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Planning Report Appendices

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Planning Report

Appendix A

Compliance with the National Marine Planning Framework

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Abbreviations

Abbreviation	Term in Full
AA	Appropriate Assessment
ABP	An Bord Pleanála
AOD	Above Ordnance Datum
CAP	Climate Action Plan
CCRA	Climate Change Risk Assessment
CDP	City / County Development Plan
CEMP	Construction Environmental Management Plan
CJEU	Court of Justice of the European Union
CO_2	Carbon dioxide
CWP	Codling Wind Park
CWPL	Codling Wind Park Limited
DCC	Dublin City Council
DECC	Department of the Environment, Climate and Communications
DHLGH	Department of Housing, Local Government and Heritage
DLRH	Dún Laoghaire Harbour
DPC	Dublin Port Company
EC	European Commission
EIA	Environmental Impact Assessment
EIA Report	Environmental Impact Assessment Report
ETS	Emissions Trading System
EU	European Union
FMMS	Fisheries Management and Mitigation Strategy
FTE	Full Time Equivalent
GES	Good Environmental Status
GHG	Greenhouse Gas
GHGA	GHG Emissions Assessment
GIS (switchgear)	Gas insulated switchgear
GVA	Gross Value Added
HGV	Heavy Good Vehicle
INNS	Invasive non-native species
LA	Landscape Area

MAC	Maritime Area Consent
MSFD	Marine Strategy Framework Directive
Mt CO2Eq	Million Tonnes of Carbon Dioxide Equivalent
MW	Megawatt
MWh	Megawatt Hour
OECC	Offshore Export Cable Corridor
OfTI	Offshore Transmission Infrastructure
O&M	Operation and Maintenance
OMPP	Overarching Marine Planning Policy
OTI	Onshore Transmission Infrastructure
NIS	Natura Impact Statement
NMPF	National Marine Planning Framework
NPWS	National Parks and Wildlife Services
SAC	Special Area of Conservation
SAR	Search and Rescue
SMPP	Sectoral Marine Planning Policy
SPA	Special Protection Area
SUDS	Sustainable Urban Drainage System
WTG	Wind turbine generator

Definitions

Glossary	Meaning
the Applicant	The developer, Codling Wind Park Limited (CWPL).
array site	The area within which the wind turbine generators (WTGs), inter-array cables (IACs) and the offshore substation structures (OSSs) are proposed.
the Board	The Board of An Bord Pleanála
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.
Dún Laoghaire Harbour	The historic harbour of Dún Laoghaire on the southern shore of Dublin Bay with limits defined as the areas contained within and including the East and West piers of Dún Laoghaire Harbour and within 600 metres of the entrance to that harbour, together with any adjoining land, banks, inlets and havens vested in Dún Laoghaire Harbour Company and the docks, piers, jetties, quays and other works vested in that company.
EirGrid	State-owned electric power transmission system operator in Ireland and nominated Offshore Transmission Asset Owner
Environmental Impact Assessment (EIA)	A systematic means of assessing the likely significant effects of a proposed project, undertaken in accordance with the EIA Directive and the relevant Irish legislation.
Environmental Impact Assessment Report (EIAR)	The report prepared by the Applicant to describe the findings of the EIA for the CWP Project.
export cables	The cables, both onshore and offshore, that connect the offshore substations with the onshore substation.
inter-array cables (IACs)	The subsea electricity cables between each WTG between and the OSSs.
interconnector cables	The subsea electricity cables between OSSs
landfall	The point at which the offshore export cables are brought onshore and connected to the onshore export cables via the transition joint bays (TJB). For the CWP Project The landfall works include the installation of the offshore export cables within Dublin Bay out to approximately 4 km offshore, where water depths that are too shallow for conventional cable lay vessels to operate.
Maritime Area Consent (MAC)	A Maritime Area Consent (MAC) provides State authorisation for a prospective developer to undertake a maritime usage and occupy a specified part of the maritime area. A MAC is required to be in place before planning consent can be sought.

Glossary	Meaning
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 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
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 wind turbine generators (WTGs) from the offshore substation structures (OSSs) to the TJBs at the landfall.
offshore export cable corridor (OECC)	The area between the array site and the landfall, within which the offshore export cables will be installed along with cable protection and other temporary infrastructure for construction.
offshore infrastructure	The permanent offshore infrastructure, comprising of the WTGs, IACs, OSSs, interconnector cables, offshore export cables and other associated infrastructure such as cable and scour protection.
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.
offshore transmission infrastructure (OfTI)	The offshore transmission assets comprising the OSSs and offshore export cables. The EIAR considers both permanent and temporary works associated with the OfTI.
onshore export cables	The cables which transport electricity generated by the WTGs from the TJBs at the landfall to the onshore substation.
onshore development area	The entire footprint of the OTI and associated temporary works that will form the onshore boundary for the planning application.
onshore transmission infrastructure (OTI)	The onshore transmission assets comprising the TJBs, onshore export cables and the onshore substation. The EIAR considers both permanent and temporary works associated with the OTI.
onshore substation	Site containing electrical equipment to enable connection to the national grid.
onshore substation site	The area within which permanent and temporary works will be undertaken to construction the onshore substation.
onshore substation site boundary	The physical boundary of the onshore substation site.
onshore substation operational site	The area within the operational site boundary within which operational activities will occur.
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.

Glossary	Meaning
O&M phase	This is the period of time during which the CWP project will be operated and maintained.
Phase 1 Project	Under the special transition provisions in the Maritime Area Planning Act 2021, as amended (the MAP Act), the Minister for the Department of Environment, Climate and Communications (DECC) has responsibility for assessing and granting a Maritime Area Consent (MAC) for a first phase of offshore wind projects in Ireland. The Phase 1 Projects include Oriel Wind Park, Arklow Bank II, Dublin Array, North Irish Sea Array, Codling Wind Park and Skerd Rocks. A MAC has since been granted by DECC for each of the Phase 1 Projects.
planning application boundary	The area subject to the application for development consent, including all permanent and temporary works for the CWP Project.
transition joint bay (TJB)	This is required as part of the OTI and is located at the landfall. It is an underground bay housing a joint which connects the offshore and onshore export cables.
wind turbine generator	All the components of a wind turbine, including the tower, nacelle, and rotor.

1 INTRODUCTION

1. The table hereafter presents the relevant NMPF policy objectives, sets out Codling Wind Park Ltd's (CWPL) response in relation to the Codling Wind Park (CWP) Project and provides an indication of where information relating to the policy can be found in the application documentation. This appendix should be read in conjunction with the **Planning Report**. Instead of repeating throughout, please note that EIAR **Chapter 2 Policy and Legislative Context, Chapter 3 Site Selection and Consideration of Alternatives** and **Chapter 4 Project Description** provides supporting information to demonstrate compliance with the policies presented in the tables below.

Appendix A.1 Environmental Ocean Health

Planning Policy Description	CWP Project Response	Application Documentation Reference
Environmental – Ocean Health Policy 1 Compliance with NMPF policies relating to: • Biodiversity • Non-indigenous species • Water quality • Sea-floor and water column integrity • Marine litter • Underwater noise Should include demonstration of contribution to the relevant Marine Strategy Framework Directive (MSFD) targets identified.	The documentation accompanying this application to An Bord Pleanála (ABP) includes an **Ecosystem Services Report** in **Annex A** of this appendix. This report shows clearly the link between MSFD, the Overarching Marine Planning Policy (OMPP) and the Environmental Impact Assessment Report (EIAR) topics. As demonstrated in **Chapter 7 Marine Water Quality** states**,** offshore waters are assessed in line with the MSFD descriptors outlined in the Ireland's Marine Strategy Framework Directive – Article 19 Summary Report Initial Assessment, Good Environmental Status (GES) and Target and Indicators – October 2013 (DHLGH and Marine Institute, 2013) and Article 17 update (DHLGH and Marine Institute, 2020). These descriptors are considered in **Section 7.6 Existing environment** and assessed in **Section 7.10 Impact assessment**.	**Annex A of this Appendix – Ecosystem Services Report** **Chapter 7 Marine Water Quality** **EIAR chapters as they are listed in response to the NMPF policies**

Appendix A.2 Biodiversity

Planning Policy Description	CWP Project Response	Application Documentation Reference
Biodiversity Policy 1: Proposals incorporating features that enhance or facilitate species adaptation or migration, or natural native habitat connectivity will be supported, subject to the outcome of statutory environmental assessment processes and subsequent decision by the competent authority, and where they contribute to the policies and objectives of this NMPF. Proposals that may have significant adverse impacts on species adaptation or migration, or on natural native habitat connectivity must demonstrate that they will, in order of preference and in accordance with legal requirements: a) avoid, b) minimise, or c) mitigate significant adverse impacts on species adaptation or migration, or on natural native habitat connectivity.	As demonstrated by the **EIAR** and/or the **Natura Impact Statement** as appropriate, CWPL has sought to avoid, minimise or mitigate any significant adverse impacts on natural connectivity (**Chapter 8 Subtidal and Intertidal Ecology**), on diadromous fish migratory routes (**Chapter 9 Fish, Shellfish and Turtle Ecology**), on ornithology (**Chapter 10 Ornithology**), on marine mammals (**Chapter 11 Marine Mammals**) and on offshore bats (**Chapter 13 Offshore Bats**). On this basis, the CWP Project complies.	**EIAR Chapters:** • **Chapter 8 Subtidal and Intertidal Ecology** • **Chapter 9 Fish, Shellfish and Turtle Ecology** • **Chapter 10 Ornithology** • **Chapter 11 Marine Mammals** • **Chapter 13 Offshore Bats** **Natura Impact Statement**
Biodiversity Policy 2	As demonstrated by the **EIAR** and/or the **Natura Impact Statement** as appropriate, CWPL has sought to avoid significant reduction in the distribution and extent of important habitats, or their	**Chapter 8 Subtidal and Intertidal Ecology**

Planning Policy Description	CWP Project Response	Application Documentation Reference
Proposals that protect, maintain, restore and enhance the distribution and net extent of important habitats and distribution of important species will be supported, subject to the outcome of statutory environmental assessment processes and subsequent decision by the competent authority, and where they contribute to the policies and objectives of this NMPF. Proposals must avoid significant reduction in the distribution and net extent of important habitats and other habitats that important species depend on, including avoidance of activity that may result in disturbance or displacement of habitats.	habitats that important species depend upon, through sensitive design and appropriate mitigation. There will be no adverse impact, and significant loss of habitats, has been avoided and / or mitigated.	**Chapter 9 Fish, Shellfish and Turtle Ecology** **Natura Impact Statement**
Biodiversity Policy 3 Where marine or coastal natural capital assets are recognised by Government: • Proposals must seek to enhance marine or coastal natural capital assets where possible. • Proposals must demonstrate that they will in order of preference, and in accordance with legal requirements: a) avoid, b) minimise, or	Natural Capital assets are considered in **Section 7.6 Existing Environment** of **Chapter 7 Marine Water Quality** and assessed in Section 7.10 Impact assessment. Significant adverse effects have been avoided (as presented **in Section 7.10**) with any proposed mitigation measures presented in **Section 7.9** and **Section 7.11**.	**Chapter 7 Marine Water Quality**
	Natural capital assets are also considered in Section 9.6 Existing Environment of **Chapter 9 Fish, Shellfish and Turtle Ecology** and potential impacts to these receptors have been assessed in **Section 9.10 Impact Assessment**. Adverse impacts have been avoided and / or mitigated.	**Chapter 9 Fish, Shellfish and Turtle Ecology**

Planning Policy Description	CWP Project Response	Application Documentation Reference
c) mitigate significant adverse impacts on marine or coastal natural capital assets, or d) if it is not possible to mitigate significant adverse impacts on marine or coastal natural capital assets proposals must set out the reasons for proceeding.		
Biodiversity Policy 4 Proposals must demonstrate that they will, in order of preference and in accordance with legal requirements: a) avoid, b) minimise, or c) mitigate significant disturbance to, or displacement of, highly mobile species	Mobile species are considered in **Section 9.6 Existing Environment** of **Chapter 9 Fish, Shellfish and Turtle Ecology** and potential impacts to these receptors have been assessed in **Section 9.10 Impact Assessment**. Adverse impacts have been avoided and / or mitigated.	**Chapter 9 Fish, Shellfish and Turtle Ecology**
	Chapter 10 Ornithology considers impacts in **Section 10.10 Impact Assessment** of the CWP Project on both terrestrial and marine birds, during breeding, non-breeding, and where relevant migration, in relation to the three phases: • **Construction**: Having considered all impacts (disturbance, direct effects on habitat, changes in prey availability, and introduction of invasive non-native species), the CWP Project would not give rise to significant residual effects. • **Operation/Maintenance (O&M)**: Having considered all impacts (disturbance, direct effects on habitat, changes in prey availability, introduction of invasive non-native species, and collision) would not give rise to significant residual effects. • **Decommissioning:** Having considered all impacts (disturbance, direct effects on habitat, changes in prey	**Chapter 10 Ornithology** **Natura Impact Statement**

Planning Policy Description	CWP Project Response	Application Documentation Reference
	availability, and introduction of invasive non-native species) would not give rise to significant residual effects. These conclusions are supported by appropriate mitigation which ensures that significant effects can be avoided for terrestrial and marine ornithological receptors during key periods, and adverse effects avoided for designated sites (for which birds are a species of conservation importance) both from the project alone and in combination with other plans and projects.	
	Chapter 11 Marine Mammals considers impacts in **Section 11.10 Impact Assessment** of the CWP Project on marine mammals, in relation to the three phases: • **Construction**: Having considered all impacts (auditory injury, disturbance (auditory), vessel disturbance, changes in prey availability, vessel collision), the CWP Project would not give rise to significant residual effects. • **O&M**: Having considered all impacts (disturbance from operational noise, changes in prey availability, vessel disturbance and vessel collision) would not give rise to significant residual effects. • **Decommissioning**: Having considered all impacts (auditory injury, vessel disturbance, changes in prey availability, vessel collision) would not give rise to significant residual effects. These conclusions are supported by appropriate mitigation which ensures that significant effects can be avoided for marine mammals, and adverse effects avoided for designated sites (for which marine mammals are a qualifying interest) both from the project alone and in combination with other plans and projects.	**Chapter 11 Marine Mammals** **Natura Impact Statement**

Planning Policy Description	CWP Project Response	Application Documentation Reference
	Even without causing significant residual effects, the CWP project will result in disturbance of Annex IV species that requires a Derogation Licence under Regulation 54 of the Birds and Natural Habitats Regulations 2011 (transposing Article 12 of the Habitats Directive.) CWPL will apply for that derogation licence close to the date of submission of the planning application for CWP Project. In order to comply with the decision of the CJEU in *Hellfire Massey v An Bord Pleanála*, ABP must, before deciding to grant permission for the CWP Project, (a) confirm that National Parks and Wildlife Service (NPWS) has granted that license and (b) reflect the granting of the licence in its reasoned conclusion on the EIA and Appropriate Assessment (AA). ABP will also need to take account of the NPWS decision in its assessment of the CWP Project's compliance with Biodiversity Policy 4. CWP proposes that it would write to ABP to confirm if and when NPWS has granted the licence, so that ABP can then take whatever steps it considers necessary to ensure the derogation licence is provided to it for consideration and public consultation if required.	

Appendix A.3 Protected Marine Sites

Planning Policy Description	CWP Project Response	Application Documentation Reference
Protected Marine Sites Policy 1 Proposals must demonstrate that they can be implemented without adverse effects on the integrity of Special Areas of Conservation (SACs) or Special Protection Areas (SPAs). Where adverse effects from proposals remain following mitigation, in line with Habitats Directive Article 6(3), consent for the proposals cannot be granted unless the prerequisites set by Article 6(4) are met.	The **Natura Impact Statement** submitted in support of the planning application concludes no Adverse Effect on Site Integrity (AESI) on any SPA or SAC from the project on its own or in-combination with other development. CWPL, in accordance with Biodiversity Policy 1, have sought to avoid, minimise, or mitigate any significant adverse impacts on natural habitat connectivity and in accordance with Biodiversity Policy 2, have avoided significant reduction in the distribution and extent of important habitats, or their habitats that important species depend upon, through sensitive design and appropriate mitigation, as set out in **Section 8.10 Impact Assessment** of EIAR **Chapter 8, Subtidal and intertidal ecology.** CWPL, in accordance with Protected Marine Sites Policies 1-4 have demonstrated there will be no adverse effects on the integrity of protected sites from the CWP Project as set out in **Section 8.6 Existing Environment, Section 8.9 Primary Mitigation** and **Section 8.10 Impact Assessment.**	**Chapter 8 Subtidal and Intertidal Ecology** **Natura Impact Statement**
	Annex II species are considered in **Section 9.6 Existing Environment** of **Chapter 9 Fish, Shellfish and Turtle Ecology** and potential impacts to these receptors have been assessed in **Section 9.10 Impact Assessment**. Adverse impact to Special Areas of Conservation for which fish and shellfish are a relevant consideration, has been avoided and / or mitigated.	**Chapter 9 Fish, Shellfish and Turtle Ecology**
Protected Marine Sites Policy 2 Proposals supporting the objectives of protected marine sites should be supported and:	As above in relation to Protected Marine Sites Policy 1.	**Chapter 8 Subtidal and Intertidal Ecology** **Chapter 9 Fish, Shellfish and Turtle Ecology**

Planning Policy Description	CWP Project Response	Application Documentation Reference
• be informed by appropriate guidance • must demonstrate that they are in accordance with legal requirements, including statutory advice provided by authorities relevant to protected marine sites.		**Natura Impact Statement**
Protected Marine Sites Policy 3 Proposals that enhance a protected marine site's ability to adapt to climate change, enhancing the resilience of the protected site, should be supported and: • be informed by appropriate guidance • must demonstrate that they are in accordance with legal requirements, including statutory advice provided by authorities relevant to protected marine sites.	As above in relation to Protected Marine Sites Policy 1.	**Chapter 8 Subtidal and Intertidal Ecology** **Chapter 9 Fish, Shellfish and Turtle Ecology** **Natura Impact Statement**
Protected Marine Sites Policy 4	As above in relation to Protected Marine Sites Policy 1.	**Chapter 8 Subtidal and Intertidal Ecology**

Planning Policy Description	CWP Project Response	Application Documentation Reference
Until the ecological coherence of the network of protected marine sites is examined and understood, proposals should identify, by review of best available evidence (including consultation with the competent authority with responsibility for designating such areas as required), the features, under consideration at the time the application is made, that may be required to develop and further establish the network. Based upon identified features that may be required to develop and further establish the network, proposals should demonstrate that they will, in order of preference, and in accordance with legal requirements: a) avoid, b) minimise, or c) mitigate significant impacts on features that may be required to develop and further establish the network, or d) if it is not possible to mitigate significant impacts, proposals should set out the reasons for proceeding.	Features, inclusive of relevant consultation (**Section 9.2)** are considered in **Section 9.6 Existing Environment** of **Chapter 9 Fish, Shellfish and Turtle Ecology** and potential impacts to these receptors have been assessed in **Section 9.10 Impact Assessment**	**Chapter 9 Fish, Shellfish and Turtle Ecology**
	Reference is made to **Appendix 8.4 Marine Protected Areas Assessment Report** which considers the features of the Marine Protected Area Advisory Group report (Ecological sensitivity analysis of the Irish Sea Main Report 2023) and details where in the CWP Project application suitable level of assessment is provided to allow a decision to be reached that will, in order of preference, and in accordance with legal requirements, demonstrate that the CWP Project has avoided, minimised, or mitigated significant effects on features that may be required to develop and further establish the network.	**Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.4 Marine Protected Areas Assessment Report**

Appendix A.4 Non-Indigenous Species

Planning Policy Description	CWP Project Response	Application Documentation Reference
Non-indigenous Species Policy 1 Reducing the risk of the introduction and / or spread of non-indigenous species is a requirement of all proposals. Proposals must demonstrate a risk management approach to prevent the introduction of and / or spread of non-indigenous species, particularly when: a) moving equipment, boats or livestock (for example fish or shellfish) from one water body to another, b) introducing structures suitable for settlement of non-indigenous species, or the spread of non-indigenous species known to exist in the area of the proposal.	Non-indigenous species are considered in 7.6 Existing environment of **Chapter 7 Marine Water Quality** and assessed **in Section 7.10 Impact assessment**. Risk management measures are included (as presented in **Section 7.10** with any proposed mitigation measures presented in **Section 7.9** and **Section 7.11**.	**EIAR Chapter 7 Marine Water Quality**
	CWPL, in accordance with Non-indigenous Species Policy 1, will seek to reduce the risk of introduction and/or spread of non-indigenous species by following industry best practices as set out in Section 8.9 Primary Mitigation Measures of **Chapter 8 Subtidal and Intertidal Ecology** and as assessed in Section 8.10 Impact Assessment.	**Chapter 8 Subtidal and Intertidal Ecology**
	Non-indigenous species and their potential impacts to the associated receptors have been assessed in **Section 9.10** of **Chapter 9 Fish, Shellfish and Turtle Ecology**, with a commitment made by the proposed CWP Project to implement a biosecurity strategy which will minimise the risk of non-native species introduction.	**Chapter 9 Fish, Shellfish and Turtle Ecology**
	Reference is made to the **Offshore Biosecurity Plan** which set out the biosecurity management approach for the construction and operation of the project to manage the risks associated with invasive non-native species (INSS).	**Construction Environmental Management Plan (CEMP), Appendix A, Offshore Biosecurity Plan**

Appendix A.5 Water Quality Policy

Planning Policy Description	CWP Project Response	Application Documentation Reference
Water Quality Policy 1 Proposals that may have significant adverse impacts upon water quality, including upon habitats and species beneficial to water quality, must demonstrate that they will, in order of preference and in accordance with legal requirements: a) avoid, b) minimise, or c) mitigate significant adverse impacts.	Water quality existing environment is considered in **Section 7.6** of **Chapter 7 Marine Water Quality** and potential impacts to these receptors are assessed in Section **7.10 Impact Assessment**. Significant adverse effects have been avoided (as presented in **Section 7.10**) with any proposed mitigation measures presented in **Section 7.9** and **Section 7.11**.	**Chapter 7 Marine Water Quality** **CEMP**
Water Quality Policy 2 Proposals delivering improvements to water quality, or enhancing habitats and species, which can be of benefit to water quality, should be supported.	N/A	

