codling wind park

Environmental Impact Assessment Report

Volume 3

Chapter 12 Commercial Fisheries


codling
wind park

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Abbreviations

Abbreviation	Term in full
AA	Appropriate assessment
AC	Alternating current
ALARP	As Low as Reasonably Practicable
BIM	Bord Iascaigh Mhara
CEA	Cumulative Effects Assessment
CFP	Common Fisheries Policy
CIA	Cumulative Impact Assessment
COLREGs	Convention on the International Regulations for Preventing Collisions at Sea
CPA	Coast Protection Act 1963
CTVs	Crew Transfer Vessels
CWP	Codling Wind Park
CWPL	Codling Wind Park Limited
DAERA	Department of Agriculture, Environment and Rural Affairs
DAFM	Department of Agriculture, Food & Marine
DCCAE	Department of Communications, Climate Action and Environment
DECC	Department of the Environment, Climate and Communications
EC	European Commission
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EPA	Environmental Protection Agency
EEA	European Economic Area
EEZ	Exclusive Economic Zone
EU	European Union
FEPA	Food and Environmental Protection Act
FILA	Foreshore Investigation Licence Application
FLO	Fisheries Liaison Officer
FLOWW	Fishing Liaison with Offshore Wind and Wet Renewables Group
FMC	Fisheries Monitoring Centre
FMMS	Fisheries Management and Mitigation Strategy
GIS	Geographic Information System

Abbreviation	Term in full
IACs	Inter-array cables
IAM	Impact Assessment Matrix
ICES	International Council for the Exploration of the Sea
IFI	Inland Fisheries Ireland
iVMS	Inshore vessel monitoring systems
LoD	Limit of deviation
MAP	Maritime area planning
MI	Marine Institute
MMO	Marine Management Organisation
MN	Marine notices
NM	Nautical mile
MSC	Marine Stewardship Council
MSFD	Marine Strategy Framework Directive
MSP	Maritime Spatial Planning
NIS	Natura Impact Statement
NEI	Not enough information
NMPF	National Marine Planning Framework
NPWS	National Parks and Wildlife Services
OECC	Offshore export cable corridor
OFLO	Offshore Fisheries Liaison Officers
ORE	Offshore Renewable Energy
OSPAR	Oslo and Paris Convention
OSS	Offshore substation structure
OWF	Offshore wind farm
O&M	Operations and maintenance
PDA	Planning and Development Act
PLGR	Pre-Lay Grapnel Run
PO	Producers Organisation
SFPA	Sea Fisheries Protection Authority
SOLAS	Safety of life at sea
SOV	Service operation vessel
TP	Transition piece
TSHD	Trailing suction hopper dredger

Abbreviation	Term in full
UKFEN	UK Fisheries Economic Network
UXO	Unexploded ordnance
VMS	Vessel Monitoring System
WFD	Water Framework Directive
WTG	Wind turbine generator

Definitions

Glossary	Meaning
alternating current (AC)	A flow of electrical current which reaches maximum in one direction, decreases to zero, then reverses itself and reaches maximum in the opposite direction. The cycle is repeated continuously and the number of cycles per second is equal to the frequency. The Irish electrical system is an AC network that uses a frequency of 50 Hz.
the Applicant	The developer, Codling Wind Park Limited (CWPL).
array site	The red line boundary 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.
Department of the Environment, Climate and Communications (DECC)	The Irish government department responsible for environment and climate action, natural resources and waste; energy; and communications.
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.
European Commission (EC)	The executive body of the European Union responsible for proposing legislation, enforcing European law, setting objectives and priorities for action, negotiating trade agreements and managing implementing European Union policies and the budget.
generating station	Comprising the wind turbine generators (WTGs), inter-array cables (IACs) and the interconnector cables.
h/km^2/year	The number of hours spent fishing per km^2 per year is an expression used for the fishing effort, which is a measure of fishing intensity.
inter-array cables (IACs)	The subsea electricity cables between each WTG and the OSSs.
interconnector cables	The subsea electricity cables between OSSs
limit of deviation (LoD)	Locational flexibility of permanent and temporary infrastructure is described as an LoD from a specific point or alignment.
Maritime Area Planning (MAP) Act 2021	An Act to regulate the maritime area, to achieve such regulation by means of a National Marine Planning Framework, maritime area consents for the occupation of the maritime area for the purposes of maritime usages that will be undertaken for undefined or relatively long periods of time (including any such usages which also require

Glossary	Meaning
	development permission under the Planning and Development Act 2000) and licences for the occupation of the maritime area for maritime usages that are minor or that will be undertaken for relatively short periods of time
National Parks and Wildlife Service (NPWS)	The National Parks and Wildlife Service is a division of the Department of Housing, Local Government and Heritage which manages the Irish State's nature conservation responsibilities. As well as managing the national parks, the activities of the NPWS include the protection of Natural Heritage Areas, Special Areas of Conservation and Special Protection Areas.
offshore development area	The total footprint of the offshore infrastructure and associated temporary works, including the array site and the OECC.
offshore export cables	The cables which transport electricity generated by the WTGs from the offshore substations (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 works 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.
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.
operations and maintenance (O&M) activities	Activities (e.g., monitoring, inspections, reactive repairs, planned maintenance) undertaken during the O&M phase of the CWP Project.
O&M phase	This is the period of time during which the CWP Project will be operated and maintained.
parameters	Set of parameters by which the CWP Project is defined, and which are used to form the basis of assessments.
preceptor	Environmental component that may be affected, adversely or beneficially, by the CWP Project.
study area	Study areas are defined for each receptor based on the relevant characteristics of the receptor (e.g., mobility / range), some receptors may have different study areas defined at different scales (e.g., local, regional, management unit level etc.)
wind turbine generator	All the components of a wind turbine, including the tower, nacelle and rotor.

12 COMMERCIAL FISHERIES

12.1 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. This chapter forms part of the Environmental Impact Assessment Report (EIAR) for the CWP Project. The purpose of the EIAR is to provide 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 Environmental Impact Assessment (EIA) Directive).

3. This EIAR chapter describes the potential impacts of the CWP Project's Offshore Infrastructure on commercial fisheries, charter angling and aquaculture during the construction, operations and maintenance (O&M), and decommissioning phases.

4. In summary, this EIAR chapter:

   - Details the EIA scoping and consultation process undertaken and sets out the scope of the impact assessment for commercial fisheries;
   - Identifies the key legislation and guidance relevant to commercial fisheries, with reference to the latest updates in guidance and approaches;
   - Confirms the study area for the assessment and presents the impact assessment methodology for commercial fisheries;
   - Describes a summary of the existing commercial fisheries baseline established from available fisheries data, desk studies and consultation;
   - Defines the project design parameters for the impact assessment and describes any embedded mitigation measures relevant to the commercial fisheries assessment;
   - Presents the assessment of potential impacts on commercial fisheries and identifies any assumptions and limitations encountered in compiling the impact assessment; and
   - Details any additional mitigation and / or monitoring necessary to prevent, minimise, reduce, or offset potentially significant effects identified in the impact assessment.

5. The assessment should be read in conjunction with **Appendix 12.1 Cumulative Effects Assessment** (CEA), which considers other plans, projects and activities that may act cumulatively with the CWP Project and provides an assessment of the potential cumulative impacts on commercial fisheries.

6. A summary of the CEA for commercial fisheries is presented in **Section 12.11**.

7. This chapter should be read in conjunction with the following chapters and appendices due to the interactions between the technical aspects:

   - **Appendix 12.2 Representative Scenario and LoD Assessment**
   - **Appendix 12.3 Commercial Fisheries Technical Report**
   - **Chapter 9 Fish, Shellfish and Turtle Ecology**: where impacts on the ecology of fish and shellfish, including species of commercial interest, are assessed; and
   - **Chapter 16 Shipping and Navigation**: where navigational aspects related to fishing vessels while in transit and the navigational safety aspects of fishing activity are assessed.

8. For the purpose of this report, 'commercial fishing' is defined as any form of fishing activity legally undertaken with catch sold for taxable profit. Commercial fisheries therefore combines the economic and ecological functions of the existing fisheries, including (but not limited to) the ability to access fishing grounds and the quality of the fishery resource.

9. To support this commercial fisheries assessment, comprehensive descriptions of the commercial fisheries baseline environment is provided in:

Appendix 12.3 Commercial Fisheries Technical Report and summarised in **Section 12.6 Existing Environment.**

12.2 Consultation

10. Consultation with statutory and non-statutory organisations is a key part of the EIA process. Consultation with regard to commercial fisheries has been undertaken to the approach to and scope of the assessment.

11. The key elements to date have included EIA scoping, consultation events and ongoing topic-specific meetings with key fisheries stakeholders. Data requests have also been submitted to obtain the latest information and reports to feed into **Section 12.6 Existing Environment**, together with **Appendix 12.3 Commercial Fisheries Technical Report.** The feedback received throughout this process has been considered in preparing the EIAR. EIA consultation is described further in **Chapter 5 EIA Methodology**, the **Planning Documents** and in the **Public and Stakeholder Consultation Report**, which has been submitted as part of the planning application

12. **Table 12-1** provides a summary of the key issues raised during the consultation process relevant to commercial fisheries and details how these issues have been considered in the production of this EIAR chapter.

Table 12-1 Consultation responses relevant to commercial fisheries

Consultee	Comment	How issues have been addressed
Scoping responses		
Bord Iascaigh Mhara (BIM) 2 December 2020 Eastern and Midland Regional Assembly 1 December 2020 Eastern Regional Fisheries Board 4 December 2020 Sea Fisheries Protection Authority (SFPA) 2 December 2020	Offshore scoping report sent (on dates listed in the first column), most recent reminders sent on 21 January 2021; no comments received.	N/A
Marine Institute (MI) 3 February 2021	It is the advice of the MI that the scale of effects of the proposed development be considered beyond the footprint of the turbines and the licenced area.	**Section 12.4 Impact Assessment Methodology** outlines the study area for commercial fisheries. Potential impacts have been assessed at local, regional and national scale.
	The International Council for the Exploration of the Sea (ICES) has established a number of expert groups whose sole function is to assist with planning of marine wet renewables and to assess the	Recent outputs from the ICES Working Group on Offshore Wind Development and Fisheries have been reviewed and included where relevant.

Consultee	Comment	How issues have been addressed
	interactions between wet renewables and marine features (e.g., benthos and fisheries). Outputs and reports from these groups will be a useful source of information.	
	The scoping document references the MI Stock Book. We recommend they also reference the Shellfish Review 2019 for razor clams among others, (although there are no such fisheries currently in the project area) and earlier versions for whelks. Also, the Marine Atlas for any information on distribution of fisheries by vessels under 12 m in length.	Ireland's Marine Atlas, the Stock Book 2020, Shellfish Stocks and Fisheries Review 2020 and earlier versions have been included in **Section 12.6 Existing Environment**.
Topic-specific meetings (summary of discussions)		
Marine Institute		
26 February 2020	Advised that since 2009 there has been a significant increase in under 12 m vessel fishing predominantly for whelks and other species like razor clams for Asian markets. SFPA data can be accurate providing that it straddles an ICES rectangle. Data may be available from landing ports in the form of sales notes.	Landings data for <10 m vessels into Irish ports from sales notes have been requested from SFPA and are included in **Section 12.6 Existing Environment**.
	Agreement that a scouting survey for looking and identifying any static fishing gear present in the area was not required for the foreshore licence application	N/A
	Agreement to a well-designed pre- and post-construction fish and shellfish survey, along with fisheries consultation (including regional and national fisheries forums).	Monitoring programmes will be agreed post-consent with the relevant statutory consultees. This is in line with advice regarding collection of data for fish (DECC, 2018). Fisheries stakeholder consultation for the CWP Project is summarised below in the Fisheries Stakeholder Consultation section of this table.
	Other organisations to consider would be the North Irish Sea Razor Clam Association,	Fisheries stakeholder consultation for the CWP Project is summarised below

Consultee	Comment	How issues have been addressed
	Producer Organisations, and Inland Fisheries Ireland (IFI).	in the Fisheries Stakeholder Consultation section of this table. IFI have been consulted throughout; no further comments on commercial fisheries since scoping phase. See **Chapter 9 Fish, Shellfish and Turtle Ecology.**
	Discussion on other fishing and nearby ports. Advice to consider recreational fishing, aquaculture and seed mussels.	Recreational fishing, aquaculture and seed mussels have been included in **Section 12.6 Existing Environment / Regional study area Fishing Activity**.
	Advised that Greystones was no longer a fishing port and that one to add was Rosslare on the SE coast.	Greystones has not been included and Rosslare has been included in **Section 12.6 Existing Environment**.
	Vessel monitoring system (VMS) data are held by the Irish Naval Service and landings data are held by SFPA. Smaller vessels are moving towards using logbooks to provide a track record of landings.	Data requests for commercial fisheries are summarised below in the Data Request section of this table. The data are presented in **Section 12.6 Existing Environment**.
2 December 2021	Poor data on whelk fishing activity; however, inshore vessel monitoring system (iVMS) data have been collected for the razor clam fishery. Every razor clam vessel is required to have a tracker. Shapefiles of these data can be provided.	Razor clam iVMS data included in **Section 12.6 Existing Environment / Regional study area Fishing Activity**.
	VMS data from the Irish Naval Service are available on Ireland's Marine Atlas. Suggestion to use the Shellfish Stocks and Review report 2011 for data on Whelk.	Data from Ireland's Marine Atlas, Shellfish Stocks and Fisheries Review 2020 and earlier versions have been included in **Section 12.6 Existing Environment**.
SFPA 18 May 2021	List of data sources and the approach to the scope and impacts, Cumulative Impact Assessment (CIA) and Appropriate Assessment (AA) approved. Suggestion of contacting South and East Fish Producers Organisation (PO) and Bottom Grown Mussel Forum (contacts at BIM) for additional data sources. Sales' note data and logbook	Landings data by <10 m vessels into Irish ports from sales notes and landings data for >10 m vessels into Irish ports from logbooks requested and included in **Section 12.6 Existing Environment**. Data requests for commercial fisheries are summarised below within **Table 12-1**.

Consultee	Comment	How issues have been addressed
	data could be requested from the SFPA for smaller vessel landings. Contacts provided at South and East Fish PO, BIM, Marine Institute and SFPA.	Full details of the consultation undertaken is presented in the **Public and Stakeholder Engagement Report**.
	Advised that the Marine Management Organisation (MMO) would have data on foreign vessels fishing in the CWP Project offshore development area.	Data requests for commercial fisheries are summarised below, in the Data Request section of this table, and presented in **Section 12.6 Existing Environment**.
Inland Fisheries Ireland (IFI) 14 September 2021	Advice to consider recreational fishing.	Recreational fishing has been included in **Section 12.6 Existing Environment / Regional study area Fishing Activity.**
BIM 9 December 2021	Advice that mussel seed data from spat books and blue logbooks are submitted to the SFPA. Data on the location of aquaculture sites can be requested from BIM. Appropriate Assessment completed for the whole Irish Sea for mussel seed Fishery Natura Plan. A full Marine Stewardship Council (MSC) assessment was also completed in 2020. Provision of mussel seed bed data. Suggestion of using Shellfish Stocks and Fisheries Review.	Data requests for commercial fisheries are summarised below in the Data Request section of this table. Mussel seed bed data, Appropriate Assessment, Shellfish Stocks and Fisheries Review 2020 and earlier versions have been included in **Section 12.6 Existing Environment**.
Fisheries Stakeholder Consultation		
Local angler 1 April 2021	A number of concerns were raised regarding the Offshore EIA scoping report, including that there is no mention of certain fish groups (e.g., elasmobranch). The need for engagement between CWP Project and the sea angling community and Inland Fisheries Ireland was also highlighted as part of the EIA.	Details of consultation undertaken for the CWP Project with the public and community groups is presented in the **Public and Stakeholder Engagement Report**. Assessment of impacts on fish species ecology, including elasmobranchs, is included in **Chapter 9 Fish, Shellfish and Turtle Ecology**.

Consultee	Comment	How issues have been addressed
Solicitors representing fishermen 8 December 2022	An online meeting was held to validate the data being used in the baseline. A PowerPoint presentation was used to show what data were utilised. Following the meeting, the presentation used was converted into a pdf and forwarded to the solicitors to be shared with their clients. The fishers are not happy with use of any personal data supplied that is used for the purpose of excluding them, wholly or partly, from compensation for surveys within the offshore development area and cable corridor areas.	CWP Project can confirm that personal data will not be disclosed within the EIA. Relevant details or data provided by the fishers will only be used for the purposes of informing the EIAR impact assessment of the proposed CWP Project.
	The maps on pages 20 and 21 of the presentation show mobile fishing right across the offshore development area and cable corridor areas as well as surrounding it. It shows that the fishers need to be free to follow the whelks.	CWP Project welcomes this acknowledgement that the maps on pages 20 and 21 of the circulated note accurately reflect the fishing activity within and around the proposed array site and offshore export cable corridor (OECC).
	The fishers' licences allow them to fish all fish types in all areas. It appears that whelk, lobster, and crab are predominantly on the sand banks which coincidently make up the CWP Project area. This is not a coincidence. Whelks are found in the same place that it is suitable for offshore wind turbines.	CWP Project welcomes this acknowledgement; static fisheries such as for whelk and crab, and lobster fisheries are predominantly across the sandbanks within and around the study area.
	Crab and lobster are also fished closer to shore and right up the offshore export cable corridor (OECC).	CWP Project welcomes this acknowledgement that static fisheries, such as crab and lobster fisheries, also occur across the nearshore area within and around the proposed OECC.
	So, in summary the data are accepted as evidence of such fishing in those areas but not as a mechanism for excluding fishers from compensation. The fishers	CWP Project welcomes this acknowledgement that the 2017–2019 data accurately reflect the fishing activity within and around the proposed array site and OECC and can be used

Consultee	Comment	How issues have been addressed
	are happy to accept that their data submitted covering Spring 2017 to 2019 be taken into account in the baseline survey. This is particularly because it reflects the pre-surveys position.	to appropriately characterise fishing activity and serve as evidence for the purposes of the EIA.
	The fishers are of the view that site investigation surveys undertaken by a number of offshore wind farms have resulted in a reduction of catch and consider the baseline should pre-date such damage.	CWP Project acknowledges the fishers' view that the regional surveys undertaken have negatively affected whelk stocks. However, CWP Project dispute this based on the available evidence from the fisheries assessment and the literature review carried out after the fishers' objection. The baseline data presented in **Section 12.6 Existing Environment** provide data over a 5-year period from 2016 / 17–2021 / 22 (where 2022 data are available) and consider fluctuations in inter-alia whelk stocks during this period, which predates some of the surveys referred to. Impacts on the whelk fishery are assessed in **Section 12.10 Impact Assessment.**
	It Is the fishers' submission that they have a constitutional proprietary right and a constitutional right to earn a living and legitimate expectation as licenced fishers, heavily invested and committed to fishing for their livelihood, that if and when they are displaced by the newly licenced wind farms, during the survey, design, construction and operation phases, that the State will ensure vindication of loss of such constitutional property rights for such displacement. Such vindication can be achieved by a State Levy.	CWP Project acknowledges this submission and note that it is directed primarily at matters which the State, rather than CWP Project, may implement. Notwithstanding this, CWP Project will ensure that a robust EIA is drafted and presented, using appropriate evidence to inform the understanding of potential displacement during the construction and operational phases of the CWP Project.
Fisheries Information Exchange 19 March 2023	CWP presented the baseline data and there were comments regarding how the SFPA data by ICES rectangle is an under-representation of the value of fishing in the area, but the data by port are more accurate. It was acknowledged that the scout survey data was a good	The under-representation of landings is acknowledged within the chapter.

Consultee	Comment	How issues have been addressed
	representation of where they fish within the array.	
Data Requests		
SFPA		
5 February 2021	Request for Irish vessel landings data by ICES rectangle to 2020.	Received 17 February 2021 and included in **Section 12.6 Existing Environment**.
24 November 2021	Request for buyers' records / sales' notes for smaller vessel landings, logbook data, shellfish gatherers log sheet data and seed mussel log sheets.	Landings data by less than 10 m vessels into Irish ports from sales notes and landings data for more than 10 m vessels into Irish ports from logbooks obtained and included in **Section 12.6 Existing Environment**.
26 May 2022	Request for Irish vessel landings data by ICES rectangle to 2021.	Received 14 June 2022 and included in **Section 12.6 Existing Environment**.
Marine Institute		
8 February 2021	Request for Irish VMS data.	Link provided for outline VMS geotiffs. Data included in **Section 12.6 Existing Environment**.
14 December 2021	Request for Razor clam iVMS data.	Razor clam iVMS data obtained and included in **Section 12.6 Existing Environment**.
BIM		
12 November 2021	Requested mussel seed bed location data.	Recorded seed mussel beds from 1970 to 2021 on the Irish east coast provided and included in **Section 12.6 Existing Environment**.
Other		
Various EU countries November 2022	Requests were made to the authorities for the most up-to-date VMS effort and / or landing data from vessels from various EU countries that may fish in the study area, including Belgium, France, Denmark, Germany, Sweden, Norway and Netherlands.	While data were not provided by individual countries, EU level VMS data have been analysed, which include activity for all EU nations, including UK, over the period 2016–2020.
Department of Agriculture, Environment and Rural Affairs (DAERA), Department of the Environment, Climate and Communications (DECC) and the Irish Defence Force	Requests were made for the most up to date VMS and landing data by foreign vessels in Irish statistical rectangles relevant to the CWP Project.	Directed to SFPA and Department of Agriculture, Food & Marine (DAFM) (below).

Consultee	Comment	How issues have been addressed
(Fisheries Monitoring Centre - FMC) November 2022		
Department of Agriculture, Food & Marine (DAFM) November 2022	Request made for the most up-to-date VMS and landing data by foreign vessels in Irish statistical rectangles relevant to the CWP Project.	While data were not provided by individual countries, EU level VMS data have been analysed, which include activity for all EU nations, including UK, over the period 2016–2020.

12.3 Legislation, policy and guidance

12.3.1 Legislation

13. The legislation that is applicable to the assessment of commercial fisheries is summarised below. Further detail is provided in **Chapter 2 Policy and Legislative Context**.

- EIA Directive 2011/92/EU, as amended by Directive 2014/52/EU and transposed into Irish law in the Planning and Development Act, 2000, as amended and the Planning and Development Regulations 2001, as amended;
- Water Framework Directive (WFD) (2000/60/EC);
- Marine Strategy Framework Directive (MSFD) (2008/56/EC);
- Maritime Spatial Planning (MSP) Directive (2014/89/EU);
- Maritime Area Planning Act 2021, as amended; and
- Fisheries (Amendment) Act 2003, as amended.

12.3.2 Policy

14. The overarching planning policy relevant to the CWP Project is described in EIAR **Chapter 2 Policy and Legislative Context**.

15. The assessment of the CWP Project against relevant planning policy is provided in the **Planning Report**. This includes planning policy relevant to commercial fisheries.

12.3.3 Guidance

16. The principal guidance and best practice documents used to inform the assessment of potential impacts on commercial fisheries are summarised below. In cases of absence of Irish guidance, the CWP Project has relied on existing good practice guidance developed elsewhere, particularly in the UK, where the offshore wind industry is already well established.

- Seafood / Offshore Renewable Energy (ORE) Engagement in Ireland: A summary guide (Seafood / ORE Working Group, 2023);
- Guidance on the information to be contained in Environmental Impacts Assessment, Environmental Protection Agency (EPA, 2022);
- Department of Communications, Climate Action and the Environment (DCCAE), Guidance on EIS and Natura Impact Statement (NIS) Preparation for Offshore Renewable Energy Projects;

- Guidance note for EIA in respect of Food and Environmental Protection Act 1985 (FEPA) and Coast Protection Act 1949 requirements, Version 2 (Cefas, 2004);
- Best practice guidance for fishing industry financial and economic impact assessments Sea Fish Industry Authority and UK Fisheries Economic Network (UKFEN 2012);
- Economic Impact Assessments of Spatial Interventions on Commercial Fishing: Guidance for Practitioners. Second Edition (Seafish and UKFEN, 2013);
- Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Liaison (FLOWW, 2014);
- Fisheries Liaison with Offshore Wind and Wet Renewables group FLOWW (2015). FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Disruption Settlements and Community Funds (FLOWW 2015);
- Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects. Cefas contract report: ME5403 – Module 15 submitted to Defra and the MMO (Cefas, 2011); and
- Guidance on Environmental Considerations for Offshore Wind Farm Development. Reference Number: 2008-3 (OSPAR, 2008).

