codling wind park

# Environmental Impact Assessment Report

## Volume 4

## Appendix 6.1 Cumulative Effects Assessment


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## Table of contents


1 Introduction ..... 8
2 CEA methodology ..... 8
3 CEA impact screening ..... 10
4 CEA 'other development' screening ..... 12
5 Assessment of cumulative effects ..... 23
6 CEA summary ..... 28
7 References ..... 29

## List of tables

Table 1 Tiered structure for other development considered for CEA (modified from PINS Advice Note 17 (PINS, 2019)) ..... 10

Table 2 CEA impacts screening for the marine geology, sediments and coastal processes ..... 11

Table 3 Summary of other developments screened into the CEA for marine geology, sediments and coastal processes ..... 14

## List of figures

Figure 1 Other developments screened in the CEA for the marine geology, sediments and coastal processes assessment ..... 22

## Abbreviations

| Abbreviation | Term in Full |
|---|---|
| ABP | An Bord Pleanála |
| CEA | Cumulative Effects Assessment |
| CWP | Codling Wind Park |
| DLRCC | Dún Laoghaire-Rathdown County Council |
| DPC | Dublin Port Company |
| EIA | Environmental Impact Assessment |
| EIAR | Environmental Impact Assessment Report |
| EPA | Environmental Protection Agency |
| EU | European Union |
| IAC | Inter-array cable |
| MAC | Marine Area Consent |
| OECC | Offshore Export Cable Corridor |
| ORESS | Offshore Renewable Electricity Support Scheme |
| OSS | Offshore Substation Structure |
| OWF | Offshore Wind Farm |
| PINS | Planning Inspectorate |
| SID | Strategic Infrastructure Development |
| SSC | Suspended Sediment Concentration |
| WTG | Wind Turbine Generator |

## Definitions

| Glossary | Meaning |
|---|---|
| the Applicant | The developer, Codling Wind Park Limited (CWPL). |
| array site | The area within which the wind turbine generators (WTGs), inter-array cables (IACs) and the offshore substation structures (OSSs) are proposed. |
| Codling Wind Park (CWP) Project | The proposed development as a whole is referred to as the Codling Wind Park (CWP) Project, comprising of the offshore infrastructure, the onshore infrastructure and any associated temporary works. |
| Codling Wind Park Limited (CWPL) | A joint venture between Fred. Olsen Seawind (FOS) and Électricité de France (EDF) Renewables, established to develop the CWP Project. |
| Dun Laoghaire Harbour | The historic harbour of Dun Laoghaire on the southern shore of Dublin Bay with limits defined as the areas contained within and including the East and West piers of Dún Laoghaire Harbour and within 600 metres of the entrance to that harbour, together with any adjoining land, banks, inlets and havens vested in Dún Laoghaire Harbour Company and the docks, piers, jetties, quays and other works vested in that company. |
| EirGrid | State-owned electric power transmission system operator in Ireland and nominated Offshore Transmission Asset Owner. |
| Environmental Impact Assessment (EIA) | A systematic means of assessing the likely significant effects of a proposed project, undertaken in accordance with the EIA Directive and the relevant Irish legislation. |
| Environmental Impact Assessment Report (EIAR) | The report prepared by the Applicant to describe the findings of the EIA for the CWP Project. |
| export cables | The cables, both onshore and offshore, that connect the offshore substations with the onshore substation. |
| inter-array cables (IACs) | The subsea electricity cables between each WTG and the OSSs. |
| Maritime Area Consent (MAC) | A Maritime Area Consent (MAC) provides State authorisation for a prospective developer to undertake a maritime usage and occupy a specified part of the maritime area.<br>A MAC is required to be in place before planning consent can be sought. |
| offshore export cables | The cables which transport electricity generated by the wind turbine generators (WTGs) from the offshore substation structures (OSSs) to the TJBs at the landfall. |
| offshore export cable corridor (OECC) | The area between the array site and the landfall, within which the offshore export cables will be installed along with cable protection and other temporary infrastructure for construction. |
| offshore infrastructure | The permanent offshore infrastructure, comprising of the WTGs, IACs, OSSs, interconnector cables, offshore export cables and other associated infrastructure, such as cable and scour protection. |

| Glossary | Meaning |
|---|---|
| offshore substation structure (OSS) | A fixed structure located within the array site, containing electrical equipment to aggregate the power from the wind turbine generators and convert it into a more suitable form for export to shore. |
| planning application boundary | The area subject to the application for development permission, including all permanent and temporary works for the CWP Project. |
| wind turbine generator | All the components of a wind turbine, including the tower, nacelle, and rotor. |

# APPENDIX 6.1 CUMULATIVE EFFECTS ASSESSMENT

## 1 Introduction

1. Codling Wind Park Limited (hereafter 'the Applicant') is proposing to develop the Codling Wind Park (CWP) Project, which is located in the Irish sea approximately 13–22 km off the east coast of Ireland, at County Wicklow.

2. The Environmental Impact Assessment Report (EIAR) for the CWP Project provides the decision-maker, stakeholders and all interested parties with the environmental information required to develop an informed view of any likely significant effects resulting from the CWP Project, as required by the European Union (EU) Directive 2011/92/EU (as amended by Directive 2014/52/EU) (the EIA Directive). These provisions are transposed into Irish legislation in Part X of the Planning and Development Act 2000, as amended, and in Part 10 of the Planning and Development Regulations 2001, as amended.

3. A fundamental component of the EIA is to consider and assess the potential for cumulative effects of the project with other projects, plans and activities (hereafter referred to as 'other development').