Appendix A.6 Sea-floor and Water Column Integrity

Planning Policy Description	CWP Project Response	Application Documentation Reference
Sea-floor and Water Column Integrity Policy 1 Proposals that incorporate measures to support the resilience of marine habitats will be supported, subject to the outcome of statutory environmental assessment processes and subsequent decision by the competent authority and where they contribute to the policies and objectives of this NMPF. Proposals which may have significant adverse impacts on marine, particularly deep sea, habitats must demonstrate that they will, in order of preference and in accordance with legal requirements: a) avoid, b) minimise, or c) mitigate significant adverse impacts on marine habitats, or d) if it is not possible to mitigate significant adverse impacts on marine habitats must set out the reasons for proceeding.	The water depth across the CWP Project does not place it in the deep sea category. CWPL, in accordance with Sea-floor and Water Column Integrity Policies 1-3, through sensitive design and appropriate mitigation have sought to avoid, minimise or mitigate significant adverse effects on marine and coastal habitats and species as set out in **Section 8.9 Primary Mitigation Measures** of **Chapter 8 Subtidal and Intertidal Ecology** and assessed in **Section 10.8**. The assessment concludes no adverse effects.	**Chapter 8 Subtidal and Intertidal Ecology**
	As can be seen in **Chapter 6 Marine Geology, Sediments and Coastal Processes, Section 6.6. Existing Environment** identified the prevailing regimes and receptors which comprise marine geology, sediments and coastal processes. The potential impacts to these receptors have been assessed in **Section 6.10 Impact Assessment**. Through appropriate design and mitigation (described in **Section 6.8**), CWP have sought to avoid significant adverse effects on marine geology, sediments and coastal processes and thus avoid, minimise, or mitigate against significant adverse impacts on marine habitats. The EIA concludes that no significant adverse effects are anticipated on marine geology, sediments and coastal processes receptors and consequently no adverse impacts on the physical processes which drive the function of marine habitats are anticipated,	**Chapter 6 Marine Geology, Sediments and Coastal Processes**

Planning Policy Description	CWP Project Response	Application Documentation Reference
	thereby adhering to Sea-floor and Water Column Integrity Policy 1 described in the NMPF.	
Sea-floor and Water Column Integrity Policy 2 Proposals, including those that increase access to the maritime area, must demonstrate that they will, in order of preference and in accordance with legal requirements: a) avoid, b) minimise, or c) mitigate adverse impacts on important habitats and species.	As above in relation to Sea-floor and Water Column Integrity Policy 1.	**Chapter 6 Marine Geology, Sediments and Coastal Processes** **Chapter 8 Subtidal and Intertidal Ecology**
	Important habitats are considered in **Section 9.6 Existing Environment** of **Chapter 9 Fish, Shellfish and Turtle Ecology** and potential impacts to these receptors have been assessed in **Section 9.10 Impact Assessment.**	**Chapter 9 Fish, Shellfish and Turtle Ecology**
Sea-floor and Water Column Integrity Policy 3 Proposals that protect, maintain, restore and enhance coastal habitats for ecosystem functioning and provision of ecosystem services will be supported, subject to the outcome of statutory environmental assessment processes and subsequent decision by the competent authority, and where they contribute to the policies and objectives of this NMPF. Proposals must take account of the space required for coastal habitats, for ecosystem functioning and provision of ecosystem services, and demonstrate that they will, in order of	As above in relation to Sea-floor and Water Column Integrity Policy 1.	**Chapter 6 Marine Geology, Sediments and Coastal Processes** **Chapter 8 Subtidal and Intertidal Ecology**

Planning Policy Description	CWP Project Response	Application Documentation Reference
preference and in accordance with legal requirements: a) avoid, b) minimise , or c) mitigate for net loss of coastal habitat.		

Appendix A.7 Marine Litter

Planning Policy Description	CWP Project Response	Application Documentation Reference
Marine Litter Policy 1 Proposals that facilitate waste re-use or recycling, or that reduce marine and coastal litter will be supported, where they contribute to the policies and objectives of this NMPF. Proposals that could potentially increase the amount of litter that is discharged into the maritime area, either intentionally or accidentally, must include measures (such as development of a waste management plan) to, in order of preference and in accordance with legal requirements: a) avoid, b) minimise, or c) mitigate the litter. Demonstration of these measures must provide satisfactory evidence that the proposal is able to manage all waste without creation of litter.	As shown in **Chapter 7 Marine Water Quality,** waste management measures are included as part of primary mitigation via production of project plans prior to construction, as set out in **Section 7.9 Primary mitigation measures**.	**EIAR Chapter 7 Marine Water Quality**
	The potential impacts from activity related litter has been assessed in **Section 9.10 Impact Assessment** of **Chapter 9 Fish, Shellfish and Turtle Ecology** with a commitment made by the proposed CWP Project to implement a **CEMP** which will minimise the risk of marine litter introduction.	**Chapter 9 Fish, Shellfish and Turtle Ecology** **CEMP**

Appendix A.8 Underwater Noise Policy 1

Planning Policy Description	CWP Project Response	Application Documentation Reference
Underwater Noise Policy 1 Proposals must take account of spatial distribution, temporal extent, and levels of impulsive and / or continuous sound (underwater noise) that may be generated and the potential for significant adverse impacts on marine fauna. Where the potential for significant impact on marine fauna from underwater noise is identified, a Noise Assessment Statement must be prepared by the proposer of development. The findings of the Noise Assessment Statement should demonstrably inform determination(s) related to the activity proposed and the carrying out of the activity itself. The content of the Noise Assessment Statement should be relevant to the particular circumstances and must include: • Demonstration of compliance with applicable legal requirements, such as necessary assessment of proposals likely to have underwater noise implications, including but not limited to: ○ Appropriate Assessment (AA);	Reference is made to **Chapter 9 Fish, Shellfish and Turtle Ecology** and to **Appendix 9.4 Underwater Noise Assessment.** The hearing sensitivities of fish are considered in **Section 9.6 Existing Environment** and potential impacts to these receptors have been assessed in **Section 9.10 Impact Assessment**. This document therefore represents the Noise Assessment Statement for the purposes of fish, shellfish, and turtles, and should be read in conjunction with **Chapter 11 Marine Mammals**. Adverse impact to noise sensitive receptors has been avoided and / or mitigated.	**Chapter 9 Fish, Shellfish and Turtle Ecology** **Appendix 9.4 Underwater Noise Assessment** **Chapter 11 Marine Mammals**
	In relation to subtidal and intertidal ecology, reference to **Chapter 8 – Subtidal and Intertidal Ecology** is made. In relation to temporary habitat disturbance, any impacts of noise and vibration would be short term and very localised. Given this, the potential impact of noise and vibration would not adversely impact the subtidal and intertidal habitats within the CWP offshore CWP Project area.	**Chapter 8 Subtidal and Intertidal Ecology**
	Chapter 11 Marine Mammals Even without causing significant residual effects, the CWP project will result in disturbance of Annex IV species that requires a Derogation Licence under Regulation 54 of the Birds and Natural Habitats Regulations 2011 (transposing Article 12 of the Habitats Directive.) CWPL will apply for that derogation licence close to the date of submission of the planning	**Chapter 11 Marine Mammals**

Planning Policy Description	CWP Project Response	Application Documentation Reference
○ Environmental Impact Assessment (EIA); ○ Strategic Environmental Assessment (SEA); ○ Specific response to 'strict protection' requirements of Article 12 of the Habitats Directive in relation to certain species listed in Annex IV of the Directive; and ○ Species protected under the Wildlife Acts. • An assessment of the potential impact of the development or use on the affected species in terms of environmental sustainability; • Demonstration that significant adverse impacts on marine fauna resulting from underwater noise will, in order of preference and in accordance with legal requirements be: a) avoided, b) minimised, or c) mitigated, or d) if it is not possible to mitigate significant adverse impacts on marine fauna, the reasons for proceeding must be set out. This policy should be included as part of statutory environmental assessments	application for the CWP Project. In order to comply with the decision of the CJEU in *Hellfire Massey v An Bord Pleanála*, ABP must, before deciding to grant permission for the CWP Project, (a) confirm that NPWS has granted that licence and (b) reflect the granting of the licence in its reasoned conclusion on the EIA and AA. ABP will also need to take account of the NPWS decision in its assessment of the CWPL Project's compliance with Biodiversity Policy 4. CWP proposes that it would write to ABP to confirm if and when NPWS has granted the licence, so that ABP can then take whatever steps it considers necessary to ensure the derogation licence is provided to it for consideration and public consultation if required.	

Planning Policy Description	CWP Project Response	Application Documentation Reference
where such assessments require consideration of underwater noise.		

Appendix A.9 Air Quality

Planning Policy Description	CWP Project Response	Application Documentation Reference
Air Quality Policy 1 Proposals that support a reduction in air pollution should be supported, subject to the outcome of statutory environmental assessment processes and subsequent decision by the competent authority, and where they contribute to the policies and objectives of this NMPF. Proposals must demonstrate consideration of their contribution to air pollution, both direct and cumulative.	As stated in **Chapter 28 Climate - Carbon Balance Assessment**, *'GHG emissions have been compared against the carbon budget for the electricity, transport, industry, and waste sectors in 2030 (DECC, 2023), against Ireland's total GHG emissions in 2022 and against Ireland's EU 2030 target of a 30% reduction in non-ETS sector emissions based on 2005 levels (33 Mt CO2eq) (set out in Regulation EU 2018/842 of the European Parliament and of the Council).* *The estimated total construction, O&M, and decommissioning phase GHG emissions (total GHG emissions pre-O&M savings), when annualised over the 25-year CWP Project lifespan (as shown in Table 28-17), are equivalent to 0.03% of Ireland's total GHG emissions in 2022 and 0.05% of Ireland's non-ETS 2030 emissions target. The estimated GHG emissions associated with fuel use during the construction phase are equivalent to 0.01% of the 2030 electricity budget, while the total GHG emissions associated with transport-related activities are 0.2% of the 2030 transport budget, construction waste GHG emissions are 0.001% of the waste budget, and industry-related activities are 0.07% of the 2030 industry budget (DECC, 2023).* *The 1300 MW from the array site will generate 5,124,600 MWh of renewable energy annually, assuming a 45% offshore capacity factor (EirGrid, 2020). The most recent (2022) figure for carbon intensity of electricity in Ireland is 332 gCO2eq/kWh (SEAI, 2023). Based on this carbon intensity, the total annual GHG emission savings of the CWP Project will amount to approximately 1,707,367 tonnes of CO2eq, at the 2022 carbon intensity, which is equivalent to 56.7% of the total carbon*	**Chapter 28 Climate - Carbon Balance Assessment**

Planning Policy Description	CWP Project Response	Application Documentation Reference
	budget for the electricity sector in 2030 (DECC, 2023) and 5.2% of Ireland's non-ETS 2030 emissions target. When the GHG emissions from the construction, O&M, and decommissioning phases are removed, the annualised (over the 25- year lifespan) emission savings total 1,311,190 tonnes of CO2eq, equivalent to 2% of Ireland's total GHG emissions in 2022, 4% of Ireland's non-ETS 2030 emissions target, and 43.7% of the total carbon budget for the electricity sector in 2030 (Table 2818), i.e., the CWP Project has the potential to reduce Ireland's CO2e emissions by these percentages.' It is therefore considered that the proposed CWP Project would contribute to a decrease in air pollution as it supports the decarbonisation of the electricity sector as envisaged under the Climate Action Plan (CAP) 2024.	
Air Quality Policy 2 Where proposals are likely to result in or facilitate an increase in air pollution, proposals should demonstrate that they will, in order of preference in accordance with legal requirements and standards: a) avoid, b) minimise, or c) mitigate air pollution.	**Chapter 25 Air Quality** found that the project would result in direct, localized, negative, short-term and not significant effects as a result of the adoption of additional mitigation measures in terms of dust soiling, human health and ecology impacts from all construction activities assessed (onshore elements only). The offshore elements of the CWP Project are not predicted to result in or facilitate an increase in air pollution.	**Chapter 25 Air Quality**

Appendix A.10 Climate change

Planning Policy Description	CWP Project Response	Application Documentation Reference
Climate Change Policy 1 Proposals should demonstrate how they: • Avoid contribution to adverse changes to physical features of the coast; • Enhance, restore or recreate habits that provided a flood defense or carbon sequestration ecosystem services where possible. Where potential significant adverse impacts upon habitats that provide a flood defence or carbon sequestration ecosystem services are identified, these must be in order of preference and in accordance with legal requirements: a) Avoided, b) Minimised; c) Mitigated, d) It not possible to mitigate significant adverse impacts, the reasons for proceeding must be set out. This policy should be included as part of statutory environmental assessment where such assessments are required.	**Section 6.6 Existing Environment of Chapter 6 Marine Geology, Sediments and Coastal Processes** identified the prevailing regimes and receptors which comprise Marine Geology, Sediments and Coastal Processes. The potential impacts to these receptors have been assessed in **Section 6.10 Impact Assessment.** Through appropriate design and mitigation. Adverse impacts on Marine Geology, Sediments and Coastal Processes have been avoided and / or mitigated. Land-sea interactions have been included in this assessment under **Section 6.6 Existing Environment** describes the coastal processes. Potential impacts to these receptors have been assessed in **Section 6.10.** The assessment carried out under **Section 6.10** found that generally all construction impacts would give rise to effects in the range of negligible/ minor and minor and do not require additional mitigation. The same conclusion was reached for impacts arising from the operational and decommissioning phases of the project. Reference is also made to **Chapter 8 Subtidal and Intertidal Ecology**, specifically **Section 8.10.** The EIAR has not identified significant effects on any of the receptors. It is therefore concluded that the project will not contribute to adverse changes to physical features of the coast and avoids	**Chapter 6 Marine Geology, Sediments and Coastal Processes**

	significant adverse impacts upon habitats that provide a flood defence or carbon sequestration ecosystem services.	
Climate Change Policy 2 For the lifetime of the proposal, the following climate change matters must be demonstrated: • estimation of likely generation of greenhouse gas emissions, both direct and indirect; • measures to support reductions in greenhouse gas emissions where possible; • likely impact of climate change effects upon the proposal from factors including but not limited to: sea level rise, ocean acidification, changing weather patterns; • measures incorporated to enable adaptation climate change effects; • likely impact upon climate change adaptation measures adopted in the coastal area relevant to the proposal and/or adaptation measures adopted by adjacent activities; • where likely impact upon climate change adaptation measures in the coastal area relevant to the proposal and/or adaptation measures adopted by adjacent activities is identified, these impacts must be in order of preference and in accordance with legal requirements: a) avoided,	*Likely GHG emissions direct and indirect:* **Chapter 28 Climate - Carbon Balance Assessment** of the EIAR provides a GHG Emissions Assessment (GHGA). This assessed considered a number of representative scenarios. The different project stages are considered: Unmitigated, the pre-Operation and Maintenance phase of the project would result in GHG emissions totaling 390,177 tCO_2eq (or 15,607 annualised). The operational phase will give rise to very minimal GHG emissions compared to the emissions savings of the overall project. The GHGA has found that the annual emission savings will amount to c1,311,190 tonnes of CO2eq, equivalent to 2% of Ireland's total GHG emissions in 2022, 4% of Ireland's non-ETS 2030 emissions target, and 43.7% of the total carbon budget for the electricity sector in 2030 as outlined in the CAP 2024. For the decommissioning phase, embodied emissions have been assumed to account for 0.2% of the GHG emissions associated with CWP Project or 902 tonnes CO_2eq. *Measures to support reduction in GHG emissions during construction* The applicant will apply measures to support a reduction in GHG emissions during construction. It must be reiterated that on balance, the project would be a net contributor to significant GHG emissions abatement, although this is primarily focused	**Chapter 28 Climate - Carbon Balance Assessment**

b) minimised, c) mitigated, d) if it is not possible to mitigate significant adverse impacts, the reasons for proceeding must be set out.	on the operational phase. As a result, the following mitigation measures are proposed: • No idle vehicles on and offsite including Heavy Good Vehicles (HGV) holding sites, • Monitoring of construction traffic to ensure use of the designated haul routes; • Regular maintenance and servicing of all plants and machinery; • Efficient scheduling of deliveries will be undertaken to minimise emissions; and • Construction vehicles shall conform to the latest EU emissions standards and reasonably practical. In addition, the EIAR considers that opportunities for the reduction of carbon emissions during construction will be considered, including: • Undertake lifecycle assessment for major asset components and implement recommendations to influence procurement of low carbon / sustainable materials and equipment; • Procure materials for with a minimum of 20% secondary and recycled contents; • Achieve a reduction in mains water use during construction (rainwater harvesting, water re-se and efficiency systems, etc). • Reuse of materials and local sourcing as much as possible. • Reuse of rainwater and pumped water to the tune of at least 25% of water required during construction. • Diversion of waste materials from landfill/incineration to reuse or offsite or recycling of material;	

	• Use of portable micro-renewables at satellite compound where necessary as an alternative to diesel generators. As there will be limited emissions arising from the operational phase of the project, limited number of measures will be required. *Likely impacts of climate change on the project and measures incorporated to enable adaptation to climate change effects* **Chapter 28 Climate - Carbon Balance Assessment** also carried out a climate change risk assessment (CCRA) to identify the vulnerability of the project to the climate change. CWP has a worst-case low vulnerability to flooding and wind. The project has been designed to decrease vulnerabilities. A monitoring and control system in each wind turbine generator (WTG) will enable to slow or cease operation in response to high winds. Lightning protection measures have been incorporated into the design of the onshore elements of the WTG. Scour protection measures have been incorporated into the offshore WTG foundation design, while cables will be buried at an appropriate depth. In relation to the project substation, the ground will be raised to 5.00m AOD (or 360 mm above the required finished floor level), a combi-wall capping bean and embankment are provided at the perimeter to a level of 5.14m OD to address wave action and incorporation of Sustainable Drainage System (SuDS). The buildings have been designed with additional temperature tolerance and will include additional measures to increase durability. It is also important to note that the substation site is currently undefended, meaning it does not avail of flood defences. As a	

	result of the implementation of the project, this part of the Dublin Port estate will become defended. *Impacts upon climate change adaptation measures* The EIAR has not found that the CWP Project would give rise to significant effects to the existing climate change adaptation measures already in place.	

Appendix A.11 Co-existence

Planning Policy Description	CWP Project Response	Application Documentation Reference
Co-Existence Policy 1 Proposals should demonstrate that they have considered how to optimise the use of space, including through consideration of opportunities for co-existence and co-operation with other activities, enhancing other activities where appropriate. If proposals cannot avoid significant adverse impacts (including displacement) on other activities they must, in order of preference: a) minimise significant adverse impacts, b) mitigate significant adverse impacts, or c) if it is not possible to mitigate significant adverse impacts, proposals should set out the reasons for proceeding.	As presented within EIAR **Volume 3, Chapter 12 Commercial Fisheries**, a number of measures have been adopted to facilitate co-existence, including the project WTG layout options being developed to avoid or minimise interaction 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. The EIAR has identified temporary significant effects during construction on the displacement of commercial fisheries which would normally access the array site and offshore export cable corridor (OECC). A **Fisheries Management and Mitigation Strategy** (FMMS) accompanies this application and outlines potential opportunities for co-existence and co-operation, as well as mitigation measures. Following mitigation, the EIAR does not predict any significant adverse effects. The project will facilitate the operational coexistence. Fishing will not be excluded from the Project area as the array layout has considered fishing activity that occurs in the area. Infrastructure has been sited appropriately to facilitate co-existence where possible. Operational safety zones may apply around structures and would usually be up to 50m. However, given the total area of the offshore Project area, it is not expected that the impact would be significant. The design of the inter-array, interconnector and export cables will not present any restriction to fishing effort in the local area.	**12 Commercial fisheries** **28 Climate – Carbon balance assessment** **Fisheries Management and Mitigation Strategy** **Public and Stakeholder Consultation Report** **Planning Report**

	CWPL have engaged with commercial fishing stakeholders, including individual fishermen for several years as described in EIAR **Chapter 12 Commercial fisheries**, **Public and Stakeholder Consultation Report** and the **FMMS**. **Chapter 16 Shipping and Navigation** of the EIAR assesses the interaction of the construction, operation and decommissioning of the CWP Project with other sea users. With mitigations in place, the assessment concludes no adverse effects on shipping and navigation stakeholders. The strategic importance of the CWP Project is discussed in more details in the **Planning Report**. The proposed development is strategic and of national importance which will have hugely beneficial impacts for the country. It will support a significant share of the offshore energy targets for 2030 as well as contribute substantially to a reduction of the carbon budget for the electricity sector by 2030. The carbon budget for the electricity sector was prepared on foot of the Climate Action and Low Carbon Development (Amendment) Act 2021 and is legally binding. This project presents the unique opportunity to make vast contributions insofar as the annual emission savings equivalent to 43.7% for the sector in 2030. The development should proceed	

Appendix A.12 Infrastructure

Planning Policy Description	CWP Project Response	Application Documentation Reference
Infrastructure Policy 1 Appropriate land-based infrastructure which facilitates marine activity (and vice versa) should be supported. Proposals for appropriate infrastructure that facilitates the diversification or regeneration of marine industries should be supported.	As detailed in **Chapter 4 Project Description** The proposed CWP Project includes all elements required for energy production, transmission and grid connection. Part of the transmission and grid connection infrastructure is to be located on land in Poolbeg, Dublin 4. It is considered that in this respect, the NMPF is supportive of the proposed CWP Project.	**Chapter 4 Project Description**

Appendix A.13 Access

Planning Policy Description	CWP Project Response	Application Documentation Reference
Access Policy 1 Proposals, including in relation to tourism and recreation, should demonstrate that they will, in order of preference: a) avoid; b) minimise, or c) mitigate significant adverse impacts on public access.	The text accompanying the Access Policies of the NMPF refers to recreational users, tourism and sports. It is therefore the understanding of the applicant that commercial fisheries, which operate under license, are not considered under 'public access' but instead are dealt with by the dedicated commercial fisheries and co-existence policies. The shipping and navigation chapter considers the policies of the NMPF and has not identified significant effects on public access. In addition, the construction of the Onshore Transmission Infrastructure (OTI) will involve the rerouting of the footpath to the Irishtown nature park and Shellybank Beach. At the most, as viewed in **Chapter 29 Population**, it is expected that there may be disruption of up to two days and can therefore be considered minimised for the purposes of the NMPF.	**Chapter 16 Shipping and Navigation** **Chapter 29 Population**
Access Policy 2 Proposals demonstrating appropriate enhanced and inclusive public access to and within the maritime area, and that consider the future provision of services for tourism and recreation activities, should be supported, subject to the outcome of statutory environmental assessment processes and subsequent decision by the	N/A	

competent authority, and where they contribute to the policies and objectives of this NMPF.		