17. Of particular note, the recently published summary guidance on seafood and offshore renewable energy (ORE) engagement in Ireland (Seafood / ORE Working Group, 2023) provides key principles for engagement with the fisheries sector. These principles include:

- Finding a balance between protecting seafood interests, responding to the global climate emergency, and meeting the State's legal obligations for reductions in carbon emissions as set out in the Climate Action Plan 2023.
- Encouraging the principle of co-existence, where the seafood and offshore renewable energy industries can work side-by-side in a manner that respectfully shares the marine space.
- Cooperating to determine the impact, effect and opportunities that ORE proposals may have on seafood activity and working together to avoid, minimize or mitigate any negative impacts.
- Early and ongoing engagement between the sectors, including open sharing of information, honest and transparent communication and cooperation to achieve sustainable outcomes that benefit both industries and Ireland's economy, society and coastal communities.
- Mutual respect, best endeavours to reach agreement, and recognition of the importance of both sectors, which is critical to effective engagement.
- Overall encouragement for mutual respect, cooperation and proactive engagement between the sectors.

12.4 Impact assessment methodology

18. **Chapter 5 EIA Methodology** provides a summary of the general impact assessment methodology applied to the CWP Project, which includes the approach to the assessment of transboundary and inter-related effects. The approach to the assessment of cumulative impacts is provided in **Chapter 5, Appendix 5.1 CEA Methodology**.

19. The following sections detail the assessment methodology for potential impacts on commercial fisheries.

12.4.1 Study area

20. The commercial fisheries study areas were initially identified at the CWP Project scoping stage. The extent of the study areas for the purposes of this assessment has been reviewed and updated in consideration of the CWP Project and the fisheries active in the surrounding area.

21. The offshore elements of the CWP Project consist of the array site and the Offshore Export Cable Corridor (OECC). The CWP Project is located within the central portion of the International Council for the Exploration of the Sea (ICES) Division 7a (Irish Sea) statistical area; within Ireland Exclusive Economic Zone (EEZ) waters. The CWP Project is fully located inside of the 12 nautical mile (NM) territorial seas limit.

22. ICES rectangles are the smallest spatial unit used to collate commercial fisheries data, and it is considered appropriate to define the study areas using these. ICES rectangles are consistent across all Member States operating in the Irish Sea.

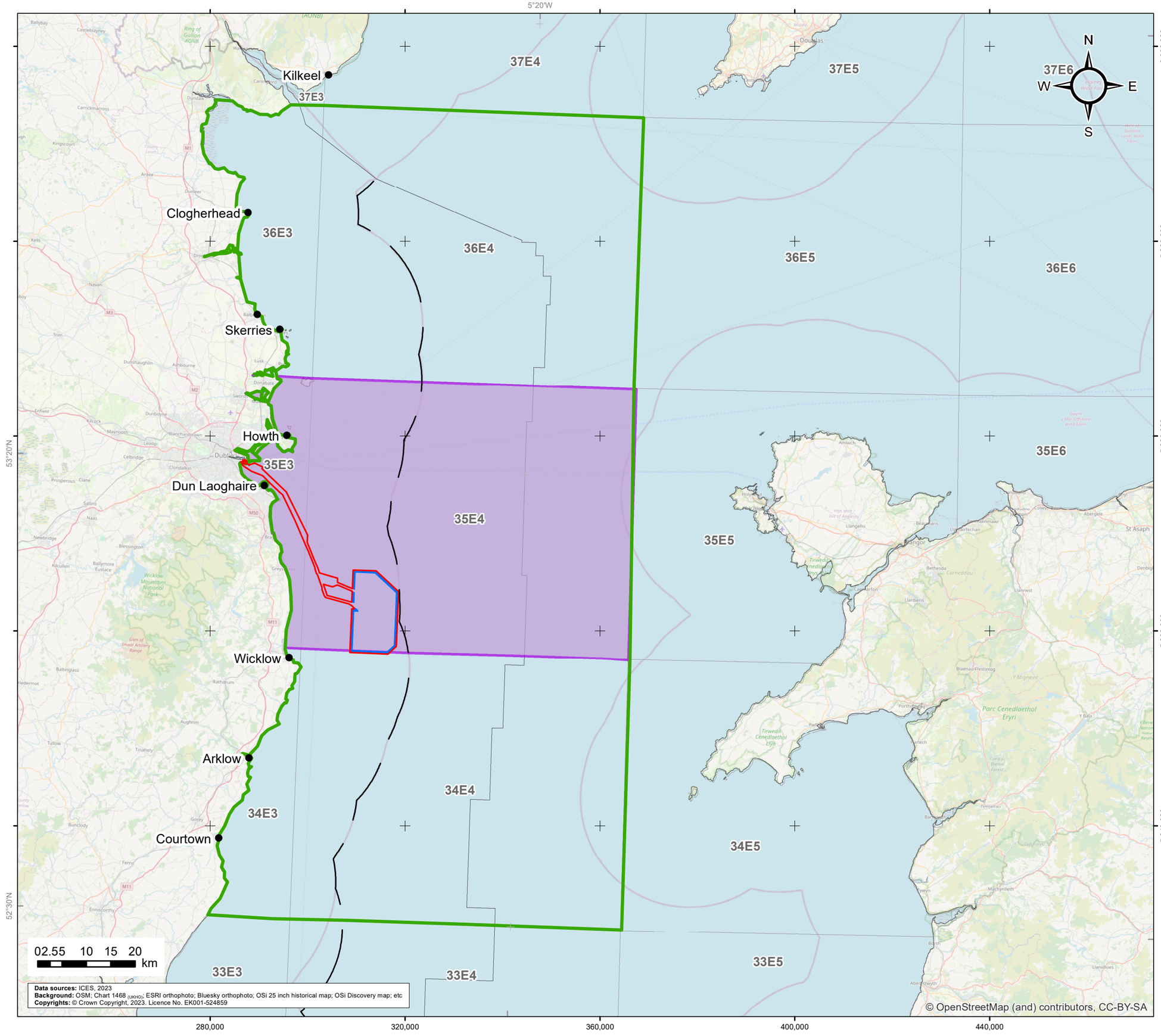
23. The array site is located within ICES rectangle 35E4 and the OECC is located within ICES rectangles 35E3 and 35E4, which together represent the commercial fisheries local study area, as shown in **Figure 12-1**. Note that the array site and the OECC occupy only a portion of these ICES rectangles.

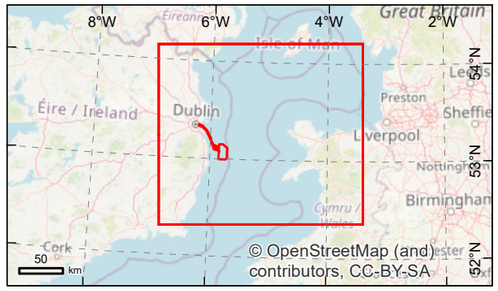
24. In order to understand fishing activity in waters adjacent to the CWP Project, a regional commercial fisheries study area has been defined to include ICES rectangles 35E3 and 35E4, together with ICES rectangles 34E3, 34E4, 36E3 and 36E4. Baseline data have been gathered and analysed for the regional study area. In summary, the study areas for commercial fisheries are:

- Local commercial fisheries study area: 35E3 and 35E4; and
- Regional commercial fisheries study area: 34E3, 34E4, 35E3, 35E4, 36E3 and 36E4.

25. The cumulative effects assessment considers a wider study area, at the scale of the Irish Sea (ICES Division 7a), to ensure appropriate consideration of the range of fishing grounds targeted by the fishing fleets under assessment. The commercial fisheries local and regional study areas in the context of the Irish Sea (7a) are shown in **Figure 12-2**.

26. The study area has been defined through reference to the offshore development area, as this represents the area in which construction and operation of the development will take place, with the Marine Safety Demarcation Area being used only for short-term navigation safety activities such as deployment of buoyage.





Legend

- Planning application boundary
- Marine safety demarcation area
- Commercial fisheries regional study area
- Commercial fisheries local study area
- Irish key fishing ports
- ICES statistical rectangles
- EEZ boundary
- 12 NM territorial sea limit

codling wind park

Project: Codling Wind Park

Contractor: nima CONSULTANTS

Website: www.nima.blue

Figure 12.1
Commercial fisheries local and regional study areas

CWP doc. number: CWP-NIM-ENG-08-01-MAP-0636

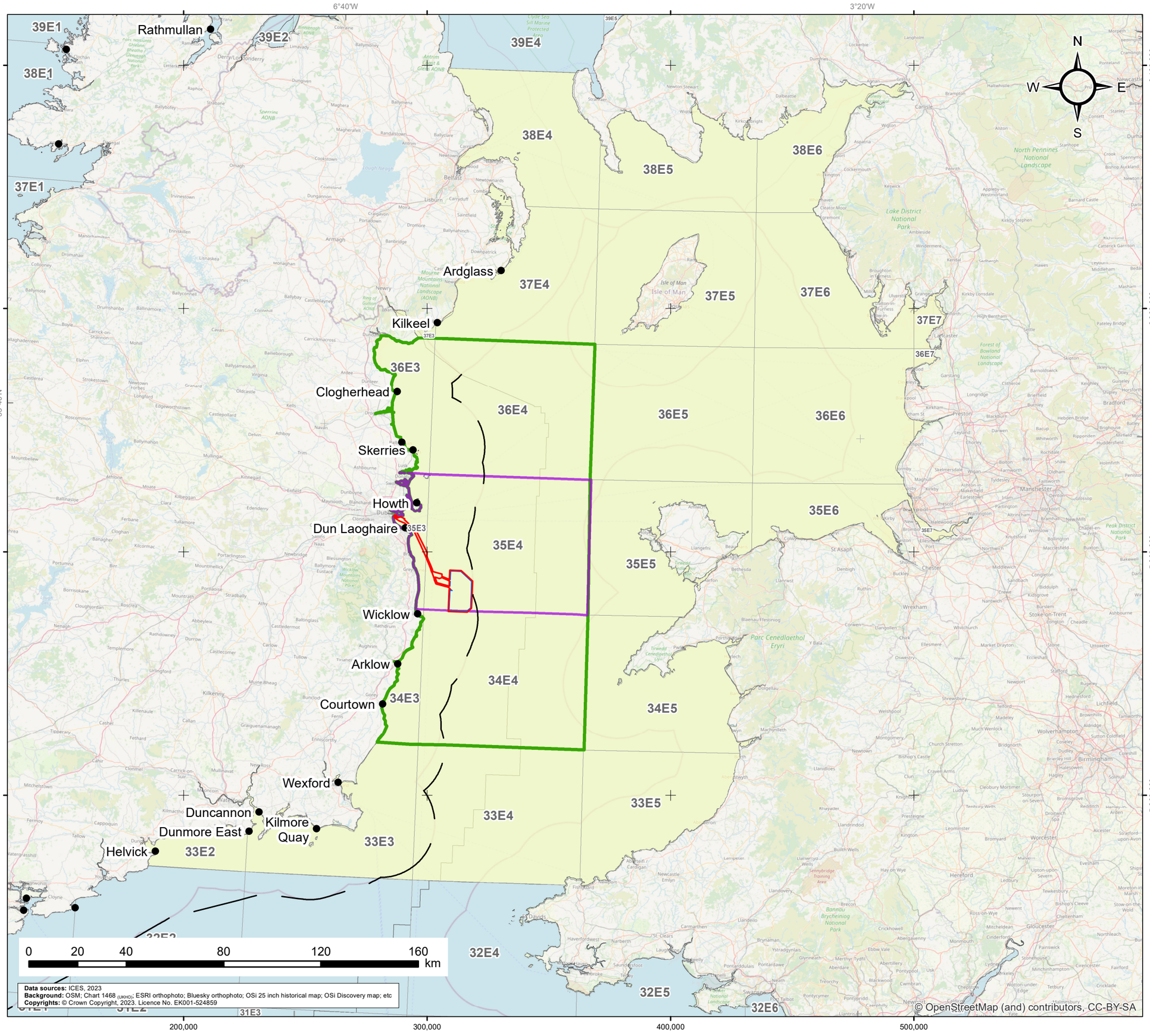
Internal descriptive code: IS - PAB - CFSAs..ICES.SRs..SEA.LIMs..IKFPs - EIAR.FIG.12.01

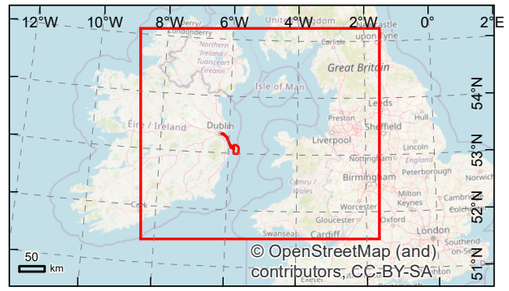
Size: A3

Scale: 1:750,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
00	Final for issue	25/07/2024	SP	PC/EA	CC





Legend

- Planning application boundary
- Marine safey demarcation area
- Commercial fisheries local study area
- Commercial fisheries regional study area
- Commercial fisheries cumulative study area
- ICES statistical rectangles
- EEZ boundary
- 12 NM territorial sea limit
- Irish key fishing ports

codling wind park

Project: Codling Wind Park

Contractor: nima CONSULTANTS
Website: www.nima.blue

Figure 12.2
Commercial fisheries cumulative study area

CWP doc. number: CWP-NIM-ENG-08-01-MAP-0637

Internal descriptive code: IS - PAB - CFSAs..ICES.SRs..SEA.LIMs..IKFPs - EIAR.FIG.12.02

Size: A3
Scale: 1:1,500,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
00	Final for issue	25/07/2024	SP	PC/EA	CC

12.4.2 Data and information sources

Site-specific surveys

27. Commercial fisheries scouting surveys were undertaken during the period 2021–2024 by Irish Commercial Charter Boats. Information on the location and type of static fishing gear, together with sightings of fishing vessel activity were recorded for the CWP Project offshore development area and used to inform the baseline. Survey data remain valid and an appropriate characterisation of the receiving environment at the point of application.

Desk study

28. Comprehensive desk-based review and data analysis were undertaken to inform the commercial fisheries baseline characterisation. Key data sources used to inform the assessment are set out in **Table 12-2**.

Table 12-2 Data sources

Data	Source	Date range	Notes
Landing statistics			
Landings statistics data for Irish-registered vessels, with data query attributes for: species, weight of landing (kg) and first sales value (€) at the following geographic scales: • All ICES divisions • Irish Sea (7a) indicating port of landing • Irish Sea (7a) indicating ICES rectangle of catches	Sea Fisheries Protection Authority (SFPA)	2015–2021	SFPA-sourced data for vessels over 10 m from landing declarations and electronic logbook data; data for vessels under 10 m in length from sales notes.
Landings statistics data for Irish-registered vessels, with data query attributes for: species, weight of landing (kg) and first sales value (€) at the following geographic scales: • Irish Sea (7a) indicating port of landing	SFPA	2022	Data provided by SFPA not available at ICES rectangle scale for 2022.
Landings statistics for EU registered vessels with data query attributes for: landing year; landing quarter; ICES rectangle; vessel length; gear type; species; and landed weight (tonnes).	EU DCF database	2012–2016	All Europe Member State vessels, including Ireland and UK. Note that data post-2016 are not available at ICES rectangle scale.
Landings statistics data for UK-registered vessels, with data query attributes for: landing year; landing month; vessel length category; ICES rectangle; vessel / gear type; port of landing; species; live weight (tonnes); and value.	UK Marine Management Organisation (MMO)	2016–2022	Data for UK - and Isle of Man - registered vessels landing at UK and non-UK ports.

Data	Source	Date range	Notes
Spatial data			
VMS data for EU registered vessels ≥12 m length. VMS data sourced from ICES displays the surface Swept Area Ratio (SAR) of catches by different gear types and covers EU- (including UK-) registered vessels ≥12 m in length. Surface SAR indicates the number of times in an annual period that demersal fishing gear makes contact with (or sweeps) the seabed surface. Surface SAR provides a proxy for fishing intensity.	ICES	2016–2020	All Europe Member State vessels, including Ireland and UK. Note that data are amalgamated and not separable at Member State level.
Fishing vessel effort data indicating high and low fishing effort. Data are available for all EU vessels of ≥12 m, operating inside the Irish EEZ; outside this zone, only Irish VMS data are routinely available within the data sets.	Marine Institute	2014–2018	Note that data are amalgamated and not separable at Member State level.
Polygon data indicating fishing grounds for Irish vessels operating inshore. Irish inshore fishing activity dataset created by the Marine Institute in support of the Natura 2000 risk assessment in 2013. It provides information on the distribution and level of fishing activity in inshore waters by various fishing methods, including dredging; line fishing; nets; bottom trawlers; midwater trawlers; and potting.		Undefined	The dataset indicates the location of fishing activity in the inshore waters (up to 10 miles from the Irish coast). The information provided by this dataset only includes activity by vessels <15 m in length in Irish waters.
Fishing vessel route density, based on vessel Automatic Information System (AIS) positional data. AIS is required to be fitted on fishing vessels ≥15 m length.	European Maritime and Safety Agency (EMSA)	2019–2022	This AIS dataset includes fishing vessels that are both actively fishing and in transit.
VMS data for UK registered vessels ≥15 m length. VMS data sourced from MMO displays the first sales value (£) of catches.	MMO	2016–2020	VMS datasets for ≥15 m vessels only.
Seed mussel beds on the east coast of Ireland.	BIM	2017–2021	
iVMS data for razor clam fishery	Marine Institute	2017–2021	
Maps of aquaculture sites, including shellfish, finfish and seaweed	Ireland's Marine Atlas	2022	Monitored for licensing purposes, with sites updated periodically.

Data	Source	Date range	Notes
Density map of fishing activity within the CWP Project based on scouting surveys.	Irish Commercial Charter Boats	2021–2024	Site-specific data.
Map showing whelk fishing activity near array	Data supplied directly from fishers	2022	Fishing events within 500 m^2 grid square.
Map showing string lines of whelk pots		2022	

12.4.3 Impact assessment

29. The significance of potential effects has been evaluated using a systematic approach, based upon assessment of the sensitivity of receptors to an impact occurring and the magnitude of that impact on each receptor. Commercial fisheries' receptors are defined as the commercial fishing fleets that are active across the regional study area. Each potential impact is assessed for each commercial fishing fleet.

30. The terms used to define receptor sensitivity and magnitude of impact are based on guidance which provides information on how to assess impacts to fisheries from offshore wind farms (see **Section 12.3**). These criteria have been adopted in order to implement a specific methodology for commercial fisheries.

31. The process for assessment follows the following stages:

- Describing the baseline within the regional study area;
- Identifying the receptors (i.e., fishing fleets);
- Identifying and characterising the potential impacts, based on the nature of the construction, operation and maintenance, including repair and replacement, and decommissioning activities associated with the CWP Project;
- Determining the sensitivity of the receptors within the study area and the magnitude of the impact;
- Determining the significance of the impacts for each receptor;
- Identifying the counter effect of any mitigation measures to be undertaken, which may be implemented in order to address significant adverse effects;
- Determining the residual impact significance after the effects of mitigation have been considered; and
- Assessing cumulative effects (with mitigation where applicable).

Sensitivity of receptor

32. For each effect, the assessment identifies receptors sensitive to that effect and implements a systematic approach to understanding the impact pathways and the level of impacts on given receptors.

33. Receptor sensitivity is determined by considering a combination of factors as follows:

- Context - The degree to which the receptor will conform or contrast with the established (baseline) conditions. To define the context the following sub-factors will be considered:
    - Adaptability - The degree to which a receptor can avoid or adapt to an impact;
    - Tolerance - The ability of a receptor to accommodate temporary or permanent change without a significant adverse impact; and

- Recoverability - The temporal scale over and extent to which a receptor will recover following an impact.

34. The definitions of receptor sensitivity for the purpose of the commercial fisheries assessment are provided in **Table 12-3**.

Table 12-3 Criteria for determination of receptor sensitivity

Sensitivity	Criteria
High	**Tolerance:** Receptor is highly vulnerable to impacts that may arise from the project. **Adaptability:** No alternative fishing grounds are available and / or the fishing fleet has very low operational range outside the project area. **Recoverability:** Recoverability is long term or not possible.
Medium	**Tolerance:** Receptor is generally vulnerable to impacts that may arise from the project. **Adaptability:** Low levels of alternative fishing grounds are available and / or the fishing fleet has low operational range. **Recoverability:** Recoverability is slow and / or costly.
Low	**Tolerance:** Receptor is somewhat vulnerable to impacts that may arise from the project. **Adaptability:** Moderate levels of alternative fishing grounds are available and / or fishing fleet has moderate operational range. **Recoverability:** Moderate to high levels of recoverability.
Very Low	**Tolerance:** Receptor is not generally vulnerable to impacts that may arise from the project and the fishing fleet is resilient to change. **Adaptability:** High levels of alternative fishing grounds are available and / or fishing fleet has large to extensive operational range. **Recoverability:** High or very high levels of recoverability.

Magnitude of impact

35. The scale or magnitude of potential impacts (both beneficial and adverse) depends on the degree and extent to which the CWP Project activities may change the environment, which usually varies according to project phase (i.e., construction, operation and maintenance and decommissioning).

36. The definitions for magnitude consider the following:

- Extent - The area, the number of sites and / or the proportion of a population affected over which an impact occurs;
- Duration - The time for which the impact occurs;
- Frequency - How often the impact occurs;
- Probability - How likely the impact is to occur;

- Consequences - The degree of change relative to the baseline level and the change in character; and
- Value - A measure of the receptor's importance, rarity and worth.

37. The criteria for defining magnitude of impact for the purpose of the commercial fisheries assessment are provided in **Table 12-4**.

38. Due to the range in scale, value (in terms of both landings and income / profit) and operational practises within the commercial fishing fleets assessed, specific economic criteria were not set for defining the level of consequence within the categories of high, medium or low. Instead, these classifications were based on judgement informed by the baseline environment characterisation and consultation with the industry.

39. Note that the magnitude of impact is assessed at a fleet level and therefore the magnitude of impact to individuals may differ to the magnitude of impact assessed at a fleet level.

Table 12-4 Criteria for determination of magnitude of impact

Magnitude	Criteria
High	**Extent:** Impact is of extended physical extent. **Duration:** Impact is of long-term duration (e.g., greater than 12 years). **Frequency:** The impact will occur continuously and constantly throughout the relevant project phase. **Probability:** The impact is highly likely to occur. **Consequences:** Impact is expected to result in one or more of the following: • Substantial loss of target fish or shellfish biological resource; and / or • Substantial loss of ability to carry on fishing activities due to removal of available habitat / area of fishery. **Value**: The receptor is of very high socio-economic value.
Medium	**Extent:** Impact is of moderate physical extent. **Duration:** Impact is of medium-term duration (e.g., 5 to 12 years). **Frequency:** The impact will occur regularly throughout the relevant project phase. **Probability:** The impact is likely to occur. **Consequences:** Impact is expected to result in one or more of the following: • Partial loss of target fish or shellfish biological resource; and / or • Partial loss of ability to carry on fishing activities. **Value**: The receptor is of high socio-economic value.
Low	**Extent:** Impact is of limited physical extent. **Duration:** Impact is of short-term duration (e.g., 2 to 5 years). **Frequency:** The impact will occur intermittently throughout the relevant project phase. **Probability:** The impact may occur. **Consequences:** Impact is expected to result in one or more of the following: • Minor loss of target fish or shellfish biological resource; and / or • Minor loss of ability to carry on fishing activities **Value**: The receptor is of medium socio-economic value.