4. The Environmental Protection Agency (EPA) Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022) defines cumulative effects as:

> *'The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.*
>
> *While a single activity may itself result in a minor impact, it may, when combined with other impacts (minor or insignificant), result in a cumulative impact that is collectively significant. For example, effects on traffic due to an individual industrial project may be acceptable; however, it may be necessary to assess the cumulative effects taking account of traffic generated by other permitted or planned projects.'*

5. This appendix presents the findings of the Cumulative Effects Assessment (CEA) for physical and coastal processes, which considers the residual effects presented in **Chapter 6 Marine Geology, Sediments and Coastal Processes** alongside the potential effects of other proposed and reasonably foreseeable development. Cumulative effects are considered in this document across the construction and operation and maintenance phases of the CWP Project.

6. The detail and scope of the decommissioning works for the CWP Project will be determined by the relevant legislation and guidance at the time of decommissioning. Project alone impacts during the decommissioning phase of the CWP Project are assessed in **Chapter 6 Marine Geology, Sediments and Coastal Processes**. It is anticipated that the impacts will be no greater than those identified for the construction phase, and therefore no separate assessment of cumulative impacts during the decommissioning phase is presented within this CEA.

## 2 CEA methodology

### 2.1 Guidance

7. This section summarises the approach to the assessment of cumulative effects for the CWP Project. Further details on the approach to the CEA is provided in **Appendix 5.1 Cumulative Effects Assessment Methodology**.

8. The principal guidance document that has informed the approach to the CEA is the Planning Inspectorate (PINS) for England 'Advice Note 17: Cumulative Effects Assessment' (PINS, 2019), which provides a four-stage process for the assessment of cumulative effects which has been applied here.

9. This guidance has been applied for a number of both offshore wind farm (OWF) and non-OWF projects in the UK and is considered to provide developers with a structured approach to assessing cumulative effects. The guidance is also regularly applied in Ireland for large scale projects, noting that there is no single, industry standard approach to CEA in Ireland which often varies between projects.

10. In developing the CEA methodology, EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022) and Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (European Commission, 1999) has also been considered.

## 2.2 Consultation

11. To date, no stakeholder or regulator feedback was received during the consultation process that is relevant to the CEA for marine geology, sediments and coastal processes.

## 2.3 Identification of 'other development'

12. Stage 1 of the process involved establishing the long list of other development with the potential to result in cumulative effects with the CWP Project. This included all projects that result in a comparative effect that is not intrinsically considered as part of the existing environment and is not limited to other OWF projects.

13. The long list of other development (presented in **Appendix 5.1 Cumulative Effects Assessment Methodology**) was then subject to additional screening criteria to establish a short list of other development for each topic. It should be noted that the approach to the CEA attempts to incorporate an appropriate level of pragmatism. Only projects which are well described and sufficiently advanced, with sufficient detail available with which to undertake a meaningful and robust assessment, have been screened into the CEA.

14. In accordance with PINS Advice Note 17, each development considered alongside the CWP Project as part of the CEA has been assigned to a tier, reflecting their current status in the planning and development process.

15. The purpose of the tiered approach is to give consideration to the level of certainty that a cumulative project will be built and therefore contribute to cumulative effects. For example, there can be greater certainty that other development approved and under construction are likely to contribute to cumulative effects, whereas other development at early phases of development (i.e., pre-planning) are less likely to proceed to construction and contribute to cumulative effects. Furthermore, sufficient detail about these projects is unlikely to be available with which to undertake a detailed cumulative assessment.

16. The proposed tiering structure is presented in **Table 1** and described in more detail in **Appendix 5.1 Cumulative Effects Assessment Methodology**. The tiers are listed in descending order of level of detail likely to be available (and, correspondingly, certainty of effects arising).

Table 1 Tiered structure for other development considered for CEA (modified from PINS Advice Note 17 (PINS, 2019))

| Tier | Description |
|---|---|
| Tier 1 | • Under construction;<br>• Permitted applications, but not yet implemented;<br>• Offshore applications submitted six months or more in advance of the CWP Project planning application, but not yet determined; and<br>• Onshore applications submitted six months or more in advance of the CWP Project planning application, but not yet determined. |
| Tier 2a | • Offshore projects in receipt of a Maritime Area Consent (MAC) and an Offshore Renewable Electricity Support Scheme (ORESS) contract. |
| Tier 2b | • Offshore projects in receipt of a MAC;<br>• Offshore Projects in the public domain where an EIA scoping report has been issued; and<br>• Onshore Projects in the public domain where an EIA scoping report has been issued. |
| Tier 3 | • Projects in the public domain where an EIA scoping report has not been issued; and<br>• Projects that have been identified in the relevant development plans and programmes, which set the framework for future development permissions / approvals, where such development is reasonably likely to come forward. |

# 3 CEA impact screening

17. The first step in the CEA for marine geology, sediments and coastal processes is the identification of which residual impacts assessed for the CWP Project alone have the potential for a cumulative impact with other development (described as 'impact screening'). This screening exercise is set out in **Table 2** below.

18. Only potential impacts assessed in **Chapter 6 Marine Geology, Sediments and Coastal Processes** as Minor or above are included in the CEA (i.e., those assessed as 'imperceptible' are not taken forward as there is no potential for them to contribute to a cumulative effect).

19. In summary, **Table 2** shows that there is the potential for cumulative effects on marine geology, sediments and coastal processes as a result of:

- Temporary disturbance of the seabed leading to increases in suspended sediment concentration (SSC) and associated deposition.
- Alteration to seabed morphology.
- Localised alteration to the hydrodynamic, wave and sediment regimes and coastal processes.
- Scour around installed structures.
- Operation and maintenance.