Appendix A.14 Employment

Planning Policy Description	CWP Project Response	Application Documentation Reference
Employment Policy 1 Proposals should demonstrate contribution to a net increase in marine related employment in Ireland, • in line with the skills available in Irish coastal communities adjacent to the maritime area, • improve the sustainable use of natural resources, • diversify skills to enable employment in emerging industries.	Reference is made to **Appendix 29.3 Economic Impact Analysis** of EIAR **Chapter 29 Population** which found that the project would create about 4,300 Full Time Equivalent (FTE) years locally. It is important to note that offshore wind is a relatively nascent industry, a fact that is clearly acknowledged in both the aforementioned appendix and the Government's Offshore Wind Industrial Strategy. The construction and operation and maintenance phases of the project will be important trigger factors in kickstarting the establishment of a supply-chain in Ireland. The proposed CWP Project will result in a net increase in marine related employment in Ireland.	**Appendix 29.3 Economic Impact Analysis**

Appendix A.15 Heritage Assets

Planning Policy Description	CWP Project Response	Application Documentation Reference
Heritage Assets Policy 1 Proposals that demonstrate they will contribute to enhancing the significance of heritage assets will be supported, subject to the outcome of statutory environmental assessment processes and subsequent decision by the competent authority, and where they contribute to the policies and objectives of this NMPF. Proposals unable to contribute to enhancing the significance of heritage assets will only be supported if they demonstrate that they will, in order of preference: a) avoid b) minimise, or c) mitigate harm to the significance of heritage assets, and d) if it is not possible, to mitigate harm, then the public benefits for proceeding with the proposal must outweigh the harm to the significance of the heritage assets.	**Chapter 14 Marine Archaeology and Cultural Heritage** has applied additional mitigation measures and found that there would be no significant residual effects on marine archaeological and heritage receptors. Reference is also made to **Chapter 15 Seascape and Landscape Visual Impact Assessment (SLVIA)** which also considers heritage assets.	**Chapter 14 Marine Archaeology and Cultural Heritage** **Chapter 15 SLVIA**

Appendix A.16 Seascape and Landscape

Planning Policy Description	CWP Project Response	Application Documentation Reference
Seascape and Landscape Policy 1 Proposals should demonstrate how the likely significant impacts of a development on the seascape and landscape of an area have been considered. Proposals will only be supported if they demonstrate that they, in order of preference: a) avoid, b) minimise, or c) mitigate significant adverse impacts on the seascape and landscape of the area. d) If it is not possible to mitigate significant adverse impacts, proposals must set out the reasons for proceeding. This policy should be included as part of statutory environmental assessments.	**Chapter 15 SLVIA** has identified significant effects on the landscape and seascape from certain receptors as follows: Character Areas: • 1c Bray Mountain Group (significant effects arising from both WTG Layout Options during operation and maintenance (O&M)) • 2a Northern Coastal Landscape Area (LA) A (as above) • 2b Southern Coastal LA (as above), • TCA 6a Greystones (WTG Layout Option A during O&M) Selected Views: • Greystones (very significant effects arising from both array options during operation and maintenance (O&M)) • Kilcoole (as above) • Kilcoole Rock (as above) • Magheramore Beach (as above) • Greystones Beach Bear (as above) The CWP Project has been designed to incorporate mitigation measures to avoid and minimise insofar as possible significant effects. In particular, the applicant has sought to reduce the number of WTGs. *Reasons for Proceeding*	**Chapter 15 SLVIA** **Planning Report**

Planning Policy Description	CWP Project Response	Application Documentation Reference
	SLVIA It should be noted that whilst an effect may be significant, that does not necessarily mean that such an impact would be unacceptable or should necessarily be regarded as an 'undue consequence' (GLVIA3 (Landscape Institute and IEMA, 2013) para 5.40). The professional judgement of the assessors of the SLVIA concluded that the CWP Project could be accommodated within views experienced by visual receptor groups, residents and visitors to settlements and receptors of key routes. Visual receptors perceived experience of the surrounding environment would not fundamentally change. Having regard to the policy reference to 'span and scope', expansive views would remain out across a large-scale seascape with, due to location, a greater focus on immediate coastal and landscape features. The CWP Project has therefore been judged to be capable of being accommodated in SLVIA terms. Please refer to **Chapter 15 SLVIA, Section 15.4.3 Impact Assessment**. *Strategic, economic or social importance to the State* As set out in the Planning Report, the proposed CWP Project is strategic and national importance which will have hugely beneficial impacts for the country. It will support a significant share of the offshore energy targets for 2030 as well as contribute substantially to a reduction of the carbon budget for the electricity sector for 2026-2030. The carbon budget for the electricity sector was prepared on foot of the Climate Action and Low Carbon CWP Project (Amendment) Act 2021 and is legally binding. This project presents the unique opportunity to make vast contributions insofar as the annual emission savings equivalent to 43.7% for the sector. The Phase One projects	

Planning Policy Description	CWP Project Response	Application Documentation Reference
	were selected because they were more advanced and will start contributing significant reductions in GHG emissions years earlier than other projects and every year matters when the sectoral emissions ceiling for electricity is 20 MtCO2eq for the entirety of 2025-2030 and CWP alone eliminates c.1.3MtCO2eq in 2030. The CWP Project should proceed. *Objectives that conflict with one another or that are ambiguous with regard to their application to the proposed CWP Project* The NMPF requires that any project which is not able to avoid, minimise or mitigate significant adverse impact on the landscape should be allowed to proceed provided they are able to demonstrate public benefit. Reference is made to the Planning Report which discusses the public benefits associated with the Project. *Inconsistencies in the NMPF* The applicant is also of the view that there are conflicts between OMPP Seascape and Landscape Policy 1 and Sectoral Marine Planning Policy (SMPP) ORE Policy 1. Section 2 of the NMPF defines '*Overarching Marine Planning Policies (OMPPs) that will apply to all marine activities*' including the CWP Project. It then defines SMPPs as '*activity-specific or sectoral marine planning policies (SMPPs) to guide decision-makers in assessing or dealing with specific proposals'*. Section 2 does not give a sense or rating as to whether an OMPP is more important than a SMPP.	

Planning Policy Description	CWP Project Response	Application Documentation Reference
	Section 4 of the NMPF states that '*the OMPPs are supplemented by, and should be read in conjunction with, the SMPPs*'. On this basis, it appears that OMPPs and SMPPs are rated equally and to be read together. It is therefore considered that there are inherent conflicts between OMPP Seascape and Landscape Policy 1 and SMPP ORE Policy 1. The former requires to apply the avoid, minimise, mitigate approach to landscape/seascape impacts, while the latter requires that proposals assisting the achievement of governmental offshore renewable energy targets for 2030 be supported. It is therefore argued that given the lack of clarity and strategic nature of the CWP Project, it is considered that the CWP Project should proceed on the basis of its Strategic, economic or social importance to the State, and the conclusions of the SLVIA.	

Appendix A.17 Social Benefits

Planning Policy Description	CWP Project Response	Application Documentation Reference
Social Benefits Policy 1 Proposals that enhance or promote social benefits should be supported. Proposals unable to enhance or promote social benefits should demonstrate that they will, in order of preference: a) minimise, or b) mitigate significant adverse impacts which result in the displacement of other existing or authorised (but yet to be implemented) activities that generate social benefits.	**Chapter 29 Population** and associated **Appendix29.3 Economic Impact Analysis** provide details on the Gross Value Added (GVA) and job creations to be derived locally. As has been stated previously in the **Planning Report**, the proposed CWP Project will result in significant job creation and GVA. In this respect, it is considered the NMPF supports the proposed CWP Project.	**Chapter 29 Population** **Appendix29.3 Economic Impact Analysis** **Public and Stakeholder Consultation Report** **Planning Report**
Social Benefits Policy 2 Proposals that increase the understanding and enjoyment of the marine environment (including its natural, historic and social value), or that promote conservation management and increased education and skills, should be supported.	As demonstrated in the **Public and Stakeholder Consultation Report**, the applicant has spent significant amount of time and efforts engaging with the public. This engagement allowed the applicant to better understand public concerns but also to provide a greater understanding of the marine environment and the emerging blue economy. As has been discussed in the **Planning Report** and **Appendix 29.3** of the EIAR, the project will allow to kick start the offshore wind energy supply chain in Ireland. As this industry is still at a nascent stage, this means that new skills will be created in the country. On this basis, the project should be supported having regard to Social Benefits Policy 2.	**Public and Stakeholder Consultation Report** **Appendix29.3 Economic Impact Analysis** **Planning Report**

Planning Policy Description	CWP Project Response	Application Documentation Reference
	EIA surveys, including those carried out pre-during, and post construction, operation and decommissioning and monitoring add and will add new data on numerous environmental aspects of the maritime area, as is demonstrated in several jurisdictions in Europe with established ORE industries.	

Appendix A.18 Transboundary

Planning Policy Description	CWP Project Response	Application Documentation Reference
Transboundary Policy 1 Proposals that have transboundary impacts beyond the maritime area, on either the terrestrial environment or neighbouring international jurisdictions, must show evidence of consultation with the relevant public authorities, including terrestrial planning authorities and other country authorities. Proposals should consider transboundary impacts throughout the lifetime of the proposed activity.	The EIAR considers, where appropriate, transboundary impacts. There are no predicted significant transboundary effects. The Applicant has also consulted with Transboundary Authorities as required.	**All EIAR Topic Chapters** **Planning Documents**

Appendix A.19 Defence and Security Policy 1

Planning Policy Description	CWP Project Response	Application Documentation Reference
Defence and Security Policy 1 Any proposal that has the potential to interfere with the performance by the Defence Forces of their security and non-security related tasks must be subject to consultation with the Defence Organisation. This includes potential interference with: • safety of navigation and access to naval facilities; • firing, test or exercise areas; • Communication, and surveillance systems; • Fisheries protection functions. Proposals should only be supported where, having consulted with the Defence Organisation, they are satisfied that it will not result in unacceptable interference with the performance by the Defence Forces of their security and non-security related tasks. Any proposal will be subject to the relevant environmental assessments,	**Chapter 17 Aviation, Military and Radar** assesses impacts on aviation and military operations. The chapter also outlines the consultations undertaken by the applicant and shows that the applicant engaged with the Department of Defence and the Irish Aviation Authority. Adverse impacts have been avoided and / or mitigated, and the assessment predicts no significant effects.	**Chapter 17 Aviation, Military and Radar**

Planning Policy Description	CWP Project Response	Application Documentation Reference
as set out in the introduction to this NMPF.		

Appendix A.20 Energy – Offshore Renewable

Planning Policy Description	CWP Project Response	Application Documentation Reference
ORE Policy 1 Proposals that assist the State in meeting the Government's offshore renewable energy targets, including the target of achieving 5 GW of capacity in offshore wind by 2030 and proposals that maximise the long-term shift from use of fossil fuels to renewable electricity energy, in line with decarbonization targets, should be supported. All proposals will be rigorously assessed to ensure compliance with environmental standards and seek to minimize impacts on the marine environment, marine ecology and other maritime users.	The proposed CWP Project is for an offshore wind farm with a potential output of 1,300 MW. It is planned to be connected to the national grid before the year 2030. In this respect, the proposed CWP Project is supported by the NMPF.	**Planning Report** **EIAR** **Natura Impact Statement**
ORE Policy 2 Proposals must be consistent with national policy, including the Offshore Renewable Energy Development Plan (OREDP) and its successor. Relevant Projects designated pursuant to the Transition Protocol and those projects that can objectively enable delivery on the Government's 2030 targets will be	The CWP project has been designated as a Relevant Project and received a Maritime Area Consent (MAC) in December 2022 (as amended) under the MAP Act. The MAC (Ref.No.2022-MAC-006) is included in the **Planning Documents**. Reference is also made to **Appendix B OREDP policy compliance** of the **Planning Report**.	**Planning Documents** **Planning Report Appendix B OREDP** **Planning Report**

Planning Policy Description	CWP Project Response	Application Documentation Reference
prioritised for assessment under the new consenting regime. Into the future, areas designated for offshore energy development, under the Designated Marine Area Plan process set out in the Maritime Area Planning Bill, will underpin a plan-led approach to consenting (or development of our marine resources) (Note – see Appendix D on Spatial Designation Process).		
ORE Policy 3 Any non-ORE proposals that are in or could affect sites held under a permission or that are subject to an ongoing permitting or consenting process for renewable energy generation (wind, wave or tidal should demonstrate that they will in order of preference: a) avoid, b) minimise, c) mitigate adverse impacts, or d) if it is not possible to mitigate significant adverse impacts,	N/A	

Planning Policy Description	CWP Project Response	Application Documentation Reference
proposals should set out the reasons for proceeding. Applicants for non-ORE proposals in or affecting ORE sites should engage ORE developers in consultation during the pre-application processes as appropriate.		
ORE Policy 4 Decisions on ORE developments should be informed by consideration of space required for other activities of national importance described in the NMPF.	The EIAR has assessed the impacts arising from the CWP Project on other users/uses of national importance. The project as it stands before ABP have been fully informed by consideration of space required from other activities of national importance. In particular, fishing will not be excluded from the Project area as the array layout has considered fishing activity that occurs in the area. Infrastructure has been sited appropriately to facilitate co-existence where possible. Operational safety zones may apply around structures and would usually be up to 50m. However, given the total area of the offshore Project area, it is not expected that the impact would be significant. The design of the inter-array, interconnector and export cables will not present any restriction to the majority of fishing effort in the local area. As stated above in relation to seascape, the array has avoided limited number of outlying WTGs. This allows for navigational safety. The internal layout of the array has been arranged to allow for Search and Rescue operations.	

Planning Policy Description	CWP Project Response	Application Documentation Reference
	The OTI at Poolbeg has been design in consultation with Dublin Port Company (DPC) to ensure alignment between the CWP Project plans and DPC's 3FM plans. On the basis of the above, the CWP Project aligns with ORE Policy 4.	
ORE Policy 5 Proposals for activity that may adversely impact ORE test projects by virtue of being within or adjacent to ORE test sites, or between site and landfall of ORE test projects that may adversely impact ORE test site projects, should demonstrate that they will in order of preference: a) avoid, b) minimise, c) mitigate adverse impacts.	N/A	
ORE Policy 6 Proposals for infrastructure enabling local use of excess energy generated from emerging marine technologies (wave, tidal, floating wind) should be supported.	N/A	
ORE Policy 7 Where potential for ports to contribute to ORE is identified, plans and policies related to this port must encourage development in such a	N/A	

Planning Policy Description	CWP Project Response	Application Documentation Reference
way as to facilitate ORE and related supply chain activity.		
ORE Policy 8 Proposals for ORE must demonstrate consideration of existing cables passing through or adjacent to areas for development, making sure ability to repair and carry out cable – related remedial work is not significantly compromised. This consideration should be included as part of statutory environmental assessments where such assessments are required.	**Chapter 18 Material Assets - Marine Infrastructure** specifically considers existing cables. It states: '*The CWP Project has been designed to be protected and to offer protection to cables that it must cross, and will have cable crossing agreements in place to ensure cables are appropriately crossed and protected.*' It further states: '*With the adoption of the additional mitigation measures the magnitude of effect will be negligible. The significance of the residual effect is therefore predicted to be* ***Imperceptible****, which is not significant'*.	**Chapter 18 Material Assets - Marine Infrastructure**
ORE Policy 9 A permission for ORE must be informed by inclusion of a visualisation assessment that supports conditions on any development in relation to design and layout. Where a development consent is applied for in an area already subject to permission, proposals must include a visualization assessment to inform design and layout. Visualisation assessments should demonstrate consultation with communities that may be able to view the proposal, in	The EIAR includes in **Appendix 15.11 SLVIA Visualisations** which supports the assessment of the project. **Chapter 15 SLVIA** sets out the methodology and assessment. Feedback was sought from local authorities, and from local communities during public exhibition events where visualisations were provided. Feedback was also received from Community and Recreational Coastline Users. Reference is made to the **Public and Stakeholder Consultation Report** which provides details of the three events and comments received. At the time of submitting the planning application, no specific guidelines have been published. The EIAR therefore refers to best practice as evidence in **Section 15.4** of **Chapter 15 SLVIA**.	**Chapter 15 SLVIA** **Appendix 15.11 SLVIA Visualisations** **Public and Stakeholder Consultation Report**

Planning Policy Description	CWP Project Response	Application Documentation Reference
addition to any other ORE development, which had received consent to proceed at a given site at the time the consent application is made, with the aim of minimizing impact. Visualisation assessments will be informed by specific emerging guidelines (detailed in the actions set out in Annexes to this NMPF). Prior to specific guidelines being available, policy and best practice relating to visualisation assessment should be used. This consideration must be included as part of statutory environmental assessments where such assessment is required.		
ORE Policy 10 Opportunities for land-based, coastal infrastructure that is critical to and supports development of ORE should be prioritised in plans and policies, where possible.	The **Planning Report** has set out the policies of the Dublin City (DCC) Development Plan (CDP) insofar as they relate to critical infrastructural. The policies of the CDP are supportive of the CWP Project, specifically the OTI.	**Planning Report**
ORE Policy 11 Where appropriate, proposals that enable the provision of emerging renewable energy technologies and associated supply chains will be supported.	The proposed CWP Project is for fixed WTG foundations. Although, the technology has not been deployed on a large scale in Ireland, it cannot be considered as emerging as it is commonly used in offshore wind energy in other countries. Nonetheless, the project will be critical in establishing ORE supply chain in Ireland.	

Appendix A.21 Energy – Petroleum

Planning Policy Description	CWP Project Response	Application Documentation Reference
Petroleum Policy 1 Proposals in areas where petroleum activities or petroleum production infrastructure have already been approved, or where applications consistent with the Government's prohibition on new exploration activity are under consideration, should only be authorised where compatibility with the existing, authorised or proposed activity can be satisfactorily demonstrated or the proposal is clearly of strategic or national importance. Compatibility should be achieved, in order of preference, through: a) avoiding, or b) minimising, or c) mitigating adverse impacts. d) If it is not possible to mitigate significant adverse impacts, proposals should set out the reasons for proceeding.	**Chapter 18 Material Assets - Marine Infrastructure states**: *'There is one oil and gas exploration area (SEL2/11) located within the study area. The licence for this exploration area expired in August 2020 (DECC, 2020), and therefore is no longer an 'authorised' active exploration licence. In February 2021, DECC confirmed it would no longer be accepting new applications for exploration licences for natural gas or oil.'* The CWP Project is therefore compliant with Petroleum Policy 1.	**Chapter 18 Material Assets - Marine Infrastructure**
Petroleum Policy 2 Proposals potentially affecting future potential activity in areas (blocks) subject to existing	Same as above	**Chapter 18 Material Assets - Marine Infrastructure**

Planning Policy Description	CWP Project Response	Application Documentation Reference
petroleum authorisations should avoid sterilization of that area for future petroleum-related activity consistent with Government policy, and demonstrate how they, in order of preference: a) avoid, or b) minimise, or c) mitigate potential adverse impacts on those activities. d) If it is not possible to mitigate significant adverse impacts, proposals should set out the reasons for proceeding.		

Appendix A.22 Energy – Transmission

Planning Policy Description	CWP Project Response	Application Documentation Reference
Transmission Policy 1 Subject to the appropriate environmental assessments, electricity transmission proposals that maintain or improve the security and diversity of Ireland's energy supply should be supported, including interconnectors, relevant EU Projects of Common Interest (PCIs), and projects in receipt of relevant alternative EU priority energy infrastructure classification provided for by the EU TEN-E regulations. This should include development of the offshore transmission system and connection with the onshore transmission system necessary to meet the Government's target of 5 GW of offshore renewables by 2030, as well as development of associated transmission system / interconnector infrastructure for hybrid offshore projects, connecting offshore renewable energy installations with Ireland and one or more other electricity transmission systems	The proposed CWP Project includes all elements of transmission ie. offshore export cable corridor (OECC, offshore substation, inter-array cables and interconnection cables), onshore cables and the associated building (substation, Gas Insulated Switchgear (GIS) and statcom). In this regard, it is considered that the proposed CWP Project is supported by the NMPF.	**Chapter 4 Description of Project Description**
Transmission Policy 2 Proposals for activities that are in or could affect energy transmission proposals in sites held under a permission or that are subject to an ongoing permitting or consenting process	The proposed CWP Project does not affect energy transmission proposals. The applicant is cognisant of proposals in the public domain and will continue to liaise with Eirgrid.	

Planning Policy Description	CWP Project Response	Application Documentation Reference
for energy transmission proposals should demonstrate that they will, in order of preference: Compatibility should be achieved, in order of preference, through: a) avoiding, or b) minimising, or c) mitigating adverse impacts. d) If it is not possible to mitigate significant adverse impacts, proposals should set out the reasons for proceeding.		
Transmission Policy 3 Decisions on transmission developments should be informed by consideration of space required for other activities of national importance described in the NMPF.	The EIAR has assessed the impacts arising from the CWP Project on other users/uses of national importance. The project as it stand before ABP has been fully informed by consideration of space required from other activities of national importance. Specifically, in relation to the offshore transmission element of this project, i.e the OECC and the offshore substations, the number of offshore substations has been reduced as much as possible and they have been located within the array to avoid navigational hazard. The OECC has been designed to minimise impacts on other uses. Its construction phase in particular will not cause material disruption to the users of Dún Laoghaire Harbour. As part of the design and assessment phase of the project, all yacht clubs were invited to attend a navigation risk workshop and have been consulted with. The applicant will notify them during the construction phase to minimise disruption. Chapter 16 on	**EIAR Chapter 16 Shipping and Navigation**

Planning Policy Description	CWP Project Response	Application Documentation Reference
	Shipping and Navigation acknowledges that the OECC passed within Dún Laoghaire Harbour's limits and within 500m of the harbour entrance at its closest. Any impact would be temporary in nature and spatially limited to the area immediately around the installation operation. Access into the harbour would not be compromised. The proposed CWP Project is also cognisant of aspirational growth plans for the harbour which will potentially see up to two approach channels dredged. At this stage there is no information within the public domain, however Dún Laoghaire-Rathdown Harbour (DLRH) have provided sufficient detail to enable CWP Project to identify and plan areas of deeper cable burial to support DLH's future growth aspirations. The OTI at Poolbeg has been design in consultation with Dublin Port Company (DPC) to ensure alignment between the CWP Project plans and DPC's 3FM plans.	
Transmission Policy 4 Where possible, opportunities for land-based, coastal infrastructure that is critical to and supports energy transmission should be prioritised in plans and policies. Designation of land-based zones for the purposes of co-ordination and integration with relevant Marine Plans must be considered, where appropriate.	The Planning Report has set out the policies of the Dublin City Development Plan (CDP) 2022-2028 insofar as they relate to critical infrastructural. The policies of the CDP are supportive of the CWP Project, specifically the OTI.	**Planning Report**
Transmission Policy 5 Proposals for construction or operation activities within one nautical mile of either of	N/A - there is no natural gas interconnector within one nautical mile of the proposed project as these are located to the north of Dublin.	