Magnitude	Criteria
Very Low	**Extent:** Impact is of negligible physical extent. **Duration:** Impact is of very short-term duration (e.g., less than 2 years). **Frequency:** The impact will occur infrequently throughout the relevant project phase. **Probability:** The impact is unlikely to occur. **Consequences:** Impact is expected to result in one or more of the following: • Slight loss of target fish or shellfish biological resource; and / or • Slight loss of ability to carry on fishing activities. **Value**: The receptor is of low socio-economic value.

Significance of effect

40. As set out in **Chapter 5 EIA Methodology**, an Impact Assessment Matrix (IAM) is used to determine the significance of an effect. In basic terms, the potential significance of an effect is a function of the sensitivity of the receptor and the magnitude of the impact, as shown in **Table 12-5**.

41. The matrix provides a framework for the consistent and transparent assessment of predicted effects across all technical chapters; however, it is important to note that individual assessments are based on relevant guidance and the application of expert judgement.

42. Significance has been assessed on a fleet level for receptor fishery, rather than impacts on individual vessels, whereby a significant effect will only be concluded should the impact affect the viability of the fishery within the study area.

43. The matrix provides levels of effect significance ranging from Imperceptible to Very Significant as defined in the Environmental Protection Agency (EPA) (2022) EIAR Guidelines. For the purposes of this assessment, potential effects identified to be of Significant or above are considered to be significant in EIA terms and additional mitigation will be required. For the purposes of commercial fisheries' assessment, potential effects identified to be Moderate may be either significant or not significant in EIA terms, dependant on expert judgement and based on where within the range of the 'Medium' category the magnitude and / or sensitivity lies. Effects identified as less than or equal to Minor / Moderate significance are considered to be not significant in EIA terms.

Table 12-5 Impact assessment matrix for determination of significance of effect

Sensitivity of Receptor	Magnitude of impact			
	High	Medium	Low	Very Low
High	Very Significant	Significant	Minor/Moderate	Minor
Medium	Significant	Moderate	Minor	Negligible / Minor
Low	Minor / Moderate	Minor	Negligible / Minor	Negligible
Very Low	Minor	Negligible / Minor	Negligible	Imperceptible

12.5 Assumptions and limitations

44. The characterisation of the existing environment has been undertaken using the data sources listed in **Table 12-2**. These are subject to a range of sensitivities and limitations.

45. It is compulsory for all EU fishing vessels and third-party fishing vessels operating in EU waters that are ≥12 m in length to have a Vessel Monitoring System (VMS) on board. This reports the vessels' position to fisheries management authorities, in the case of EU fishing vessels, every two hours. This obligation has applied to vessels that are ≥12 m in length since 1 January 2012 (before that date it applied to vessels ≥15 m in length, see Council Regulation (EC) No 1224/2009).

46. ICES collated VMS data for vessels ≥12 m operating mobile gear that has contact with the seabed, through a European wide data call. This VMS dataset includes vessel registered to the following countries: Belgium, Denmark, France, Germany, the Netherlands, Norway, Ireland, Sweden and UK. Data are amalgamated for all countries and are not available on a country-by-country basis; data have been analysed over a five-year period, from 2016 to 2020.

47. Data for EU Member States other than Ireland are no longer publicly available by ICES rectangle from 2017 onwards. Data are available over a wider area (Irish Sea ICES division 27.7.a), but this does not provide the spatial resolution to attribute landings to the study areas. Data from 2012 to 2016 for EU Member States by ICES rectangle represent the best available landings statistics to assess international commercial fisheries activity.

48. For the distribution of fishing effort by Irish fishing vessels according to the gear type used, data are provided as hours / km^2 / year. Data only include information on vessels ≥12 m in length. Data are provided as an annual average for the period 2014–2018 in Ireland's Marine Atlas.

49. Data from different components of the fleet are available as follows:

- Vessels more or equal to 12 m in length, landings by European vessels (ICES);
- Vessels over 10 m in length, landings by Irish vessels in Irish ports and by ICES rectangles (SFPA); and
- Vessels less than 10 m in length, landings by Irish vessels from sales notes (SFPA).

50. Data from less than 10 m vessels are difficult to obtain due to a lack of reporting requirements. Data from sales' notes have been used but are not available at ICES statistical rectangle level, only by port. Caution should be taken with these data as these species may have been caught from ICES statistical rectangles outside the defined study areas. Furthermore, data for less than 10 m vessels are only provided by weight, not value.

51. Due to data processing, which redacts data that have not been summed for three or more vessels, a significant portion of landings are not represented within the landings by Irish vessels from the commercial fisheries' local study area (ICES rectangles 35E3 and 35E4) dataset by ICES rectangle. Furthermore, the data under-represent landings by vessels that are 10 m and under in length. The figures by ICES rectangle are assumed to under-represent the true value of the whelk fishery in the region due to this data redaction process.

52. A number of whelk fishermen are known to target the CWP Project offshore development area. Figures have been produced using the plotter data and coordinates previously provided directly by these fishers. This data have been georeferenced from multiple sources and, as such, the spatial accuracy is dependent on the source data. The figures represent aggregated data and are not presented by source / individual vessel. These figures show activity within the CWP Project offshore development area; however, it should be noted that activity outside the CWP Project offshore development area is not described by these data. This limitation is for the whelk fishery only.

53. While limitations of individual datasets are recognised, the range of data sources analysed allow the different sources to be corroborated and verified, ensuring that the characterisation of the existing environment in this chapter and in **Appendix 12.3 Commercial Fisheries Technical Report** are appropriate, comprehensive and robust for informing the impact assessment.

12.6 Existing environment

54. A technical report has been prepared to provide a detailed characterisation of the receiving baseline for commercial fisheries for the regional and local study areas (**Appendix 12.3 Commercial Fisheries Technical Report**). A review of the key findings from that study has been incorporated into the description of the existing environment.

55. This section presents the existing baseline environment for commercial fisheries, using the most recent datasets available at the time of writing (2015–2022 for SFPA data; 2004–2019 for Marine Institute; 2012–2016 for EU DCF data; 2016–2022 for MMO data; and 2016–2020 for ICES VMS data).

56. This section provides an overview of all landings from the commercial fisheries local study area (i.e., ICES rectangles 35E3 and 35E4), followed by analysis of the array site and OECC on a fishery-by-fishery basis, where details on the nationality of vessels, species caught, and location of fishing activity are provided.

57. The Technical Report (**Appendix 12.3**) also provides further details on target species and fishing vessel and gear characteristics, as well as comprehensively profiling the fisheries' activity in the local and regional study areas, and in the wider region of the Irish Sea.

12.6.1 Overview of commercial fisheries landings in the local study area

Landings by Irish registered vessels

58. Landings by Irish vessels from the commercial fisheries local study area (ICES rectangles 35E3 and 35E4) are presented by landed weight in **Plate 12-1** for the time period 2015 to 2020.

59. The statistics indicate that whelk *Buccinum undatum* are the principal species targeted, accounting for the majority of the landings in ICES rectangle 35E3 and 35E4. This species is targeted by Irish vessels deploying pots. The statistics by ICES rectangle indicate that approximately 346 tonnes of whelk are landed annually from the commercial fisheries local study area. Please refer to **Section 12.5 Assumptions and Limitations** for details on the data redaction process that this dataset has been subject to.

60. Data are presented for the annual weight of landings into key Irish ports in **Plate 12-2**; because this data are on a wider regional scale, there is limited data redaction, and the data are considered to more accurately reflect the activity by Irish vessels. Key ports are: Wicklow, Dun Laoghaire, Howth, Arklow, Courtown and Skerries: selected as they are within 50 km from the CWP Project. This is not categorised by ICES rectangle, and provides landings of species by Irish vessels from the Irish Sea (7a) by port for the period 2017 to 2022. Note that the difference in time period (2015–2020 for data by ICES rectangle and 2017–2022 for data on Irish Sea scale) is related to the most recent data sets available, as provided by the SFPA.

61. On average, 3,400 tonnes of whelk are landed into the key Irish ports (Wicklow, Dun Laoghaire, Howth, Arklow, Courtown and Skerries); landings have been relatively consistent annually, with a peak in 2021 of 3,700 tonnes and their lowest in 2017 at 2,900 tonnes. The first sales from landings in 2022 indicates a value of €5.3 million landed into the key Irish ports (**Plate 12-3**), with 48% by value landed into Wicklow. The landings data indicate a significant local whelk fishery targeted by Irish vessels.

62. Other notable species landed from the local commercial fisheries study area, as indicated in **Plate 12-3**, are plaice *Pleuronectes platessa*, blonde ray *Raja brachyura*, haddock *Melanogrammus aeglefinus* and sprat *Sprattus sprattus* (in 2015 only). Other notable species landed into local ports (but not necessarily associated with fishing grounds overlapping the CWP Project), are Norway lobster *Nephrops norvegicus*, queen scallop *Aequipecten opercularis*, herring *Clupea harengu*, king scallop *Pecten maximus*, razor clams *Ensis species* and sole *Solea solea*.

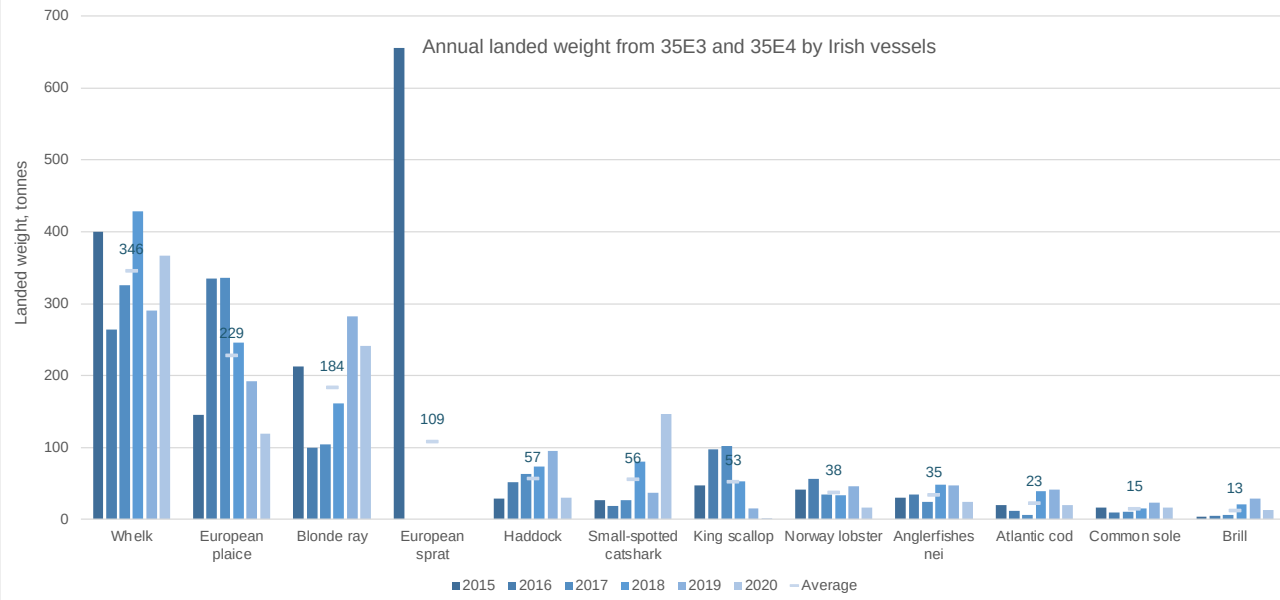


Plate 12-1 Weight of landings by Irish vessels from ICES rectangles 35E3 and 35E4 indicating species in 2015–2020 (Source: SFPA, 2022)

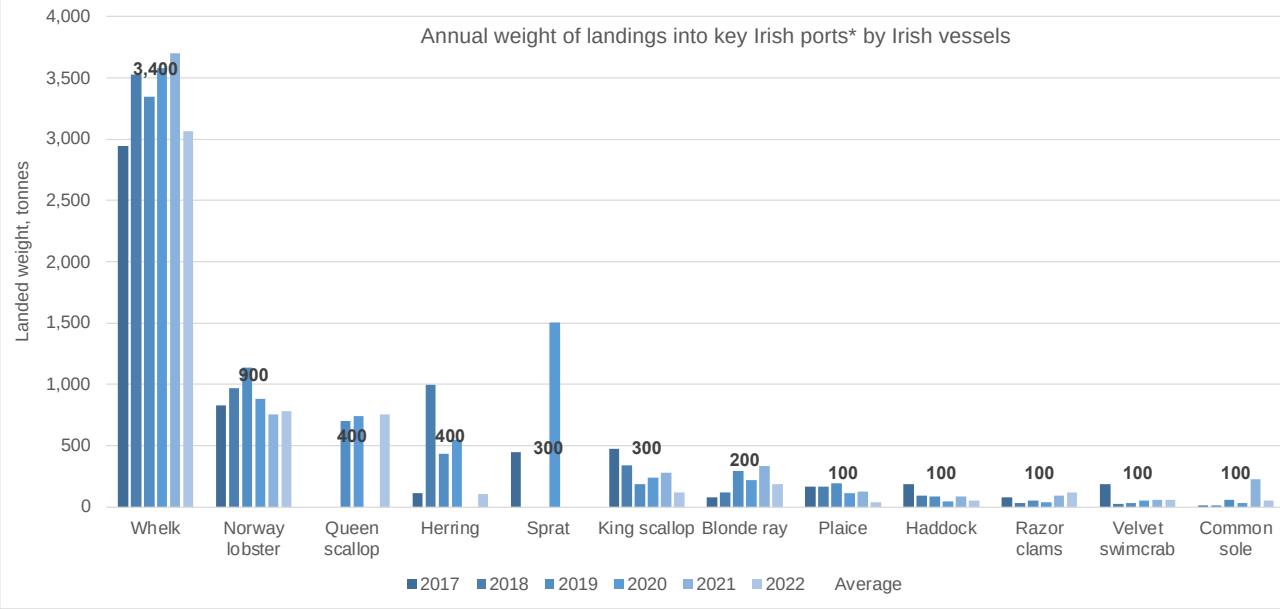


Plate 12-2 Annual weight of landings into key Irish ports by Irish vessels for top twelve species in 2017–2022 (Source: SFPA, 2022; SFPA, 2023) [*Key ports are: Wicklow, Dun Laoghaire, Howth, Arklow, Courtown and Skerries: selected as <50 km from the CWP Project]

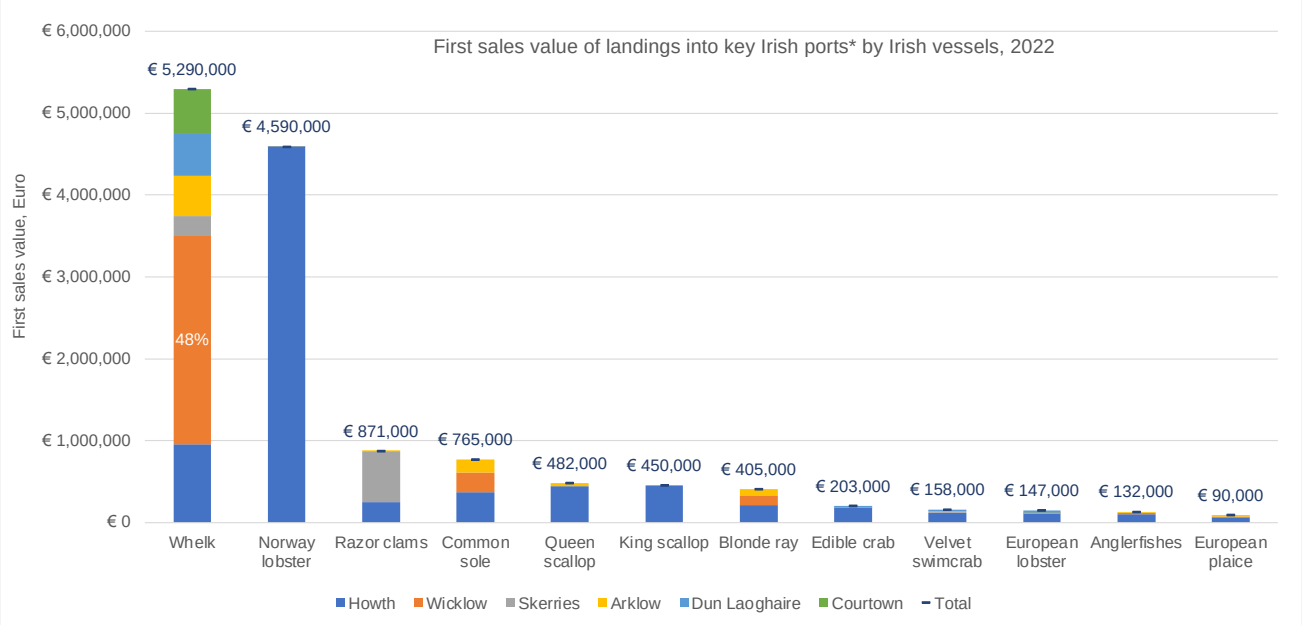


Plate 12-3 First sales value of landings into key Irish ports by Irish vessels for top twelve species in 2022 (Source: SFPA, 2023) [*Key ports are: Wicklow, Dun Laoghaire, Howth, Arklow, Courtown and Skerries: selected as <50 km from the CWP Project]

Landings by UK- and other EU Member State-registered vessels

63. Landings data for vessels registered in the UK and other EU Member States from the commercial fisheries local study area (35E3 and 35E4) are presented in **Appendix 12.3 Commercial Fisheries Technical Report.**

64. The data indicate relatively low levels of landings by UK (Northern Irish and Welsh vessels) targeting a range of fisheries, including lobster *Homarus Gammarus* and king scallop in ICES rectangle 35E4; however, this effort is understood to be located outside the Irish territorial waters 12 NM boundary and therefore outside the CWP Project.

65. A small level of landings by Belgian beam trawlers is noted to have been caught in the local study area, but is understood to be located outside the Irish territorial waters 12 NM boundary and therefore outside the CWP Project.

12.6.2 Fishing grounds

Potting fishery

66. An indication of the extent and location of inshore fishing grounds targeted by potting vessels (all under 15 m vessels and primarily under 12 m vessels) is provided in **Figure 12-3.**

67. Whelk fishing areas are identified to extend over the commercial fisheries' local study area from close inshore out to and slightly beyond the 12 NM boundary, as well as wider areas to the north and south. Whelk fishing grounds are identified to occur throughout the CWP Project array site and throughout most of the OECC, with the exception of the immediate inshore location at landfall.

68. Wicklow is one of the closest ports to the CWP Project array site at approximately 12 km from the nearest point to the array site.

69. Consultations with fishers and stakeholders have been undergone to confirm these data and gain insight into key grounds through the collation of plotter data and coordinates of gear locations (presented in **Appendix 12.3**).

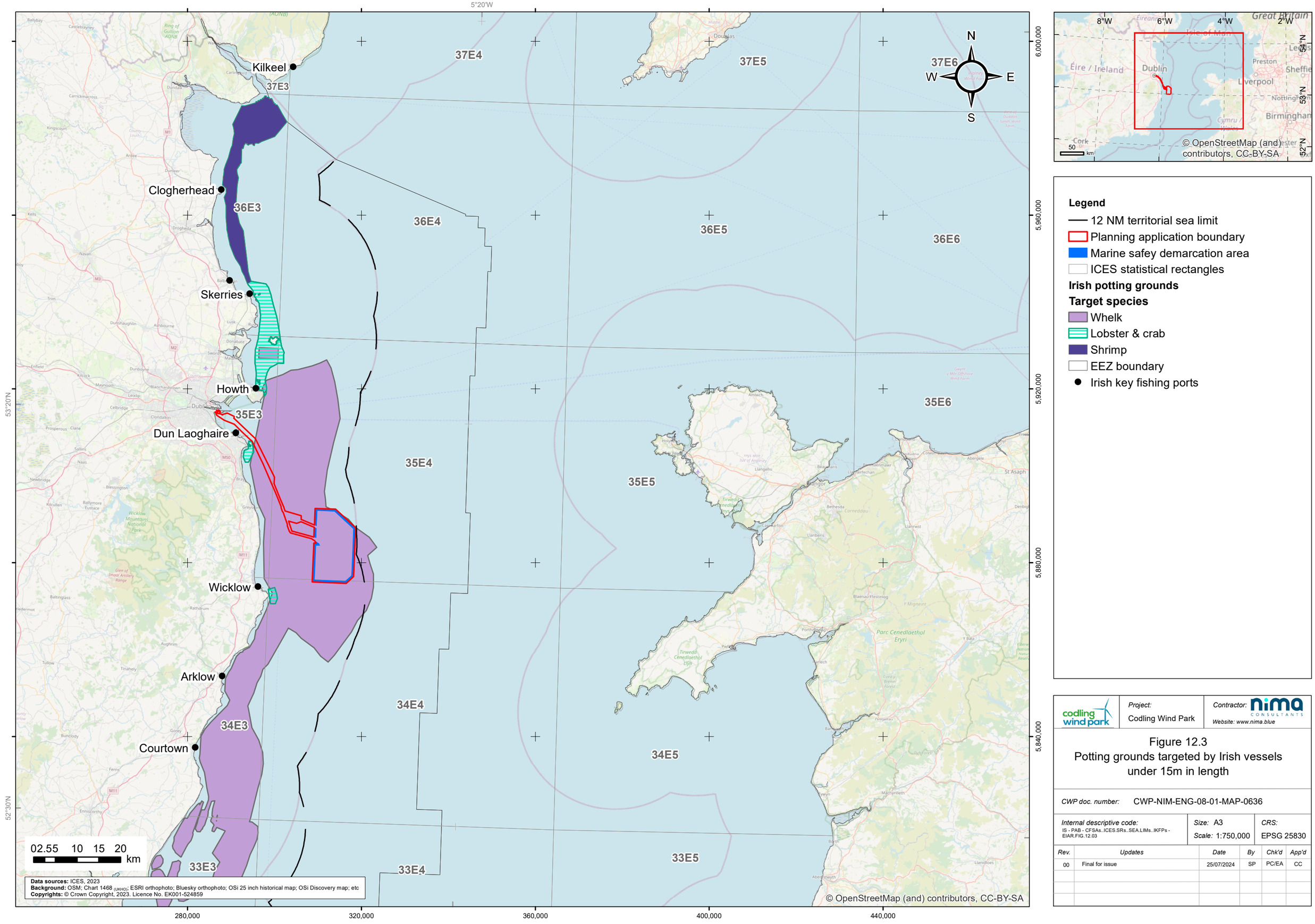
70. Scouting surveys were undertaken across the CWP Project from 2021 to 2024 to identify the presence of potting gear in the water. Density mapping of this scout survey data shows that fishing activity occurs within the array site, concentrated along the western edge (inside the array site) and in the southern section (inside and outside of the array site). It is understood through consultation that the activity within the array site is focused on targeting whelk. Activity is also noted throughout most of the OECC, where fishers target whelk, as well as crab and lobster (**Figure 12-4**). The survey took place within the offshore development area and data are only available for the locations surveyed, i.e., potting activity is understood to occur throughout the array site and in surrounding areas which are not represented within this dataset (because not all areas were surveyed).

71. Data from fishing vessel plotters on whelk fishing activity near the array site (fishing events within 500 m^2 grid square) illustrate concentrated fishing activity on the west side of the array site and notable overlap of the array site with fishing activity for whelk (**Figure 4** of **Appendix 12.3**).

72. In addition to mapping the location of observed potting activity, detail was collated on the orientation of the set potting gear. When targeting whelk in the CWP Project and surrounding area, fleets of pots are shot in an east to the west direction (**Figure 5** of **Appendix 12.3**). This is understood to be due to the tidal flow direction in the region; gear is shot across the tide to maximise the scent trail of the bait attracting the whelk.

73. Further evidence from Vessel Monitoring System (VMS) data is provided in **Figure 6** of **Appendix 12.3** for vessels 12 m and over in length. These VMS data corroborate the higher levels of activity along this west side of the array site.