Table 2 CEA impacts screening for the marine geology, sediments and coastal processes

| Impact | Potential for cumulative effect | Rationale |
|---|---|---|
| Construction | | |
| **Impact 1**: Temporary disturbance of the seabed resulting from pre-installation methods and effects, cable and monopile installation leading to increases in suspended sediment concentrations and associated deposition. | Yes | Screened into the CEA. |
| **Impact 2**: Temporary disturbance of the seabed resulting from pre-sweeping / sandwave levelling activities leading to increases in suspended sediment concentrations and associated deposition. | Yes | Screened into the CEA. |
| **Impact 3:** Alteration to seabed morphology during seabed preparation. | Yes | Screened into the CEA. |
| **Impact 4**: Localised alteration to the hydrodynamic, wave and sediment regimes and coastal processes. | Yes | Screened into the CEA. |
| Operation | | |
| **Impact 1**: Localised alteration of hydrodynamic and wave conditions across the site and effects on the sediment transport regime and coastal processes. | Yes | Screened into the CEA. |
| **Impact 2**: Scour around installed structures and associated sediment transportation and deposition leading to changes in seabed composition, structure or morphology. | Yes | Screened into the CEA. |
| **Impact 3**: Operation and maintenance | Yes | Screened into the CEA. |
| Decommissioning | | |
| **Impact 1**: Temporary increases in suspended sediment concentration during removal of foundations and / or cables. | The detail and scope of the decommissioning works for the CWP Project will be determined by the relevant legislation and guidance at the time of decommissioning. Project alone impacts during the decommissioning phase of the CWP Project are assessed in Chapter 6 Marine Geology, Sediments and Coastal Processes. It is anticipated that the impacts will be no greater than those identified for the construction phase, and therefore no separate assessment of cumulative impacts during the decommissioning phase is presented within this CEA. | |
| **Impact 2**: Localised alteration of hydrodynamic and wave conditions across the site and effects on the sediment transport regime and coastal processes. | | |

| Impact | Potential for cumulative effect | Rationale |
|---|---|---|
| **Impact 3**: Alteration to seabed morphology during decommissioning. | | |

# 4 CEA 'other development' screening

20. The second step in the CEA for marine geology, sediments and coastal processes is the identification of the other developments that may result in cumulative effects for inclusion in the CEA (described as 'project screening'). To identify the other developments to be screened into the CEA short list, a screening range was established based on the tidal excursion distance during the spring tidal phase, being *c*. 15 km, derived from the analysis of data which has been produced by the modelling performed to support the assessment. This distance was doubled to establish the range within which projects are screened in (30 km). This information is set out in **Table 3** below, together with a consideration of the relevant details of each development, including the tier (see **Table 1**), proximity to the CWP Project offshore development area and a rationale for including or excluding the other development from the assessment.

21. The other developments included in the table below are taken from the long list of other developments (presented in **Appendix 5.1**). Information gathering for the other developments screened in at Stage 2 of the CEA, along with a greater understanding of the potential effects of the CWP Project, has enabled further refinement of the short list.

22. In summary, the following other developments will be assessed for potential cumulative effects with the CWP Project in relation to marine geology, sediments and coastal processes:

- Sure Partners Limited / SSE Renewables – Arklow Bank OWF Phase 2 (CEA-0004, CEA-2752 & CEA-2753);
- RWE Renewables – Dublin Array OWF (CEA-0037);
- Statkraft Ireland – North Irish Sea Array OWF (CEA-0094 & CEA-2751);
- Malahide Marina Village Ltd – Dredge disposal (CEA-0138);
- Dublin Port Company – Maintenance Dredging in Dublin Port (CEA-0191);
- Dublin Port Company – Dublin Port Capital Dredging Project (CEA-0192);
- America Europe Connect Ltd – CeltixConnect 2 (CEA-0195);
- Eirgrid plc – East-West interconnector (CEA-0196);
- Dún Laoghaire-Rathdown County Council (DLRCC) – Mooring maintenance (CEA-0198);
- Dublin Port Company – Dredge disposal (CEA-0206, CEA-0207, CEA-0208, CEA-0209 & CEA-0210);
- Dublin Port Company – MP2 Project (CEA-1323 & CEA-1328);
- Dublin City Council – Grand Canal Storm Water Outfall Extension (CEA-1329);
- Dublin Port Company – 3FM Project (CEA-1348);
- Wicklow County Council – Wicklow Port Dredging (CEA-1355);
- MaresConnect Ltd – Interconnector Site Investigation (CEA-2749);
- Dublin Port Company – Site Investigations (CEA-2727);
- Rockabill Cable Systems Ltd – Subsea Cable (CEA-2732);
- SSE Renewables – Braymore Park now Setanta Wind Park (CEA-2742);
- Sunrise Offshore Wind Farm (CEA-2744);
- Banba Wind Offshore Wind Farm (CEA-2746);
- Wicklow Sea Offshore Wind Farm CEA-2747);
- Hibernian Wind Power (CEA-2756);

- Kish Offshore Wind Limited & Bray Offshore Wind Limited (CEA-2979);
- Microsoft Ireland Operations Ltd – Geophysical survey and site investigations (CEA-2989 & CEA-2991);
- Iarnród Éireann – Geotechnical and Geophysical site investigation survey (CEA-2993); and
- Dublin City Council – Environmental survey and ground investigation (CEA-2996).