Planning Policy Description	CWP Project Response	Application Documentation Reference
the two existing natural gas interconnector pipelines shall be avoided. If construction or operation activities are proposed to take place within one nautical mile of either of the two existing natural gas interconnector pipelines, the views of Gas Networks Ireland in relation to how such activities could impact the pipelines shall be taken into account and either appropriate mitigation measures put in place or the proposed activities altered. If construction or operation activities involve the crossing of either of the two existing natural gas interconnector pipelines by other pipelines or cables, the views of Gas Networks Ireland in relation to how such activities could impact the pipelines shall be taken into account and either appropriate mitigation measures be put in place or the proposed activities altered.		
Transmission Policy 6 Subject to required assessments for the protection of the environment, and only where in keeping with the outcome of the review of the security of energy supply of Ireland's electricity and natural gas systems (which is being carried out by Department of the Environment, Climate and Communications), and not involving the importation of fracked gas, additional proposals for natural gas	N/A	

Planning Policy Description	CWP Project Response	Application Documentation Reference
transmission/import infrastructure should be supported.		

Appendix A.23 Fisheries

Planning Policy Description	CWP Project Response	Application Documentation Reference
Fisheries Policy 1 Proposals that may have significant adverse impacts on access for existing fishing activities, must demonstrate that they will, in order of preference: a) avoid, b) minimise, or c) mitigate such impacts. d) If it is not possible to mitigate significant adverse impacts on fishing activity, the public benefits for proceeding with the proposal that outweigh the significant adverse impacts on existing fishing activity must be demonstrated.	CWPL is engaging directly with commercial fishers, fishing stakeholders, is an active participant in Wind Energy Ireland's Fisheries Working Group, and is a key participant in the Government-led Seafood/Offshore Renewable Energy forum and a number of its associated sub groups. Fishing is not predicted to be excluded from the Project area during O&M as the array layout design has considered fishing activity that occurs in the area. Infrastructure has been sited appropriately to facilitate co-existence where possible. Operational safety zones may apply around structures and would usually be up to 50m. However, given the total area of the offshore Project area, it is not expected that the impact would be significant. The design of the inter-array, interconnector and export cables will not present any restriction to the majority of fishing effort in the local area. **Chapter 12 Commercial Fisheries** describes mitigation measures applied to minimise disruption to fishing activity, and avoid significant effects.	**Chapter 12 Commercial Fisheries**
Fisheries Policy 2 Where significant impact upon fishing activity arising from any proposal is identified, a Fisheries Management and Mitigation Strategy (FMMS) should be prepared by the proposer of development or other maritime area use, in consultation with local fishing interests and other	Whilst there are no residual significant (fleet level) impacts predicted in **EIAR Volume 3, Chapter 12 Commercial Fisheries**, some short term significant impacts were identified during construction that require additional mitigation. Therefore, CWP Project has chosen to bring forward and implement a **FMMS** thereby reducing residual impact.	**FMMS** **Appendix A – Annex A Ecosystem Services Report** **Chapter 9 Fish, Shellfish and Turtle Ecology**

Planning Policy Description	CWP Project Response	Application Documentation Reference
interests as appropriate. All efforts should be made to agree the FMMS with those interests. Those interests should also undertake to engage with the proposer and provide best available, transparent and accurate information and data in a timely manner to help complete the FMMS. The FMMS should be drawn up as part of readying a proposal prior to submission, with measures identified to be considered in finalising conditions of any authorisations granted. Development of the strategy should be coordinated with other relevant assessments such as EIA where possible. The content of the Fisheries Management and Mitigation Strategy (FMMS) should be relevant to the particular circumstances and could include: • An assessment of the potential impact of all stages of the development or other suggested use on the affected fishery or fisheries, both in socio-economic terms and in relation to environmental sustainability. This assessment should include consideration of any impact upon cultural identity within fishing communities, as well as identifying indirect / in-combination matters. • A recognition that the disruption to existing fishing opportunities / activity should be minimised as far as possible. • Demonstration of the public benefit(s) that outweigh the significant impacts identified.	Assessment of potential impacts of all stages of the CWP Project is addressed in **EIAR, Volume 3, Chapter 12 Commercial Fisheries**. The cultural value associated with the marine environment, including fisheries, is considered in the ecosystem services assessment (**Annex A to this Appendix of the Planning Report**). This includes consideration of inter alia cultural ecosystem services with reference to the psychical, psychological and spiritual benefits that humans obtain from contact with nature, and provisioning services derived from the direct connection between the ecosystem and provisioning services including fisheries and aquaculture. Section 6 of the **FMMS** recognises the disruption to fishing activity should be minimised as far as possible and outlines the mitigation measures to achieve this. **The Planning Report** outlines the public benefits of the proposed CWP Project. Section 6 of this **FMMS** outlines embedded mitigation identified in EIAR Volume 3, **Chapter 12 Commercial Fisheries**, therefore CWP considers the public benefit of the CWP project outweigh the significant impacts identified. Impacts and mitigation measures associated with the sustainability of fisheries are assessed in EIAR volume 3, **Chapter 9 Fish, Shellfish and Turtle Ecology**. All contents of the **FMMS** have been consulted on with the fisheries stakeholders. They were also invited to comment on the document through the planning process. Industry feedback will inform the development of the post-consent	**Chapter 12 Commercial Fisheries** **Planning Report**

Planning Policy Description	CWP Project Response	Application Documentation Reference
• Reasonable measures to mitigate any constraints which the proposed development or use may place on existing or proposed fishing activity. • Reasonable measures to mitigate any potential impacts on sustainability of fish stocks (e.g. impacts on spawning grounds or areas of fish or shellfish abundance) and any socio-economic impacts. Where it does not prove possible to agree the FMMS with all interests: • Divergent views and the reasons for any divergence of views between the parties should be fully explained in the FMMS, and dissenting views should be given a platform within the said FMMS to make their case. • Where divergent views are identified, relevant public authorities should be engaged to identify informal and formal steps designed to enable proposal(s) to progress.	**FMMS**, which will be based on policies and stakeholder feedback relevant at that time.	
Fisheries Policy 3 Proposals that enhance the sustainability of fisheries or support a sustainable fishing industry, including the industry's diversification and or enhanced resilience to the effects of climate change, should be supported provided they fully meet the environmental safeguards contained within authorisation processes	Impacts associated with the sustainability of fisheries are assessed in **EIAR Volume 3, Chapter 12 Commercial Fisheries**. CWP Project has developed a Sustainable Fishers Charter and has committed to a Fisheries Fund. Impacts associated with the sustainability of fisheries are assessed in **EIAR Volume 3, Chapter 12 Commercial Fisheries.** The document outlines the impacts during	**Chapter 12 Commercial Fisheries** **Fisheries Management Mitigation Strategy**

Planning Policy Description	CWP Project Response	Application Documentation Reference
	operations and maintenance (O&M), including detail on array layout and cable burial, and confirmation that fishing will not be excluded from the CWP Project offshore development area. Primary mitigation measures relevant to the assessment of commercial fisheries are set out in **EIAR Volume 3, Chapter 12 Commercial Fisheries**.	
Fisheries Policy 4 Infrastructural proposals that enable access to fishing activities should be supported provided they fully meet the environmental safeguards contained within authorisation processes.	Impacts associated with the sustainability of fisheries are assessed in EIAR Volume 3, **Chapter 12 Commercial Fisheries**. The document outlines the impacts during O&M, including detail on array layout and cable burial, and confirmation that fishing will not be excluded from the CWP Project offshore CWP Project area. Primary mitigation measures relevant to the assessment of commercial fisheries are set out in EIAR Volume 3, **Chapter 12 Commercial Fisheries.** Impacts associated with fish habitat are assessed in EIAR **Volume 3, Chapter 9 Fish, Shellfish and Turtle Ecology**. While no significant impacts have been identified, CWP Project is undertaking feasibility studies for nature inclusive design (Fisheries Policy 3 to enhance fish habitat) within the voluntary biodiversity strategy for the project (this does not form part of the planning application).	**Chapter 12 Commercial Fisheries**
Fisheries Policy 5 Proposals, regardless of the type of activity they relate to, enhancing essential fish habitat, including spawning, nursery and feeding grounds,	Impacts associated with fish habitat are assessed in EIAR Volume 3, **Chapter 9 Fish, Shellfish and Turtle Ecology**. Whilst no significant impacts have been identified, the CWP Project are undertaking feasibility studies for nature inclusive	**Chapter 9 Fish, Shellfish and Turtle Ecology**

Planning Policy Description	CWP Project Response	Application Documentation Reference
and migratory routes should be supported. If proposals cannot enhance essential fish habitat, they must demonstrate that they will, in order of preference: a) avoid, b) minimise, c) mitigate significant adverse impact on essential fish habitat, including spawning, nursery and feeding grounds, and migration routes. d) If it is not possible to mitigate significant adverse impact on essential fish habitat, proposals must set out the reasons for proceeding.	design (Fisheries Policy 3 to enhance fish habitat) within the voluntary biodiversity strategy for the project (this does not form part of the planning application).	
Fisheries Policy 6 Ports and harbours should seek to engage with fishing and other relevant stakeholders at an early stage to discuss any changes in infrastructure that may affect them. Any port or harbour developments should take account of the needs of the dependent fishing fleets with a view to avoiding commercial harm where possible. Where a port or harbour has reached a minimum level of infrastructure required to support a viable fishing fleet, there should be a presumption in	Impacts and mitigation associated with fishing fleets are assessed in **EIAR Volume 3, Chapter 12 Commercial Fisheries**. Whilst CWP Project is not a port and harbour project, with a view of avoiding commercial harm, in depth consultation with ports and harbours have been considered in the existing baseline information. An overview of consultation undertaken is outlined in **EIAR Volume 3, Chapter 12 Commercial Fisheries.**	**Chapter 12 Commercial Fisheries**

Planning Policy Description	CWP Project Response	Application Documentation Reference
favour of maintaining this infrastructure, provided there is an ongoing requirement for it to remain in place and that it continues to be fit for purpose.		

Appendix A.24 Ports, Harbours and Shipping

Planning Policy Description	CWP Project Response	Application Documentation Reference
Ports, Harbours and Shipping Policy 1 To provide for shipping activity and freedom of navigation the following factors will be taken into account when reaching decisions regarding development and use: • The extent to which the locational decision interferes with existing or planned routes used by shipping, access to ports and harbours and navigational safety. This includes commercial anchorages and approaches to ports as well as key littoral and offshore routes; • A mandatory Navigation Risk Assessment; • Where interference is likely: whether reasonable alternatives can be identified; and • Where there are no reasonable alternatives: whether mitigation through measures adopted in accordance with the principles and procedures established by the International Maritime Organisation can be achieved at no significant cost to the shipping or ports sector.	Impacts on shipping and navigation receptors are assessed in **Chapter 16 Shipping and Navigation**. Adverse impacts have been avoided and / or mitigated. A **Navigation Risk Assessment** accompanies the planning application.	**Chapter 16 Shipping and Navigation** **Appendix 16.3 Navigational Risk Assessment**

Planning Policy Description	CWP Project Response	Application Documentation Reference
Ports, Harbours and Shipping Policy 2 Proposals that may have a significant impact upon current activity and future opportunity for expansion of port and harbour activities should demonstrate that they will, in order of preference: a) avoid, b) minimise, or c) mitigate significant adverse impacts, and d) if it is not possible to mitigate significant adverse impacts on current activity and future opportunity for expansion of port and harbour activities, proposals should set out the reasons for proceeding.	Impacts on shipping and navigation receptors are assessed in **Chapter 16 Shipping and Navigation**. Adverse impacts have been avoided and / or mitigated. A **Navigation Risk Assessment** accompanies the planning application. **Chapter 18 Material Assets - Marine Infrastructure** assesses interactions of the CWP Project with existing marine infrastructure. It also considers future aspirational plans by Dún Laoghaire Harbour (DLH) which will potentially include up to two dredged approach channels. As there is no publicly available information, DLH provided details to allow CWPL to propose deeper cable burial depth to ensure no impediment to DLH potential growth plans. The project design is also mindful of proposals by DPC in relation to the 3FM project. CWPL has worked closely with DPC to ensure that the proposal before ABP does not impinge or cause any impediment to the 3FM plans.	**Chapter 16 Shipping and Navigation** **Chapter 18 Material Assets - Marine Infrastructure**
Ports, Harbours and Shipping Policy 3 Proposals that may have a significant impact upon current activity and future opportunity for expansion of port and harbour activities must demonstrate consideration of the National Ports Policy, the National Planning Framework, and relevant provisions related to the TEN-T network.	The proposed CWP Project is cognisant of DPC's designation as a Tier 1 Port of National Significance and as part of the Ten-T network. **Section 4.2.20** of the **Planning Report** deals with the specific provisions of the National Port Policy. The applicant has engaged closely with DPC to ensure that the CWP Project of CWP would not impinge or hinder the potential to further develop the capacity of DPC. **Chapter 18 Material Assets - Marine Infrastructure** assesses interactions of the CWP Project with existing marine infrastructure. It also considers future aspirational plans by Dún Laoghaire Harbour (DLH) which will potentially include up to two dredged approach channels. As there is no publicly available	**Chapter 16 Shipping and Navigation** **Chapter 18 Material Assets - Marine Infrastructure** **Planning Report**

Planning Policy Description	CWP Project Response	Application Documentation Reference
	information, DLH provided details to allow CWPL to propose deeper cable burial depth to ensure no impediment to DLH potential growth plans.	
Ports, Harbours and Shipping Policy 4 Proposals within ports limits, beside or in the vicinity of ports, and / or that impact upon the main routes of significance to a port, must demonstrate within applications that they have: • been informed by consultation at pre-application stage or earlier with the relevant port authority; • have carried out a navigational risk assessment including an analysis of maritime traffic in the area; and • have consulted Department of Transport, MSO and Commissioners of Irish Lights. Applicants must continue to engage parties identified in pre-application processes as appropriate during the decision-making process.	As detailed in **Chapter 16 Shipping and Navigation**, CWPL has consulted with key parties including DPC and Dún Laoghaire Harbour. Wicklow and Arklow Harbours were also invited to attend the applicant's navigation hazard workshop held in 2023. Engagement with the Commissioner of Irish Lights and the Marine Survey Office have also informed the EIAR. A **Navigation Risk Assessment** has been undertaken as required which includes analysis of vessel traffic in the area based on multiple data sources.	**Chapter 16 Shipping and Navigation** **Appendix 16.3 Navigational Risk Assessment** **Public and Stakeholder Consultation Report**
Ports, Harbours and Shipping Policy 5 Proposals for capital dredging will be supported where it is necessary to safeguard national port capacity and Ireland's international connectivity, and where required compliance assessments associated with authorisations have been carried out and	This project does not include capital dredging. This policy does not apply. However, there is an element of dredging involved. The applicant will seek a dumping at sea licence from the Environmental Protection Agency.	

Planning Policy Description	CWP Project Response	Application Documentation Reference
incorporated into subsequent competent authority decision(s).		
Ports, Harbours and Shipping Policy 6 In areas of authorised dredging activity, including those subject to navigational dredging, proposals for other activities will not be supported unless they are compatible with the dredging activity.	N/A	
Ports, Harbours and Shipping Policy 7 Proposals for maintenance dredging activity will be supported where: • relevant decisions by competent authorities incorporate the outcome of statutory environmental assessment processes, as well as necessary compliance assessments associated with authorisations, including in relation to the planning process; • there will be no significant adverse impact on marine activities or uses or the maritime area. Any potential adverse impact will be, in order of preference, avoided, minimised or mitigated; • dredged waste is managed in accordance with internationally agreed hierarchy of waste management options for sea disposal;	N/A	

Planning Policy Description	CWP Project Response	Application Documentation Reference
• if disposing of dredged material at sea, existing registered disposal sites are used, in preference to new disposal sites; and • where they contribute to the policies and objectives of this NMPF.		
Ports, Harbours and Shipping Policy 8 Proposals that cause significant adverse impacts on licensed disposal areas should not be supported. Proposals that cannot avoid such impact must, in order of preference" a) minimise, b) mitigate, or c) if it is not possible to mitigate the significant adverse impacts, proposals must set out the reasons for proceeding	N/A - the proposed CWP Project is not located on or near a licensed disposal area.	
Ports, Harbours and Shipping Policy 9 Proposals for the management of dredged material must demonstrate that they have been assessed against the waste hierarchy (see Glossary).	N/A - this policy specifically relates to dredged material in the context of Ports and Harbours.	
Ports, Harbours and Shipping Policy 10 Proposals identifying new dredge disposal sites which are subject to best practice and	N/A - this policy specifically relates to dredged material in the context of Ports and Harbours.	

Planning Policy Description	CWP Project Response	Application Documentation Reference
guidance from previous studies should be supported where: • competent authority decisions incorporate necessary compliance assessments associated with authorisations; and • they contribute to the policies and objectives of this NMPF. Proposals must include an adequate characterisation study, be assessed against the waste hierarchy and must be informed by consultation with all relevant stakeholders.		

Appendix A.25 Safety at Sea

Planning Policy Description	CWP Project Response	Application Documentation Reference
Safety at Sea Policy 1 Proposals for installation, operation, and decommissioning of Offshore Wind Farms must demonstrate how they will: • Minimise navigational risk between commercial vessels arising from an increase in the density of vessels in maritime space as a result of wind farm layout; and • Allow for recreational vessels within the Offshore Wind Farm (including consideration of turbine height) or redirect recreational vessels, minimising navigational risk arising between recreational and commercial vessels.	**Chapter 16 Shipping and Navigation** assesses potential impacts on commercial and recreational vessels. Adverse impacts have been avoided and / or mitigated, and the assessment concludes no significant effects. The WTGs will have a minimum spacing of approximately 1km which is considered sufficient to facilitate transits by small vessels. Restrictions to vessel entry into the array site are not expected. The array layouts have been designed to allow Search and Rescue (SAR) lanes in at least one line of orientation.	**Chapter 16 Shipping and Navigation** **Appendix 16.3 Navigational Risk Assessment**
Safety at Sea Policy 2 Proposals for infrastructure that have the potential to significantly reduce under-keel clearance must demonstrate how they will, in order of preference: a) avoid, b) minimise, c) mitigate	In relation to under keel clearance, the EIAR found that the frequency of occurrence where issues could arise was 'remote'. CWPL proposes primary and additional mitigation, committing to not reducing water depths in the approach of DLH. The EIAR concludes that the significance of the effect is predicted to be tolerable and not significant.	**Chapter 16 Shipping and Navigation**

Planning Policy Description	CWP Project Response	Application Documentation Reference
adverse impacts, or d) if it is not possible to mitigate significant adverse impacts, proposals should set out the reasons for proceeding.		
Safety at Sea Policy 3 All proposals for temporary or permanent fixed infrastructure in the maritime area must ensure navigational marking in accordance with appropriate international standards and ensure inclusion in relevant charts where applicable.	**Chapter 16 Shipping and Navigation** describes that lighting and marking as directed by Irish Lights and in compliance with the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) G1162 (IALA, 2021a) has been assumed as embedded mitigation.	**Chapter 16 Shipping and Navigation**
Safety at Sea Policy 4 Establishing, changing or disestablishing Aids to Navigation (AtoN) must be sanctioned, in advance of works, by the Commissioners of Irish Lights.	**Chapter 16 Shipping and Navigation** describes that lighting and marking as directed by Irish Lights and in compliance with IALA G1162 (IALA, 2021a) has been assumed as embedded mitigation, as has marking on relevant nautical charts.	**Chapter 16 Shipping and Navigation**
Safety at Sea Policy 5 Proposals must identify their potential impact, if any, on Maritime Emergency Response (Search and Rescue (SAR), Maritime Casualty and Pollution Response) operations. Where a proposal may have a significant impact on these operations it must demonstrate how it will, in order of preference: a) avoid, b) minimise,	Impacts associated with SAR operations are assessed in **Chapter 16 Shipping and Navigation.**	**Chapter 16 Shipping and Navigation**

Planning Policy Description	CWP Project Response	Application Documentation Reference
c) mitigate adverse impacts, or d) if it is not possible to mitigate significant adverse impacts, proposals should set out the reasons for proceeding, supported by parties responsible for maritime SAR.		