74. Overall, mapping of potting activity presented in this EIAR Chapter and in **Appendix 12.3** provides evidence of a whelk-targeted fishery throughout the CWP Project (as evidenced by inshore potting mapping for under 15 m vessels), with high activity noted across the west and southern portions of the array site (as corroborated by VMS data for vessels 12 m and over; and scouting surveys for all vessel lengths). Crab and lobster potting is understood to occur in the inshore areas across the OECC, noting that this fishery uses a different type of pot and bait than the whelk fishery (further details of gear configuration are provided in **Appendix 12.3**).



Legend

- 12 NM territorial sea limit
- Planning application boundary
- Marine safey demarcation area
- ICES statistical rectangles

Irish potting grounds

Target species

- Whelk
- Lobster & crab
- Shrimp
- EEZ boundary
- Irish key fishing ports

codling wind park

Project: Codling Wind Park

Contractor: nima CONSULTANTS

Website: www.nima.blue

Figure 12.3
Potting grounds targeted by Irish vessels under 15m in length

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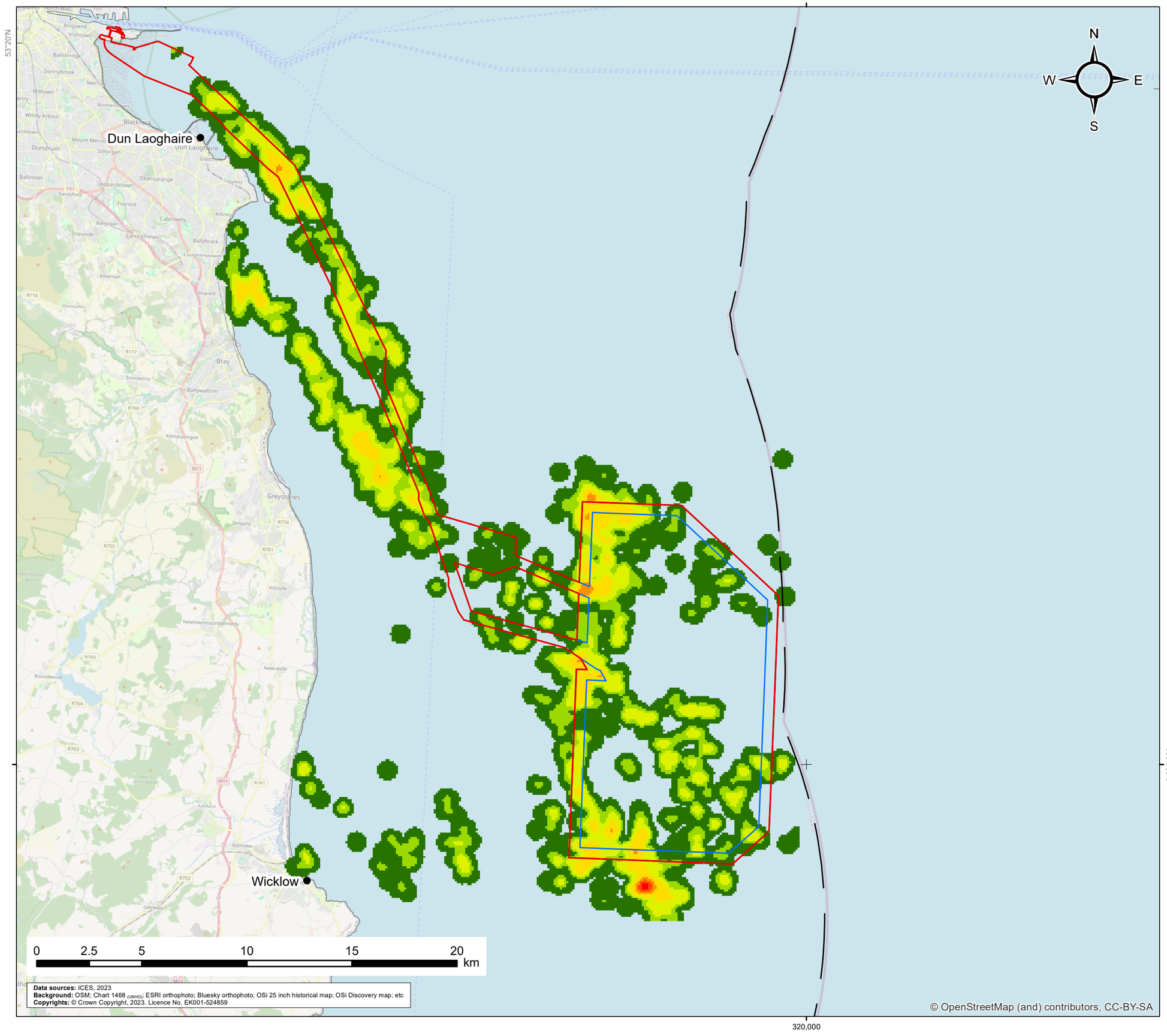

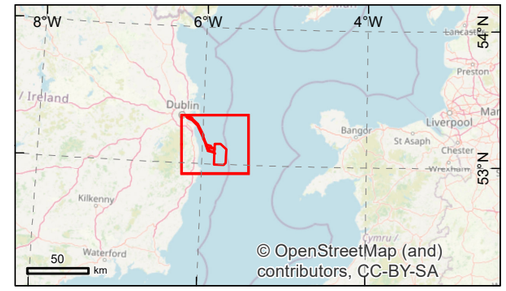

Legend

- Planning application boundary
- Marine safey demarcation area
- 12 NM territorial sea limit
- Irish key fishing ports

Fishing gear denisty

- Points/ km2
- 0.01 - 5
- 5.1 - 10
- 11 - 25
- 26 - 50
- 51 - 75
- 76 - 100
- 110 - 120

codling wind park

Project: Codling Wind Park

Contractor: nima CONSULTANTS

Website: www.nima.blue

Figure 12.4
Fishing gear survey and derived potting gear denisty (assumed gear length = 500m) (27/10/21 to 11/09/23)

CWP doc. number: CWP-NIM-ENG-08-01-MAP-0639

Internal descriptive code: IS - PAB - CFSAs..ICES.SRs..SEA.LIMs..IKFPs - EIAR.FIG.12.03

Size: A3

Scale: 1:175,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
00	Final for issue	20/07/2024	SP	PC/EA	CC

Mussel seed fishery

75. The mussel fishery targets seeds, which are re-laid for on growing of bottom-cultured mussels in aquaculture licence areas. The mussel beds targeted by Irish vessels are considered ephemeral, and therefore harvest rates can be up to 100% of a mussel bed, as seed is not required to be maintained for reproductive capacity (Marine Institute, 2017).

76. Mussel seed may be found in small patches at the edge of sand banks and on coarse sediments and rock, which are scoured by strong currents.

77. The location of seed mussel beds identified by BIM from 1970 to 2021 in the proximity of the CWP Project is illustrated in **Figure 8** of **Appendix 12.3**. As shown, mussel beds local to the CWP Project are primarily located in inshore areas off Wicklow, to the west and southwest of the array site and OECC. There is a very small overlap of seed mussel dredge within the southwest corner of the array site (understood to have occurred pre-2017), and no overlap with the OECC.

Razor clam fishery

78. Every razor clam fishing vessel is required to have an inshore VMS (iVMS) device fitted, and therefore the location of this fishery is understood with high certainty. The iVMS data are provided in **Figure 9** of **Appendix 12.3**. In addition, inshore dredge grounds for razor clam are shown in **Figure 8** of **Appendix 12.3**.

79. The razor clam fishery is located approximately 35 km north of the CWP Project. No activity is recorded in the offshore development area or within the local study area (**Figure 9** of **Appendix 12.3**). It is worth noting that the activity is not in the vicinity of the CWP Project and is of no relevance to it; however, this fishery has been reviewed as suggested by feedback provided during scoping.

Scallop dredge fishery

80. A scallop-directed fishery targets king scallop within Irish territorial waters. The grounds targeted are located outside and immediately north of the array site (approximately 1.6 km north of the array site boundary), with no overlap with the CWP Project. The location of scallop grounds targeted by Irish, UK and Isle of Man vessels is indicated in **Figure 10** of **Appendix 12.3**.

81. Landing statistics indicate 53 tonnes of king scallop (with a first sales value of €130,000) taken from the commercial fisheries' local study area in the grounds located outside and north of the array site. King scallop and queen scallop are noted in catches landed into Howth, as shown in **Plate 12-3**, with a combined value of €900,000 in 2022. These are understood to be fished in areas adjacent to Howth and approximately 1.6 km from the CWP Project, as indicated in **Figure 11** of **Appendix 12.3**. These fishing grounds are corroborated by VMS data for Irish and UK vessels presented in **Figure 12** to **Figure 14** of **Appendix 12.3**.

Static netting fishery

82. An inshore static nets fishery targets blonde ray, other ray species (including thornback ray *Raja clavata*), and mixed flatfish and round fish species within Irish territorial waters. The grounds targeted are located outside and immediately south of the OECC (adjacent to the boundary), with no overlap with the CWP Project. The location of netting grounds targeted by Irish vessels under 15 m in length is indicated in **Figure 15** of **Appendix 12.3**.

83. Landing statistics indicate 180 tonnes of blonde ray (with a first sales value of €400,000) taken from the commercial fisheries' local study area. It is likely that a proportion of this is taken by the beam trawl fleet (as described below).

Beam trawl fishery

84. A beam trawl-directed fishery targets flatfish (sole, plaice, brill *Scophthalmus rhombus*) and ray species (blonde ray and thornback ray). Landing statistics indicate a combined weight of 480 tonnes of these species caught within the commercial fisheries local study area, worth €1.6 million annually. VMS data indicate that this fishery is targeted within the commercial fisheries' local study area and occurs outside the 12 NM limit, with no overlap with the CWP Project. Key beam trawl-targeted grounds are located 4 km east of the CWP Project, as indicated in **Figure 16** and **Figure 17** of **Appendix 12.3**.

Demersal otter trawl fishery

85. Nephrops is the main species landed within the Irish Sea mixed fisheries, targeted using demersal otter trawls. Other species in the nephrops fishery constitute a low proportion of the overall landings and include cod *Gadus morhua*, haddock, and anglerfish *Lophius* spp. A highly significant nephrops fishery is located within ICES rectangle 36E4, i.e., immediately north of the commercial fisheries' local study area and within the regional study area. This nephrops fishery within the Irish Sea West Functional Unit 15, is targeted by international fleets, most notably vessels registered in Ireland and Northern Ireland.

86. Spatial mapping data are available to evidence the location of the nephrops fishery, as presented in **Appendix 12.3** (specifically **Figures 18 and 19**), which is located approximately 37 km from the CWP Project. Nephrops are associated with a specific muddy habitat within which they create a network of burrows that supports a wider ecosystem function.

87. Fishing grounds targeted by demersal otter trawlers are also located outside and approximately 25 km to the east of CWP Project, within the local commercial fisheries' study area. This is understood to be targeting mixed demersal species, including blonde ray, haddock and anglerfish.

Pelagic trawl fishery

88. Pelagic fisheries typically operate across a wide geographic area to catch shoaling fish as they migrate to spawning grounds. The catches of pelagic species vary both spatially and temporally. Typically, in the wider Celtic Seas ecoregion, pelagic fisheries are targeted predominately along the shelf edge, to the west of Ireland. Some pelagic fisheries do occur within the Irish Sea (Division 7a), including herring and sprat. Landing statistics for the commercial fisheries' local study area indicate that relatively low value landings of sprat (~€30,000) occurred in 2015.

89. Fishing grounds targeted by Irish pelagic trawlers are indicated in **Figure 21** of **Appendix 12.3**. These grounds are located very close inshore and are understood to be related to a seasonal sprat fishery. Activity by UK pelagic trawl vessels is indicated in **Figure 22** and **23** of **Appendix 12.3**, with targeted areas approximately 35 km northeast of the CWP Project.

12.6.3 Recreational fishing

90. Based upon the consultation feedback provided, it is considered that recreational angling occurs for a variety of species, with tope *Galeorhinus galeus*, smooth-hound *Mustelus mustelus*, and more rarely

black bream *Spondyliosoma cantharus*, being of special interest. Other target species include spurdogs *Squalus acanthias*, porbeagle shark *Lamna nasus*, bull huss *Scyliorhinus stellaris*, dogfish *Scyliorhinus canicula*, rays *Raja* species, flounder *Paralichthys dentatus*, red mullet *Mullus barbatus*, pollock *Pollachius pollachius*, conger *Conger conger*, gurnard *Chelidonichthys lucerna*, mackerel *Scomber scombrus*, cod *Gadus morhua* and ballan wrasse *Labrus bergylta*. The activity occurs within the offshore development area and surrounding waters; from Arklow to Skerries, inshore and offshore up to 30 miles (on wrecks), normally from May to September, weather dependant.

12.6.4 Aquaculture

91. Maps provided by MI indicate that aquaculture activity is present in ICES rectangle 37E3 and ICES rectangle 34E3, notably near Arklow port and further to the southwest (ICES rectangles 33E2–33E3) near the ports of Wexford, Duncannon and Helvick (**Figure 24** of **Appendix 12.3**). Aquaculture activity for this area is exclusively for shellfish (mussels and oysters). There is no overlap of aquaculture sites within the CWP Project.

12.6.5 Identification of receptors

92. Commercial fisheries' receptors requiring assessment in relation to the potential impacts of the CWP Project have been identified (**Table 12-6**) based on the sections described above, and further baseline evidence is provided in **Appendix 12.3** and information gathered during consultation with stakeholders. The impact assessment is undertaken on a fleet-by-fleet basis for the fisheries identified as being present in the commercial fisheries' regional study area.

Table 12-6 Commercial fisheries' receptors identified within the commercial fisheries' regional study area (in no particular order)

Commercial fisheries' receptor		Activity within regional study area
Gear	**Target species**	
Potting	Whelk	Fishing grounds located throughout the CWP Project area, including array site and OECC, and extending north and south along the eastern Irish coast out to 12 NM.
	Brown crab and lobster	Fishing grounds focused in inshore areas of the OECC and extending north and south along the eastern Irish coast within inshore waters.
Dredge	King scallop	Fishing grounds do not overlap with the CWP Project and are located 1.6 km north of the array site.
	Mussel seed	A very small overlap with the array site (pre-2017), with majority of mussel seed beds harvested to the east and southeast of the CWP Project.
Hydraulic dredge	Razor clam	Fishing grounds do not overlap with the CWP Project and are located 35 km north of the array site.
Static nets	Blonde ray, sole and mixed demersal species	Fishing grounds located immediately adjacent to part of the OECC, and larger areas of fishing grounds located 9 km both north and south of the CWP Project.
Beam trawl	Sole and mixed flatfish	Fishing grounds do not overlap with the CWP Project and are located 4 km east of the array site.
Demersal otter trawl	Nephrops and mixed demersal	Fishing grounds do not overlap with the CWP Project and are located 25 km east and 37 km north of the array site.
Pelagic trawl	Sprat and herring	Fishing grounds overlap with the very inshore areas of the OECC, with further grounds located 35 km northeast of the CWP Project.
Charter angling	Recreational angling targeting a range of species	Activity occurs across a wide area, including on occasion throughout the CWP Project.
Aquaculture	Mussels and oysters	No overlap of aquaculture sites within the CWP Project.

12.6.6 Climate change and natural trends

93. As fisheries are contingent on the viability of the target species, changes that arise in fish and shellfish species as a result of climate change may directly affect fishers. See **Chapter 9 Fish, Shellfish and Turtle Ecology** for the assessment of climate change and natural trends with respect to fish and shellfish ecology.

12.6.7 Predicted future baseline

94. The fisheries within the regional and local study areas are unlikely to remain constant in the absence of the CWP Project, as fisheries change from year to year. Numerous factors can influence the spatial extent, movement and profitability of fisheries. The potential changes in future baseline conditions are described within this section.

95. Potting for whelks is currently the principal fishing activity undertaken in the local study area by the local fleet, and activity is concentrated in inshore areas within 12 NM. Landings of this species are not restricted through annual quota; however, management measures, such as the Whelk (Conservation of Stocks) Regulations, 2006 (S.I. No. 237/2006) are currently in place.

96. Detailed information on the status of the local whelk stock is not currently available. This species is, however, considered to be generally depleted or locally depleted in the Irish Sea due to high fishing mortality (Tully, 2017).

97. The 2022 Shellfish Stocks and Fisheries Review (Marine Institute & BIM, 2023) provided an assessment of whelks. The size at maturity for whelks is well above the minimum landing size (MLS) and it is therefore feasible that local depletions of stock may occur. In future, it is considered not feasible to solely manage the whelk fishery using MLS; however, increasing the MLS to the average size at maturity would severely limit landings. Overall, it is considered that area-based management within the Irish Sea may be necessary for the whelk fishery (Marine Institute & BIM, 2023).

98. Where local inshore whelk stocks decline or are depleted in the future, there may be potential for fishing activity to move further offshore. From information gathered during consultation with local fisheries' stakeholders, it is understood that some local fishermen are already investing in larger vessels to allow them to target offshore grounds. Areas offshore of the array site may become increasingly important in the future to the local fleet.

99. With regards to the mussel seed fishery, potential fishing grounds would be expected to remain relatively consistent with the locations of mapped seed mussel dredge areas (**Figure 8** of **Appendix 12.3**). Known seed mussel beds do not overlap with the OECC, with very limited overlap with the array site. As such, it would not be expected for the array site to support mussel seed fisheries in the future.

100. The baseline assessment has demonstrated that commercial fisheries landings and activity varies from year-to-year, and that changing trends are normal and expected in future fisheries' baseline environment. Patterns in commercial fisheries change and fluctuate based on a range of natural and management-controlled factors. These include the following:

- Brexit: there have been two schemes to support the Irish fishing industry due to the reduction in the Total Allowable catches (TACs) and quotas as a result of Brexit:
    - Tie-up scheme: for 1 month in 2021 and for 2 months in 2022;
    - Decommissioning scheme: in 2023 primarily affecting the offshore fleet;
- Market demand: commercial fishing fleets respond to market demand, which is impacted by a range of factors, including the COVID pandemic affecting landings in 2020 and 2021;
- Market prices: commercial fishing fleets respond to market prices by focusing effort on higher value target species when prices are high and markets in demand;

- Stock abundance: fluctuation in the biomass of individual species' stocks in response to the status of the stock, recruitment, natural disturbances (e.g., due to storms, sea temperature etc.), climate change and changes in fishing pressure;
- Fisheries' management: including new management for specific species where overexploitation has been identified, or changes in TACs leading to the relocation of effort, and / or an overall increase / decrease of effort and catches from specific areas;
- Environmental management: including the potential restriction of certain fisheries within protected areas;
- Improved efficiency and gear technology: with fishing fleets constantly evolving to reduce operational costs, e.g., by moving from beam trawl to demersal seine; and
- Sustainability: with seafood buyers more frequently requesting certification of the sustainability of fish and shellfish products, such as the Marine Stewardship Council certification, industry is adapting to improve fisheries' management and wider environmental impacts.

101. The variations and trends in commercial fisheries' activity are an important aspect of the baseline assessment and form the principal reason for considering a minimum of five years of baseline data. The key species targeted in the commercial fisheries' local study area are non-quota shellfish species, which therefore do not have negotiated TACs. The effect of the withdrawal of the UK from the EU and subsequent reallocation of TACs is not of relevance to these fisheries and therefore has minimal effect on these fisheries. It is therefore considered, with sufficient certainty, that the current baseline is reflective of the future scenarios over the lifetime of the CWP Project.

12.7 Scope of the assessment

102. An EIA Scoping Report for the Offshore Infrastructure was published on 6 January 2021. The Scoping Report was uploaded to the CWP Project website and shared with regulators, prescribed bodies and other relevant consultees, inviting them to provide relevant information and to comment on the proposed approach being adopted by the Applicant in relation to the offshore elements of the EIA.

103. Based on responses to the Scoping Report, further consultation, and refinement of the CWP Project design, potential impacts to commercial fisheries scoped into the assessment are provided in **Table 12-7.**

Table 12-7 Potential impacts scoped into the assessment.

Impact No.	Description of impact	Notes
Construction		
Impact 1	Loss of grounds or restricted access to fishing grounds within the array site	Advisory safe passing distances around structures and works during construction in the array site may result in a loss of access to established fishing grounds.
Impact 2	Loss of grounds or restricted access to fishing grounds within the OECC	Advisory safe passing distances around construction vessels in the OECC may result in a loss of access to established fishing grounds.
Impact 3	Displacement of fishing activity into other areas	Loss of access to fishing grounds during construction may result in displacement of fishers into other areas or other established fishing grounds, leading to gear conflict and / or increased effort on other grounds.

Impact No.	Description of impact	Notes
Impact 4	Interference with fishing activities	Static fishing gear in and around the construction area may be snagged or damaged by construction vessels transiting through and around the CWP Project. CWP Project-related vessels transiting to construction areas may interfere with fishing activities.
Impact 5	Potential for snagging of gear	Fishing gear may become snagged with CWP Project-related infrastructure and obstacles on the seabed. This impact relates to the economic loss of slipping gear that has become snagged and not the safety aspects, which are described and assessed in **Chapter 16 Shipping and Navigation**.
Impact 6	Increased steaming times to fishing grounds	As fishers are displaced from site during construction this may result in them having to travel further via an alternative route to reach alternative fishing grounds.
Impact 7	Effects on commercially exploited species	Disturbance caused to commercially important fish and shellfish species during construction activities may affect the local resource availability.
Operation and Maintenance		
Impact 1	Loss of grounds or restricted access to fishing grounds within the array site	Physical presence of infrastructure and cable protection within the array site, together with maintenance activities, may affect the access to fishing grounds.
Impact 2	Loss of grounds or restricted access to fishing grounds within the OECC	Physical presence of cable protection across parts of the OECC, together with maintenance activities, may affect the access to fishing grounds.
Impact 3	Displacement of fishing activity into other areas	Loss of access to fishing grounds may result in displacement of fishers into other areas or other established fishing grounds, leading to gear conflict and / or increased effort on other grounds.
Impact 4	Interference with fishing activities	Static fishing gear in and around the construction area may be snagged or damaged by transiting maintenance vessels and the physical presence of vessels may interfere with fishing activities.
Impact 5	Potential for snagging of gear	Fishing gear may become snagged with CWP Project-related infrastructure and obstacles on the seabed. This impact relates to the economic loss of slipping gear that has become snagged and

Impact No.	Description of impact	Notes
		not the safety aspects, which are described and assessed in **Chapter 16 Shipping and Navigation**.
Impact 6	Increased steaming times to fishing grounds	Fishers may require additional fuel and time to steam to alternative fishing grounds that would have otherwise been fished within the CWP Project offshore development area.
Impact 7	Effects on commercially exploited species	Disturbance caused to commercial important fish and shellfish species during operation and maintenance activities may affect the local resource availability.
Decommissioning		
Impacts on commercial fisheries during decommissioning are considered analogous to those assessed for the construction phase, with a progressive removal of infrastructure.		
Impact 1	Loss of grounds or restricted access to fishing grounds within the array site	As described for construction.
Impact 2	Loss of grounds or restricted access to fishing grounds within the OECC	
Impact 3	Displacement of fishing activity into other areas	
Impact 4	Interference with fishing activities	
Impact 5	Potential for snagging of gear	As described for construction, plus potential for any infrastructure to be left in situ, such as buried cable.
Impact 6	Increased steaming times to fishing grounds	As described for construction.
Impact 7	Effects on commercially exploited species	

104. Based on responses to the Scoping Report, further consultation, and refinement of the CWP Project design, none of the potential impacts to commercial fisheries identified were agreed to be scoped out of the assessment.

12.8 Assessment parameters

12.8.1 Background

105. Complex, large-scale infrastructure projects with a terrestrial and marine interface, such as the CWP Project, are consented and constructed over extended timeframes. The ability to adapt to a supply chain, policy or environmental conditions and to make use of the best available information to feed into project design, promotes environmentally sound and sustainable development. This ultimately reduces project development costs and therefore electricity costs for consumers and reduces CO_2 emissions.