23. The location of these other developments, relative to the CWP Project is shown on a map of the area in **Figure 1**.

Table 3 Summary of other developments screened into the CEA for marine geology, sediments and coastal processes

| Development | Distance from the array site (km) | Distance from the export cable corridor | Tier | Included in the CEA (Yes/No) | Rationale |
|---|---|---|---|---|---|
| Sure Partners Limited / SSE Renewables<br>Arklow Bank OWF Phase 2<br>CEA-0004<br>Planning Ref:<br>2022-MAC-002 | 9.8 | 9.9 | 2b | Yes | Screened into the CEA. |
| RWE Renewables<br>Dublin Array OWF<br>CEA-0037<br>Planning Ref:<br>2022-MAC-003 and 004 | 2.8 | 0 | 2a | Yes | Screened into the CEA. |
| Statkraft Ireland<br>North Irish Sea Array OWF<br>CEA-0094<br>Planning ref:<br>2022-MAC-005 | 40.8 | 23.0 | 2a | Yes | Screened into the CEA. |
| Sure Partners Limited / SSE Renewables<br>Arklow Bank OWF Phase 2<br>Site Investigations<br>CEA-2752 & CEA-2753 | 9 | 17 | 1 | No | The proposed activities are not anticipated to have an effect on the receiving environment (RPS, 2021a, 2023). |

| Development | Distance from the array site (km) | Distance from the export cable corridor | Tier | Included in the CEA (Yes/No) | Rationale |
|---|---|---|---|---|---|
| Statkraft Ireland<br>North Irish Sea Array OWF<br>Site Investigations for Export Cable Route<br>CEA-2751 | 45 | 27 | 1 | No | The proposed activities are not anticipated to have significant effects on the receiving environment (Statkraft, 2021). |
| Malahide Marina Village Ltd.<br>Dredge disposal<br>CEA-0138<br>Planning Ref:<br>S0031-01 | 12 | 12 | 1 | Yes | Screened into the CEA. |
| Dublin Port Company<br>Maintenance Dredging in Dublin Port<br>CEA-0191<br>Planning Ref:<br>FS007132 | 31.6 | 0.4 | 1 | Yes | Screened into the CEA. |
| Dublin Port Capital Dredging Project<br>CEA-0192<br>Planning Ref:<br>FS007164 | 31.6 | 0.5 | 1 | Yes | Screened into the CEA. |

| Development | Distance from the array site (km) | Distance from the export cable corridor | Tier | Included in the CEA (Yes/No) | Rationale |
|---|---|---|---|---|---|
| America Europe Connect Ltd<br>CeltixConnect 2<br>CEA-0195<br>Planning ref:<br>FS006631 | 41 | 10 | 1 | No | The Project construction phase is complete, the cable is not anticipated to interact with the CWP Project during operation. |
| Eirgrid plc<br>East-West Interconnector CEA-0196<br>Planning ref:<br>FS004527 | 22 | 20 | 1 | No | The Project construction phase is complete, the cable is not anticipated to interact with the CWP Project during operation. |
| Dún Laoghaire Harbour Company now Dún Laoghaire-Rathdown County Council (DLRCC)<br>Mooring Maintenance<br>CEA-0198<br>Planning Ref:<br>FS006713 | 25.5 | 1.6 | 1 | No | No construction works associated with the development are anticipated to impact on the Physical and Coastal Processes environment (Department of Housing, Local Government and Heritage, 2017). |

| Development | Distance from the array site (km) | Distance from the export cable corridor | Tier | Included in the CEA (Yes/No) | Rationale |
|---|---|---|---|---|---|
| Dublin Port Company<br>Dredge disposal<br>CEA-206, CEA-207, CEA-208, CEA-209 & CEA-210<br>Planning Ref:<br>S0004-02, S0004-03, S0033-01, S0004-01 & S0024-02 | 30 | 0.5 | 1 | Yes | Screened into the CEA. |
| Dublin Port Company<br>MP2 Project<br>CEA-1323 & CEA-1328<br>Planning Ref:<br>FS 006893 &<br>ABP-304888-19 | 32.1 | 4 | 1 | Yes | Screened into the CEA. |
| Dublin City Council<br>Grand Canal Storm Water Outfall Extension<br>CEA-1329<br>Planning Ref:<br>ABP-313738-22 | 34.2 | 1.7 | 1 | No | The potential impact of construction works associated with the Grand Canal Storm Water Outfall Extension are anticipated to be managed so that effects are contained within the bounds of the construction area and thus will not have any impacts outside the canal (Dublin City Council, 2022). |

| Development | Distance from the array site (km) | Distance from the export cable corridor | Tier | Included in the CEA (Yes/No) | Rationale |
|---|---|---|---|---|---|
| Dublin Port Company<br>3FM Project<br>CEA-1348<br>Planning Ref:<br>Awaiting submission | 32.6 | 0 | 1 | No | The development is in the early planning stage. Inadequate information is available for appropriate screening into the CEA. |
| Wicklow County Council<br>Wicklow Port Dredging<br>CEA-1355<br>Planning ref:<br>FS007583 | 12.9 | 14.2 | 1 | Yes | Screened into the CEA |
| MaresConnect Ltd<br>Electricity Interconnector Site Investigation<br>CEA-2749<br>Planning ref:<br>FS007635 | 30 | 9.5 | 3 | No | The development is in the early planning stage. Inadequate information is available for appropriate screening into the CEA. |
| Dublin Port Company Site Investigations<br>CEA-2727<br>Planning Ref:<br>FS006497 | 29 | 0.2 | 1 | No | The site investigation campaigns are not expected to impact on the Marine Geology, Sediments and Coastal Processes environment (Department of Housing, Local Government and Heritage, 2020). |