Appendix A.26 Sports and Recreation

Planning Policy Description	CWP Project Response	Application Documentation Reference
Sports and Recreation Policy 1 Proposals that promote sustainable development of water-based sports and marine recreation, while enhancing community health, wellbeing and quality of life, should be supported, provided that due consideration is given to environmental carrying capacities and tourism pressures.	N/A	
Sports and Recreation Policy 2 Proposals should demonstrate the following in relation to potential impact on recreation and tourism: • The extent to which the proposal is likely to adversely impact sports clubs and other recreational users, including the extent to which proposals may interfere with facilities or other physical infrastructure. • The extent to which any proposal interferes with access to and along the shore, to the water, use of the resource for recreation or tourism purposes and existing navigational routes or navigational safety. • The extent to which the proposal is likely to adversely impact on the natural environment.	**Chapter 16 Shipping and Navigation** concludes no significant effects on recreational users.	**Chapter 16 Shipping and Navigation**

Planning Policy Description	CWP Project Response	Application Documentation Reference
Sports and Recreation Policy 3 Opportunities to promote inclusive development of water-based sports and marine recreation should be supported, where appropriate and at the applicable scale, with a focus on facilities for people with disabilities.	Restrictions to vessel entry into the array site during O&M are not expected.	**Chapter 16 Shipping and Navigation**
Sports and Recreation Policy 4 Proposals that improve access to marine and coastal resources for tourism activities, and sport and recreation should be supported, where appropriate, at the applicable scale and aligned with existing development plans	The construction of OTI will involve the rerouting of the footpath to the Irishtown nature park and Shellybank Beach. At the most, as viewed in **Chapter 29 Population**, it is expected that there may be disruption of up to two days and can therefore be considered minimised for the purposes of the NMPF.	**Chapter 29 Population**
Sports and Recreation Policy 5 Proposals should seek to enhance water safety through provision of appropriate International Organization for Standardization (ISO) and European Committee for Standardization (CEN) compliant safety signage. In general the safety of persons should be a key consideration for planners and due consideration should be given to best practice guidance for marine and coastal recreation areas endorsed by the Visitor Safety in the Countryside Group	N/A – the project is not designed to increase safety. However, **Chapter 16 Shipping and Navigation** concludes no significant effects on shipping and navigation receptors.	**Chapter 16 Shipping and Navigation**

Appendix A.27 Telecommunications

Planning Policy Description	CWP Project Response	Application Documentation Reference
Telecommunications Policy 1 Proposals that guarantee existing and future international telecommunications connectivity which is critically important to support the future needs of society, Government, the provision of Public Services and enterprise in Ireland, should be supported.	Reference is made to **Chapter 18 Material Assets - Marine Infrastructure** of the EIAR. Cable crossings will be protected using concrete mattresses. The export cables will be laid across the mattress at an angle as close as possible to 90 degrees. The export cable will then be covered by a second mattress to secure the cables in place and ensure that they remain protected.	**Chapter 18 Material Assets - Marine Infrastructure**
Telecommunications Policy 2 Preference should be given to proposals where evidence is provided of an integrated approach to CWP Project and activity, such as the bundling of cables (electricity and communications) where suitable, as well as pipelines for multiple activities, to minimise impacts on the marine environment, infrastructures and other users. Compatibility should be achieved, in order of preference, through: a) avoiding, or b) minimising, or c) mitigating adverse impacts, or	N/A	

Planning Policy Description	CWP Project Response	Application Documentation Reference
d) If it is not possible to mitigate significant adverse impacts, proposals should set out the reasons for proceeding.		
Telecommunication Policy 3 Preference should be given to proposals that protect submarine cables whilst achieving successful seabed user coexistence, such as the bundling of cables (electricity and communications) as well as pipelines for multiple activities where suitable. Proposals should specify if separate access to cables for the purposes of repair and maintenance is required. With regard to decommissioning redundant submarine cables, a risk-based approach should be applied with consideration given to cables being left in situ where this would minimise significant impacts on the physical, natural, societal, historic, and economic value of the area	See above in relation to Telecommunication Policy 1.	**Chapter 18 Material Assets - Marine Infrastructure**
Telecommunications Policy 4 Proposals that ensure and enhance connectivity of Ireland's rural and island communities to high quality telecommunications networks should be supported.	N/A	

Appendix A.28 Tourism

Planning Policy Description	CWP Project Response	Application Documentation Reference
Tourism Policy 1 Where appropriate, proposals enabling, promoting or facilitating sustainable tourism and recreation activities, particularly where this creates diversification or additional utilisation of related facilities beyond typical usage patterns, should be supported.	N/A	
Tourism Policy 2 Proposals must identify possible impacts on tourism. Where a potential significant impact upon tourism is identified it should be demonstrated how the potential negative consequences to tourism in communities will be minimised. This must include assessment of how the benefits of proposals are not outweighed by potential negative impacts	**Chapter 29 Population** assesses the impacts of the construction and O&M phases of the project on tourism. It concludes that the construction phase would not be expected to result in negative impacts on the tourism economy. It also did not identify significant effects on tourism as a result of the O&M phase of the project.	**Chapter 29 Population**
Tourism Policy 3 Proposals for tourism development should seek to optimise facilities and use of space by taking a cross-sectoral development approach that provides for multiple activities, whilst minimising the extent to which the proposal is likely to adversely impact on the natural environment	N/A	

Appendix A.29 Wastewater Treatment and Disposal

Planning Policy Description	CWP Project Response	Application Documentation Reference
Wastewater Treatment and Disposal Policy 1 Proposals by Irish Water related to the treatment and disposal of wastewater that: i) service the social and economic development of the country under the National Planning Framework; ii) resolve environmental issues at priority areas identified by the EPA; iii) contribute to the realisation of the objectives of: • Ireland's River Basin Management Plan 2018 – 2021 • The Water Services Policy Statement 2018 – 2025 • Marine Strategy Framework Directive 2012 - 2020 should be supported, provided they fully meet the environmental safeguards contained within relevant authorisation processes.	N/A	
Wastewater Treatment and Disposal Policy 2 Proposals that have the potential to significantly adversely affect existing and planned wastewater management and treatment infrastructure where a consent or authorisation	The EIAR has assessed the impacts of the project on the Uisce Eireann assets and has not identified significant effects.	**Chapter 18 Material Assets - Marine Infrastructure**

Planning Policy Description	CWP Project Response	Application Documentation Reference
or lease has been granted or formally applied for by Irish Water should not be authorised unless: • compatibility with the existing, authorised, proposed or otherwise identified in consultations with Irish Water activity, can be satisfactorily demonstrated; • the proposal is clearly of strategic or national importance. Where possible, proposals that may affect Irish Water activities or plans should engage with Irish Water at the earliest available opportunity. Compatibility should be achieved, in order of preference, through: a) avoiding adverse impacts on those activities; and / or b) minimising impacts where they cannot be avoided; and / or c) mitigating impacts where they cannot be minimised.	The applicant has extensively engaged with Uisce Eireann throughout the project design phase.	

2. The following policy themes were not considered to apply or to have interactions with the proposed scheme:

- The proposed development is not on or near aquaculture production areas. It is therefore considered that the aquaculture NMPF policies do not apply.
- Natural gas, as the development is for offshore wind energy.
- Mineral exploration, as the development is for offshore wind farm.
- Rural Coastal and Island Communities.

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codling wind park

Annex 1: Ecosystem Services

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Abbreviations

Abbreviation	Term in Full
ABP	An Bord Pleanála
ADD	Acoustic Deterrent Device
AEZ	Archaeological Exclusion Zone
ALARP	As Low As Reasonably Practicable
CEMP	Construction Environmental Management Plan
CICES	Common International Classification of Ecosystem Services
CWP	Codling Wind Park Project
EA	Ecosystem Approach
EAC	Environmental Assessment Criteria
EBM	Ecosystem Based Management
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
ERCoP	Emergency Response and Cooperation Plan
EU	European Union
EVMP	Ecological Vessel Management Plan
FLO	Fisheries Liaison Officer
FMMS	Fisheries Management and Monitoring Strategy
GES	Good Environmental Status
HWM	High Water Mark
INNS	Invasive Non Native Species
LoD	Limit of Deviation
MAC	Maritime Area Consent
MEA	The Millennium Ecosystem Assessment
MMMP	Marine Mammal Mitigation Protocol
MMO	Marine Mammal Observer

Abbreviation	Term in Full
MSFD	Marine Strategy Framework Directive
NIS	Natura Impact Statement
NMPF	National Marine Planning Framework
NSP	Navigational Safety Plan
OMPP	Overarching Marine Planning Policies
OSS	Offshore Substation Structure
OTI	Onshore Transmission Infrastructure
OWF	Offshore Wind Farm
PAM	Passive Acoustic Monitoring
SAR	Search and Rescue
SEA	Strategic Environmental Assessment
WTG	Wind Turbine Generator

Definitions

Glossary	Meaning
the Applicant	The developer, Codling Wind Park Limited (CWPL).
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.
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.
limit of deviation (LoD)	Locational flexibility of permanent and temporary infrastructure is described as a LoD from a specific point or alignment.
Maritime Area Consent (MAC)	A Maritime Area Consent (MAC) provides State authorisation for a prospective developer to undertake a maritime usage and occupy a specified part of the maritime area. A MAC is required to be in place before planning consent can be sought.
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.
onshore transmission infrastructure (OTI)	The onshore transmission assets comprising the TJBs, onshore export cables and the onshore substation. The EIAR considers both permanent and temporary works associated with the OTI.
transition joint bay (TJB)	This is required as part of the OTI and is located at the landfall. It is an underground bay housing a joint which connects the offshore and onshore export cables.
wind turbine generator	All the components of a wind turbine, including the tower, nacelle, and rotor.

ECOSYSTEM SERVICES

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 report is a stand-alone document to support the planning application for the CWP Project. The requirement for consideration of the implications of development on ecosystem services is outlined by the National Marine Planning Framework (NMPF, 2021). The NMPF notes that proposals for marine infrastructure projects in Irish water must consider a number of specific aspects of ecosystem services during planning. These are the following:

   - The space required for coastal habitats;
   - The space required to maintain normal ecosystem functions; and
   - The space required to provide normal ecosystem services.

3. The ecosystems services aspect requires the proposed project to demonstrate an ability to conform with legal requirements to avoid, minimise or mitigate for net loss of coastal habitat.

4. It is important to note that the CWP Project will not result in the loss of coastal habitat. This document therefore principally focusses on providing an understanding of the potential effects that may cause an impediment to the ability of normal ecosystem functions and services to function.

5. It is also worthy of note that the CWP project proposes to contribute to the enhancement of coastal habitats and ecosystems through strategic partnerships with academic institutes. Whilst not a specific component of the planning application or Environmental Impact Assessment the proposed enhancements will be delivered through the implementation of the CWP Project Biodiversity Strategy. An Bord Pleanála (ABP) have encouraged CWP Project to include the information on proposed BNG strategy and demonstrate the positive non EIA measures CWP aspire to bring forward.

1.1 Ecosystem Services and classification

6. Ecosystems are multifunctional communities of living organisms interacting with each other and their environment. Ecosystems provide a series of services for human well-being (ecosystem services) either directly (as food and fibre) or indirectly by providing clean air and water. Marine ecosystem services can be defined as those services that are provided by the processes, functions and structure of the marine environment that directly or indirectly contribute to societal welfare, health and economic activities.

7. The Millennium Ecosystem Assessment (MEA, 2005) aimed to provide evidence for action needed to protect ecosystems and their ecosystem services. It provided a classification system separating the ecosystem services into four groupings. The first three, provisioning services, regulation and maintenance services and cultural services, were all underpinned by the fourth, supporting services.

8. The UN Common International Classification of Ecosystem Services (CICES, 2013) has since been developed using MEA as a starting point and then refined to reflect some of the key issues identified in the wider research literature. It has been endorsed as a tool for classification of ecosystem services by the United Nations and the European Commission.

9. In Ireland the same CICES approach has been used in the classification of Valuing Ireland's Blue Ecosystem Services (Norton et al., 2018) (**Section 2.3.22.3.2**).

2 Legislation, policy and guidance

2.1 Legislative Context

2.1.1 The Marine Strategy Framework Directive (MSFD)

10. The Marine Strategy Framework Directive (MSFD) 2008/56/EC, its amending Commission Directive (EU) 2017/845 and Commission Decision (EU) 2017/848 collectively set out the legal requirements, benchmarks, criteria and methodological standards by which the European Union aims to have a high quality, clean and productive marine environment, as well as environmentally sustainable maritime activities.

11. Article 1 of the MSFD states marine strategies shall be developed and implemented in order to:

(a) protect and preserve the marine environment, prevent its deterioration or, where practicable, restore marine ecosystems in areas where they have been adversely affected;

(b) prevent and reduce inputs in the marine environment, with a view to phasing out pollution as defined in Article 3(8), so as to ensure that there are no significant impacts on or risks to marine biodiversity, marine ecosystems, human health or legitimate uses of the sea.

Marine strategies shall apply an ecosystem-based approach to the management of human activities, ensuring that the collective pressure of such activities is kept within levels compatible with the achievement of good environmental status and that the capacity of marine ecosystems to respond to human-induced changes is not compromised, while enabling the sustainable use of marine goods and services by present and future generations.

12. The MSFD is the environmental pillar of the EU's Integrated Maritime Policy. At the core of the MSFD is the determination, achievement and maintenance of Good Environmental Status (GES) according to 11 qualitative condition descriptors. Good Environmental Status' (GES) is defined under Article 3(5) of the Directive as *"the environmental status of marine waters where these provide ecologically diverse and dynamic oceans and seas which are clean, healthy, and productive within their intrinsic conditions, and the use of the marine environment is at a level that is sustainable, thus safeguarding the potential for uses and activities by current and future generations"*. Recent communication from the EU Commission (C/2024/2078) provides specific GES threshold values for habitat loss, adverse effects on habitats, impulsive noise, continuous noise and litter.

13. Under the MSFD, a cyclical implementation process of evaluation and reporting is required. In addition to the assessment and determination of environmental status, programmes of monitoring and programmes of measures are legally required of Member States in order to underpin the effective and coherent determination and the achievement or maintenance of GES.

14. The principle tool for achieving GES is the application of the ecosystem approach (EA) using ecosystem based management (EBM). EA is defined as "*An integrated resource planning and management approach that recognizes the connections between land, air and water and all living things, including people, their activities and institutions"*. EBM is defined as "*a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way – the ecosystem approach*".

15. EBM and the EA facilitate achieving GES, improving management and understanding of pressures and impacts from human activity to reduce undesirable impacts on the marine environment.

16. Ireland has established a total of 25 binding environmental targets and associated methodological standards established in 2020 (Marine Strategy Framework Directive 2008/56/EC - Article 17 update to Ireland's Marine Strategy Part 1: Assessment (Article 8), Determination of Good Environmental Status (Article 9) and Environmental Targets (Article 10) and which represent Ireland's overarching and core policy statements on its marine environment under the MSFD (NMPF, 2021). They are spread across all 11 GES Descriptors (**Table 1**), and they are applicable to a wide range of criteria elements set out in Commission Decision (EU) 2017/848.

Table 1 MSFD Descriptors of Good Environmental Status (for more in depth descriptions see: Descriptors under the Marine Strategy Framework Directive - European Commission (europa.eu))

Ref.	Descriptor	Descriptor criteria
1	Marine biodiversity	Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions.
2	Non-indigenous species	Non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystems.
3	Commercial fish and shellfish	Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock.
4	Food webs	All elements of the marine food webs, to the extent that they are known, occur at normal abundance and diversity and levels capable of ensuring the long-term abundance of the species and the retention of their full reproductive capacity.
5	Eutrophication	Human-induced eutrophication is minimised, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algae blooms and oxygen deficiency in bottom waters.
6	Seabed integrity	Sea-floor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected.
7	Hydrographical conditions	Permanent alteration of hydrographical conditions does not adversely affect marine ecosystems.
8	Contaminants	Concentrations of contaminants are at levels not giving rise to pollution effects.
9	Contaminants in seafood	Contaminants in fish and other seafood for human consumption do not exceed levels established by Union legislation or other relevant standards.
10	Marine litter	Properties and quantities of marine litter do not cause harm to the coastal and marine environment.
11	Energy, including underwater noise	Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment.

2.1.2 The Maritime Spatial Planning (MSP) Directive

17. The Maritime Spatial Planning (MSP) Directive 2014/89/EU establishes a framework for maritime spatial planning and was adopted in July 2014. The Directive obliges all coastal EU Member States to establish maritime spatial plans by March 2021. When establishing and implementing maritime spatial planning, Member States are obliged by the Directive to consider economic, social and environmental aspects to support sustainable development and growth in the maritime sector, applying an ecosystem-based approach, and to promote the co-existence of relevant activities and uses. The Directive requires Member States to use their maritime spatial plans to aim to contribute to the sustainable development of energy sectors at sea, of maritime transport, and of the fisheries and aquaculture sectors, and to the preservation, protection and improvement of the environment, including resilience to climate change impacts. Additionally, it allows Member States to pursue other objectives such as the promotion of sustainable tourism and the sustainable extraction of raw materials.

18. The CWP Project, through the EIAR, demonstrates the consideration of the MSFD descriptors and ability to conform with legal requirements to avoid, minimise or mitigate where possible effects of the CWP Project. This paper provides an assessment of the effects of the CWP Project through application of an ecosystem-based approach as the MSFD and MSP Directives require.

2.2 Policy Context

2.2.1 The National Marine Planning Framework (NMPF)

19. The National Marine Planning Framework (NMPF) sets out the framework and proposed approach to managing Ireland's maritime activities to ensure the sustainable use of marine resources up to 2040. The plan covers Ireland's maritime area, including internal waters (sea area), territorial seas, exclusive economic zone (EEZ) and continental shelf. Environment policies in the NMPF have been split into nine categories largely aligned to the MSFD GES descriptors as well as addressing air quality and climate change.

20. In particular, the Environmental – Ocean Healthy Policy 1 from the NMPF outlines the overarching policies and objectives related to ocean health and ecosystem service management. By following this policy, the CWP Project can demonstrate how mitigation measures for the ecosystem services affected by its construction align with NMPF policy goals by highlighting contributions to areas such as biodiversity conservation, water quality improvement, reduced marine litter and mitigation of underwater noise.

21. As part of the NMPF, the Ocean Health Policy 1 requires any chapters complying with NMPF policies relating to biodiversity, non-indigenous species, water quality, sea-floor and water column integrity, marine litter and underwater noise to demonstrate a contribution to the main MSFD targets with which they relate to. This report is structured to show the relevant NMPF policies for each EIAR chapter alongside the related MSFD descriptors in order to comply with Ocean Health Policy 1 as seen in **Table 2**. Further to this, Table 4 addresses in more detail the contribution made by the Project to relevant MSFD and NMPF policies by EIAR chapter.

22. MSFD GES descriptors are an example of paired management and operational objectives in the context of ecosystem service based management. The management of benthic habitats in relation to the Project results in an operational and functioning habitat state (Roux and Pedreschi, 2024).

23. The NMPF Overarching Marine Planning Policies (OMPPs) apply to all proposals capable of having impacts in the maritime area. They apply equally to proposals that would be located in the maritime

area, and to proposals that would be located outside of the maritime area but capable of having an impact in the maritime area. OMPPs are grouped according to environmental, social and economic objectives and policies. OMPPs are supplemented by, and should be read in conjunction with, the Sectoral Marine Planning Policies (SMPPs). For any given proposal, a range of OMPPs and SMPPs may need to be considered and applied to ensure full compliance with all relevant NMPF objectives and policies.

24. The NMPF makes reference to Ecosystem Services within various elements of the framework which is applicable to the CWP Project. The policy notes *inter alia* 'Proposals must take account of the space required for coastal habitats, for ecosystem functioning and provision of ecosystem services, and demonstrate that they will, in order of preference and in accordance with legal requirements: a) avoid, b) minimise, or c) mitigate for net loss of coastal habitat'.

25. All applications for activity or development in Ireland's maritime area, including those made under the Maritime Area Planning Act 2021, as amended, will be considered in terms of their consistency with the objectives of the plan.

26. The information presented in **Table 2** provides a comparison between the overarching marine planning policies (OMPPs) outlined in the NMPF and any relevant MSFD descriptors. The alignment between these policies is covered in the corresponding EIAR chapter, where the OMPP does not have to be directly related to the MSFD descriptor to be included.

Table 2 Relevant NMPF policies drawn from MSFD Descriptors related to the EIAR topics.

EIAR Topic	MSFD Descriptor	Relevant NMPF OMPPs
Marine Geology, Sediments and Coastal Processes	6. Seabed integrity	Seafloor and Water Column Integrity Policy 3
	7. Hydrographical conditions	Seafloor and Water Column Integrity Policy 3
	8. Contaminants	Water Quality Policy 1
	10. Marine litter	Marine Litter Policy 1
Marine Water Quality	1. Marine biodiversity	Biodiversity Policy 1
	2. Non-indigenous species	Non-indigenous Species Policy 1
	5. Eutrophication	Water Quality Policy 1
	8. Contaminants	Water Quality Policy 1
	7. Hydrographical conditions	Seafloor and Water Column Integrity Policy 3
	9. Contaminants in seafood	Dealt with via policies operated alongside NMPF
	11. Energy, including underwater noise	Underwater Noise Policy 1
Subtidal and Intertidal Ecology	1. Marine biodiversity	Biodiversity Policy 1
	2. Non-indigenous species	Non-indigenous Species Policy 1
	4. Food webs	Biodiversity Policy 1
	7. Hydrographical conditions	Seafloor and Water Column Integrity Policy 3

EIAR Topic	MSFD Descriptor	Relevant NMPF OMPPs
	8. Contaminants	Water Quality Policy 1
	9. Contaminants in seafood	Dealt with via policies operated alongside NMPF
	11. Energy, including underwater noise	Underwater Noise Policy 1
Fish, Shellfish and Turtle Ecology	1. Marine biodiversity	Biodiversity Policy 1
	2. Non-indigenous species	Non-indigenous Species Policy 1
	4. Food webs	Biodiversity Policy 1
	8. Contaminants	Water Quality Policy 1
	9. Contaminants in seafood	Dealt with via policies operated alongside NMPF
	11. Energy, including underwater noise	Underwater Noise Policy 1
Ornithology	1. Marine biodiversity	Biodiversity Policy 1
	2. Non-indigenous species	Non-indigenous Species Policy 1
	4. Food webs	Biodiversity Policy 1
	8. Contaminants	Water Quality Policy 1
	9. Contaminants in seafood	Dealt with via policies operated alongside NMPF
	11. Energy, including underwater noise	Underwater Noise Policy 1
Marine Mammals	1. Marine biodiversity	Biodiversity Policy 1
	4. Food webs	Biodiversity Policy 1
	11. Energy, including underwater noise	Underwater Noise Policy 1
Commercial Fisheries	1. Marine biodiversity	Biodiversity Policy 1
	3. Commercial fish and shellfish	Dealt with via policies operated alongside NMPF
	4. Food webs	Biodiversity Policy 1
Offshore Bats	1. Marine biodiversity	Biodiversity Policy 1
	4. Food webs	Biodiversity Policy 1
	11. Energy, including underwater noise	Underwater Noise Policy 1
Marine Archaeology and Cultural Heritage	N/A	Heritage Assets Policy 1
Seascape, Landscape and Visual Impacts	N/A	Seascape and Landscape Policy 1 Social Benefits Policy 2

2.2.2 National Biodiversity Action Plan

27. In addition to the NMPF, Ireland has a 4th National Biodiversity Action Plan 2023-2030 as one of its seven objectives to "Conserve and restore biodiversity and ecosystem services in the marine environment". The Plan notes that pressures from human activities on Ireland's coastal and marine biodiversity and ecosystem services arise from a growing range of sources including nutrient and chemical discharge from human activities, for example from industry, agriculture, municipal wastewater, and through direct physical disturbance from, for instance, shipping, recreation and aquaculture, and habitat degradation from pollution, litter, artificial noise and light.

28. The NBAP takes account of the wide range of policies, strategies, conventions, laws and targets at the global, EU and national level in order to scale up biodiversity action. The Plan contains five Objectives, each addressing a different theme that will contribute to the realisation of the vision for biodiversity:

- Objective 1: Adopt a whole-of-Government, Whole-of-Society approach to biodiversity

  - Proposed actions include capacity and resource reviews across Government; determining responsibilities for the expanding biodiversity agenda; providing support for communities, citizen scientists and business; and mechanisms for the governance and review of the National Biodiversity Action Plan.