106. In this regard, the approach to the design development of the CWP Project has sought to introduce flexibility where required, among other things, to enable the best available technology to be constructed and to respond to dynamic maritime conditions, while at the same time to specify project boundaries, project components and project parameters wherever possible, while having regard to known environmental constraints.

107. **Chapter 4 Project Description** describes the design approach that has been taken for each component of the CWP Project. Wherever possible, the location and detailed parameters of the CWP Project components are identified and described in full within the EIAR. However, for the reasons outlined above, certain design decisions and installation methods will be confirmed post-consent, requiring a degree of flexibility in the planning consent. The **Planning Report** and **Chapter 5 EIA Methodology** provide further information on the approach to assessing design flexibility in this EIAR.

108. Where necessary, flexibility is sought in terms of:

- Up to two options for certain permanent infrastructure details and layouts, such as the WTG layouts.
- Dimensional flexibility, described as a limited parameter range, i.e., upper and lower values for a given detail such as cable length; and
- Locational flexibility of permanent infrastructure, described as a limit of deviation (LoD) from a specific point or alignment.

109. The CWP Project had to procure an opinion from An Bord Pleanála to confirm that it was appropriate that this application be made and determined before certain details of the development were confirmed. An Bord Pleanála issued that opinion on 25 March 2024 (as amended in May 2024) and it confirms that the CWP Project could make an application for permission before the details of certain permanent infrastructure described in **Section 4.3** of **Chapter 4 Project Description** is confirmed.

110. In addition, the application for permission relies on the standard flexibility for the final choice of installation methods and O&M activities.

111. Notwithstanding the flexibility in design and methods, the EIAR identifies, describes and assesses all of the likely significant impacts of the CWP Project on the environment.

12.8.2 Options and dimensional flexibility

112. Where the application for permission seeks options or dimensional flexibility for infrastructure or installation methods, the impacts on the environment are assessed using a representative scenario approach. A “representative scenario” is a combination of options and dimensional flexibility that has been selected in this EIAR chapter to represent all of the likely significant effects of the CWP Project on the environment. Sometimes, several representative scenarios will have to be considered to ensure all impacts are identified, described and assessed.

113. For commercial fisheries this analysis is presented in **Appendix 12.2**, which identifies one or more representative scenarios for each impact with supporting text to demonstrate that no other scenarios would give rise to new or materially different effects, taking into consideration the potential impact of other scenarios on the magnitude of the impact or the sensitivity of the receptor(s) that is being considered.

114. **Table 12-8** presents a summarised version of **Appendix 12.2** and describes the representative scenarios on which the construction and O&M phase commercial fisheries’ assessment has been based. Where options exist, for each receptor and potential impact, the table identifies the representative scenario and provides a justification for this.

12.8.3 Limit of deviation

115. Where the application for permission seeks locational flexibility for infrastructure, the impacts on the environment are assessed using an LoD. The LoD is the furthest distance at which a specified element of the CWP Project can be constructed.

116. This chapter assesses the specific preferred location for permanent infrastructure. However, **Appendix 12.2** provides further analysis to determine if the proposed LoD for permanent infrastructure may give rise to any new or materially different effects, taking into consideration the potential impact of the proposed LoD on the magnitude of the impact.

117. For commercial fisheries this analysis is summarised in **Table 12-9.**

118. Where the potential for the LoD to cause a new or materially different effect is identified, this is noted in **Table 12-9** and is considered in more detail within **Section 12.10** of this chapter.

Table 12-8 Representative scenario summary

Impact	Representative scenario details	Value	Notes / assumptions
Construction			
Impact 1: Loss of grounds or restricted access to fishing grounds within the array site	Permanent infrastructure		The duration of the construction phase relates to the extent of fishing exclusion and hence the potential to restrict access to fishing grounds. As the duration is the same for both Layout Options, the infrastructure (number of WTGs) would lead to a representative scenario under which fishing activities would be excluded from the offshore development area. Layout Option A forms the representative scenario as this represents the greatest level of temporary loss or restricted access to established fishing grounds, and therefore Layout Option A forms the basis of the assessment for Impact 1: in this chapter. Layout Option B, or any other scenario resulting in a lower level of loss or restricted access would not introduce new or different impacts and would not result in a materially different effect of significance. The construction footprint comprises the full permanent seabed area of structures, scour protection, cable crossings and cable protection plus the temporary footprint of preparatory works. The impact area also incorporates advisory safe passing distances around major activities. It is important to note that the temporal aspect of construction works will not apply in full throughout the offshore construction phase, as activities will be completed sequentially.
	Progressive installation of WTGs	75	
	Progressive installation of OSSs	3	
	Array site total area (km^2)	125	
	Progressive installation of inter-array and interconnector cables across the array site for the duration of construction (i.e., fishing activities cannot be undertaken in the area of inter-array or interconnector cable installation)		
	Length of inter-array cabling on the seabed (km)	120 - 139	
	Length of interconnector cabling on the seabed (km)	7.4 - 8.6	
	Length of inter-array and interconnector cabling requiring cable protection (km)	29.8	
	Total area of seabed covered by cable protection (m^2)	208,600	
	IACs and interconnectors minimum depth of cover (m)	1.0	
	Installation methods and effects		
	Advisory safe passing distances around construction activities within the array site (m)		

Impact	Representative scenario details	Value	Notes / assumptions
	Total construction duration for the WTGs and the OSSs (months)	30	
Impact 2: Loss of grounds or restricted access to fishing grounds within the OECC	Permanent infrastructure		The duration of the construction phase relates to the extent of fishing exclusion and hence the potential to restrict access to fishing grounds. The duration of construction and all project details relating to the OECC are the same for both Options. The construction footprint of the OECC comprises the full permanent seabed area of scour protection, cable crossings and cable protection plus the temporary footprint of preparatory and installation works. The impact area also incorporates advisory safe passing distances around major activities. It is important to note that the temporal aspect of temporary works will not apply in full throughout the offshore construction phase, as activities will be completed sequentially.
	OECC total area (km^2)	40.1	
	Total length of offshore export cables (km)	126 - 146	
	Total area of seabed covered by export cable protection (m^2)	105,000	
	Offshore export cables minimum depth of cover (m)	1.4	
	Installation methods and effects		
	Advisory safe passing distances around construction activities (m)		
	Total construction duration for the cable installation in the OECC (months)	12	
Impact 3: Displacement of fishing activity into other areas	As described for Impact 1 and Impact 2		Construction activities resulting in the maximum level of displacement of fishing activity are a product of the areas of temporary exclusion as defined in Construction Impact 1 and Impact 2.
	Permanent infrastructure		The maximum number of vessels transits and the maximum number of round trips would result in the greatest potential for
	Progressive installation of WTGs	75	

Impact	Representative scenario details	Value	Notes / assumptions
Impact 4: Interference with fishing activities	Progressive installation of OSSs	3	conflict / interaction between construction vessels and fishing vessels and gear. Layout Option A forms the representative scenario as this represents the maximum number of vessels transits and the maximum number of round trips and, and therefore Option A forms the basis of the assessment for Impact 4: in this chapter. Layout Option B, or any other scenario resulting in a lower number of vessels and duration of the construction programme would not introduce new or different impacts and would not result in an effect of materially different significance.
	Installation methods and effects	Peak vessels / round trips	
	Seabed preparation vessels (including surveys, UXO investigation and boulder clearance)	4 / 20	
	WTG and OSS monopile installation vessels (includes installation vessel, feeder vessel and anchor handlers)	6 / 43	
	TP installation vessels	7 / 43	
	Scour protection installation vessels (including filter layer and seabed preparation)	7 / 107	
	WTG installation vessels (includes installation vessel, feeder vessel and anchor handlers)	4 / 50	
	OSS topside installation vessels	4 / 20	
	Seabed preparation vessels (including Trailing Suction Hopper Dredger (TSHD) for sand wave clearance and disposal off	7 / 548	

Impact	Representative scenario details	Value	Notes / assumptions
	site, pre-lay grapnel run (PLGR), offshore substation structure (OSS) removal, boulder clearance, pre-crossing protection and survey vessel)		
	Array cable and interconnector installation vessels (includes support, cable protection and anchor handling vessels	6 / 39	
	Export cable installation vessels (including at landfall) (includes support, cable protection and anchor-handling vessels)	5 / 43	
	Nearshore export cable installation vessels (including at landfall) (includes barges, tugs, and small work boats)	17 / 118	
	Commissioning vessels	2 / 48	
	General support vessels (including guard vessel, project Service Operation Vessel (SOV) and work boats)	4 / 506	
	Crew Transfer Vessels (CTVs)	2 / 824	
	Maximum total construction vessels	75 / 2,409	

Impact	Representative scenario details	Value	Notes / assumptions
	Peak vessels on site simultaneously	38	
Impact 5: Potential for snagging of gear	As described for Impact 1 and Impact 2		Offshore works, such as construction anchoring, jack up legs or cable trenching can produce seabed obstructions which can represent a potential fastening risk and damage to fishing gear. Potential for objects to be dropped on the seabed during construction-related activities.
Impact 6: Increased steaming times to fishing grounds	Installation methods and effects		The infrastructure (number of WTGs) would lead to a representative scenario under which fishing activities would be excluded from the offshore CWP Project area. Layout Option A forms the representative scenario as this represents the greatest level of the maximum potential disruption to established steaming routes, and therefore Option A forms the basis of the assessment for Impact 6: in this chapter. Layout Option B, or any other scenario resulting in a lower level of disruption to established steaming routes would not introduce new or different impacts and would not result in an effect of materially different significance.
	Progressive installation of WTGs	75	
	Progressive installation of OSSs	3	
	Advisory safe passing distances (radius) around construction activities (m)		
	Peak vessels on site simultaneously	38	
Impact 7: Effects on commercially exploited species	As per **Chapter 9 Fish, Shellfish and Turtle Ecology**.		The scenario assessed in **Chapter 9 Fish, Shellfish and Turtle Ecology** forms the highest disturbance to commercially important species.
Operations and maintenance			
Impact 1: Loss of grounds or restricted access to	Permanent infrastructure		Layout Option A represents the maximum loss of fishing grounds.
	Number of WTGs	75	

Impact	Representative scenario details	Value	Notes / assumptions
fishing grounds within the array site	Number of OSSs	3	The Applicant will, where practicable, bury all cables to a minimum depth of cover. In cases where depth of cover is inadequate due to unforeseeable seabed conditions, cable protection will be implemented as mitigation to avoid risks to other marine operations. A preliminary cable burial risk assessment, involving a peer review of environmental considerations, ground conditions, and anticipated installation considerations, has been undertaken to identify locations that may require cable protection. This exercise has determined an anticipated maximum extent and volume of cable protection within the array site and OECC, which has been used as a basis for the EIA.
	Length of inter-array cabling on the seabed (km)	120–139	
	Length of interconnector cabling (km)	7.4–8.6	
	Total length of offshore export cables (km)	126.0–146.0 (3 alternating current (AC) cables)	
	Total area of seabed covered by inter-array and interconnector cable protection (m^2), including secondary protection of rock placement (height: 1.25 m; width: 7 m).	208,600	
	Total area of seabed covered by export cable protection (m^2), including secondary protection of rock placement (height: 1.5 m; width: 7 m) and use of mattresses for cable crossing (height: 1.5 m; width: 7 m)	105,000	
	O&M vessels		
	Peak vessels on site simultaneously	14	
Impact 2: Loss of grounds or restricted access to	Total length of offshore export cables (km)	126.0–146.0 (3 alternating current (AC) cables)	Options are the same for the OECC and neither Layout Option A nor B impact the design scenario for the OECC.

Impact	Representative scenario details	Value	Notes / assumptions
fishing grounds within the OECC	Total area of seabed covered by export cable protection (m^2)	105,000	
Impact 3: Displacement of fishing activity into other areas	As described for Impact 1 and Impact 2		Operational activities resulting in the maximum level of displacement of fishing activity are a product of the areas of temporary exclusion required during major maintenance activities and long-term exclusion due to physical presence of the wind farm infrastructure, as defined in Operation Impact 1.
Impact 4: Interference with fishing activities	As described for Impact 1 and Impact 2		Either scenario represents the maximum potential number of vessel transits during operation and maintenance and, as such, the greatest potential for conflict between operation and maintenance vessels and fishing operations. As the maximum number is the same for both options, impact does not vary between scenarios.
Impact 5: Potential for snagging of gear	As described for O&M Impact 1 and Impact 2		WTG Option A represents the greatest presence of obstacles on the seabed that may represent a fastening/safety risk to fishing vessels and therefore forms the representative scenario for the assessment.
Impact 6: Increased steaming times to fishing grounds	As described for O&M Impact 1 and Impact 2		Operational activities resulting in the maximum level of displacement of fishing activity are a product of the areas of temporary exclusion as defined in O&M phase impacts 1 & 2.
Impact 7: Effects on commercially exploited species	As per **Chapter 9 Fish, Shellfish and Turtle Ecology**.		The scenario assessed in **Chapter 9 Fish, Shellfish and Turtle Ecology** forms the highest disturbance to commercially important species.
Decommissioning			

Impact	Representative scenario details	Value	Notes / assumptions
Impact 1: Loss of grounds or restricted access to fishing grounds within the Array Site	For the purposes of the EIA, at the end of the operational lifetime of the CWP Project, all offshore infrastructure will be rehabilitated. In this regard, for the purposes of a representative scenario for decommissioning impacts, the following assumptions have been made: • The WTGs and OSS topsides shall be completely removed; • Following WTG and OSS topside decommissioning and removal, the monopile foundations will be cut below the seabed level, to a depth that will ensure the remaining foundation is unlikely to become exposed. This is likely to be approximately one metre below seabed, although the exact depth will depend upon the sea-bed conditions and site characteristics at the time of decommissioning; • All cables and associated cable protection in the offshore environment shall be wholly removed. It is likely that equipment similar to that which is used to install the cables may be used to reverse the burial process and expose them. Therefore, the area of seabed impacted during the removal of the cables is anticipated to be the same as the area impacted during the installation of the cables; and • Generally, decommissioning is anticipated to be a reverse of the construction and installation process for the CWP Project and the assumptions around the number of vessel on site, and vessel round trips is therefore the same as described for the construction phase of the offshore components. Given the above, it is anticipated that for the purposes of a representative scenario, the works will be analogous with the construction phase works.		
Impact 2: Loss of grounds or restricted access to fishing grounds within the OECC			
Impact 3: Displacement of fishing activity into other areas			
Impact 4: Interference with fishing activities			
Impact 5: Potential for snagging of gear			
Impact 6: Increased steaming times to fishing grounds			

Impact	Representative scenario details	Value	Notes / assumptions
Impact 7: Effects on commercially exploited species			

Table 12-9 LoD Assessment Summary

Project component	Limit of deviation	Conclusion from Appendix 12.2
WTGs / OSSs	100 m from the centre point of each WTG and OSS location is proposed to allow for small adjustments to be made to the structure locations.	No potential for new or materially different effects.
IACs / interconnector cables	100 m either side of the preferred alignment of each IAC and interconnector cable 200 m from the centre point of each WTG location	No potential for new or materially different effects.
Offshore export cables	250 m either side of the preferred alignment within the array site. The offshore export cable corridor (OECC) outside of the array site	No potential for new or materially different effects.

12.9 Primary mitigation measures

119. Throughout the evolution of the CWP Project, measures have been adopted as part of the project design and approach to construction to avoid or otherwise reduce adverse impacts on the environment. These mitigation measures are referred to as 'primary mitigation'. They are an inherent part of the CWP Project and are effectively 'built in' to the impact assessment.

120. Primary mitigation measures relevant to the assessment of commercial fisheries are set out in **Table 12-10**. Where additional mitigation measures are proposed, these are detailed in the impact assessment (**Section 12.10**). Additional mitigation includes measures that are not incorporated into the design of the CWP Project and require further activity to secure the required outcome of avoiding or reducing impact significance.

Table 12-10 Primary mitigation measures

Project element	Description
Construction Environmental Management Plan (CEMP)	A CEMP has been prepared to provide a management framework to ensure appropriate controls are in place to manage environmental risks associated with the construction of the CWP Project. It outlines environmental procedures that require consideration throughout the construction process, in accordance with legislative requirements and industry best practice. In summary, the CEMP includes details of: • The Environmental Management Framework for the CWP Project including environmental roles and responsibilities (i.e., ecological clerk of works) and contractor requirements (i.e., method statements for specific construction activities); • Mitigation measures and commitments made within the EIAR, Natura Impact Statement (NIS) and supporting documentation for the CWP Project. • Measures proposed to ensure effective handling of chemicals, oils and fuels including compliance with the MARPOL convention; • A Marine Pollution Prevention and Contingency Plan to address the procedures to be followed in the event of a marine pollution incident originating from the operations of the CWP Project; • An Emergency Response Plan adhered to in the event of discovering unexploded ordnance; • Offshore biosecurity and invasive species management detailing how the risk of introduction and spread of invasive non-native species will be minimised; and • Offshore waste management and disposal arrangements. The CEMP will be implemented by the Applicant and its appointed contractor(s) and will be secured through the conditions of the development consent. It will be a live document which will be updated and submitted to the relevant authority prior to the start of construction.
The array layout has been developed to ensure that the impacts on commercial fisheries are minimised and to	Positions of WTGs and OSSs have been informed by a wide range of site-specific data, including metocean data (e.g., wind speed and direction), geophysical and geotechnical survey data (e.g., bathymetry), environmental data (e.g., benthic surveys and archaeological assessment) and stakeholder consultation. Designing and optimising the layout of the

Project element	Description
maximise the potential for coexistence	WTGs has considered multiple constraints identified from analysis of these datasets, alongside the consideration of layout principles taken from relevant guidance on the design of OWFs. A summary of the key actions taken to avoid or otherwise reduce impacts is provided below: • The WTG layout options include Search and Rescue (SAR) access lanes to allow a SAR resource to fly on the same orientation continuously through the array site. This is provided to minimise risks to surface vessels and / or SAR resource transiting through the array site. • Archaeological exclusion zones (AEZs) around known features of archaeological interest have been avoided. No works that impact the seabed will be undertaken within the extent of an AEZ during the construction, operational, or decommissioning phases. • The locations of offshore infrastructure been developed to avoid known sensitive ecological habitats, including areas with suitable conditions for *Sabellaria spinulosa*, which can form reefs under some circumstances. Whilst reefs were not identified during the characterisation surveys, as an ephemeral feature it will be necessary to validate the results in advance of construction. A pre-construction geophysical survey will therefore be undertaken to facilitate the micrositing around sensitive habitats, such as *Sabellaria spinulosa*. • The WTG layout options have been developed to avoid or minimise interactions with known areas of high fishing density, where possible. As avoidance is not always possible, the layouts have also been developed to increase the potential for coexistence, aligning orientation with the way fishing activity occurs. • A paleochannel (the remnants of a river or stream channel that flowed in the past) in the centre west of the array site has been avoided.
Navigational Safety Plan (NSP) and advisory safe passing distances	A NSP has been prepared for shipping and navigation purposes, including the safe navigation of fishing vessels. The NSP includes details of: • Advisory safe passing distances around structures and works; • Marine coordination and communication to manage the movements of project vessels; • Marking of all infrastructure associated with the project (including subsea cables) on appropriately scaled Admiralty Charts; • Procedures in relation to Local Notices to Mariners, to be updated and re-issued during construction and prior to planned maintenance works; • Consultation with the relevant harbour authorities; • Compliance of all project vessels with international marine regulations as adopted by the Flag State, notably the COLREGs and International Convention for the Safety of Life at Sea (SOLAS); and • Use of a guard vessel(s) as deemed appropriate by risk assessment. The NSP will be implemented by the Applicant and its appointed contractor(s) and will be secured through conditions of the development consent. It will be a live document which will be updated and submitted to the relevant authority, prior to the start of construction.
Burial of cables	The Applicant will, where practicable, bury all cables within the offshore development area:

Project element	Description
	operations. • IACs and interconnector cables will have a minimum depth of cover of 1.0 m; and • Offshore export cables will have a minimum depth of cover of 1.4 m. In cases where burial is inadequate due to unforeseeable seabed conditions, and at cable crossings, cable protection will be implemented as mitigation to avoid risks to other marine operations.
Production of a FMMS	A Fisheries Management and Mitigation Strategy (FMMS) has been prepared to provide an overview of the Applicant's approach to fisheries liaison and mitigation with regards to the CWP Project. This includes measures proposed to facilitate co-existence with the commercial fishing industry with the aim of minimising potential impacts to fisheries stakeholders as far as possible. The FMMS includes details of: • The roles and responsibilities of the Fisheries Liaison Officer and other relevant fisheries liaison roles; • Approach to disseminating information and communicating with fisheries stakeholders; • Procedures to facilitate coexistence; and • Code of good practice for all vessels The FMMS will be implemented by the Applicant and its appointed contractor(s) and will be secured through conditions of the development consent. It will be a live document which will be updated prior to the start of construction to reflect the most up-to-date policy and legislation on coexistence.
Rehabilitation Schedule	A Rehabilitation Schedule is provided as part of the planning application. This has been prepared in accordance with the MAP Act (as amended by the Maritime and Valuation (Amendment) Act 2022) to provide preliminary information on the approaches to decommissioning the offshore and onshore components of the CWP Project. A final Rehabilitation Schedule will require approval from the statutory consultees prior to the undertaking of decommissioning works. This will reflect discussions held with stakeholders and regulators to determine the exact methodology for decommissioning, taking into account available methods, best practice and likely environmental effects.

12.10 Impact assessment

12.10.1 Construction phase

121. The potential environmental impacts arising from the construction of the CWP Project are listed in **Table 12-8** along with the parameters against which each construction phase impact has been

assessed. A description of the potential effect on commercial fisheries receptors caused by each identified impact is given below.

Impact 1: Loss of grounds or restricted access to fishing grounds within the array site

122. During construction of the array site, associated infrastructure and cabling, advisory safe passing distances from structures and works will be in place.

123. The total construction duration for the array site will be approximately 30 months (see **Table 12-8**), with a range of WTG, OSS and cable construction activities being undertaken simultaneously across the site at any one time. In practice, the actual area and duration of advised safe passing distances associated with the installation of array and interconnector cables would depend on the installation methods used.

124. Construction of the offshore project components for the CWP Project will be completed in a number of stages, these may not necessarily be consecutive, and some flexibility is required in the construction process to account for changing construction programmes due to, for example, fabrication delays or vessel availability. The stages are:

- Pre-construction surveys;
- Seabed preparation;
- Fabrication;
- Transportation;
- Offshore foundation / substructure installation;
- OSS and WTG installation;
- Export cable installation;
- Array cable and interconnector cable installation; and
- Cable landfall works.

125. As per **Table 12-10**, primary mitigation measures for this impact includes the CEMP, FMMS, advisory safe passing distances, guard vessels and regular fisheries' liaison.

Receptor sensitivity

126. The Irish potting fleet operates across distinct areas of ground, from the coastline out to beyond 12 NM. The whelk fishery is composed of several vessels, is considered to have moderate levels of alternative fishing grounds, is deemed to be generally vulnerable to this impact and to have medium recoverability. However, given its limited operational range and reliance on local grounds, its fishing opportunities are restricted. The sensitivity of this receptor is therefore considered to be Medium.

127. Similarly, for the Irish potting fleet targeting crab and lobster and the static netting fleet targeting ray species and mixed demersal species, low levels of alternative fishing grounds are available, and the fishing fleet has a limited operational range with reliance on local grounds. The sensitivity of this receptor is therefore considered to be Medium.

128. The Irish mussel seed dredge fishery is operated in very discrete areas where mussel beds are located. Fishing opportunities are relatively limited and depend on the presence of mussel seed beds, which can be variable in a given season. Due to the highly localised nature of the fishery, it is considered to have low–moderate levels of alternative fishing grounds, is deemed to be generally vulnerable to this impact, have high recoverability and medium value. The sensitivity of the receptor is therefore considered to be Medium.