| Development | Distance from the array site (km) | Distance from the export cable corridor | Tier | Included in the CEA (Yes/No) | Rationale |
|---|---|---|---|---|---|
| Rockabill Cable Systems Ltd<br>Subsea Cable<br>CEA-2732<br>Planning ref:<br>FS006842 | 42 | 17 | 1 | No | The Project construction phase is complete, the cable is not anticipated to interact with the CWP Project during operation. |
| SSE Renewables<br>Braymore wind Park now Setanta Wind Park<br>CEA-2742<br>Planning ref:<br>FS006973 | 53 | 27 | 3 | Yes | Screened into the CEA. |
| Sunrise Wind<br>Sunrise Offshore Wind Farm<br>CEA-2744<br>Planning Ref: FS007151 | 0 | 2 | 1 | No | The development is in the early planning stage. Inadequate information is available for appropriate screening into the CEA. |
| Banba Wind Limited<br>Banba Wind Offshore Wind Farm<br>CEA-2746<br>Planning Ref: FS007283 | 0 | 0 | 1 | No | The development is in the early planning stage. Inadequate information is available for appropriate screening into the CEA. |

| Development | Distance from the array site (km) | Distance from the export cable corridor | Tier | Included in the CEA (Yes/No) | Rationale |
|---|---|---|---|---|---|
| Wicklow Sea Wind<br>Wicklow Sea Offshore Wind Farm<br>CEA-2747<br>Planning Ref:<br>FS007163 | 2 | 11 | 1 | No | The development is in the early planning stage. Inadequate information is available for appropriate screening into the CEA. |
| Hibernian Wind Power<br>Hibernian Wind Power – Kilmichael Point<br>CEA-2756<br>Planning ref:<br>FS006788 | 25 | 34.5 | 1 | No | The development is in the early planning stage. Inadequate information is available for appropriate screening into the CEA. |
| Kish Offshore Wind Limited & Bray Offshore Wind Limited<br>ORE O&M Base<br>CEA-2979<br>Planning ref:<br>MAC20230012 | 23 | 1 | 3 | No | The development is assessed as part of RWE Renewables – Dublin Array OWF (CEA-0037), and inadequate information is available for more detailed screening. |

| Development | Distance from the array site (km) | Distance from the export cable corridor | Tier | Included in the CEA (Yes/No) | Rationale |
|---|---|---|---|---|---|
| Microsoft Ireland Operations Ltd<br>Geophysical survey and site investigations<br>CEA-2989 & CEA-2991<br>Planning ref:<br>LIC230018 & LIC230016 | 30 | 0 | 1 | No | The site investigation campaigns are not expected to impact on the Marine Geology, Sediments and Coastal Processes environment (Altemar, 2024). |
| Iarnród Éireann<br>Geotechnical and Geophysical site investigation survey<br>CEA-2993<br>Planning ref:<br>LIC230028 | 2 | 28 | 1 | No | The site investigation campaigns are not expected to impact on the Marine Geology, Sediments and Coastal Processes environment (IARNRÓD ÉIREANN, 2023). |
| Dublin City Council<br>Environmental survey and ground investigation<br>CEA-2996<br>Planning ref:<br>LIC230007 | 1.5 | 35 | 1 | No | The application is yet to be assessed. Inadequate information is available for appropriate screening into the CEA. |

6°36'W
6°0'W
5°24'W
53°24'N
52°48'N
5,920,000
5,880,000
280,000
350,000
N
W
E
S
0 0.5 1 km
0 5 10 km
50 km
6°W
53°N
**Data sources:** DLRCC, 2017; DCC, 2022; RPS, 2021
**Background:** OpenStreetMap
**Copyrights:** © OpenSteetMap (and) contributors

## Legend

- Planning application boundary
- Buffer considered for the purpose of the CEA (30 km)
- MP2 planning boundary
- Dublin port company
- Wicklow port
- Malahide marina village Ltd
- The offshore dredge disposal site used by the dublin port company for the disposal works associated with the MP2 development, maintenance dredging and the capital dredging project
- Dublin port capital dredging project boundaries

**Offshore wind farms**

- Arklow bank phase 2
- Dublin array
- North Irish sea array
- Setanta wind park

codling wind park

*Project:* Codling Wind Park

*Contractor:* Partrac.com

Figure 1.
Other developments considered in the CEA for the Marine Geology, Sediments and Coastal processes

*CWP doc. number:* CWP-PAR-ENG-08-01-MAP-0671

*Internal descriptive code:* WE - PAB..BUFF.30km - DREDGE.DISPOSAL.SITES. .PORTS..ARK2.WF..DA.WF..MP2..NISA.WF..SET.WF - (EIAR.Vol.04.Ch.06.Ap.01.FIG.01)

*Size:* A3
*Scale:* 1:400,000

*CRS:* EPSG 25830

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| B | Final version | 2024/06/26 | MG | JP/EA | JP/EA |
| | | | | | |
| | | | | | |

# 5 Assessment of cumulative effects

## 5.1 Construction phase

### 5.1.1 5.1.1 Cumulative Impact 1: Temporary disturbance of the seabed resulting from pre-installation methods and effects, cable and monopile installation leading to increases in suspended sediment concentrations, and associated deposition.