- Objective 2: Meet urgent conservation and restoration needs

  - Supporting actions will build on existing conservation measures. Efforts to tackle Invasive Alien Species will be elevated. The protected area network will be expanded to include the Marine Protected Areas. The ambition of the EU Biodiversity Strategy will be considered as part of an evolving work programme across Government.

- Objective 3: Secure nature's contribution to people

  - Actions highlight the relationship between nature and people in Ireland. These include recognising the tangible and intangible values of biodiversity, promoting nature's importance to Irish culture and heritage and recognising how biodiversity supports Ireland's society and economy.

- Objective 4: Enhance the evidence base for action on biodiversity

  - This objective focuses on biodiversity research needs, as well as the development and strengthening of long-term monitoring programmes that will underpin and strengthen future decision-making. Action will also focus on collaboration to advance ecosystem accounting that will contribute towards natural capital accounts.

- Objective 5: Strengthen Ireland's contribution to international biodiversity initiatives

  - Collaboration with other countries and across Ireland will play a key role in the realisation of this Objective. Ireland will strengthen its contribution to international biodiversity initiatives and international governance processes, such as the United Nations Convention on Biological Diversity.

29. The CWP Project must ensure that any potential impacts on the marine environment during the lifetime of the project are limited to remain in line with objectives of the NMPF and Ireland's National Biodiversity Action Plan 2023-2030. This is done by predicting the overall significance of effect on individual receptors presented within the EIAR, and mitigating impacts where necessary to insure there is no impediment to the objectives being met.

2.2.3 Offshore Renewable Energy Development Plan (OREDP I & II)

30. The OREDP provides a mechanism to inform and coordinate policy and implementation across the energy, environment and economic areas, supporting the sustainable exploitation of Ireland's offshore wind and ocean energy resources out to 2030. A key objective of the OREDP is to provide a policy framework for the assessment of applications for planning consents and the carrying out of Environmental Impact Assessments (EIA) for individual projects.

31. In order to ensure that significant adverse effects in the marine environment as a result of the development of offshore renewable energy projects are managed appropriately, measures to avoid, reduce or offset any potential significant adverse effects have been developed through the Strategic Environmental Assessment (SEA) and Natura Impact Statement (NIS) processes. To this end, two forms of mitigation have been identified as being required to achieve the appropriate level of protection – measures at the level of the OREDP i.e. plan level mitigation measures and measures at the level of individual projects i.e. suggested project level mitigation measures.

32. The CWP Project will align with the suggested project level mitigation measures where practicable in line with the OREDP.

2.3 Research and Guidance

33. The following provides a brief summary of the research and guidance sources that have been used in informing the consideration of the implication for ecosystem services presented within this document. The individual EIAR chapters have been completed using a risk led approach (Roux and Pedreschi, 2024). Understanding the ecosystem services relevant to the CWP Project allows negative implications from construction, operation, maintenance and decommissioning to be considered in terms of their impacts on humans (ABPmer et al*.,* 2020). Where possible specific Irish guidance and research has been used, but broader international information is also provided where relevant.

2.3.1 UK Energy Research Centre Database of Evidence

34. A UK Energy Research Centre (UKERC) funded Phase 4 Research Programme developed a 'Database of Evidence for the impact of Offshore wind farms on Marine Ecosystem Services'

UKERC_OWF_ES_evidence_database_v.1.xlsx (live.com).

35. The evidence database was collated through a semi-systematic review of global primary literature (primary or peer reviewed literature) and UK grey literature regarding the impacts of OWF developments. Data was extracted from each evidence source, for each subject or marine ecosystem component that was impacted by the OWF development, the phase of development, the specific pressure and other relevant information about the wind farm or location. Expert judgement by ecosystem services scientists was used to map each piece of evidence for impacts on the marine environment according to CICES v5.1 or MEA (Millenium Ecosystem Assessment) and other published classification systems for ecosystem services.

36. The database can be interrogated by individual users by applying filters on the headers assigned to each column e.g., 'Population'. This filters the evidence to relevant sources for each EIAR topic. Whilst not drafted specifically for Ireland the information included within the database draws on extensive experiences across the offshore wind industry and has been used to inform this report. A summary of evidence from the database has been provided in **Table 4**.

2.3.2 Ireland's Blue Ecosystem Services

37. The Socio-Economic Marine Research Unit (SEMRU) within the Whitaker Institute of NUI Galway, have a main research focus examining the economic utility of the marine environment (e.g. transportation, recreation) and the ecological value (e.g. fisheries, aquaculture) derived from the productivity of associated ecosystems. The SEMRU non-technical report 'Valuing Ireland's Blue Ecosystem Services' (Norton et al., 2018) is focused on the ecosystem service benefits that society receives from Ireland's marine environment, complementing previous work on the Irish ocean economy.

38. The report itself aims to improve stakeholder and policymaker's understanding of Ireland's blue economy and encourage the development of sustainable economic activities that foster "blue growth". The report outlines some of its goals as the following:

- Provide an overview of the marine ecosystem services in Ireland;
- Estimate the value to society of the ecosystem services outlined;
- Provide data that can be used to manage and plan decisions related to human activities within the marine environment;
- Give an understanding of the important and potential economic trade-offs associated with existing marine users; and
- Identify knowledge gaps in determining the economic value of all ecosystem services.

This report has been used to define the marine ecosystem services of relevance to the CWP project.

2.4 Marine Ecosystem Services

39. Taking the above research, legislative, and policy framework into account, this report considers that marine ecosystem services can be classified as provisioning, regulation and maintenance, cultural or supporting services (Norton et al., 2018) as follows:

- **Provisioning services** – These ecosystem services are tangible goods and there is often a direct connection between the ecosystem and the provision of these ecosystem services. Examples of the provisioning ecosystem services generated by Irish marine and coastal ecosystems are the fish and seaweed that are harvested and also the aquaculture production around Ireland's coasts.
- **Regulation and maintenance services** – These ecosystem services regulate the world around us and often are consumed indirectly. Examples of these ecosystem services include carbon sequestration which helps to mitigate climate change, treatment of wastewater and its return to the hydrological cycle and flood and storm protection by sand dunes and saltmarsh which lessens the damage from winter storms.
- **Cultural services** – The cultural ecosystem services refer to the psychical, psychological and spiritual benefits that humans obtain from contact with nature. Examples of the cultural ecosystem services in the Irish marine and coastal zones include recreational activities such as walking along the beach, surfing, etc. and also the added value that having a sea view from your house has on your well-being.
- **Supporting ecosystem services** uphold and enable the maintenance and delivery of the other ecosystem service categories. To avoid double counting, supporting services tend not to be included in ecosystem value assessments as only final impacts on well-being are counted as economic benefits. For example, the effects of changes in nutrient cycling in marine systems will be reflected in the final welfare impact on provisioning services such as commercial fish catches or in the cultural service of recreational fishing.

40. SEMRU consider Marine Renewable Energy under 'Other Marine Services' as shown in **Plate 1** below. The SEMRU report references the Common International Classification of Ecosystem Services (**Paragraph 88** CICES).

41. While there is an accompanying classification of abiotic (non-living) outputs from natural systems, CICES mainly focuses on biotic (living) elements rather than abiotic elements of nature. Therefore, the use of water as a medium for transportation of goods, as in the case of shipping, is not classed as an ecosystem service (ABPmer et al., 2020). Another example is oil and gas; although of biological origin they are considered abiotic mineral resources for the purposes of the CICES and are not assessed. Both shipping and oil and gas are valuable marine services, while these services are not included within a CICES based ecosystem services assessment, these other abiotic services should still be considered in policy and decision making processes. With regards to the CWP Project, these abiotic elements of marine ecosystem services are assessed in the following EIAR chapters:

- Chapter 16 Shipping and Navigation
- Chapter 17 Aviation, Military and Radar
- Chapter 18 Material Assets – Marine Infrastructure

Plate 1 Ecosystem Services from the Sea (SEMRU) (Norton et al., 2018)

3 Marine Ecosystem Services Assessment

42. An assessment can be used to evaluate potential impacts on marine ecosystem services within the context of the EIAR prepared for marine infrastructure projects. This is a useful tool at the planning stage as it can inform further mitigation measures necessary to reduce impacts on ecosystem service components by assessing multiple indicators and feedback loops (Roux and Pedreschi, 2024). CWP have therefore provided consideration of the implications of the CWP Project on ecosystem services, using the following approach.

3.1 Approach

43. The process of the assessment is as follows:

- Screen each ecosystem service as outlined by Norton et al., (2018) for relevance to the CWP Project, and if screened IN, assign to one or more EIAR topic;
- Use the potential impacts scoped into the EIAR topic chapter to inform the potential for the project to affect the ecosystem service;
- Use the impact assessment completed in the EIAR topic chapter to inform the overall effect to the ecosystem service;
- Outline the primary mitigation measures taken by the CWP Project to reduce impacts on the ecosystem service and topic being assessed;
- Where appropriate, state the overall predicted effect from the preliminary assessment on the individual MSFD Descriptors (2017) of GES related to the ecosystem service and topic being assessed; and
- Include any additional evidence or studies used to inform the preliminary assessment of the ecosystem service or topic being assessed.

3.2 Ecosystem Service Screening

44. **Table 3** below provides an initial screening of each ecosystem service for possible interaction with the CWP Project, where there is likely to be an interaction, this has been screened IN and signposted to the EIAR topic(s). Ecosystem services which do not interact with the CWP Project are screened OUT and are not carried forward to the assessment.

Table 3 The marine ecosystem services of Ireland (as outlined by Norton et al., 2018) screened IN or OUT of the assessment

Ecosystem Service (Norton et al., 2018)	Screened IN / OUT by CWP Project with relevant chapters
Provisioning	
Offshore capture fisheries	IN: Chapter 12 Commercial Fisheries
Aquaculture	OUT: There are no aquaculture sites in the vicinity of the CWP Project
Algae / seaweed Harvesting	OUT: There are no algae / seaweed harvesting activities taking place in the vicinity of the CWP Project
Genetic materials	OUT: The provision of genetic materials is not impacted by the CWP Project

Ecosystem Service (Norton et al., 2018)	Screened IN / OUT by CWP Project with relevant chapters
Water for non-drinking purposes	OUT: Water for non-drinking purposes such as power station cooling and agricultural abstraction is not assessed as although there are a number of abstractions unrelated to the CWP Project within the study area, the use and abstraction volume is unknown for most. All water abstractions over 25 m^3 per day must be registered with EPA. There are no such registered abstractions within 500 m of the Onshore Transmission Infrastructure (OTI) on the Poolbeg Peninsula (Chapter 20 Hydrology and Hydrogeology) so this ecosystem service is not considered.
Regulating and Maintenance	
Waste services	OUT: The CWP Project does not impact on the ability of the marine environment to mediate waste and is not located on or near any dumping at sea areas.
Coastal defence	OUT: Any change in capacity of the marine environment within the CWP Project area to provide coastal defence services is scoped out, on the basis that there is no net loss of coastal habitat. In addition, all works at landfall are temporary, and works are limited to intertidal muds, a lower order of coastal defence habitat when compared to saltmarsh.
Lifecycle and habitat services	IN: Chapter 6 Marine Geology, Sediments and Coastal Processes Chapter 7 Marine Water Quality Chapter 8 Subtidal and Intertidal Ecology Chapter 9 Fish, Shellfish and Turtle Ecology Chapter 10 Ornithology Chapter 11 Marine Mammals
Pest and disease control	IN: Chapter 9 Fish, Shellfish and Turtle Ecology Chapter 10 Ornithology
Climate regulation	OUT: Climate regulation by marine environments is not explored by the CWP Project
Cultural	
Recreational services	IN: Chapter 9 Fish, Shellfish and Turtle Ecology Chapter 10 Ornithology Chapter 11 Marine Mammals Chapter 15 Seascape, Landscape and Visual Impact Assessment Chapter 16 Shipping & Navigation

Ecosystem Service (Norton et al., 2018)	Screened IN / OUT by CWP Project with relevant chapters
Scientific and educational services	IN: The collection, collation, and analysis of a very substantive body of scientific data has informed the CWP Project EIAR, and this data will be made available publicly. Further to this CWP Project is committed to undertaking appropriate site specific and strategic scale monitoring which will contribute towards the better understanding of the functioning of the marine environment and the implications of offshore wind. An In Principle Project Monitoring Plan will be submitted with the planning application and details the proposed monitoring at CWP Project. Chapter 6 Marine Geology, Sediments and Coastal Processes Chapter 8 Subtidal and Intertidal Ecology Chapter 10 Ornithology Chapter 11 Marine Mammals Chapter 12 Commercial Fisheries Chapter 13 Offshore Bats Chapter 14 Marine Archaeology & Cultural Heritage Chapter 16 Shipping & Navigation
Marine heritage, culture and entertainment	IN: Chapter 14 Marine Archaeology & Cultural Heritage
Aesthetic services	IN: Chapter 15 Seascape, Landscape and Visual Impact Assessment
Spiritual and emblematic values	IN: Chapter 14 Marine Archaeology & Cultural Heritage Chapter 15 Seascape, Landscape and Visual Impact Assessment
Non-use values	OUT: Non-use values (existence and bequest values e.g., satisfaction with the knowledge a resource exists by an individual not currently making use of the resource) associated with marine environments are not explored by the CWP Project

4 Marine Ecosystem Services Assessment

45. The following is an assessment undertaken for the CWP Project (see **Table 4**

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
Offshore Capture Fisheries		

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
Chapter 12 – Commercial Fisheries	The estimated value for landings made by capture fisheries within the Irish EEZ (vessels 15 m<) was over EU470 million in 2015 (Norton et al., 2018). The CWP Project must ensure that the offshore area impacted by the Project maintains the population abundance, distribution, habitat and diversity of species caught by offshore fisheries in line with MSFD Descriptors 1 and 4. MSFD Descriptor 3 dealt with via policies operated alongside NMPF, as not all MSFD GES descriptors are suitable for delivery through a State-level, plan-led approach to spatial management. A search of the UKERC database filtering for Commercial Fish, indicates an overall general decrease in catch per unit effort and negative affect on abundance. There is also suggestion of a negative impact on static and towed gears of commercial fisheries along with a generally negative economic impact on commercial fisheries. In some areas of Europe and the USA, an increase in catch per unit effort was recorded for cod, pouting, sole and brown crab during wind farm operation.	Primary mitigation measures include: • Construction Environmental Management Plan (CEMP) to be adhered to during construction phase. • The WTG layout options have been developed to avoid or minimise interaction 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. • A Navigational Safety Plan (NSP) has been prepared for shipping and navigation purposes, including the safe navigation of fishing vessels. • Cables will be buried where practicable to provide the cables with protection against damage and reduce interference with other sea users including fishing activities. 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. • Appropriate liaison would be undertaken with all relevant fishing interests to ensure that they are fully informed of development planning, construction and maintenance activities (Marine Notices). • Appointment of a Fisheries Liaison Officer (FLO). • Production of a Fisheries Management and Mitigation Strategy (FMMS). • Prohibition of discarding objects or materials overboard; rapid recovery of any accidentally dropped objects. Additional mitigation measures include: • Gear trials to assess practicality of potting activity within the operational array site. This could include alterations to normal gear configurations, such as number of pots per string and / or direction the gear is set with respect to turbine locations. • Monitoring of catch rates within the array site, including a control site outside the array site. **Minor to Negligible / Minor effect** is predicted for all commercial fisheries receptors, and commercially targeted fish species as a result of the CWP Project. As there are no significant effects anticipated on the specific commercial fisheries receptors, including those that may occur through inter-related factors, it can be concluded that there will be no impediment to the ability of normal ecosystem functions and services to function with regards to commercial capture fisheries, and accordingly no impediment to the relevant objectives of the MSFD and NMPF being met. Similar mitigation measures have been adopted by other OWF including the implementation of safety zones during

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
		construction and maintenance activities (Awel y Môr, 2023); ensuring the burial of cables wherever possible to reduce damage caused by and to fishing gear (Norfolk Vanguard, 2018a; Norfolk Boreas, 2020); timely and efficient notices of works to relevant marine environment stakeholders (Norfolk Vanguard, 2018a; Norfolk Boreas, 2020) and appointment of a Fisheries Liaison Officer (FLO) to assist in this and similar effects (Vanguard, 2018a; Norfolk Boreas, 2020; Awel y Môr, 2023); the employment of policies to prohibit discarding of objects/materials overboard and rapid recovery of any objects in case of accidental loss at sea (Norfolk Vanguard, 2018a; Norfolk Boreas, 2020).
Lifecycle and habitat services		
Chapter 6 – Marine Geology, Sediments and Coastal Processes	Marine geology, sediments and coastal processes must be maintained to ensure the seabed is habitable for marine organisms. The spatial extent and distribution of permanent alteration of hydrographical conditions to the seabed and water column, is at a level that ensures that the structure and functions of the ecosystems are safeguarded and that benthic ecosystems, in particular, are not adversely affected in line with MSFD Descriptors 6, 7 and 8. UKERC database, filtering for Sediment and Geology, indicates an overall general increase in sediment loss via plumes and scour and accretion effects on the seabed. There is generally no impact on sedimentation and geology and seabed features. There were some differences in impacts experienced between different windfarms. Despite their close proximity, the Norfolk Vanguard offshore wind farm found a negative impact on water quality and suspended sediment	Primary mitigation measures include: • Route planning to avoid hard substrate to ensure cable burial, and minimise bedform clearance and minimise use of cable protection measures. • Sufficient turbine separation distance has been defined between adjacent wind turbines within each row and between rows, minimising the potential for cumulative wake effects between adjacent wind turbines. • Disposal of dredged material will occur in suitable locations within the MAC application boundary. This has the benefit of maintaining the sediment budget for the wider sediment cell, minimising impacts on seabed and sandbank morphology and the wider sediment regime. • During construction all necessary equipment will remain on site for the minimum practical period of time to ensure any impacts on the prevailing hydrodynamic, wave and sediment regimes and coastal processes is minimised. Based on the predicted level of effects it is concluded that no additional mitigation is required beyond the primary mitigation measures. **Minor / Negligible/Minor effect** is predicted for all Marine Geology, Sediments and Coastal Processes receptors as a result of the CWP Project. As there are no significant effects anticipated on the specific marine geology, sediments and coastal processes receptors, including those that may occur through inter-related factors, it can be concluded that there will be no impediment to the ability of normal ecosystem functions and services to function with regards to marine geology, sediments and coastal processes, and accordingly no impediment to the relevant objectives of the MSFD and NMPF being met. Other offshore wind farm projects that included similar mitigation measures such as the use of micro-siting to ensure cable burial wherever possible (Norfolk Vanguard, 2018a; Norfolk Boreas, 2020); targeting areas of seabed that cater for cable burial e.g., avoiding hard substrates

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
	whereas the Norfolk Boreas offshore wind farm found no impact on water quality and suspended sediment. The result of these impacts is an overall negative to no impact on regulating and maintenance ecosystem services.	(Rampion 2, 2023); ensuring sufficient distance is maintained between individual turbines to reduce impacts to marine physical processes (Norfolk Vanguard 2018a, Norfolk Boreas, 2020); disposal of dredged material in licensed sites (Awel y Môr, 2023).
Chapter 7 – Marine Water Quality	Marine water quality must be maintained to ensure the water column is habitable for marine organisms. The CWP Project must ensure that the offshore area impacted by the Project does not impact trophic guilds inhabiting the water column through anthropogenic pressures such as introduction of non-native species; adverse effects of increased nutrient levels on marine water quality; increased concentrations of contaminants that may exceed OSPAR assessed limits (CEMP and Environmental Assessment Criteria - EAC); an increased spatial extent and distribution of temporary or permanent habitat loss exceeding specified proportions of the natural extent of habitat type in the Project area; the introduction of energy that may be harmful to marine animals in line with MSFD Descriptors 1, 2, 5, 7, 8 and 11. MSFD Descriptor 9 dealt with via policies operated alongside NMPF. A search of the UKERC database, filtering for water quality, indicates an overall negative impact on marine	Primary mitigation measures include: • Bedform clearance operations will be undertaken only where necessary, thereby minimising sediment disturbance and alteration to seabed morphology. • A Construction Environmental Management Plan (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. The CEMP includes: ○ Vessels and plant relating to all stages of the Project will follow OSPAR, International Maritime Organisation (IMO) and International Convention for the Prevention of Pollution from Ships (MARPOL) guidelines, and industry best practice regarding pollution at sea including waste management. • All drill fluids and grouts will comply with industry best practice and standards to avoid, minimise and prevent harm to the environment. Based on the predicted level of effects it is concluded that no additional mitigation is required beyond the primary mitigation measures. **No significant effect** is predicted for all marine water quality receptors as a result of the CWP Project. As there are no significant effects anticipated on the specific marine water quality receptors, including those that may occur through inter-related factors, it can be concluded that there will be no impediment to the ability of normal ecosystem functions and services to function with regards to marine water quality, and accordingly no impediment to the relevant objectives of the MSFD and NMPF being met. Some offshore wind farms use similar mitigation measures such as the standardised production of (Project) Environmental Management Plans (EMP) (Norfolk Vanguard, 2018a).

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
	water quality during all stages of an offshore wind farm. This implies an overall negative impact to regulating and maintenance ecosystem services.	
Chapter 8 – Subtidal and Intertidal Ecology	Subtidal and intertidal ecology, in particular the habitats within this category, must be maintained to ensure the subtidal and intertidal areas within the scope of the Project are habitable for marine organisms. The CWP Project must ensure that the offshore area impacted by the Project does not impact trophic guilds inhabiting subtidal and intertidal areas through anthropogenic pressures such as introduction of non-native species; adverse effects of increased nutrient levels on marine water quality; increased concentrations of contaminants that may exceed OSPAR assessed limits (CEMP and EAC); an increased spatial extent and distribution of temporary or permanent habitat loss exceeding specified proportions of the natural extent of habitat type in the Project area; the introduction of energy that may be harmful to marine animals in line with MSFD Descriptors 1, 2, 4, 7, 8 and 11. MSFD Descriptor 9 dealt with via policies operated alongside NMPF. A search of the UKERC database, filtering for habitat, non-native species and EMF, shows increases in non-	Primary mitigation measures include: • Pre-construction surveys will be conducted to ensure accurate routing of cables and siting of turbines to avoid as far as practicable areas of sensitive reef habitats by cable installation. • A Construction Environmental Management Plan (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. The CEMP includes details of: ○ Offshore biosecurity and invasive species management detailing how the risk of introduction and spread of invasive non-native species will be minimised. ○ Measures proposed to ensure effective handling of chemicals, oils and fuels including compliance with the MARPOL convention. • Cables will be suitably buried or will be protected by other means when burial is not practicable, which will reduce the potential for impacts relating to EMF. Additional cable protection is likely to be used in any areas where the target burial depth (as defined by the Cable Burial Risk Assessment) is not achieved. Based on the predicted level of effects it is concluded that no additional mitigation is required beyond the primary mitigation measures. **No significant effect** is predicted for all subtidal and intertidal ecology receptors as a result of the CWP Project. As there are no significant effects anticipated on the specific subtidal and intertidal ecology receptors, including those that may occur through inter-related factors, it can be concluded that there will be no impediment to the ability of normal ecosystem functions and services to function with regards to subtidal and intertidal ecology, and accordingly no impediment to the relevant objectives of the MSFD and NMPF being met.