129. Other Irish and foreign fishing fleets include fishing vessels which operate towed fishing gear (including pelagic otter trawl, demersal otter trawl, beam trawl, demersal seine, razor clam dredge and scallop

dredge). These vessels have extensive operational ranges and high levels of alternative fishing grounds. These vessels have the ability to exploit a varied range of fishing grounds across a wider geographic area and are not specifically associated with the fishing grounds that overlap the CWP Project. The sensitivity of these receptors is therefore considered to be Low.

130. Charter angling businesses have a limited operational range with reliance on local grounds. The sensitivity of this receptor is therefore considered to be Medium.

131. There are no aquaculture sites within the array site, with production most likely in close inshore areas. The sensitivity of this receptor is therefore considered to be Low.

Magnitude of impact

132. This impact will lead to a localised loss of access to fishing grounds and loss of the ability to catch fish and shellfish resources within these grounds for a range of fisheries during the period of construction, which will directly affect fleets over a short-term duration (e.g., 30 months, as per the definition in **Table 12-8**). The impact is predicted to be intermittent, with localised advisory safe passing distances surrounding construction activities and partially installed infrastructure and vulnerable sections of array and interconnector cables (i.e., awaiting burial or protection).

133. As described in the primary mitigation measures above (**Section 12.9**), consultation will be undertaken with relevant stakeholders to ensure effective management of advisory safe passing distances around structures and works. This includes timely and efficient Marine Notices (MN) and other navigational warnings being issued to the fishing community and the use of Offshore FLOs (OFLO) onboard construction vessels where appropriate to ensure efficient communications while at sea.

134. The magnitude of impact is assessed for each fleet below.

135. **Whelk potting fishery**: the Irish potting fleet targets whelk across a defined area from inshore grounds extending across the entirety of the array site (**Figure 12-3**). This distinct area of fishing ground specifically targeted for whelk runs along the southeast coast of Ireland and extends in places out to the 12 NM territorial seas limit. Landing statistics, fisheries mapping for vessels under 15 m length, and consultation with a range of stakeholders corroborate that Irish potting vessels actively target whelk in the region and across the grounds represented in **Figure 12-3**.

136. The area of whelk grounds that overlaps the commercial fisheries local study area covers an area of approximately 928 km^2. Based on the best available data, the area of whelk grounds that overlaps the array site is approximately 126 km^2, equating to 14% of the whelk grounds in the commercial fisheries local study area.

137. In addition to landing statistics, industry consultation undertaken by the FLO, together with the fisheries activity surveys, cite moderate–high levels of activity within the array site.

138. The consequence of the impact on the potting fleet targeting whelk is assessed as moderate, based on the loss of ability to carry on fishing activities within 14% of the grounds targeted in the local study area, noting that the vessels within the fleet under assessment routinely target areas inside the array site. The impact is predicted to be of local spatial extent. The duration of the impact will be short term and intermittent. The overall magnitude of impact is assessed as Medium adverse.

139. **Crab and lobster potting fishery**: The potting fleet targeting crab and lobster is understood to operate across grounds located closer to shore and not specifically targeting the array site. The consequence of the impact on the crab and lobster potting fishery is assessed as minor. The impact is predicted to be of local spatial extent, short term and intermittent. The overall magnitude of impact is assessed as Low adverse.

140. **Mussel seed fishery**: Known mussel beds do not regularly overlap the array site, although they are located immediately south and southwest of the array site. Currently, there is low risk of losing mussel seed fishing grounds or access to them within the array site during the construction phase. The impact is predicted to be of local spatial extent. The duration of the impact will be short term and intermittent. The magnitude of the impact is therefore considered to be Low adverse.

141. **Static netting fishery**: Known fishing grounds targeted by inshore static nets do not overlap the array site and are located close in shore and north of the CWP Project. The impact is predicted to be of local spatial extent. The duration of the impact will be short term and intermittent. The magnitude of the impact is therefore considered to be Low adverse.

142. **Scallop dredge**: Defined scallop grounds are located immediately north and outside of the array site and show consistent annual activity. These grounds are currently primarily targeted by Irish dredge vessels due to loss of reciprocal access to 6–12 NM Irish territorial waters for the UK fleet post-Brexit. The impact is predicted to be of local spatial extent. The duration of the impact will be short term and intermittent. The magnitude of the impact is therefore considered to be Low adverse.

143. **All other commercial fishing fleets**: Activity by other Irish and foreign fishing vessels (including pelagic otter trawl, demersal otter trawl, beam trawl, demersal seine and razor clam dredge) is understood to take place at very low levels in the proximity of the array site. This is informed by landing statistics, VMS data, fisheries' activity surveys and knowledge from the FLO. Overall, the array site supports very limited activity by these fisheries. The impact is predicted to be of local spatial extent. The duration of the impact will be short term and intermittent. In addition, a range of liaison and management measures will be implemented to minimise disturbance to fishing activities during construction. The magnitude of the impact is therefore considered to be Very low.

144. **Recreational fishing**: As referred to in **Section 12.6.5**, activity takes place from Arklow to Skerries, normally from May to September. Charter angling vessels target specific locations, such as wrecks or seabed features, dependant on the species being targeted. The activity takes place across a wider area and no specific wreck or angling feature is understood to be located within the array site. The array site is considered to represent a small proportion of the area available to this activity. The impact is predicted to be of local spatial extent. The duration of the impact will be short term and intermittent. The magnitude of the impact is therefore considered to be Low adverse.

145. **Aquaculture**: No aquaculture production sites are located in the vicinity of the array site. The magnitude of the impact is therefore considered to be Very low.

Significance of the effect

146. For the whelk potting fleet, the magnitude of the impact is deemed to be Medium adverse and the sensitivity of the receptor is considered to be Medium. The effect will, therefore, be of **Moderate** (adverse) significance, which is considered to be significant in EIA terms.

147. For the crab and lobster potting fleet, the static netting fleet and the mussel dredge fleet, the magnitude of the impact is deemed to be Low adverse and the sensitivity of the receptor is considered to be Medium. The effect will therefore be of **Minor** (adverse) significance, which is not significant in EIA terms.

148. For the scallop dredge fleet, the magnitude of the impact is deemed to be Low adverse and the sensitivity of the receptor is considered to be Low. The effect will therefore be of **Minor** (adverse) significance, which is not significant in EIA terms.

149. For all other fleets and aquaculture, the magnitude of the impact is deemed to be Very low and the sensitivity of the receptor is considered to be Low. The effect will therefore be **Negligible**, which is not significant in EIA terms.

150. For charter angling, the magnitude of the impact is deemed to be Low adverse and the sensitivity of the receptor is considered to be Medium. The effect will therefore be of **Minor** (adverse) significance, which is not significant in EIA terms.

151. Where flexibility in the proposed design exists, no other scenario would lead to a more significant effect.

Additional mitigation

152. In order to mitigate the potential effects on the whelk and crab and lobster fisheries during the construction phase, the Applicant has developed a FMMS.

153. It is the intention of the CWP Project to promote co-existence and to minimise potential disruption to normal commercial fishing practices. It is recognised, however, that there may be instances where the relocation of static fishing gear may be necessary as a result of survey or construction works. Where this is the case, CWP will endeavour to enter into reasonable, justifiable and evidence-based cooperation agreements with affected fishermen who can demonstrate a legitimate economic dependency on the CWP Project offshore development area wherever possible.

154. The CWP Project will follow standard procedures as outlined in the draft Seafood ORE Co-existence BPG, or other relevant guidelines and legislation in place at that time.

Residual effect assessment

155. For the whelk potting fleet, with the commitment of the FMMS, which details mitigation measures, including cooperation agreements and associated payments for the Irish whelk potting fleet, the impact magnitude is reduced to Low adverse, and the residual effect is of **Minor** (adverse) significance, which is not significant in EIA terms.

156. Where flexibility in the proposed design exists, no other scenario would lead to a more significant effect.

Impact 2: Loss of grounds or restricted access to fishing grounds within the OECC

157. During construction of the OECC, advisory safe passing distances will be in place where construction activities are taking place, and vulnerable sections of cables (i.e., awaiting burial or protection). The total construction duration for the cable installation in the OECC will be 12 months.

158. The construction footprint comprises the full OECC, including scour protection, cable crossings and cable protection plus the temporary footprint of preparatory works.

159. As per **Table 12-10**, primary mitigation measures for this impact include the CEMP, advisory safe passing distances, guard vessels, and regular fisheries' liaison.

Receptor sensitivity

160. The sensitivity of receptors is as defined for Impact 1 with justifications provided in paragraphs 126 to 131: summarised as Medium for potting (whelk and crab and lobster), netting, mussel dredge and charter angling, and Low for all other commercial fisheries' receptors and aquaculture.

Magnitude of impact

161. **Whelk potting fishery**: The whelk fishery is known to operate across most of the OECC, with the exception of a very close inshore portion, as indicated by fisheries' mapping for <15 m length potting vessels (**Figure 12-3**), landing statistics and industry consultation. The information relevant to this impact is as described in paragraphs 135 to 138.

162. The consequence of the impact on the potting fleet targeting whelk is assessed as moderate, based on the potential moderate loss of ability to carry on fishing activities during the construction phase, noting that vessels are likely to be requested to relocate potting gear from the OECC to accommodate the construction process. The potting vessels within the fleet under assessment have a moderate proportion of effort across the OECC. The impact is predicted to be of local spatial extent. The duration of the impact will be short term and intermittent. The overall magnitude of impact is assessed as Medium adverse.

163. **Crab and lobster potting fishery**: While the limited activity is recorded by the Irish potting fleet targeting crab and lobster, based on mapping of vessels <15 m in length (**Figure 12-3**), consultation indicates that a small number of local vessels routinely operate potting gear across the OECC while targeting brown crab and lobster. This is not corroborated by landing statistics, although uncertainties are identified with this dataset, specifically related to small vessels that are typical of those targeting inshore grounds.

164. With due regard to fishing industry consultation, coupled with the typical operational range of smaller inshore vessels, the consequence of the impact on the potting fleet targeting crab and lobster is expected to cause minor–moderate loss of ability to carry on fishing activities, covering a moderate extent of grounds available to this fleet. The impact is predicted to be of local spatial extent. The duration of the impact will be short term and intermittent. The overall magnitude of impact is assessed as Medium adverse.

165. **Static netting fishery**: Fishing grounds targeted by vessels deploying static nets have a very limited overlap with the OECC based on the mapping of vessels <15 m in length (**Figure 15** of **Appendix 12.3**), although grounds are identified immediately south of the OECC, close to shore at Dun Laoghaire. Consultation indicates that a small number of local vessels operate static netting gear to target blonde ray and other flatfish and round fish demersal species. Such inshore vessels typically switch between gear to target shellfish species using pots on a seasonal basis, and these fishing vessel businesses are therefore somewhat accounted for in the above potting assessments. Overall, the consequence of the impact on the netting fleet is expected to cause minor loss of ability to carry on fishing activities, covering a minor extent of grounds available to this fleet. The impact is predicted to be of local spatial extent. The duration of the impact will be short term and intermittent. The overall magnitude of impact is assessed as Low adverse.

166. **Scallop dredge**: The Irish and UK dredging fleet target scallop across a relatively wide area offshore and throughout the Irish Sea. It is noted that currently, UK vessels do not have access to the 6–12 NM territorial waters, but that Northern Irish vessels can fish from 0–6 NM based on the provisions of the Voisinage Arrangement which provides reciprocal access to fish in the 0–6 NM area.

167. Data for the study area, as described in paragraph 142, together with VMS data, indicate no dredging activity within the OECC (**Figures 10** to **13** of **Appendix 12.3**). Consultation with the industry indicates some inshore activity, but that the OECC is not routinely fished. The consequence of the impact to the Irish and UK dredge fleets is expected to cause minor loss of ability to carry on fishing activities, based on the limited and occasional overlap with the OECC. The impact is predicted to be of local spatial extent. The duration of the impact will be short term and intermittent. The overall magnitude of impact is assessed as Low adverse.

168. **Mussel seed fishery**: Known mussel beds are located in areas south of the OECC and do not overlap the OECC. Currently, there is a low risk of losing mussel seed fishing grounds or access to them within the OECC during the construction phase. The impact is predicted to be of local spatial extent. The duration of the impact will be short term and intermittent. The magnitude of the impact is therefore considered to be Low adverse.

169. **Pelagic trawl fishery**: VMS data indicate pelagic trawl activity very close to shore (**Figure 21** of **Appendix 12.3**) with a very small overlap with the OECC. It is understood from consultation with the industry that pelagic trawl fishery will operate on a seasonal basis targeting sprat in very close inshore waters. Within the regional study area, catches of sprat are more consistently targeted in ICES rectangles 33E2 and 33E3, far south of the CWP Project. It is noted that pelagic trawl vessels operate across very wide areas with an opportunity to catch this shoaling species across a wide area. The consequence of the impact to the Irish pelagic trawl fleet is expected to cause minor loss of ability to carry on fishing activities, based on the limited and highly seasonal overlap with the OECC. The overall magnitude of impact is assessed as Low adverse.

170. **All other commercial fishing fleets**: Activity by other Irish and foreign fishing vessels (including demersal otter trawl, beam trawl, demersal seine and razor clam dredge) is understood to take place at very low levels in the proximity of the OECC. This is informed by landing statistics, VMS data, fisheries activity surveys and knowledge form the FLO. Overall, the OECC supports very limited activity by these fisheries. The impact is predicted to be of local spatial extent. The duration of the impact will be short term and intermittent. In addition, a range of liaison and management measures will be implemented to minimise disturbance to fishing activities during construction. The magnitude of the impact is therefore considered to be Very low.

171. **Recreational fishing**: Activity is as described in paragraph 144. The activity takes place across a wider area and no specific wreck or angling feature is understood to be located within the OECC, which is considered to represent a small proportion of the area available to this activity. The impact is predicted to be of local spatial extent. The duration of the impact will be short term and intermittent. The magnitude of the impact is therefore considered to be Low adverse.

172. **Aquaculture**: No aquaculture production sites are located in the vicinity of the OECC. The magnitude of the impact is therefore considered to be Very low.

Significance of the effect

173. For the whelk and crab and lobster potting fleets, the magnitude of the impact is deemed to be Medium adverse and the sensitivity of the receptor is considered to be Medium. The effect will therefore be of **Moderate** (adverse) significance, which is considered to be significant in EIA terms.

174. For the mussel dredge fleet, the magnitude of the impact is deemed to be Low adverse and the sensitivity of the receptor is considered to be Medium. The effect will therefore be of **Minor** (adverse) significance, which is not significant in EIA terms.

175. For the scallop dredge fleet, the magnitude of the impact is deemed to be Low adverse and the sensitivity of the receptor is considered to be Low. The effect will therefore be of **Minor** (adverse) significance, which is not significant in EIA terms.

176. For the pelagic trawl fleet targeting inshore sprat, the magnitude of the impact is deemed to be Low adverse and the sensitivity of the receptor is considered to be Low. The effect will therefore be of **Minor** (adverse) significance, which is not significant in EIA terms.

177. For charter angling, the magnitude of the impact is deemed to be Low adverse and the sensitivity of the receptor is considered to be Medium. The effect will therefore be of **Minor** (adverse) significance, which is not significant in EIA terms.

178. For all other fleets and aquaculture, the magnitude of the impact is deemed to be Very low and the sensitivity of the receptor is considered to be Low. The effect will therefore be **Negligible**, which is not significant in EIA terms.

179. Where flexibility in the proposed design exists, no other scenario would lead to a more significant effect.

Additional mitigation

180. In order to mitigate the potential effects on the whelk and crab and lobster fisheries during the construction phase, the Applicant has developed a FMMS.

181. It is the intention of the CWP Project to promote co-existence and minimise potential disruption to normal commercial fishing practices. It is recognised, however, that there may be instances where the relocation of static fishing gear may be necessary as a result of survey or construction works. Where this is the case, CWP will endeavour to enter into reasonable, justifiable and evidence-based cooperation agreements with affected fishermen who can demonstrate a legitimate economic dependency on the CWP Project offshore development area wherever possible.

182. The CWP Project will follow standard procedures, as outlined in the draft Seafood ORE Co-existence BPG, or other relevant guidelines and legislation in place at that time.

Residual effect assessment

183. For the whelk and crab and lobster potting fleets, with the commitment of the FMMS, which details mitigation measures including cooperation agreements and associated payments for the Irish whelk, lobster and crab potting fleet active within the OECC, the impact magnitude is reduced to Low adverse, and the residual effect is of **Minor** (adverse) significance, which is not significant in EIA terms.

Impact 3: Displacement of fishing activity into other areas

184. Localised exclusion from fishing grounds during construction of the CWP Project, including the array site and OECC, may lead to temporary increases in fishing effort in other areas that may already be exploited, thereby leading to gear conflict and increased fishing pressure on adjacent grounds.

Receptor sensitivity

185. The sensitivity of receptors is as defined for Impact 1 with justifications provided in paragraphs 126 to 131; summarised as Medium for potting (whelk and crab and lobster), netting, mussel dredge and charter angling; and Low for all other commercial fisheries receptors and aquaculture.

Magnitude of impact

186. The impact is predicted to be of regional spatial extent, short-term duration, intermittent and with medium reversibility for all commercial fishing fleets. It is predicted that the impact will affect the receptor directly. The impact is of relevance to national fishing fleets as described below.

187. **Whelk and crab and lobster potting fishery**: Conflict over diminished grounds may occur if displaced potting gear is relocated into actively fished potting grounds. In practice, conflict can lead to the entanglement of potting lines, which is time consuming to separate and can create operational

difficulties (for example, the lines have to be cut and re-tied at each pot to disentangle and reassemble the string of pots).

188. When considering the impact of potters being displaced from the array site and / or OECC into grounds already targeted by potters two scenarios are feasible:

- Alternative fishing grounds are available to relocate gear, in which case gear conflict and displacement effects will be low; or
- Alternative fishing grounds are not available as adjacent areas are already being fished by potters, in which case the gear already on the ground limits the level of displacement. While there remains potential for gear conflicts and increased fishing pressure to arise, appropriately mitigated exclusion impacts will limit this.

189. The Applicant will seek to ensure that loss of access impacts are appropriately mitigated to minimise the displacement effect. The mitigation of the loss of access is taken into account for this assessment of the displacement. Taking this mitigation into consideration, the magnitude of the displacement impact is assessed to be Low adverse for the potting fleets targeting whelk and crab and lobster.

190. All other fisheries, including mussel dredge, netting and charter angling: displacement from the array site and / or OECC is not expected to affect these fisheries since key fishing grounds and activity are located outside of the CWP Project offshore development area. The magnitude of the displacement impact, including the potential for potters to be displaced into grounds targeted by mobile fishing gear, is assessed to be Low adverse.

Significance of the effect

191. For the whelk and crab and lobster potting, static netting, mussel dredge fleets and charter angling, the magnitude of the impact is deemed to be Low adverse and the sensitivity of the receptor is considered to be Medium. The effect will therefore be of **Minor** (adverse) significance, which is not significant in EIA terms.

192. For all other fleets and aquaculture, the magnitude of the impact is deemed to be Low adverse and the sensitivity of the receptor is considered to be Low. The effect will therefore be of **Minor** (adverse) significance, which is not significant in EIA terms.

193. Where flexibility in the proposed design exists, no other scenario would lead to a more significant effect.

194. Based on the predicted level of effect, it is concluded that no additional mitigation is required beyond the primary mitigation measures described in **Section 12.9**.

Impact 4: Interference with fishing activities

195. There is a potential for the propellers, rudders or towed survey equipment of installation and / or survey vessels to become entangled in fishing gear, thus causing interference to fishing activity through loss of fishing equipment. This is particularly relevant to static fishermen, as their gear is left deployed in the water for long periods of time, therefore creating a risk of entanglement of buoys and attachment lines.

196. In order to minimise gear losses, static gear fishermen generally avoid deploying their gear in shipping routes and areas of high shipping activity. Primary mitigation measures (**Section 12.9**) such as the FMMS and circulation of information via MN, will notify sea users of construction works. Additionally, the appointment of a FLO will aid in ensuring that local fishermen are made aware of the construction works. These measures should significantly reduce any risk to fishing gear being impacted by project vessels. Marine notice would be issued and procedures would be in place to avoid conflicts with visible

static gear deployed at sea as far as is reasonably possible. Also, there shall be a loss or damage to fishing gear claim procedure in place which shall be specified within the FMMS.

Receptor sensitivity

197. **Potting and static netting fisheries:** Construction traffic is likely to constrain most potting and static netting activity across established construction supply routes due to the vulnerability of the marker buoys to the propellers of passing construction vessels. It is noted that shipping routes currently exist in the vicinity of the CWP Project and that the construction vessels are likely to follow these existing routes where possible. The potting and static netting fisheries are deemed to be of medium vulnerability, moderate recoverability and low-medium value. The sensitivity of these receptors is therefore considered to be Medium.

198. **All other commercial fishing fleets** and **charter angling** are expected to be in a position to avoid the CWP Project offshore development area and associated vessel traffic with low likelihood of interaction. The sensitivity of these receptors is therefore considered to be Low.

199. **Aquaculture:** The sensitivity for aquaculture is predicted to be Very low due to no anticipated interaction with construction vessels.

Magnitude of impact

200. Vessel movements (i.e., construction vessels transiting to and from areas undergoing construction works) related to the construction of CWP Project will add to the existing level of shipping activity in the area (see **Chapter 16 Shipping and Navigation** for a full assessment of additional vessel movements).

201. Continuous liaison with the fishing industry will be undertaken including the location and duration of construction activities; further details will be provided in the FMMS.

202. With sufficient notice, all fishing fleets are considered to be able to avoid vessel movements related to CWP Project construction. The impact is predicted to be of regional spatial extent, short-term duration, intermittent and with high reversibility for all commercial fishing fleets. It is predicted that the impact will affect the receptor directly. The magnitude is therefore considered to be Low adverse for all potting and static netting fleets and Very low for all other fisheries, charter angling and aquaculture.

Significance of the effect

203. For the whelk and crab and lobster potting and static netting fisheries, the magnitude of the impact is deemed to be Low adverse and the sensitivity of the receptor is considered to be Medium. The effect will therefore be of **Minor** (adverse) significance, which is not significant in EIA terms.

204. For all other fleets, charter angling and aquaculture, the magnitude of the impact is deemed to be Very low and the sensitivity of the receptor is considered to be Low. The effect will therefore be **Negligible**, which is not significant in EIA terms.

205. Where flexibility in the proposed design exists, no other scenario would lead to a materially different effect.

206. Based on the predicted level of effect, it is concluded that no additional mitigation is required beyond the primary mitigation measures described in **Section 12.9**.

Impact 5: Potential for gear snagging

207. The inter-array cables and offshore export cables and associated cable protection, together with any structures (and associated scour protection) on the seabed or in the water column represent potential snagging points for fishing gear and could lead to damage to, or loss of, fishing gear. Safety aspects related to commercial fishing vessels are assessed within **Chapter 16 Shipping and Navigation**.

208. In addition, obstacles on the seabed present the same risk, including potential exposed cables, objects accidentally dropped by construction vessels, uneven ground created as a result of installation activities, and spoil mounds resulting from vessel anchoring.

209. This impact considers the economic loss of fishing gear, and while safety aspects are noted, they are assessed within **Chapter 16 Shipping and Navigation** in terms of being **as low as reasonably practicable (ALARP)**.

Receptor sensitivity

210. **Potting and static netting fisheries**: Potters and static netters show a lower vulnerability to gear snagging with CWP Project-related infrastructure under construction because this gear is placed, not towed and is less likely to penetrate the seabed. The sensitivity of potters and static netters is considered to be Low.

211. **Pelagic otter trawl**: This gear is designed to be deployed within the water column, with minimal seabed contact. Potential exists for the gear to snag with infrastructure within the water column, such as WTGs. However, the spread and lead-in distance required to set pelagic, mid-water trawl nets means that operation within the array site is highly unlikely. The sensitivity of pelagic trawl to snagging CWP Project infrastructure is considered to be Low.

212. **All other fleets**: Due to the nature and operation of mobile gear (i.e., it is actively towed, and dredge, otter trawl and beam trawl gear directly penetrates the seabed with near continuous contact) there is increased vulnerability to this impact and the sensitivity is therefore considered to be Medium for mobile gear fisheries.