24. As described in **Chapter 6 Marine Geology, Sediments and Coastal Processes Section 6.10**, a **Negligible / Minor** impact resulting from an increase in SSC levels is anticipated for marine geology, sediments and coastal processes receptors during the construction phase when the CWP Project is considered separately.

25. An assessment of cumulative impacts on SSC levels for screened projects outlined in **Table 3** is provided below.

    Cumulative Increase in SSC levels resulting from the construction of the CWP Project coinciding with Tier 1 projects including dredging activities in the Dublin Port, the MP2 Jetty Development, the Wicklow port dredging and the Malahide Marina Village.

26. The Dublin Harbour Capital Dredging Project at Dublin Port is being proposed for consent as part of the Dublin Port Masterplan 2018 (Department of Housing, Local Government and Heritage, 2022). In total, 500,000 $m^3$ of material is to be dredged during an eight-year dredging programme. The sediments to be dredged are mixed, comprising clays, silts, sands and gravels with occasional cobbles. The proposed areas to be dredged are all within the inner Dublin Port Harbour and the dumping is planned for the offshore dump site presented in **Figure 1**. As part of the EIAR submitted in support of the foreshore licence and dumping at sea permit, an assessment of impacts on coastal processes receptors was completed.

27. Dublin Port Company (DPC) carries out routine maintenance dredging of the navigation channel, basins and berthing pockets in order to maintain accepted charted depths and provide safe navigation for vessels to and from the Port. The dredged material mostly consists of silt and sand, with elements of clay. The campaigns utilise a trailer suction dredger to dredge a maximum of 300,000 $m^3$ per annum. The dredge arisings are disposed of within the bounds of an existing licenced offshore disposal site (hown in **Figure 1**). To assess the potential impacts of the dredge and disposal activities on coastal processes, a Coastal Processes Risk Assessment was completed as part of the planning application (RPS, 2021b).

28. The modelling exercises, performed to assess the impacts of the capital dredging works and the maintenance dredging works, concluded that the dredging operations will not result in any significant impact to water quality in terms of suspended sediments, and elevated suspended sediment concentrations arising from the disposal works will not extend beyond 750 m of the dumping site (RPS, 2021b, 2021c).

29. A similar modelling exercise was performed for the MP2 Project at Dublin Port, which was consented for development in accordance with the Dublin Port Master Plan 2018 (Department of Housing, Local Government and Heritage, 2022). The exercise concluded that dredging and disposal activities will not result in any significant increases to the background level of suspended sediments and will not impact on the existing water quality in the greater Dublin Bay area (RPS, 2021d), with only localised effects anticipated (circa <1 km from dredge / disposal activities).

30. At Malahide Marina in County Dublin, maintenance dredging is required to restore the marina depths to their original levels. Since its construction in 1991, sediments have continually infilled the marina area, affected safe navigation and caused distortion of some of the pontoons. Dredging of the area to remove the settled sediments was previously carried out in 1996, however sediment levels have increased gradually since that time and further maintenance dredging is now required. It is proposed that a total of 40,000 $m^3$ of sediment is removed from the marina area by a water injection dredging process. It is proposed that the project be completed over a ten-year period with a total of 20,000 $m^3$ being removed in 2018, a further 10,000 $m^3$ in 2022 and the remaining 10,000 $m^3$ in 2027.

31. A study conducted as part of the foreshore application concluded that the works associated with the dredging activities 'will contribute only minimal additional silts and muds and that these materials will be dispersed into background siltation by natural scouring' (MERC Consultants, 2018). It was also concluded that the impacts on the local estuary will be 'minimal'.

32. In order to maintain the advertised charted depths of the navigation channel, the turning basins and the berthing pockets at the Wicklow harbour, the Wicklow County Council proposed an eight-year dredging program (2025 to 2032). It is proposed that a total of 334,950 tonnes will be dredged during the eight-year period, the highest amount of material to be dredged over a single dredging phase will occur in the first year of the campaign, where 80,850 tonnes will be dredged. The maximum daily disposal rate is set at ~13,590 tonnes/day. As part of the Foreshore license application, a modelling exercise was performed to assess the dispersion of spilled material during the dredging works (GDG, 2023). The exercise concluded that during the dredging operations, the mean SSC concentration is ~30 mg\l within the harbour, decreasing to ~10 mg\l (below baseline levels) immediately outside the harbour.

33. Given the findings described above, should offshore construction works of the CWP Project coincide with disposal activities associated with the maintenance dredging activities, or capital dredging works to be performed as part of the MP2 development in Dublin Port, the Wicklow maintenance dredging or dredging activities in the Malahide Marina Village, it is highly unlikely that this would lead to cumulative impacts, as the distance between the works (or the disposal area) and the array site / offshore export cable corridor is at least 3.5 km, which exceeds the predicted lateral extent of the resulting sediment plumes (<1 km) from the dredging activities. Consequently, no significant cumulative effects are anticipated from CWP together with Tier 1 projects.

Cumulative Increase in SSC levels due to coincident construction periods with Tier 2a and 2b projects Dublin Array OWF and / or Arklow Bank Phase 2 OWF and / or North Irish Sea Array OWF and / or Tier 3 project Setanta Wind Park.

34. A cumulative increase in SSC levels may arise if the construction of the CWP Project coincides with the construction of the Dublin Array OWF (which is located approximately 2 km to the north of the offshore export cable corridor (OECC)), the Arklow Bank Phase 2 OWF (located approximately 10 km to the south of the array site), the North Irish Sea OWF and the Setanta Wind Park (located approximately 23 km and 27 km from the OECC, respectively) (**Figure 1**). Construction of the Dublin Array OWF is planned between 2025 and 2027. The Arklow Bank Phase 2 OWF is proposed to be constructed between 2026 and 2028. Construction for the North Irish Sea Array OWF is proposed to be between 2026 and 2028. Setanta Wind Park construction is planned between 2027 and 2030.