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
	native species abundance and habitat loss due to smothering. There were some differences in impacts between wind farms. The Awel y Môr offshore wind farm found no impact on habitat quality or quantity whereas the Rhiannon offshore wind farm predicted a negative impact. There was no impact on particle size or condition, health, injury, or community behaviour as a result of EMF emissions. There is overall negative to no impact to regulating and maintenance ecosystem services.	Other similar mitigation measures used by offshore wind farms include the avoidance of Annex I reef features and other sensitive habitat on the seabed for cable laying (Norfolk Vanguard, 2018a; Norfolk Boreas, 2020; Awel y Môr, 2023); the implementation of Biosecurity Plans to reduce the introduction/spread of INNS within areas associated with the offshore wind farm (Awel y Môr, 2023); The use of EMPs in case of accidental spills / leaks or other releases of contaminants into the marine environment (Norfolk Boreas, 2020; Awel y Môr, 2023); ensuring the burial or protection of offshore cables wherever possible to reduce the effect of EMF on subtidal and intertidal ecology receptors (Norfolk Vanguard, 2018a; Norfolk Boreas, 2020; Awel y Môr, 2023).
Chapter 9 – Fish, Shellfish and Turtle Ecology	Fish, shellfish and turtle ecology must be maintained to ensure the offshore areas within the scope of the Project support indigenous fish, shellfish and turtle populations. The CWP Project must ensure that the offshore area impacted by the Project does not impact areas inhabited by fish, shellfish and turtle through anthropogenic pressures such as introduction of non-native species; adverse effects of increased nutrient levels on marine water quality; increased concentrations of contaminants that may exceed OSPAR assessed limits (CEMP and EAC); the introduction of energy that may be harmful to marine animals in line with MSFD Descriptors 1, 2, 4, 8 and 11. MSFD Descriptor 9 dealt with via policies operated alongside NMPF.	Primary mitigation measures include: • Implementation of marine mammal mitigation protocols (MMMPs), which incorporate measures of mitigation for underwater noise which will benefit fish as well as marine mammals. • The 2014 DAHG guidance will be implemented alongside the use of soft charges / acoustic deterrent device (ADD) and pre-detonation searches prior to any UXO clearance. • A Construction Environmental Management Plan (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. The CEMP includes details of: ○ Offshore biosecurity and invasive species management detailing how the risk of introduction and spread of invasive non-native species will be minimised. ○ Measures proposed to ensure effective handling of chemicals, oils and fuels including compliance with the MARPOL convention. • Bedform clearance operations will be undertaken only where necessary, thereby minimising sediment disturbance and alteration to seabed morphology. • Export cables will be buried wherever possible, or otherwise protected by other means, to reduce the potential for effects relating to Electromagnetic Fields (EMF).

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
	A search of the UKERC database - filtering for habitat, benthic, EMF and sediment - indicates an overall negative (but not significant with regards EIA) impact on fish and shellfish habitat due to smothering from increased Suspended Sediment Concentration (SSC) causing damage to fish and eggs; an increased risk of non-auditory injury and increase in non-native species abundance. When filtering for the same themes, there was overall no impact on condition, health, injury or community behaviour of fish and shellfish due to the presence of EMF. This suggests negative to no impact on associated provisioning and cultural ecosystem services.	Additional proposed mitigation includes: • Piling works along the River Liffey Channel will not be permitted between March and May to avoid noise impact during the smolt run. **No significant effect** is predicted for all fish and shellfish ecology receptors as a result of the CWP Project. As there are no significant effects anticipated on the specific fish and shellfish ecology receptors, including those that may occur through inter-related factors, it can be concluded that there will be no impediment to the ability of normal ecosystem functions and services to function with regards to fish and shellfish ecology, and accordingly no impediment to the relevant objectives of the MSFD and NMPF being met. Examples of other offshore wind farm projects implementing similar mitigation measures include the use of Biosecurity Plans and following best practice guidelines to prevent the proliferation of INNS in any area associated with project development (Awel y Môr, 2023); the burial of offshore cables to at least 1m (and use of cable protection where burial is not possible) to reduce impacts to fish and shellfish receptors from EMF (Norfolk Vanguard, 2018a; Awel y Môr, 2023).
Chapter 10 - Ornithology	Ornithological receptors must be maintained to ensure the offshore areas within the scope of the Project support bird populations. The CWP Project must ensure that the offshore area impacted by the Project does not impact areas inhabited by birds through anthropogenic pressures such as introduction of non-native species; adverse effects of increased nutrient levels on marine water quality; increased concentrations of contaminants that may exceed OSPAR assessed limits (Coordinated Environmental Monitoring and Assessment Programme and Environmental Assessment Criteria); the introduction of energy that may be harmful to marine	Primary mitigation measures include: • The array site will feature turbine blade clearances of 36 m above msl, which is beyond the minimum required clearance of 22 m above msl. This will reduce potential impacts on species sensitive to collision risk. • A soft-start for intertidal pilling. • A Construction Environmental Management Plan (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. The CEMP includes details of: ○ Offshore biosecurity and invasive species management detailing how the risk of introduction and spread of invasive non-native species will be minimised. ○ Measures proposed to ensure effective handling of chemicals, oils and fuels including compliance with the MARPOL convention. • An Ecological Vessel Management Plan (EVMP) will be produced which will provide details on minimising the potential for disturbances to birds arising from vessels.

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
	animals in line with MSFD Descriptors 1, 2, 4, 8 and 11. MSFD Descriptor 9 dealt with via policies operated alongside NMPF. A search of the UKERC database, filtering for birds, habitat and noise, show an overall negative impact on collision and displacement risk; the barrier effect; habitat quantity, quality or natural extant and a decrease in foraging habitat. There is overall no impact on abundance of species or on noise disturbance. There is generally a negative impact to cultural ecosystem services relating to ornithology.	• The location and design of the onshore landfall and construction compounds have been purposefully located away from the grassland area known as 'goose green' which is part of the South Dublin Bay and River Tolka Estuary SPA, this location is known to be used by Light-bellied brent goose, a qualifying interest species of the SPA and who may have been impacted by habitat loss and / or disturbance impacts. • The onshore substation has been altered during the design stage to reduce and remove potential for perching opportunities for avian predator species such as peregrine falcon and hooded crow. The substation will feature mitigations such as steep angles to the band at the material junction, preventing perching on brisk work and metal cladding raised above roof parapet impairing hunting birds views, more details and figures of these measures can be seen in the CWP substation design statement (FaulknerBrowns Ltd, 2024). Proposed additional mitigation includes: • Various seasonal and daily temporal restrictions for construction activities (details provided within Chapter 10 Ornithology). **No significant effect** is predicted for all ornithology receptors as a result of the CWP Project after additional mitigation measures such as diurnal, seasonal and temporal restrictions on construction are implemented. As there are no significant effects anticipated on the specific ornithology receptors, including those that may occur through inter-related factors, it can be concluded that there will be no impediment to the ability of normal ecosystem functions and services to function with regards to ornithology, and accordingly no impediment to the relevant objectives of the MSFD and NMPF being met. A number of offshore wind projects have used similar mitigation techniques to avoid reduce impacts on ecosystem services such as the provision of Vessel Traffic Management Plans and EMPs (Awel y Môr, 2023); operating vessels in a way to minimise disturbance to birds as much as possible (Norfolk Boreas, 2020); increasing blade clearance height to reduce collision risk (Norfolk Boreas, 2020; Awel y Môr, 2023).
Chapter 11 – Marine Mammals	Marine mammal receptors must be maintained to ensure the offshore areas within the scope of the Project support marine mammal populations. The CWP Project must ensure that the offshore area impacted by the Project does	Primary mitigation measures include: • A Marine Mammal Mitigation Protocol (MMMP) has been prepared to outline the mitigation requirements for minimising the impacts on marine mammals during the construction of the CWP Project. The MMMP 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,

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
	not impact areas inhabited by marine mammals through anthropogenic pressures which impact the population abundance, distributional range, diversity or habitat; or through the introduction of energy that may be harmful to marine animals in line with MSFD Descriptors 1, 4 and 11. A search of the UKERC database, filtering for marine mammals shows an overall negative impact on behaviour due to underwater noise and impacts of suspended sediments on marine mammals and megafauna. Harbour Porpoise (*Phocoena Phocoena*), Grey Seal (*Halichoerus grypus*) and Harbour seal (*Phoca vitulina*) are generally at a higher risk of collision during operation of OWFs. There is overall no impact on the foraging ability of marine mammals during periods of increased suspended sediment concentrations. There is generally a negative impact to cultural ecosystem services relating to marine mammals.	prior to the start of construction. Primary mitigation measures in the MMMP include: ○ Pre geophysical survey visual watch by an MMO ○ Pre UXO detonation visual watch by an MMO ○ Pre UXO detonation PAM (if required to supplement to visual observations) • A site zonation approach to piling activities. • An Environmental Vessel Management Plan (EVMP) will be put in place to minimise the risk of collisions with vessels, and disturbance from vessels. • A Construction Environmental Management Plan (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. The CEMP includes details of: ○ Offshore biosecurity and invasive species management detailing how the risk of introduction and spread of invasive non-native species will be minimised. ○ Measures proposed to ensure effective handling of chemicals, oils and fuels including compliance with the MARPOL convention. Proposed additional mitigation includes: • Acoustic Deterrent Devices (ADDs) to deter marine mammals from the immediate vicinity of the pile. • Use of MMOs and PAM to detect marine mammals in the mitigation zone, the use of various at source noise abatement methods. • Use of alternative piling methods. **Negligible / minor effect** is predicted for all marine mammals receptors as a result of the CWP Project. As there are no significant effects anticipated on the specific marine mammals receptors, including those that may occur through inter-related factors, it can be concluded that there will be no impediment to the ability of normal ecosystem functions and services to function with regards to marine mammals, and accordingly no impediment to the relevant objectives of the MSFD and NMPF being met. Similar mitigation measures have been imposed by a number of offshore wind farm developments, including the development of MMMPs in relation to piling and UXO activities and the implementation of soft-start pile driving techniques to reduce the chance of physical and auditory injury to marine mammals and megafauna (Norfolk

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
		Vanguard, 2018a; Norfolk Boreas, 2020; Awel y Môr, 2023); the provision of Vessel Traffic Management Plans (Awel y Môr, 2023); the generation of EMPs to manage potential pollution events and impacts (Norfolk Boreas, 2020).
Pest and Disease Control		
Chapter 9 – Fish, Shellfish and Turtle Ecology	Pests and diseases cause economic loss through damage to organism and habitat health and biodiversity. Predators and parasitoids can control these invasive organisms as a biological control service. Predatory species of fish and shellfish can provide this biological control service, however they can also be adversely affected by non-native species introduction through competition for prey and proliferation of new diseases. The CWP Project must try to minimise introduction of non-native organisms that could become pests or introduce diseases to the existing ecosystem wherever possible in line with MSFD Descriptor 2.	As per previous Fish, Shellfish and Turtle Ecology section under **Lifecycle and habitat services**, which concludes that with the addition of the primary and secondary mitigation measures, such as implementation of a biosecurity plan, that there will be no adverse significant effects**.**
Chapter 10 - Ornithology	Pests and diseases cause economic loss through damage to organism and habitat health and biodiversity. Predators and parasitoids can control these invasive organisms as a biological control service. Predatory species of bird can provide this biological control service, however they can also be adversely affected by non-native species introduction through competition for prey and proliferation of new diseases. The CWP Project must try to minimise introduction of non-	As per previous Ornithology section under **Lifecycle and habitat services**, which concludes that with the addition of the primary and secondary mitigation measures, such as implementation of a biosecurity plan, that there will be no adverse significant effects**.**

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
	native organisms that could become pests or introduce diseases to the existing ecosystem wherever possible in line with MSFD Descriptor 2.	
Recreational Services		
Chapter 9 – Fish, Shellfish and Turtle Ecology	Recreational services contribute over EU1.5 billion to the Irish economy each year (Norton et al., 2018). The recreational activity of fishing from the sea or shore contributed over EU600 million to this total in 2014 (Norton et al., 2018). In order to maintain this ecosystem service in the future, the CWP Project must ensure the population abundance, distribution, diversity and habitat of fish and shellfish is not adversely affected within the Project area in line with MSFD Descriptor 1.	As per previous Fish, Shellfish and Turtle Ecology section under **Lifecycle and habitat services,** which concludes that with the addition of the primary and secondary mitigation measures, such as implementation of a biosecurity plan, that there will be no adverse significant effects**.**
Chapter 10 - Ornithology	Recreational services contribute over EU1.5 billion to the Irish economy each year (Norton et al., 2018). Bird watching contributed over EU27 million to this total in 2014 (Norton et al., 2018). In order to maintain this ecosystem service in the future, the CWP Project must ensure the population abundance, distribution, diversity and habitat of birds is not adversely affected within the Project area in line with MSFD Descriptor 1.	As per previous Ornithology section under **Lifecycle and habitat services,** which concludes that with the addition of the primary and secondary mitigation measures, such as implementation of seasonal restrictions on construction activities, that there will be no adverse significant effects**.**
Chapter 11 – Marine Mammals	Whale and dolphin watching contributed over EU9 million to the Irish economy in 2014 (Norton et al., 2018).	As per previous Marine Mammal section under **Lifecycle and habitat services,** which concludes that with the addition of the primary and secondary mitigation measures, such as

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	In order to maintain this ecosystem service in the future, the CWP Project must ensure the population abundance, distribution, diversity and habitat of marine mammals is not adversely affected within the Project area in line with MSFD Descriptor 1.	implementation of a MMMP, that there will be no adverse significant effects**.**
Chapter 15 – Seascape, Landscape and Visual Impacts	Other recreational activities associated with the seascape and marine landscape contributed over EU970 million to the Irish economy in 2014 (Norton et al., 2018). In order to maintain this ecosystem service in the future, the CWP Project must avoid, minimise and mitigate significant adverse impacts to the seascape and landscape within the Project area in line with policies outlined in the NMPF: • Seascape and Landscape Policy 1 • Social Benefits Policy. A search of the UKERC database, filtering for seascape and categories of humans interacting with the environment showed an acceptance of offshore wind farms by the general public, tourists and some fishermen. There was an overall negative effect on the seascape of areas with offshore wind farms, indicated by a number of different demographics. There are some positive and some negative impacts to cultural ecosystem services in relation to seascape, landscape and visual impacts.	Primary mitigation measures include: • The Codling Bank array site is 13 – 22 km from the coastline, reducing the magnitude of visual impact when viewed from the shoreline. • The Codling Bank is significantly larger than other banks in the area, allowing the design of the array site to be in a layout extending away from the coastline as opposed to a long strip of WTGs running parallel to the coastline. The Applicant has sought to produce a visually balanced and coherent layout of WTGs when seen from key viewpoints, demonstrating a consistent rhythm and spacing. Furthermore, whilst outliers are present, there are no outlying WTGs that appear significantly detached from the rest of the array. • The Applicant has sought to reduce the number of WTGs as far as possible. This is evident in the proposed reduction in the number of WTGs from 150 (at EIA Scoping) to 75 (Option A) or 60 (Option B). • The Applicant has sought to reduce the number of OSSs as far as possible. This is evident in the proposed reduction in the total number of OSSs from up to five (at EIA Scoping) to three (for Option A and B). • To ensure compliance with SAR requirements and to reduce the potential effects on seascape, landscape and visual receptors, the Applicant has sought to align the OSSs as closely as possible with the rows of WTGs, with a consistent spacing. • The Applicant has sought to reduce the extent of lighting associated with the array to reduce night-time effects. Aviation lighting was initially proposed for all WTGs; however, it was agreed that such lighting would only be introduced on each WTG around the edge of the array site. Lighting associated with WTG numbers will be hooded to reduce light spill. To minimise light pollution further, OSSs will be unlit whilst they are unmanned. • An Ecological Vessel Management Plan (EVMP) has been prepared to determine vessel routing to and from

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		construction sites and ports and to include a code of conduct for vessel operators. No additional mitigation is proposed. **No significant effect** is predicted for most seascape, landscape and visual impact receptors as a result of the Project. Significant effect is predicted for the LA1c The Bray Mountain Group with regards to direct / indirect long term (reversible) impacts on views / seascape / landscape and protected landscapes. There is a significant to very significant effect predicted for fourteen viewpoints with regards to direct / indirect long term (reversible) impacts on views / seascape / landscape and protected landscapes. There is a very significant effect on the settlements of Greystones and Kilcoole and the walking routes of Bray-Greystones Cliff Walk and Greystones to Wicklow Trail with regards to direct / indirect long term (reversible) impacts on views / seascape / landscape and protected landscapes. Embedded mitigation measures are in place throughout, although this does not alter the significance of the effects outlined.

Chapter 16 – Shipping & Navigation	Recreational activities involving vessels include fishing, sailing and diving are included in the Recreational services contribution of over EU1.5 billion to the Irish economy each year (Norton et al., 2018). In order to maintain this provision, the CWP Project must avoid, minimise or mitigate significant adverse impacts on recreational vessel activities.
	
	A search of the UKERC database, filtering for human recreational boating and fishing activities showed an overall positive impact on cultural services, including a positive increase in catch per unit effort, and on use of seascape. Negative impacts were also recorded as potential effects on recreational fishing activity.
		Primary mitigation measures include:
		• A Navigational Safety Plan (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.
		• Suitable implementation and monitoring of cable protection (via burial, or external protection where burial to a suitable burial depth as identified via a cable burial risk assessment is not feasible).
		• An Emergency Response and Cooperation Plan (ERCoP) will be in place for the CWP Project. The ERCoP will detail liaison with SAR resources including

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		the IRCG to ensure suitable emergency response plans and procedures are in place. • A Lighting and Marking Plan (LMP) has been prepared to capture construction and O&M phase lighting requirements for the offshore infrastructure and demarcation of the offshore development area such as construction buoy requirements. • Blade clearance of at least 22 m above HAT (in line with industry good practice and MGN 654). • Consideration of navigation safety and SAR in WTG design and layouts, including acceptable levels of Supervisory Control and Data Acquisitions (SCADA) systems. The EIAR impact assessment has concluded that the significance of risk for all potential impacts to shipping and navigation is **broadly acceptable** or **tolerable** and as low as reasonably practicable (ALARP), with **no significant adverse effects** anticipated.
Marine Heritage, Culture and Entertainment		
Chapter 14 – Marine Archaeology and Cultural Heritage	Inspiration for culture, art and design and benefits from engaging with marine heritage is difficult to quantify. This ecosystem service remains important to the Irish population. In order to maintain the provision of marine heritage, culture and entertainment as an ecosystem service, the CWP Project must avoid, minimise or mitigate harm to the significant of heritage assets in line with NMPF Heritage Assets Policy 1. A search of the UKERC database, filtering for archaeology indicates an overall negative impact on archaeological features during all stages of an offshore wind farm development. There is overall negative impact to cultural ecosystem services in	Primary mitigation measures include: • 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. • In order to mitigate the risk of damage to any previously unrecorded archaeological remains an agreed archaeological mitigation strategy or management plan, agreed with relevant archaeological curators, and Protocol for Archaeological Discoveries (PAD) will be in place. • Bedform clearance operations will be undertaken only where necessary, thereby minimising sediment disturbance and alteration to seabed morphology. Proposed additional mitigation includes: • Further investigation of potential P1 and P2 Palaeogeography targets. • Avoidance of A2 anomalies by use of LoD. • Assessment of future preconstruction survey magnetometer data by a qualified archaeological contractor. • A targeted archaeological walkover survey including metal detection is undertaken covering the intertidal zone, up to MHW. • If avoidance of the one known intertidal heritage receptor (1001–1003) is not possible, then it is recommended that the site is re-established to verify the feature and an

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	relation to marine archaeology and cultural heritage.	archaeological recording is undertaken prior to construction works. **Major Adverse to Minor effect** is predicted for all marine archaeology and cultural heritage receptors as a result of the CWP Project. As a result, secondary mitigation measures including further geoarchaeological assessments and geotechnical samples, implementation of AEZs and LoD will be implemented. This residual effect from these additional mitigation measures are minor, moderate and major beneficial, concluding there will be no significant effects on marine archaeology and cultural heritage arising from the project. Other offshore wind farms that employed similar mitigation techniques include the Norfolk Vanguard (2018a) and Norfolk Boreas (2020) projects, which avoided previously identified anomalies (archaeological features) on and below the seabed, as identified by geophysical surveys.
Aesthetic Services		
Chapter 15 – Seascape, Landscape and Visual Impacts	The value of this ecosystem service relates to the beauty of the landscape for those viewing it. This is hard to quantify, but estimates have been made based on economic activities capitalising from a “sea view”. In 2014, aesthetic services contributed EU68 million to the Irish economy. In order to maintain the provision of aesthetic services, the CWP Project must avoid, minimise or mitigate significant adverse impacts on the seascape and landscape within the Project area in line with NMPF Seascape and Landscape Policy 1.	As per previous Seascape, Landscape and Visual Impacts section under **Recreational Services** which concludes that with the addition of the primary mitigation measures, such as implementation of a coherent and balanced layout and reduction in assets, there will still be some significant effects.
Spiritual and Emblematic Values		
Chapter 14 – Marine Archaeology and Cultural Heritage	It is difficult to quantify the spiritual and emblematic value held by individuals in relation to the marine environment. Marine archaeology and cultural heritage can provide benefits	As per previous Marine Archaeology and Cultural Heritage section under **Marine Heritage, Culture and Entertainment,** which concludes there will be no significant effects on marine archaeology and cultural heritage arising from the project.