Magnitude of impact

213. **All fisheries:** Snagging poses a risk to fishing equipment and in extreme cases may potentially lead to the capsizing of vessel and crew fatalities, as well as damage to subsea infrastructure. Three phases of interaction are possible: initial impact of gear and subsea infrastructure; pullover of gear across subsea infrastructure; and snagging or hooking of gear on the subsea infrastructure. The snagging or hooking of fishing gear with infrastructure / cables on the seabed is the most hazardous to the vessel and crew due to the possibility of capsizing.

214. Specifically, the consequences of snagging an exposed cable could range from damage to gear and the cable, loss of stability due to lines being put under strain and in the worst case, capsizing of a vessel, men overboard and the risk of injury or fatality. For example, a risk of capsizing could occur if the vessel attempted to free its gear by raising the cable rather than slipping and releasing the gear.

215. The frequency of this impact is considered to be remote, assuming the cable is left exposed for a limited period of time during construction, although the potential severity is considered to be serious. The potential for incidents can be reduced through listed primary mitigation measures.

216. In addition to exposed cables, given the safety implications associated with the interaction of fishing gear and obstacles on the seabed, any risks resulting from potential obstacles on the seabed will be

rectified before removing any advisory safe passing distances. In addition, as mentioned in the primary mitigation measures above (**Section 12.9**), discarding objects or waste at sea is prohibited by offshore policy (IMO, 1996) and the reporting and potential recovery of any accidentally dropped objects will be specified through the FMMS. Also, timely and efficient MN and other navigational warnings (e.g., appropriate marking on charts where applicable) would be issued to the fishing community.

217. For all other obstacles on the seabed apart from exposed cable (e.g., dropped objects and spoil mounds), given the reporting procedures and due to the lack of scheduling information, fishing is assessed as not occurring within areas considered to be advisory safe passing distances until installation activities are complete, where upon they will be surveyed to confirm burial depth and seabed conditions.

218. In addition, post-lay and burial inspection surveys will be undertaken after the cables are installed into the seabed to assess the seabed status. In addition to burial status, these will identify the presence of construction-related seabed obstacles and, where appropriate and practicable, rectification works would be undertaken.

219. It is considered likely that fishermen will operate appropriately by avoiding the indicated infrastructure and cable protection under construction at the defined locations and associated advisory safe passing distances. This assumes that adequate notification of the locations of any snagging hazards has been provided as secured through the FMMS. Overall, it is considered that commercial fishing vessel operators are highly likely to avoid the infrastructure and cable protection within the array site and OECC.

220. In the instance that snagging does occur, the FMMS provides a procedure for cutting / slipping gear and dealing with claims for loss or damage of gear.

221. The impact is predicted to be of local spatial extent, short-term duration, intermittent and with low reversibility. It is predicted that the impact will affect the receptor directly. Based on the measures that will be implemented as part of the CWP Project and the commitment of CWP Project to follow standard protocols in relation to reimbursement for loss of gear should snagging occur, the magnitude is considered to be Low adverse for all fleets.

Significance of the effect

222. For the whelk and crab and lobster potting and static netting fisheries, the magnitude of the impact is deemed to be Low adverse and the sensitivity of the receptor is considered to be Low. The effect will therefore be of **Minor** (adverse) significance, which is not significant in EIA terms.

223. For all other mobile gear fisheries, the magnitude of the impact is deemed to be Low adverse and the sensitivity of the receptor is considered to be Medium. The effect will therefore be of **Minor** (adverse) significance, which is not significant in EIA terms.

224. In addition, in relation to safety implications, the conclusion from **Chapter 16 Shipping and Navigation** is: With the application of primary mitigation, safety issues for fishing vessels associated with obstacles on the seabed would be **ALARP**.

225. Where flexibility in the proposed design exists, no other scenario would lead to a materially different effect.

Impact 6: Temporary increases in steaming times

226. The advisory safe passing distances around infrastructure under construction and around mobile installation vessels has the potential to result in some temporary and short-term increases in steaming times for vessels navigating around them to access fishing grounds.

227. The impact is predicted to be of local spatial extent, short-term duration, intermittent and with high reversibility. It is predicted that the impact will affect the receptor directly.

Receptor sensitivity

228. **Whelk, crab and lobster potting and static netting fleets**: The majority of local vessels are under 12 m in length and have limited operational ranges. Given their operational range and size, they have limited capability to adapt to changes in steaming routes to / from fishing grounds. The sensitivity of these receptors is therefore considered to be Medium.

229. **Mussel seed fishery**: For vessels targeting mussel seed, given the discrete areas where mussel beds are located and as only some of these are available for fishing in a given season, they are also considered to have limited capability to adapt to changes in steaming routes to / from fishing grounds. The sensitivity of the receptor is therefore considered to be Medium.

230. **All other fleets and charter angling**: Other fishing vessels potentially active at times in the local study area include vessels that operate towed fishing gears (both Irish and foreign vessels). These vessels have more extensive operational ranges and are able to exploit a varied range of fishing grounds. These vessels therefore have higher adaptability to changes in steaming routes to / from fishing grounds. The sensitivity of the receptor is therefore considered to be Low.

Magnitude of impact

231. **All fisheries:** Increased steaming time may happen under two scenarios:

- (1) Fishing vessels having to travel further to access alternative grounds due to loss of access not within the CWP Project offshore development area (this scenario is linked to the displacement impact assessment); or
- (2) Fishing vessels having to travel further to reach grounds being targeted outside the CWP Project offshore development area due to avoiding construction on their normal route (this scenario is linked to **Chapter 16 Shipping and Navigation**).
- Both scenarios require having to route around construction activities.

232. It is considered that such increases in steaming times are likely to be of short duration (minutes) and encompassing such small areas, they are not expected to result in any discernible increases in either steaming times or vessel running costs.

233. All fishing fleets and charter angling businesses included in this assessment operate across a range of grounds not limited to the CWP Project. Fishing vessel operators choose to fish specific locations for a variety of reasons and with sufficient notice are able to plan their fishing activities to avoid specific areas undergoing construction activities. This impact will lead to a highly localised increases in steaming times for a small number of vessels during the period of construction. It is predicted that the impact will affect the receptor directly. The impact is predicted to be of very small spatial extent and short-term duration, and a range of fisheries liaison and management measures will be implemented. For all fishing fleets, the magnitude is therefore considered to be Very low.

Significance of the effect

234. For the whelk and crab and lobster potting and static netting fisheries, the magnitude of the impact is deemed to be Very low and the sensitivity of the receptor is considered to be Medium. The effect will therefore be of **Minor** (adverse) significance, which is not significant in EIA terms.

235. For all other fisheries and charter angling, the magnitude of the impact is deemed to be Very low and the sensitivity of the receptor is considered to be Low. The effect will therefore, be of **Negligible** significance, which is not significant in EIA terms.

236. Where flexibility in the proposed design exists, no other scenario would lead to a materially different effect.

237. Based on the predicted level of effect, it is concluded that no additional mitigation is required beyond the primary mitigation measures described in **Section 12.9**.

Impact 7: Effects on commercially exploited species

238. Temporary noise and vibration, and seabed disturbances may displace commercially important fish and shellfish populations from the area. This section assesses the potential temporary subsequent impact for the owners of fishing vessels, where commercially important stocks may be disturbed or displaced to a point where normal fishing practices would be affected.

239. With respect to the magnitude of this impact on commercial fisheries, the overall significance of the effect on fish and shellfish species is considered (i.e., both the magnitude and sensitivity of fish and shellfish species are considered to assess the magnitude on commercial fishing fleets). This is because the overall effect on the fish and / or shellfish species relates directly to the availability and amount of exploitable resource. For instance, where an effect of Minor significance is assessed for a species, a Low magnitude is assessed for commercial fishing; where an effect of Moderate adverse significance is assessed for a species, a Medium magnitude is assessed for commercial fishing, and so on.

Sensitivity of the receptor

240. **Whelk and crab and lobster potting and scallop and mussel dredge fisheries**: There is potential for fishing grounds beyond the immediate construction activities to be affected by these impacts. Exposure to the impact is likely and commercial fleets targeting key species will be affected, specifically potting and dredge fisheries targeting benthic shellfish species (including whelk, crab, lobster and scallop) that have limited ability to move. The sensitivity of the receptor for all potting and dredge fleets is therefore considered to be Medium.

241. **Charter angling businesses**: There is potential for fish behaviour to be impacted and therefore charter angling may be more sensitive to resource impacts given the need for fish to be in foraging behaviour to be caught by angling. The sensitivity of the receptor is therefore Medium.

242. **All other fleets:** Due to the range of alternative areas targeted and the distribution of other commercial species throughout the Irish Sea, fleets are deemed to be of low vulnerability and high recoverability. The sensitivity of all other fleets is therefore considered to be Low.

Magnitude of the impact

243. **All fisheries:** There is potential for the construction phase of the CWP Project to result in impacts on commercially exploited fish and shellfish species. This could in turn indirectly affect the productivity of the fisheries that depend on them.

244. The potential impacts of the construction of the CWP Project on fish and shellfish species, including those of commercial importance, are assessed in **Chapter 9 Fish, Shellfish and Turtle Ecology** including consideration of the following:

- Temporary habitat loss / disturbance due to construction activities;
- Increased suspended sediment concentrations and associated sediment deposition due to foundation and cable installation;
- Injury and / or disturbance to fish and shellfish from underwater noise and vibration during pile-driving; and
- Accidental pollution.

245. The assessment presented in **Chapter 9 Fish, Shellfish and Turtle Ecology** did not predict any residual impacts to be greater than of **Minor (adverse)** significance on fish and shellfish species, with details of the fish and shellfish ecology assessment summarised in **Table 12-11**. Consequently, any associated impacts on the commercial fisheries that target these species are also not expected to exceed a Low adverse magnitude of impact.

Table 12-11 Significance of effects of construction phase impacts on fish and shellfish ecology

Potential impact	Magnitude	Sensitivity	Significance of effect
Temporary seabed habitat disturbance	Low adverse	Medium	Minor adverse
Noise and vibration	Migratory species (Barrier effects in the River Liffey): Up to High adverse	Up to High	Up to profound, with additional mitigation to reduce residual significance to Minor adverse
	All other species: Low adverse	Medium	Minor adverse
Temporary disturbance of the seabed leading to increases in SSC and associated deposition.	Low adverse	Medium	Minor adverse
Collision with vessels	Negligible	High	Minor adverse
Accidental pollution events	Negligible	High	Minor adverse
Invasive non-native species	Negligible	High	Minor adverse

Significance of the effect

246. For the whelk, crab and lobster potting, dredge fisheries and charter angling, the magnitude of the impact is deemed to be Low adverse, and the sensitivity of the receptor is considered to be Medium. The effect will therefore be of **Minor** (adverse) significance, which is not significant in EIA terms.

247. For all other fisheries, the magnitude of the impact is deemed to be Low adverse, and the sensitivity of the receptor is considered to be Low. The effect will therefore be of **Minor** (adverse) significance, which is not significant in EIA terms.

248. Where flexibility in the proposed design exists, no other scenario would lead to a materially different effect.

12.10.2 Operation and maintenance

249. The impacts described below should be considered in the context of the design life of the CWP Project (approximately 25 years).

250. The same receptor sensitivities identified for the construction phase apply for assessment of impacts during operation, as referenced in this section.

Impact 1: Loss of grounds or restricted access to fishing grounds within the array site

251. The assessment assumes that commercial fisheries will be prevented from actively fishing on top of the physical locations of installed infrastructure within the array site together with an advisory safe operating distance during operation and advisory safe passing distances for major maintenance activities, as set out in **Table 12-8**.

252. Out with this area, the assessment assumes that fishing will not be prohibited from within the array site where WTG spacing and layout allow productive grounds to be targeted. However, it is recognised that the level of fishing may not resume to full levels pre-construction of the CWP Project due to the physical presence of infrastructure within the site. In addition, the individual decisions made by the skippers of fishing vessels with their own perception of risk will determine the likelihood of whether their fishing will resume within the array site. Inclement weather will be a significant contributor to this risk perception and may be more restrictive during winter months. The type and dimension of fishing gear also influences the potential opportunities within the array site. For example, trawl and dredge gear typically requires a greater distance for safe operation and this gear is unlikely to target grounds in the vicinity of infrastructure.

253. The CWP Project is fully committed to co-existence with the fishing industry within the array site and supports the resumption of fishing during the operational and maintenance phase.

254. The Applicant will, where practicable, bury all IACs and interconnector cables to a minimum depth of cover of 1 m. Likewise, the Applicant will bury all offshore export cables within the OECC to a minimum depth of cover of 1.4 m. This will provide the cables with protection against damage and reduce interference with fishing activities and other sea users. Where, following cable burial, the minimum depth of cover is inadequate due to unforeseeable seabed conditions, cable protection will be implemented as mitigation to avoid risks to other marine operations.

255. Secondary cable protection within the array site and OECC will be achieved by covering the exposed cables with rock placement. This ensures that cables remain protected from natural movements of the seabed and from anthropogenic factors that may cause damage to a cable (e.g., trawling or anchors).

In addition to rock placement, cable protection within the OECC will be required at cable crossing locations using concrete mattresses.

256. A preliminary cable burial risk assessment, taking into consideration the location of cable crossings, has been undertaken to identify locations that may require cable protection. This exercise has determined an anticipated maximum extent and volume of cable protection within the array site and OECC, which has been used as a basis for the EIA.

257. It should be noted that cable burial is the preferred method of protection, and secondary cable protection will only be used where the minimum depth of cover is not appropriate or achievable. Where required, the location and type of cable protection used will be communicated to the fishing industry.

258. Primary mitigation measures (**Section 12.9**) including the FMMS will ensure ongoing communication and consultation with the fleet to ensure adequate notification of maintenance.

259. The operational phase of the CWP Project is proposed to be 25 years.

Receptor sensitivity

260. The sensitivity of receptors is as defined for Impact 1 in Construction, with justifications provided in paragraphs 126 to 131; summarised as Medium for potting (whelk and crab and lobster), netting, mussel dredge and charter angling; and Low for all other commercial fisheries receptors and aquaculture.

Magnitude of impact

261. **Potting fishery**: A potting fishery research study by Roach et al., (2018) investigated the effect of the construction and operation of the Westermost Rough offshore wind farm on established lobster fishing grounds (noting that this site lies approximately 8 km off the Holderness coast in eastern England, UK). The study concluded that:

- The temporary closure during the construction period offered some respite from fishing pressure for adult lobsters and led to an increase in abundance and size of lobster in the wind farm area;
- Reopening of the site to fishing exploitation saw a decrease in catch rates and size structure, but this did not reach levels below that of the surrounding area;
- Opening the site to exploitation allowed the fishery to recuperate some of the economic loss during the closure; and
- Finally, the authors conclude that temporary closures of selected areas may be beneficial to lobster fisheries and should be considered as a management option for lobster fisheries.

262. A similar research project is proposed for Hornsea Four (also east coast of England) to investigate the effect of offshore wind farm construction on brown crab.

263. It is understood that whelk fishermen off north Wales and in the North Sea operate within operational wind farms. It is therefore expected that potting activity can resume within the array site during the operation and maintenance phase.

264. Based on the concerns expressed by the industry, it is not possible to assume that fishing will resume to the full extent of pre-project conditions. Based on the value of the whelk fishery, the recognition of the importance of this area to the local fleets under assessment, coupled with stakeholder concern regarding the level of which fishing will resume, it is assessed to potentially lead to a substantial loss of ability to carry on fishing activities and access the whelk resource within the operational wind farm. The magnitude of the impact is therefore considered to be Medium adverse. This assessment takes

into account high uncertainty as to the extent to which fishing may resume within the array area and is therefore recognised as precautionary.

265. Potting for crab and lobster, static netting, mussel dredge, scallop dredge, otter trawl and beam trawl fisheries and charter angling: while occasional activity is noted, the presence of the array site is not expected to restrict the baseline operation of these fisheries. The magnitude of the impact is therefore considered to be Low adverse.

266. All other fisheries: the razor shell and pelagic fisheries do not target the array site and are not expected to do so during the operational phase. The magnitude of the impact is therefore considered to be Very low.

267. Aquaculture: there is no aquaculture present in the array site. The magnitude of the impact is therefore considered to be Very low.

Significance of the effect

268. For the whelk potting fleet, the magnitude of the impact is deemed to be Medium adverse, and the sensitivity of the receptor is considered to be Medium. The effect will therefore be of **Moderate** (adverse) significance, which is considered to be significant in EIA terms.

269. For crab and lobster potting, static netting, mussel dredge and charter angling, the magnitude of the impact is deemed to be Low adverse, and the sensitivity of the receptor is considered to be Medium. The effect will therefore be of **Minor** (adverse) significance, which is not considered to be significant in EIA terms.

270. For the scallop dredge, otter trawl and beam trawl fisheries, the magnitude of the impact is deemed to be Low adverse and the sensitivity of the receptor is considered to be Low. The effect will therefore be of **Minor** (adverse) significance, which is not significant in EIA terms.

271. For all other fleets and aquaculture, the magnitude of the impact is deemed to be Very low and the sensitivity of the receptor is considered to be Low. The effect will therefore be **Negligible**, which is not significant in EIA terms.

272. Where flexibility in the proposed design exists, no other scenario would lead to a materially different effect.

Additional mitigation

273. The Applicant has developed a FMMS, which includes measures to enable co-existence and therefore further mitigate the effect, including during the operational phase of the CWP Project. This includes timely notification of any maintenance activity, and clear information on the location of CWP Project infrastructure, including scour protection and lighting and marking.

274. The level of resumption of the whelk potting fishery within the array site is uncertain, and the assessment takes this uncertainty into account with a precautionarily assessment of Moderate impact significance. As such the following mitigation is proposed:

- Pre- and post-construction monitoring of whelk CPUE within the array site, including a control site outside the array site; and
- Gear trials to assess the practicality of potting activity within the operational array site. This could include support in alterations to normal gear configurations, such as the number of pots per string and / or direction the gear is set with respect to WTG locations.

Residual effect assessment

275. For the whelk potting fleet: With the additional mitigation to facilitate the co-existence and monitoring of whelk catch rates, the impact magnitude is reduced to Low adverse, and the residual effect is of **Minor adverse** significance, which is not significant in EIA terms.

Impact 2: Loss of grounds of restricted access to fishing grounds within the OECC

276. A temporary advisory safe passing distance is recommended around vessels engaged in export cable repair works, and the presence of cable protection could limit fishing opportunities within localised areas.

Receptor sensitivity

277. All fleets are considered to have an operational range beyond that of the OECC. All fleets, except potting and static netting, are considered to have low levels of dependence on the OECC, be highly adaptable, with high recoverability and low value; the sensitivity of all other fleets is considered to be Very low. The potting fleet and static netting fleet, understood to be more active in inshore waters, are deemed to be of medium vulnerability, high recoverability and low value. The sensitivity of this receptor is considered to be Low.

Magnitude of impact

278. The European Subsea Cables Association notes that cables are potentially subsea hazards, and that while great effort is made to bury and protect them, mariners should never assume that cables are completely buried. Furthermore, the NP 100 Mariners Handbook (UK Hydrographic Office, 2020) advises that: "every care should be taken to avoid anchoring, trawling, fishing, dredging, drilling or carrying out any other activity in the vicinity of cables which might damage them".

279. Notwithstanding this, subsea cables are widespread throughout the waters of Europe, providing power and telecommunications links, and it is understood that fishing does take place in the vicinity of subsea cables (KIS-ORCA, 2019). Such scenarios of fishing over a subsea cable is considered more likely for potting gear which is not trawled or dredged across the seabed.

280. For the purposes of this assessment, it is assumed that fishermen will be well informed of the location and integrity of the offshore export cables, i.e., locations of protection, details of routine cable integrity surveys and the location and schedule of any maintenance works, and that based on this knowledge will seek to exploit grounds across the offshore export cables with caution. The assessment therefore assumes that fishing will resume within the vicinity of the export cables. Any known cable exposures will be communicated via MN and Kingfisher.

281. Marine Notices will be issued in advance of any maintenance works. Potting vessels targeting whelk and / or crab and lobster, and vessels deploying static netting may be required to temporarily relocate pots during maintenance works, although such works are likely to be infrequent. With sufficient notice, otter trawling and scallop dredging vessels are expected to be able to avoid maintenance works. Beam trawling, mussel seed, razor shell and pelagic fisheries are not expected to take place within the OECC.

282. The impact is predicted to be of very local spatial extent and of temporary duration for maintenance works that may be required along the export cables. It is predicted that the impact will affect the

receptor directly. Given that fishing is likely to resume across the majority of the OECC, the magnitude is considered to be Low adverse for potting and static netting and Very low for all other fleets.

Significance of the effect

283. For the whelk and crab and lobster potting and static netting fisheries, the magnitude of the impact is deemed to be Low adverse, and the sensitivity of the receptor is considered to be Low. The effect will therefore be of **Minor** (adverse) significance, which is not significant in EIA terms.

284. For all other fisheries, charter angling and aquaculture, the magnitude of the impact is deemed to be Very low, and the sensitivity of the receptor is considered to be Very low. The effect will therefore be of **Negligible** significance, which is not significant in EIA terms.

285. Where flexibility in the proposed design exists, no other scenario would lead to a materially different effect.

Impact 3: Displacement of fishing activity into other areas

286. Exclusion from fishing grounds during operation and maintenance of the CWP Project may lead to increases in fishing effort in other areas that may already be exploited, thereby leading to gear conflict.

287. Notifications of maintenance activity, liaison with all relevant fishers, and appointment of a FLO to enable efficient dissemination of information and to facilitate effective communication with fishers will all act to reduce the effects of this impact by enabling fishers to take account of any ongoing works.

Receptor sensitivity

288. The sensitivity of receptors is as defined for Impact 1 in Operation, with justifications provided in paragraphs 126 to 131; summarised as Medium for potting (whelk and crab and lobster), netting, mussel dredge and charter angling; and Low for all other commercial fisheries receptors and aquaculture.

Magnitude of impact

289. The impact is predicted to be of local spatial extent, short-term duration, intermittent and with high reversibility. It is predicted that the impact will affect the receptor directly. Given that potting can resume across the OECC and within the array area (to the extent practicable and subject to proposed mitigation), the magnitude for potting is considered to be Low adverse.

290. The magnitude of impact of displacement during the operational and maintenance phase is expected to be lower than that during construction for all other fleets and is therefore assessed as Very low adverse.

Significance of effect

291. For the whelk and crab and lobster potting and static netting fisheries, the magnitude of the impact is deemed to be Low adverse, and the sensitivity of the receptor is considered to be Medium. The effect will therefore be of **Minor** (adverse) significance, which is not significant in EIA terms.

292. For all other fisheries, charter angling and aquaculture, the magnitude of the impact is deemed to be Very low, and the sensitivity of the receptor is considered to be Low. The effect will therefore be of **Negligible** significance, which is not significant in EIA terms.

293. Where flexibility in the proposed design exists, no other scenario would lead to a more significant effect.

294. Based on the predicted level of effect, it is concluded that no additional mitigation is required beyond the primary mitigation measures described in **Section 12.9**.

Impact 4: Interference with fishing activity

295. The effects of the operational and maintenance phase are expected to be the same as or similar to the effects from construction. The significance of effect is therefore **Minor** adverse for whelk and crab and lobster potting and static netting fisheries and **Negligible** for all other fleets, which is not significant in EIA terms.

Impact 5: Potential for snagging of gear

296. The effects of the operation and maintenance phase are expected to be the same as or similar to the effects from construction. The significance of effect is therefore **Minor** adverse for all commercial fisheries receptors, which is not significant in EIA terms.

Impact 6: Increased steaming times

297. The advisory safe operating distances around installed infrastructure such as WTGs (maximum of 75) and OSSs (maximum of three) together with advisory safe passing distances around infrastructure undergoing maintenance activities and around mobile installation vessels has the potential to result in some temporary and short-term increases in steaming times for vessels navigating around them to access fishing grounds.