35. Due to the close proximity of the Dublin Array OWF (2 km), it is anticipated that an overlap in construction works may yield higher SSC levels within the MAC application boundary, and across the region. This potential increase is likely to be transient in nature and limited spatially. This is because the seabed is dominantly comprised of coarse sediments, meaning the majority of those sediments liberated during construction would deposit locally. The finer sediments, which remain in suspension longer and thus have a greater likelihood of interacting with, and enhancing the SSC of, plumes generated by construction activities at the Dublin Array OWF will be quickly dispersed by the prevailing tidal regime, resulting in SSCs returning to baseline levels over a period of days to weeks following

completion of the construction activities. With regards to the North Irish Sea OWF, due to the distance from the CWP project (>10 km) it is considered unlikely that significant interaction of suspended sediment plumes will occur due to overlap between the construction of the CWP Project and this proposed development. Were overlap to occur during construction, the concentration of suspended sediment plumes would have reduced significantly at the point of interaction, with coarser sediments depositing locally to the construction activities. Those finer sediments remaining in suspension would be rapidly dispersed by the prevailing tidal regime, with SSC levels anticipated to quickly return to baseline levels following completion of the construction activities. Consequently, no significant cumulative effects are anticipated for Tier 2a projects, the same conclusion is drawn for Tier 1 and Tier 2a projects combined.

36. As the distance between the CWP project and the Tier 2b and Tier 3 projects (Arklow Bank Phase 2 OWF and Setanta Wind Park) is >10 km, the same conclusion can be drawn. Consequently, no significant cumulative effects are anticipated for Tier 1, Tier 2a, Tier 2b and Tier 3 projects combined.

### 5.1.2 Cumulative Impact 2: Temporary disturbance of the seabed resulting from pre-sweeping / sandwave levelling activities leading to increases in suspended sediment concentrations, and associated deposition.

37. As described in **Chapter 6 Marine Geology, Sediments and Coastal Processes Section 6.10**, a **Negligible / Minor or Minor** impact resulting from an increase in SSC levels is anticipated for marine geology, sediments and coastal processes receptors during the construction phase when the Proposed Development is considered separately.

38. As the effects resulting from Impact 2 are analogous to those described in Impact 1, no significant cumulative effects are anticipated for Tier 1, Tier 2a, Tier 2b and Tier 3 projects combined.

### 5.1.3 Cumulative Impact 3: Alteration to seabed morphology during seabed preparation

39. As described in **Chapter 6 Marine Geology, Sediments and Coastal Processes Section 6.10**, a **Negligible / Minor or Minor** impact resulting from localised alteration to the hydrodynamic, wave and sediment regimes and coastal processes is anticipated for marine geology, sediments and coastal processes receptors during the construction phase when the Proposed Development is considered separately. There are no Tier 1 projects of relevance to this impact.

40. Given the highly localised nature of effects associated with alteration to seabed morphology resulting from seabed preparation during the construction phase when the project is considered separately, and the likely similar conclusions drawn with regard the adjacent Tier 2a, Tier 2b and Tier 3 project OWFs (Arklow Bank Phase 2, Dublin Array, North Irish Sea Array, and Setanta), there is no likelihood of interaction between these projects and thus no significant cumulative effects are anticipated for Tier 2a, Tier 2b and Tier 3 projects combined.

### 5.1.4 Cumulative Impact 4: Localised alteration to the hydrodynamic, wave and sediment regimes and coastal processes.

41. As described in **Chapter 6 Marine Geology, Sediments and Coastal Processes Section 6.10**, a **Negligible / Minor** impact resulting from localised alteration to the hydrodynamic, wave and sediment regimes and coastal processes is anticipated for marine geology, sediments and coastal processes receptors during the construction phase when the Proposed Development is considered separately. There are no Tier 1 projects of relevance to this impact.

42. Given the highly localised nature of effects associated with alteration to the hydrodynamic, wave and sediment regimes and coastal process during the construction phase when the project is considered separately, and the likely similar conclusions drawn with regard the adjacent Tier 2a, Tier 2b and Tier 3 project OWFs (Arklow Bank Phase 2, Dublin Array, North Irish Sea Array OWF and Setanta Wind Park) there is no likelihood of interaction between these projects and thus no significant cumulative effects are anticipated for Tier 2a, Tier 2b and Tier 3 projects combined.

## 5.2 Operation and maintenance

### 5.2.1 Cumulative Impact 1: Localised alteration to the hydrodynamic, wave and sediment regimes and coastal processes

43. As discussed in **Chapter 6 Marine Geology, Sediments and Coastal Processes Section 6.10**, a **Negligible** impact resulting from alteration to the hydrodynamic, wave and sediment regimes and coastal processes is anticipated for marine geology, sediments and coastal processes receptors when the CWP Project is considered separately. There are no Tier 1 projects of relevance to this impact.

44. An assessment of cumulative impacts on the regional and local hydrodynamic and wave regimes and effects on the sediment transport regime (and seabed morphology including sand bank composition and structure) and coastal processes due to the operation of the Dublin Array OWF, Arklow Phase 2 OWF, North Irish Sea Array OWF and Setanta Wind Park is provided below.