298. However, maintenance and repair activities are likely to be infrequent with any potential advisory safe passing distances being highly localised and temporary. Increased steaming times that may result from activities during the operation phase will not exceed that already assessed for the construction phase, summarised as **Minor** adverse for whelk and crab and lobster potting and static netting fisheries and **Negligible** for all other fishing fleets.

299. Where flexibility in the proposed design exists, no other scenario would lead to a materially different effect.

300. Based on the predicted level of effect, it is concluded that no additional mitigation is required beyond the primary mitigation measures described in **Section 12.9**.

Impact 7: Effects on commercially exploited species.

301. This impact relates to any potential change in the resource that is targeted by commercial fishing fleets in the CWP Project local and regional study area.

Receptor sensitivity

302. The fleets are deemed to be of low vulnerability, high recoverability and medium-low value. The sensitivity of the receptor for all fleets, except whelk potting, is therefore considered to be Low. Based on the value of the whelk fishery, together with the relative low mobility of the target species, coupled with concern raised by fishing industry stakeholders, the sensitivity is considered to be Medium.

Magnitude of impact

303. Detailed assessments of the following potential operation and maintenance impacts have been undertaken in **Chapter 9 Fish, Shellfish and Turtle Ecology**:

- Long-term loss of habitat due to the presence of WTG foundations, scour protection and cable protection;
- Increased hard substrate and structural complexity as a result of the introduction of turbine foundations, scour protection and cable protection; and
- EMF effects arising from cables during operational phase.

304. The approach to this assessment follows that outlined for construction, with details of the fish and shellfish ecology assessment summarised in **Table 12-12**.

Table 12-12 Significance of effects of operational phase impacts on fish and shellfish ecology

Potential impact	Magnitude	Sensitivity	Significance of effect
Long-term loss of habitat due to the presence of turbine foundations, scour protection and cable protection	Low adverse	Medium	Minor adverse
Increased hard substrate and structural complexity as a result of the introduction of turbine foundations, scour protection and cable protection	Low adverse	Medium	Minor adverse
EMF effects arising from cables during operational phase	Low adverse	Low	Minor adverse
Long-term loss of habitat due to the presence of turbine foundations, scour protection and cable protection	Low adverse	Medium	Minor adverse

305. The impact on commercial fishing fleets is predicted to be of local spatial extent, of relevance to national fishing fleets, and of long-term duration. It is predicted that the impact will affect the receptor

directly through loss of resources. The magnitude is therefore considered to be Low adverse for whelk, crab and lobster potting fleets and Very low for all other fleets in relation to all potential impacts.

Significance of effect

306. For the whelk potting fleet, the magnitude of the impact is deemed to be Low adverse and the sensitivity of the receptor is considered to be Medium. The effect will therefore be of **Minor** (adverse) significance, which is not considered to be significant in EIA terms.

307. For all other fleets, the magnitude of the impact is deemed to be Very low adverse, and the sensitivity of the receptor is considered to be Low. The effect will therefore be of **Minor** (adverse) significance, which is not considered to be significant in EIA terms.

308. Where flexibility in the proposed design exists, no other scenario would lead to a materially different effect.

12.10.3 Decommissioning phase

309. Decommissioning is likely to include removal of all of the wind turbine components and part of the foundations (those above seabed level). Some or all of the array cables, interconnector cables, and offshore export cables may be removed. Scour and cable protection would likely be left in situ.

310. Therefore, during decommissioning, there would be the potential for wind turbine, foundation, and cable removal activities to cause disruption to normal fishing activity.

311. The types of effect would be comparable to those identified for the construction phase, namely:

- Impact 1: Loss of grounds or restricted access to fishing grounds within the array site;
- Impact 2: Loss of grounds or restricted access to fishing grounds within the OECC;
- Impact 3: Displacement of fishing activity into other areas;
- Impact 4: Interference with fishing activities;
- Impact 5: Potential for snagging of gear;
- Impact 6: Increased steaming times to fishing grounds; and
- Impact 7: Effects on commercially exploited species.

312. The effects of decommissioning activities are expected to be the same as or similar to the effects from construction for all impacts, as presented in **Section 12.10.1**.

12.11 Cumulative Impacts

313. A fundamental component of the EIA is to consider and assess the potential for cumulative effects of the CWP Project with other projects, plans and activities (hereafter referred to as ‘other development’).

314. **Appendix 12.1** presents the findings of the Cumulative Effects Assessment (CEA) for commercial fisheries, which considers the residual effects presented in **Section 12.10** alongside the potential effects of other proposed and reasonably foreseeable other development.

315. A summary of the CEA for commercial fisheries is presented below.

316. The potential impacts considered for cumulative assessment for all project phases are:

- Impact 1: Loss of grounds or restricted access to established fishing grounds;
- Impact 2: Displacement of fishing activity into other areas; and
- Impact 3: Effects on commercially exploited species.

317. All other impacts are scoped out of cumulative assessment due to the highly localised nature of the impacts. Given the scale of CWP Project-alone effects, there would be no interaction of effects; additive effects across the study area would be negligible across projects.

318. The potential for cumulative impacts to occur would largely depend on the operational practices of each particular fishery, the location and extent of their grounds relative to other developments and the timing of construction phases.

319. Other projects / activities with the potential to result in cumulative impacts include offshore wind farm projects, aggregate dredging activity, oil and gas activity and the implementation of restrictions to fishing in marine protected areas (MPAs).

320. Offshore wind farms and aggregate dredging areas considered in the cumulative assessment are the Arklow Bank Phase 2, Dublin Array, North Irish Sea Array, Oriel, Malahide Marina Village Ltd, Marine aggregate deposit in Irish Sea and the East West Interconnector.

321. Overall, the CEA found that loss of grounds or restricted access would be mitigated by individual projects and thereby a significant cumulative effect was not predicted at any phase.

322. For the displacement of potting vessels targeting whelk, projects are considered to have a similar individual, but additive contribution to cumulative magnitude impacts related to displacement. These vessels will be displaced into areas already targeted for whelk, leading to increased competition for space and increased pressure on the whelk resources. Displacement occurring across multiple projects is difficult to attribute to a specific project, with displaced vessels likely to seek alternative grounds, leading to increased competition. Displacement of potting vessels was therefore assessed to form a significant cumulative effect during the construction phase only.

323. The Applicant is committed to involvement with the Seafood / ORE Working Group as an approach to mitigating displacement effects is developed within this Working Group. The residual effect is therefore not significant.

12.12 Transboundary Impacts

324. Transboundary impacts can exist where the impacts of the offshore development area extend beyond the Irish waters, either in isolation of the CWP Project or cumulatively with other projects in the wider area.

325. Due to the nature of the assessment, which considers all fisheries that use the area and which may be affected by the CWP Project, and the resolution of international fishing effort data that do not distinguish between the nationality of fishers due to data protection laws, it is considered that any transboundary effects are inherently considered within the assessment and that no significant effects of the CWP Project alone or cumulatively were identified and thus, no transboundary effects are considered likely to occur.

12.13 Inter-relationships

326. The inter-related effects assessment considers the potential for all relevant effects across multiple topics to interact, spatially and temporally, to create inter-related effects on a receptor group. This includes incorporating the findings of the individual assessment chapters to describe potential additional effects that may be of greater significance when compared to individual effects acting on a receptor group.

327. The term 'receptor group' is used to highlight the fact that the proposed approach to the inter-relationships assessment has not assessed every individual receptor considered in this chapter, but instead focuses on groups of receptors that may be sensitive to inter-related effects.

328. **Chapter 5 EIA Methodology** provides a matrix to show at a broad level where, across the EIAR, interactions between effects on different receptor groups have been identified.

329. The potential inter-related effects that could arise in relation to commercial fisheries are presented in **Table 12-13.**

Table 12-13 Inter-related effects (phase) assessment for commercial fisheries

Impact / receptor	Related chapter	Phase assessment
Adverse effects on commercially exploited fish and shellfish. Impacts on fish and shellfish species of commercial importance could indirectly affect the fisheries that target them.	**Chapter 9 Fish, Shellfish and Turtle Ecology**	During construction, operation and maintenance, impacts on fish and shellfish are assessed as no greater than **Minor adverse**, and not significant. This is not considered likely to lead to any material change to the assessments of commercial fisheries receptors, and it is considered that any interrelated effects will not lead to any increase in significance over those described for the receptors alone.
Navigation and Safety Issues for Fishing Vessels. In addition to safety issues for fishing vessels associated with snagging risks and manoeuvrability issues and seabed obstacles (addressed in this chapter), fishing vessels would be affected by safety issues associated with the potential for collision or allision with project vessels and infrastructure. The latter are addressed in **Chapter 16 Shipping and Navigation**.	**Chapter 16 Shipping and Navigation**	During construction, operation and maintenance, impacts on shipping and navigation are assessed as no greater than **Minor adverse**, and not significant. This is not considered likely to lead to any material change to the assessments of commercial fisheries receptors, and it is considered that any interrelated effects will not lead to any increase in significance over those described for the receptors alone.

12.14 Potential monitoring requirements

330. Monitoring requirements for the CWP Project are described in the **In Principle Project Environmental Monitoring Plan (IPPEMP)**, submitted alongside the EIAR and further developed and agreed with stakeholders prior to construction.

331. The assessment of impacts on commercial fisheries has resulted in the identification of monitoring needs in relation to whelk catch rates pre- and post-construction and gear trials, during the operational phase. Further details and a commitment to monitoring specific to commercial fisheries is secured in the **FMMS.**

12.15 Impact assessment summary

332. This chapter of the EIAR has assessed the potential environmental impacts on commercial fisheries from the construction, operation and maintenance and decommissioning phases of the CWP Project. Where significant impacts have been identified, additional mitigation has been considered and incorporated into the assessment.

333. This section, including **Table 12-14**, summarises the impact assessment undertaken and confirms the significance of any residual effects, following the application of additional mitigation.

334. Commercial fisheries have been assessed as there is the potential that they can experience significant effects from the various aspects of the CWP Project. For construction and decommissioning, this includes temporary loss or restricted access to established fishing grounds, temporary displacement of fishing activity into other areas, snagging damage to static gear by project vessels, navigational safety issues for fishing vessels, temporary increases in steaming times and obstacles on the seabed. For operation and maintenance, this includes long-term loss or restricted access to established fishing grounds, long-term displacement of fishing activity into other areas, interference with normal fishing activities by O&M vessels, impacts on navigational safety for fishing vessels, increased steaming times and obstacles on the seabed.

335. Key consultations have taken place with stakeholders such as the MI, SFPA, IFI, BIM and individual fishermen. Key sources, such as VMS data from MI and landings data from SPFA, have been used to determine the receptors.

336. The receptors have been categorised based on the gear type used. The first type is pot fishing and the receptors identified are whelk fisheries and crab and lobster fisheries; the second type is dredge fishery and the receptor identified is seed mussel; and the third type is net fishing with the receptor identified as mixed demersal.

337. These receptors have then been assessed in terms of sensitivity, based on the definitions provided in **Section 12.4**. The sensitivity, in combination with the magnitude determined for each impact, was used to determine the significance of the predicted effects for the various activities that will occur over the CWP Project lifetime.

338. The following provides a summary of the construction- and decommissioning-related significance. For temporary loss or restricted access to established fishing grounds, the highest residual significance effect was minor. For temporary displacement of fishing activity into other areas, the highest significance was minor. For snagging damage to static gear by project vessels, the highest significance was minor. For temporary increases in steaming times, the highest significance was negligible / minor, and for obstacles on the seabed, the impact was considered mitigatable to ALARP. None of the predicted effects are significant.

339. The following provides a summary of operation and maintenance-related significance. For long-term loss or restricted access to established fishing grounds, the highest residual significance was minor. For long-term displacement of fishing activity into other areas, the highest significance was minor. For snagging damage to static gear by O&M vessels, the highest significance was minor. For increased steaming times, the highest significance was negligible / minor and for the obstacles on the seabed the impact was determined to be mitigatable to ALARP. None of the predicted effects are significant.

Table 12-14 Summary of potential impacts and residual effects

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
Construction						
Impact 1: Loss of grounds or restricted access to fishing grounds within the array site	Potting: whelk	Medium	Medium	Moderate **(Significant)**	Yes	Minor **(Not significant)**
	Potting: crab and lobster	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: mussel seed	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: razor clam	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: king scallop	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Netting: Blonde ray, sole and mixed demersal	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Beam trawl: sole and mixed flatfish	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Demersal otter trawl: nephrops and mixed demersal	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Pelagic trawl: sprat and herring	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Charter angling	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
	Aquaculture	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
Impact 2: Loss of grounds or restricted access to fishing grounds within the OECC	Potting: whelk	Medium	Medium	Moderate **(Significant)**	Yes	Minor **(Not significant)**
	Potting: crab and lobster	Medium	Medium	Moderate **(Significant)**	Yes	Minor **(Not significant)**
	Dredge: mussel seed	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: razor clam	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: king scallop	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Netting: Blonde ray, sole and mixed demersal	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Beam trawl: sole and mixed flatfish	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Demersal otter trawl: nephrops and mixed demersal	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Pelagic trawl: sprat and herring	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Charter angling	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
	Aquaculture	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
Impact 3: Displacement of fishing activity into other areas	Potting: whelk	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Potting: crab and lobster	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: mussel seed	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: razor clam	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: king scallop	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Netting: Blonde ray, sole and mixed demersal	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Beam trawl: sole and mixed flatfish	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Demersal otter trawl: nephrops and mixed demersal	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Pelagic trawl: sprat and herring	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
	Charter angling	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Aquaculture	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
Impact 4: Interference with fishing activities	Potting: whelk	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Potting: crab and lobster	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: mussel seed	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: razor clam	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: king scallop	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Netting: Blonde ray, sole and mixed demersal	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Beam trawl: sole and mixed flatfish	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Demersal otter trawl: nephrops and mixed demersal	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
	Pelagic trawl: sprat and herring	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Charter angling	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Aquaculture	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
Impact 5: Potential for snagging of gear	Potting: whelk	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Potting: crab and lobster	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: mussel seed	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: razor clam	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: king scallop	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Netting: Blonde ray, sole and mixed demersal	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Beam trawl: sole and mixed flatfish	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Demersal otter trawl: nephrops and mixed demersal	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
	Pelagic trawl: sprat and herring	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Charter angling	N/A				
	Aquaculture	N/A				
Impact 6: Increased steaming times to fishing grounds	Potting: whelk	Medium	Very low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Potting: crab and lobster	Medium	Very low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: mussel seed	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: razor clam	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: king scallop	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Netting: Blonde ray, sole and mixed demersal	Medium	Very low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Beam trawl: sole and mixed flatfish	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Demersal otter trawl: nephrops and mixed demersal	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Pelagic trawl: sprat and herring	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Charter angling	N/A				

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
	Aquaculture	N/A				
Impact 7: Effects on commercially exploited species	Potting: whelk	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Potting: crab and lobster	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: mussel seed	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: razor clam	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: king scallop	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Netting: Blonde ray, sole and mixed demersal	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Beam trawl: sole and mixed flatfish	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Demersal otter trawl: nephrops and mixed demersal	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Pelagic trawl: sprat and herring	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Charter angling	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
	Aquaculture	N/A				
Operation and maintenance						
Impact 1: Loss of grounds or restricted access to fishing grounds within the array site	Potting: whelk	Medium	Medium	Moderate **(Significant)**	Yes	Minor (Not significant)
	Potting: crab and lobster	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: mussel seed	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: razor clam	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: king scallop	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Netting: Blonde ray, sole and mixed demersal	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Beam trawl: sole and mixed flatfish	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Demersal otter trawl: nephrops and mixed demersal	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Pelagic trawl: sprat and herring	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
	Charter angling	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Aquaculture	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
Impact 2: Loss of grounds or restricted access to fishing grounds within the OECC	Potting: whelk	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Potting: crab and lobster	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: mussel seed	Very low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: razor clam	Very low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: king scallop	Very low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Netting: Blonde ray, sole and mixed demersal	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Beam trawl: sole and mixed flatfish	Very low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Demersal otter trawl: nephrops and mixed demersal	Very low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Pelagic trawl: sprat and herring	Very low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
	Charter angling	Very low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Aquaculture	Very low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
Impact 3: Displacement of fishing activity into other areas	Potting: whelk	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Potting: crab and lobster	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: mussel seed	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: razor clam	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: king scallop	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Netting: Blonde ray, sole and mixed demersal	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Beam trawl: sole and mixed flatfish	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Demersal otter trawl: nephrops and mixed demersal	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
	Pelagic trawl: sprat and herring	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Charter angling	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Aquaculture	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
Impact 4: Interference with fishing activities	Potting: whelk	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Potting: crab and lobster	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: mussel seed	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: razor clam	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: king scallop	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Netting: Blonde ray, sole and mixed demersal	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Beam trawl: sole and mixed flatfish	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
	Demersal otter trawl: nephrops and mixed demersal	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Pelagic trawl: sprat and herring	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Charter angling	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Aquaculture	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
Impact 5: Potential for snagging of gear	Potting: whelk	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Potting: crab and lobster	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: mussel seed	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: razor clam	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: king scallop	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Netting: Blonde ray, sole and mixed demersal	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
	Beam trawl: sole and mixed flatfish	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Demersal otter trawl: nephrops and mixed demersal	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Pelagic trawl: sprat and herring	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Charter angling	N/A				
	Aquaculture	N/A				
Impact 6: Increased steaming times to fishing grounds	Potting: whelk	Medium	Very low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Potting: crab and lobster	Medium	Very low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: mussel seed	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: razor clam	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: king scallop	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Netting: Blonde ray, sole and mixed demersal	Medium	Very low	Minor **(Not significant)**	No	Minor **(Not significant)**

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
	Beam trawl: sole and mixed flatfish	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Demersal otter trawl: nephrops and mixed demersal	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Pelagic trawl: sprat and herring	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Charter angling	N/A				
	Aquaculture	N/A				
Impact 7: Effects on commercially exploited species	Potting: whelk	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Potting: crab and lobster	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: mussel seed	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: razor clam	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: king scallop	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Netting: Blonde ray, sole and mixed demersal	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
	Beam trawl: sole and mixed flatfish	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Demersal otter trawl: nephrops and mixed demersal	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Pelagic trawl: sprat and herring	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Charter angling	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Aquaculture	N/A				
Decommissioning						
Impact 1: Loss of grounds or restricted access to fishing grounds within the array site	Potting: whelk	Medium	Medium	Moderate **(Not significant)**	Yes	Minor **(Not significant)**
	Potting: crab and lobster	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: mussel seed	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: razor clam	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: king scallop	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
	Netting: Blonde ray, sole and mixed demersal	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Beam trawl: sole and mixed flatfish	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Demersal otter trawl: nephrops and mixed demersal	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Pelagic trawl: sprat and herring	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Charter angling	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Aquaculture	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
Impact 2: Loss of grounds or restricted access to fishing grounds within the OECC	Potting: whelk	Medium	Medium	Moderate **(Not significant)**	Yes	Minor **(Not significant)**
	Potting: crab and lobster	Medium	Medium	Moderate **(Not significant)**	Yes	Minor **(Not significant)**
	Dredge: mussel seed	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: razor clam	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
	Dredge: king scallop	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Netting: Blonde ray, sole and mixed demersal	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Beam trawl: sole and mixed flatfish	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Demersal otter trawl: nephrops and mixed demersal	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Pelagic trawl: sprat and herring	Low	Low	Minor **(Not significant)**	No	Negligible **(Not significant)**
	Charter angling	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Aquaculture	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
Impact 3: Displacement of fishing activity into other areas	Potting: whelk	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Potting: crab and lobster	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: mussel seed	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
	Dredge: razor clam	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: king scallop	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Netting: Blonde ray, sole and mixed demersal	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Beam trawl: sole and mixed flatfish	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Demersal otter trawl: nephrops and mixed demersal	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Pelagic trawl: sprat and herring	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Charter angling	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Aquaculture	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
Impact 4: Interference with fishing activities	Potting: whelk	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Potting: crab and lobster	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
	Dredge: mussel seed	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: razor clam	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: king scallop	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Netting: Blonde ray, sole and mixed demersal	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Beam trawl: sole and mixed flatfish	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Demersal otter trawl: nephrops and mixed demersal	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Pelagic trawl: sprat and herring	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Charter angling	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Aquaculture	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
Impact 5: Potential for snagging of gear	Potting: whelk	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
	Potting: crab and lobster	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: mussel seed	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: razor clam	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: king scallop	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Netting: Blonde ray, sole and mixed demersal	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Beam trawl: sole and mixed flatfish	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Demersal otter trawl: nephrops and mixed demersal	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Pelagic trawl: sprat and herring	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Charter angling	N/A				
	Aquaculture	N/A				
	Potting: whelk	Medium	Very low	Minor **(Not significant)**	No	Minor **(Not significant)**

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
Impact 6: Increased steaming times to fishing grounds	Potting: crab and lobster	Medium	Very low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: mussel seed	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: razor clam	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Dredge: king scallop	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Netting: Blonde ray, sole and mixed demersal	Medium	Very low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Beam trawl: sole and mixed flatfish	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Demersal otter trawl: nephrops and mixed demersal	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Pelagic trawl: sprat and herring	Low	Very low	Negligible **(Not significant)**	No	Negligible **(Not significant)**
	Charter angling	N/A				
	Aquaculture	N/A				
	Potting: whelk	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual effect
Impact 7: Effects on commercially exploited species	Potting: crab and lobster	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: mussel seed	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: razor clam	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Dredge: king scallop	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Netting: Blonde ray, sole and mixed demersal	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Beam trawl: sole and mixed flatfish	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Demersal otter trawl: nephrops and mixed demersal	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Pelagic trawl: sprat and herring	Low	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Charter angling	Medium	Low	Minor **(Not significant)**	No	Minor **(Not significant)**
	Aquaculture	N/A				

12.16 References

340. Barnes M.D. (2017). Guidance on EIS and NIS Preparation for Offshore Renewable Energy Projects, Report for the Environmental Working Group of the Offshore Renewable Energy Steering Group and the Department of Communications, Climate Action and Environment, Dublin: Department of Communications, Climate Action and Environment.

341. Council Regulation (EC) No 1224/2009. Available at: https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009R1224

342. Codling Wind Park (2020). Offshore Scoping Report [online] Available at: CWP website - https://codlingwindpark.ie/library / [Accessed October 2022].

343. Data from the Inshore Fishing Activity theme accessed through Ireland's Marine Atlas at http://atlas.marine.ie/, [November 2022].

344. DECC (2018). Department of the Environment, Climate and Communications. Guidance on Marine Baseline Assessments and Monitoring Activities for Offshore Renewable Energy Projects Part 2. Available at: https://www.gov.ie/en/publication/3d6efb-guidance-documents-for-offshore-renewable-energy-developers/ [Accessed October 2022].

345. European Union Data Collection Framework (EU DCF) (2019). Data by quarter-rectangle: Tables and maps of effort and landings by ICES statistical rectangles.

346. Hornsea Project Four: Environmental Statement (ES) (2021). Commercial Fisheries Chapter.

347. Hynes, Stephen and Graeven, Rainey, (2016). "The value of recreational fishing in the Irish marine waters: a travel cost analysis using on-site count data models". Working Papers. 30.

348. https://cbe.miis.edu/cbe_working_papers/30

349. Ireland's Marine Atlas (2016). Available at: https://atlas.marine.ie/#?c=53.9108:-15.9082:6 [Accessed October 2022].

350. Marine Recreational Fishery in Ireland (2022). Available at: https://www.fisheriesireland.ie/what-we-do/research/marine-recreational-fishery-in-ireland-mrec

351. Norfolk Boreas Offshore Wind Farm (2019). Chapter 14: Commercial Fisheries.

352. Review of Fisheries in OECD Countries: Glossary, February 1998.

353. SFPA (2021). Sea Fisheries Protection Agency. SFPA Landing in Irish Ports and ICES statistical rectangle by Irish Vessels 2017-2021. Requested May 2022.

354. SFPA (2022). Sea Fisheries Protection Agency. Landings data (weight) by <10m vessels into Irish ports from sales notes 2016-2020. Requested October 2022.