45. It is anticipated, when assessed separately, that during the operational phase of the Tier 2a, Tier 2b and Tier 3 projects Dublin Array OWF, Arklow Bank Phase 2 OWF, North Irish Sea Array OWF and the Setanta Wind Park, these developments will only have minor or minor / negligible effects on the prevailing wave, hydrodynamic and sediment regimes, and coastal processes. Cumulative effects of concern include:

- Wake effects generating turbulence that persists downstream of the windfarm altering the prevailing tidal regime; and
- Restricted sediment supply impacting the regional and local sediment regime and seabed and sandbank morphology, composition and structure.

46. Wake effects from developments can generate turbulence in the flow downstream. This can have a cumulative effect at the individual turbine scale (i.e., with turbulence persisting in the flow as the flow passes a contiguous line of individual wind turbine generators (WTG)), or at the regional scale (i.e., where turbulence persists in the flow downstream of an array of turbines). Turbulence will exist in the flow structure as a narrow persistent feature until the turbulence dissipates, which is anticipated to occur across the length scales of several hundred metres, up to a few km. Across the region, rectilinear tides are observed flowing broadly North–South along the Eastern Irish Seaboard. Consequently, due to the locations, alignment and distance between the developments, limited cumulative effects on the prevailing tidal regime due to wake effects are anticipated with only minor, localised changes to the flow regime in terms of current velocity and direction expected. Such changes are not anticipated to generate significant cumulative effects.

47. In regard to the potential for restricted sediment supply impacting the regional and local sediment regime and seabed and sandbank morphology, composition and structure, it is important to consider the contemporary sediment supply which maintains the majority of sand banks along the eastern Irish Seaboard. Banks are maintained in dynamic equilibrium dominantly by reworked sediments, with smaller contributions from the coast and fluvial sources. If you consider the origin and maintenance hypotheses for linear sandbanks suggested by Dyer and Huntley (1999), it would be reasonable to conclude that the contemporary supply of sediment from the coastline and from reworked marine sediments is broadly limited and that the region, in terms of sediment supply / loss is in broad

equilibrium. Across the lifetime of the CWP Project, where sediment supply is maintained and the local hydrodynamic regime broadly remains the same, there is no evidence to suggest that the sediment transport regime, seabed morphology and large-scale bathymetric patterns will significantly alter. The future long-term development of the sandbanks in the region is linked to changes in mean sea level, coastal recession (including anthropogenic response), sediment supply and flow interactions. As the cumulative effects of the CWP Project and other projects is anticipated to have a minor or negligible impact upon the prevailing tidal and wave regime, it is reasonable to conclude that the cumulative effects on sediment transport pathways, and the rate and magnitude of supply / loss from the wider system will remain broadly uninterrupted.

48. Though the presence of windfarm infrastructure across the region will have an effect on sediment transport, manifested at the turbine / seabed infrastructure scale by either blocking or enhancing sediment transport due to flow acceleration as the flow passes the structure, these effects are localised and are not anticipated to lead to more significant effects on the structure or composition of the seabed morphology and sandbanks across the region for Tier 1, Tier 2a, Tier 2b and Tier 3 projects combined.

### 5.2.2 Cumulative impact 2: Scour around installed structures and associated sediment transportation and deposition leading to changes in seabed composition, structure, or morphology

49. As described in **Chapter 6 Marine Geology, Sediments and Coastal Processes Section 6.10**, a **Negligible / Minor** impact resulting from operation and maintenance is anticipated for marine geology, sediments and coastal processes receptors during the operational phase when the CWP Project is considered separately. There are no Tier 1 projects of relevance to this impact.

50. For Tier 2a, 2b and Tier 3 projects, given the highly local scouring radius due to the presence of structures (e.g., monopiles) on the seabed, there is no likelihood for impacts to interact between the proximal OWFs (Dublin Array, Arklow Bank Phase 2 OWF, North Irish Sea Array OWF and Setanta Wind Park) and no significant cumulative effects are anticipated for Tier 2a, Tier 2b and Tier 3 projects combined.

### 5.2.3 Cumulative impact 3: Operation and maintenance

51. As described in **Chapter 6 Marine Geology, Sediments and Coastal Processes Section 6.10**, a **Negligible / Minor** impact resulting from operation and maintenance works is anticipated for marine geology, sediments and coastal processes receptors during the operational phase when the CWP Project is considered separately.

52. Considering the highly localised impacts of operation and maintenance when the project is considered separately, there is no likelihood that the interaction of these works and the operations associated with Tier 1 projects (dredging activities in the Dublin Port, the MP2 Jetty Development, the Wicklow port dredging and the Malahide Marina Village) will result in a significant cumulative effect.

53. Similarly, given the transient nature of impacts resulting from operation and maintenance when the project is considered separately, and the likely similar conclusions drawn with regard to the proximal OWFs (Arklow Bank Phase 2, Dublin Array, North Irish Sea Array OWF and Setanta Wind Park), there is no likelihood of interaction between these projects and thus no significant cumulative effects are anticipated. Consequently, no significant cumulative effects are anticipated for Tier 1, Tier 2a, Tier 2b and Tier 3 projects combined.

# 6 CEA summary

54. This CEA, which supports **Chapter 6 Marine Geology, Sediments and Coastal Processes** has assessed the potential cumulative effects on marine geology, sediments and coastal processes receptors from the construction and operation and maintenance phases of the CWP Project alongside other developments.

55. In summary, the CEA for marine geology, sediments and coastal processes does not identify any significant cumulative effects resulting from the CWP Project alongside other developments.

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