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
	for associated spiritual and emblematic values e.g., the use of the Galway Hooker as a brewery logo. This ecosystem service remains important to the Irish population. In order to maintain the provision of aesthetic services, the CWP Project must avoid, minimise or mitigate significant adverse impacts on marine archaeology and cultural heritage within the Project area in line with NMPF Heritage Assets Policy 1and Social benefits Policy 1 & 2.	
Chapter 15 – Seascape, Landscape and Visual Impacts	It is difficult to quantify the spiritual and emblematic value held by individuals in relation to the marine environment. Seascape, landscape and visual impacts can provide benefits for associated spiritual and emblematic values e.g., the seeking of inspiration from the environment they inhabit by indigenous people. This ecosystem service remains important to the Irish population. In order to maintain the provision of aesthetic services, the CWP Project must avoid, minimise or mitigate significant adverse impacts on the seascape and landscape within the Project area in line with NMPF Seascape and Landscape Policy 1 and Social benefits Policy 1 & 2.	As per previous Seascape, Landscape and Visual Impacts section under **Recreational Services,** which concludes that with the addition of the primary mitigation measures, such as implementation of a coherent and balanced layout and reduction in assets, there will still be some significant effects.

46. below). Each marine ecosystem service which is screened IN is considered in relation to the EIAR topic chapter(s) which align with the ecosystem service.

Table 4 Marine ecosystem services assessment

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
Offshore Capture Fisheries		
Chapter 12 – Commercial Fisheries	The estimated value for landings made by capture fisheries within the Irish EEZ (vessels 15 m<) was over EU470 million in 2015 (Norton et al., 2018). The CWP Project must ensure that the offshore area impacted by the Project maintains the population abundance, distribution, habitat and diversity of species caught by offshore fisheries in line with MSFD Descriptors 1 and 4. MSFD Descriptor 3 dealt with via policies operated alongside NMPF, as not all MSFD GES descriptors are suitable for delivery through a State-level, plan-led approach to spatial management. A search of the UKERC database filtering for Commercial Fish, indicates an overall general decrease in catch per unit effort and negative affect on abundance. There is also suggestion of a negative impact on static and towed gears of commercial fisheries along with a generally negative economic impact on commercial fisheries. In some areas of Europe and the USA, an increase in catch per unit effort was recorded for cod, pouting, sole and brown crab during wind farm operation.	Primary mitigation measures include: • Construction Environmental Management Plan (CEMP) to be adhered to during construction phase. • The WTG layout options have been developed to avoid or minimise interaction 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. • A Navigational Safety Plan (NSP) has been prepared for shipping and navigation purposes, including the safe navigation of fishing vessels. • Cables will be buried where practicable to provide the cables with protection against damage and reduce interference with other sea users including fishing activities. 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. • Appropriate liaison would be undertaken with all relevant fishing interests to ensure that they are fully informed of development planning, construction and maintenance activities (Marine Notices). • Appointment of a Fisheries Liaison Officer (FLO). • Production of a Fisheries Management and Mitigation Strategy (FMMS). • Prohibition of discarding objects or materials overboard; rapid recovery of any accidentally dropped objects. Additional mitigation measures include: • Gear trials to assess practicality of potting activity within the operational array site. This could include alterations to normal gear configurations, such as number of pots per string and / or direction the gear is set with respect to turbine locations.

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
		• Monitoring of catch rates within the array site, including a control site outside the array site. **Minor to Negligible / Minor effect** is predicted for all commercial fisheries receptors, and commercially targeted fish species as a result of the CWP Project. As there are no significant effects anticipated on the specific commercial fisheries receptors, including those that may occur through inter-related factors, it can be concluded that there will be no impediment to the ability of normal ecosystem functions and services to function with regards to commercial capture fisheries, and accordingly no impediment to the relevant objectives of the MSFD and NMPF being met. Similar mitigation measures have been adopted by other OWF including the implementation of safety zones during construction and maintenance activities (Awel y Môr, 2023); ensuring the burial of cables wherever possible to reduce damage caused by and to fishing gear (Norfolk Vanguard, 2018a; Norfolk Boreas, 2020); timely and efficient notices of works to relevant marine environment stakeholders (Norfolk Vanguard, 2018a; Norfolk Boreas, 2020) and appointment of a Fisheries Liaison Officer (FLO) to assist in this and similar effects (Vanguard, 2018a; Norfolk Boreas, 2020; Awel y Môr, 2023); the employment of policies to prohibit discarding of objects/materials overboard and rapid recovery of any objects in case of accidental loss at sea (Norfolk Vanguard, 2018a; Norfolk Boreas, 2020).
Lifecycle and habitat services		
Chapter 6 – Marine Geology, Sediments and Coastal Processes	Marine geology, sediments and coastal processes must be maintained to ensure the seabed is habitable for marine organisms. The spatial extent and distribution of permanent alteration of hydrographical conditions to the seabed and water column, is at a level that ensures that the structure and functions of the ecosystems are safeguarded and	Primary mitigation measures include: • Route planning to avoid hard substrate to ensure cable burial, and minimise bedform clearance and minimise use of cable protection measures. • Sufficient turbine separation distance has been defined between adjacent wind turbines within each row and between rows, minimising the potential for cumulative wake effects between adjacent wind turbines. • Disposal of dredged material will occur in suitable locations within the MAC application boundary. This has the benefit of maintaining the sediment budget for

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
	that benthic ecosystems, in particular, are not adversely affected in line with MSFD Descriptors 6, 7 and 8. UKERC database, filtering for Sediment and Geology, indicates an overall general increase in sediment loss via plumes and scour and accretion effects on the seabed. There is generally no impact on sedimentation and geology and seabed features. There were some differences in impacts experienced between different windfarms. Despite their close proximity, the Norfolk Vanguard offshore wind farm found a negative impact on water quality and suspended sediment whereas the Norfolk Boreas offshore wind farm found no impact on water quality and suspended sediment. The result of these impacts is an overall negative to no impact on regulating and maintenance ecosystem services.	the wider sediment cell, minimising impacts on seabed and sandbank morphology and the wider sediment regime. • During construction all necessary equipment will remain on site for the minimum practical period of time to ensure any impacts on the prevailing hydrodynamic, wave and sediment regimes and coastal processes is minimised. Based on the predicted level of effects it is concluded that no additional mitigation is required beyond the primary mitigation measures. **Minor / Negligible/Minor effect** is predicted for all Marine Geology, Sediments and Coastal Processes receptors as a result of the CWP Project. As there are no significant effects anticipated on the specific marine geology, sediments and coastal processes receptors, including those that may occur through inter-related factors, it can be concluded that there will be no impediment to the ability of normal ecosystem functions and services to function with regards to marine geology, sediments and coastal processes, and accordingly no impediment to the relevant objectives of the MSFD and NMPF being met. Other offshore wind farm projects that included similar mitigation measures such as the use of micro-siting to ensure cable burial wherever possible (Norfolk Vanguard, 2018a; Norfolk Boreas, 2020); targeting areas of seabed that cater for cable burial e.g., avoiding hard substrates (Rampion 2, 2023); ensuring sufficient distance is maintained between individual turbines to reduce impacts to marine physical processes (Norfolk Vanguard 2018a, Norfolk Boreas, 2020); disposal of dredged material in licensed sites (Awel y Môr, 2023).
Chapter 7 – Marine Water Quality	Marine water quality must be maintained to ensure the water column is habitable for marine organisms. The CWP Project must ensure that the offshore area impacted by the Project does not impact trophic guilds inhabiting the water column through anthropogenic pressures such as introduction of non-native species;	Primary mitigation measures include: • Bedform clearance operations will be undertaken only where necessary, thereby minimising sediment disturbance and alteration to seabed morphology. • A Construction Environmental Management Plan (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

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	adverse effects of increased nutrient levels on marine water quality; increased concentrations of contaminants that may exceed OSPAR assessed limits (CEMP and Environmental Assessment Criteria - EAC); an increased spatial extent and distribution of temporary or permanent habitat loss exceeding specified proportions of the natural extent of habitat type in the Project area; the introduction of energy that may be harmful to marine animals in line with MSFD Descriptors 1, 2, 5, 7, 8 and 11. MSFD Descriptor 9 dealt with via policies operated alongside NMPF. A search of the UKERC database, filtering for water quality, indicates an overall negative impact on marine water quality during all stages of an offshore wind farm. This implies an overall negative impact to regulating and maintenance ecosystem services.	throughout the construction process, in accordance with legislative requirements and industry best practice. The CEMP includes: ○ Vessels and plant relating to all stages of the Project will follow OSPAR, International Maritime Organisation (IMO) and International Convention for the Prevention of Pollution from Ships (MARPOL) guidelines, and industry best practice regarding pollution at sea including waste management. • All drill fluids and grouts will comply with industry best practice and standards to avoid, minimise and prevent harm to the environment. Based on the predicted level of effects it is concluded that no additional mitigation is required beyond the primary mitigation measures. **No significant effect** is predicted for all marine water quality receptors as a result of the CWP Project. As there are no significant effects anticipated on the specific marine water quality receptors, including those that may occur through inter-related factors, it can be concluded that there will be no impediment to the ability of normal ecosystem functions and services to function with regards to marine water quality, and accordingly no impediment to the relevant objectives of the MSFD and NMPF being met. Some offshore wind farms use similar mitigation measures such as the standardised production of (Project) Environmental Management Plans (EMP) (Norfolk Vanguard, 2018a).
Chapter 8 – Subtidal and Intertidal Ecology	Subtidal and intertidal ecology, in particular the habitats within this category, must be maintained to ensure the subtidal and intertidal areas within the scope of the Project are habitable for marine organisms. The CWP Project must ensure that the offshore area impacted by	Primary mitigation measures include: • Pre-construction surveys will be conducted to ensure accurate routing of cables and siting of turbines to avoid as far as practicable areas of sensitive reef habitats by cable installation. • A Construction Environmental Management Plan (CEMP) has been prepared to provide a management framework, to ensure appropriate controls are in place to

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
	the Project does not impact trophic guilds inhabiting subtidal and intertidal areas through anthropogenic pressures such as introduction of non-native species; adverse effects of increased nutrient levels on marine water quality; increased concentrations of contaminants that may exceed OSPAR assessed limits (CEMP and EAC); an increased spatial extent and distribution of temporary or permanent habitat loss exceeding specified proportions of the natural extent of habitat type in the Project area; the introduction of energy that may be harmful to marine animals in line with MSFD Descriptors 1, 2, 4, 7, 8 and 11. MSFD Descriptor 9 dealt with via policies operated alongside NMPF. A search of the UKERC database, filtering for habitat, non-native species and EMF, shows increases in non-native species abundance and habitat loss due to smothering. There were some differences in impacts between wind farms. The Awel y Môr offshore wind farm found no impact on habitat quality or quantity whereas the Rhiannon offshore wind farm predicted a negative impact. There was no impact on particle size or condition, health, injury, or community	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. The CEMP includes details of: ○ Offshore biosecurity and invasive species management detailing how the risk of introduction and spread of invasive non-native species will be minimised. ○ Measures proposed to ensure effective handling of chemicals, oils and fuels including compliance with the MARPOL convention. • Cables will be suitably buried or will be protected by other means when burial is not practicable, which will reduce the potential for impacts relating to EMF. Additional cable protection is likely to be used in any areas where the target burial depth (as defined by the Cable Burial Risk Assessment) is not achieved. Based on the predicted level of effects it is concluded that no additional mitigation is required beyond the primary mitigation measures. **No significant effect** is predicted for all subtidal and intertidal ecology receptors as a result of the CWP Project. As there are no significant effects anticipated on the specific subtidal and intertidal ecology receptors, including those that may occur through inter-related factors, it can be concluded that there will be no impediment to the ability of normal ecosystem functions and services to function with regards to subtidal and intertidal ecology, and accordingly no impediment to the relevant objectives of the MSFD and NMPF being met. Other similar mitigation measures used by offshore wind farms include the avoidance of Annex I reef features and other sensitive habitat on the seabed for cable laying (Norfolk Vanguard, 2018a; Norfolk Boreas, 2020; Awel y Môr, 2023); the implementation of Biosecurity Plans to reduce the introduction/spread of INNS

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	behaviour as a result of EMF emissions. There is overall negative to no impact to regulating and maintenance ecosystem services.	within areas associated with the offshore wind farm (Awel y Môr, 2023); The use of EMPs in case of accidental spills / leaks or other releases of contaminants into the marine environment (Norfolk Boreas, 2020; Awel y Môr, 2023); ensuring the burial or protection of offshore cables wherever possible to reduce the effect of EMF on subtidal and intertidal ecology receptors (Norfolk Vanguard, 2018a; Norfolk Boreas, 2020; Awel y Môr, 2023).
Chapter 9 – Fish, Shellfish and Turtle Ecology	Fish, shellfish and turtle ecology must be maintained to ensure the offshore areas within the scope of the Project support indigenous fish, shellfish and turtle populations. The CWP Project must ensure that the offshore area impacted by the Project does not impact areas inhabited by fish, shellfish and turtle through anthropogenic pressures such as introduction of non-native species; adverse effects of increased nutrient levels on marine water quality; increased concentrations of contaminants that may exceed OSPAR assessed limits (CEMP and EAC); the introduction of energy that may be harmful to marine animals in line with MSFD Descriptors 1, 2, 4, 8 and 11. MSFD Descriptor 9 dealt with via policies operated alongside NMPF. A search of the UKERC database - filtering for habitat, benthic, EMF and sediment - indicates an overall negative (but not significant with regards EIA) impact on fish and shellfish habitat due to	Primary mitigation measures include: • Implementation of marine mammal mitigation protocols (MMMPs), which incorporate measures of mitigation for underwater noise which will benefit fish as well as marine mammals. • The 2014 DAHG guidance will be implemented alongside the use of soft charges / acoustic deterrent device (ADD) and pre-detonation searches prior to any UXO clearance. • A Construction Environmental Management Plan (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. The CEMP includes details of: ○ Offshore biosecurity and invasive species management detailing how the risk of introduction and spread of invasive non-native species will be minimised. ○ Measures proposed to ensure effective handling of chemicals, oils and fuels including compliance with the MARPOL convention. • Bedform clearance operations will be undertaken only where necessary, thereby minimising sediment disturbance and alteration to seabed morphology. • Export cables will be buried wherever possible, or otherwise protected by other means, to reduce the potential for effects relating to Electromagnetic Fields (EMF).

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	smothering from increased Suspended Sediment Concentration (SSC) causing damage to fish and eggs; an increased risk of non-auditory injury and increase in non-native species abundance. When filtering for the same themes, there was overall no impact on condition, health, injury or community behaviour of fish and shellfish due to the presence of EMF. This suggests negative to no impact on associated provisioning and cultural ecosystem services.	Additional proposed mitigation includes: • Piling works along the River Liffey Channel will not be permitted between March and May to avoid noise impact during the smolt run. **No significant effect** is predicted for all fish and shellfish ecology receptors as a result of the CWP Project. As there are no significant effects anticipated on the specific fish and shellfish ecology receptors, including those that may occur through inter-related factors, it can be concluded that there will be no impediment to the ability of normal ecosystem functions and services to function with regards to fish and shellfish ecology, and accordingly no impediment to the relevant objectives of the MSFD and NMPF being met. Examples of other offshore wind farm projects implementing similar mitigation measures include the use of Biosecurity Plans and following best practice guidelines to prevent the proliferation of INNS in any area associated with project development (Awel y Môr, 2023); the burial of offshore cables to at least 1m (and use of cable protection where burial is not possible) to reduce impacts to fish and shellfish receptors from EMF (Norfolk Vanguard, 2018a; Awel y Môr, 2023).
Chapter 10 - Ornithology	Ornithological receptors must be maintained to ensure the offshore areas within the scope of the Project support bird populations. The CWP Project must ensure that the offshore area impacted by the Project does not impact areas inhabited by birds through anthropogenic pressures such as introduction of non-native species; adverse effects of increased nutrient levels on marine water quality; increased concentrations of contaminants that may exceed OSPAR assessed limits (Coordinated Environmental Monitoring and	Primary mitigation measures include: • The array site will feature turbine blade clearances of 36 m above msl, which is beyond the minimum required clearance of 22 m above msl. This will reduce potential impacts on species sensitive to collision risk. • A soft-start for intertidal pilling. • A Construction Environmental Management Plan (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. The CEMP includes details of:

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
	Assessment Programme and Environmental Assessment Criteria); the introduction of energy that may be harmful to marine animals in line with MSFD Descriptors 1, 2, 4, 8 and 11. MSFD Descriptor 9 dealt with via policies operated alongside NMPF. A search of the UKERC database, filtering for birds, habitat and noise, show an overall negative impact on collision and displacement risk; the barrier effect; habitat quantity, quality or natural extant and a decrease in foraging habitat. There is overall no impact on abundance of species or on noise disturbance. There is generally a negative impact to cultural ecosystem services relating to ornithology.	○ Offshore biosecurity and invasive species management detailing how the risk of introduction and spread of invasive non-native species will be minimised. ○ Measures proposed to ensure effective handling of chemicals, oils and fuels including compliance with the MARPOL convention. • An Ecological Vessel Management Plan (EVMP) will be produced which will provide details on minimising the potential for disturbances to birds arising from vessels. • The location and design of the onshore landfall and construction compounds have been purposefully located away from the grassland area known as 'goose green' which is part of the South Dublin Bay and River Tolka Estuary SPA, this location is known to be used by Light-bellied brent goose, a qualifying interest species of the SPA and who may have been impacted by habitat loss and / or disturbance impacts. • The onshore substation has been altered during the design stage to reduce and remove potential for perching opportunities for avian predator species such as peregrine falcon and hooded crow. The substation will feature mitigations such as steep angles to the band at the material junction, preventing perching on brisk work and metal cladding raised above roof parapet impairing hunting birds views, more details and figures of these measures can be seen in the CWP substation design statement (FaulknerBrowns Ltd, 2024). Proposed additional mitigation includes: • Various seasonal and daily temporal restrictions for construction activities (details provided within Chapter 10 Ornithology). **No significant effect** is predicted for all ornithology receptors as a result of the CWP Project after additional mitigation measures such as diurnal, seasonal and temporal restrictions on construction are implemented. As there are no significant effects anticipated on the specific ornithology receptors, including those that may occur through inter-related factors, it can be concluded that there will be no impediment to the ability of normal ecosystem functions and

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
		services to function with regards to ornithology, and accordingly no impediment to the relevant objectives of the MSFD and NMPF being met. A number of offshore wind projects have used similar mitigation techniques to avoid reduce impacts on ecosystem services such as the provision of Vessel Traffic Management Plans and EMPs (Awel y Môr, 2023); operating vessels in a way to minimise disturbance to birds as much as possible (Norfolk Boreas, 2020); increasing blade clearance height to reduce collision risk (Norfolk Boreas, 2020; Awel y Môr, 2023).
Chapter 11 – Marine Mammals	Marine mammal receptors must be maintained to ensure the offshore areas within the scope of the Project support marine mammal populations. The CWP Project must ensure that the offshore area impacted by the Project does not impact areas inhabited by marine mammals through anthropogenic pressures which impact the population abundance, distributional range, diversity or habitat; or through the introduction of energy that may be harmful to marine animals in line with MSFD Descriptors 1, 4 and 11. A search of the UKERC database, filtering for marine mammals shows an overall negative impact on behaviour due to underwater noise and impacts of suspended sediments on marine mammals and megafauna. Harbour Porpoise (*Phocoena Phocoena*), Grey Seal (*Halichoerus grypus*) and Harbour	Primary mitigation measures include: • A Marine Mammal Mitigation Protocol (MMMP) has been prepared to outline the mitigation requirements for minimising the impacts on marine mammals during the construction of the CWP Project. The MMMP 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. Primary mitigation measures in the MMMP include: ○ Pre geophysical survey visual watch by an MMO ○ Pre UXO detonation visual watch by an MMO ○ Pre UXO detonation PAM (if required to supplement to visual observations) • A site zonation approach to piling activities. • An Environmental Vessel Management Plan (EVMP) will be put in place to minimise the risk of collisions with vessels, and disturbance from vessels. • A Construction Environmental Management Plan (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. The CEMP includes details of:

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
	seal (*Phoca vitulina*) are generally at a higher risk of collision during operation of OWFs. There is overall no impact on the foraging ability of marine mammals during periods of increased suspended sediment concentrations. There is generally a negative impact to cultural ecosystem services relating to marine mammals.	○ Offshore biosecurity and invasive species management detailing how the risk of introduction and spread of invasive non-native species will be minimised. ○ Measures proposed to ensure effective handling of chemicals, oils and fuels including compliance with the MARPOL convention. Proposed additional mitigation includes: • Acoustic Deterrent Devices (ADDs) to deter marine mammals from the immediate vicinity of the pile. • Use of MMOs and PAM to detect marine mammals in the mitigation zone, the use of various at source noise abatement methods. • Use of alternative piling methods. **Negligible / minor effect** is predicted for all marine mammals receptors as a result of the CWP Project. As there are no significant effects anticipated on the specific marine mammals receptors, including those that may occur through inter-related factors, it can be concluded that there will be no impediment to the ability of normal ecosystem functions and services to function with regards to marine mammals, and accordingly no impediment to the relevant objectives of the MSFD and NMPF being met. Similar mitigation measures have been imposed by a number of offshore wind farm developments, including the development of MMMPs in relation to piling and UXO activities and the implementation of soft-start pile driving techniques to reduce the chance of physical and auditory injury to marine mammals and megafauna (Norfolk Vanguard, 2018a; Norfolk Boreas, 2020; Awel y Môr, 2023); the provision of Vessel Traffic Management Plans (Awel y Môr, 2023); the generation of EMPs to manage potential pollution events and impacts (Norfolk Boreas, 2020).
Pest and Disease Control		
Chapter 9 – Fish, Shellfish	Pests and diseases cause economic loss through damage to organism and habitat	As per previous Fish, Shellfish and Turtle Ecology section under **Lifecycle and habitat services**, which concludes that with the addition of the primary and

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
and Turtle Ecology	health and biodiversity. Predators and parasitoids can control these invasive organisms as a biological control service. Predatory species of fish and shellfish can provide this biological control service, however they can also be adversely affected by non-native species introduction through competition for prey and proliferation of new diseases. The CWP Project must try to minimise introduction of non-native organisms that could become pests or introduce diseases to the existing ecosystem wherever possible in line with MSFD Descriptor 2.	secondary mitigation measures, such as implementation of a biosecurity plan, that there will be no adverse significant effects**.**
Chapter 10 - Ornithology	Pests and diseases cause economic loss through damage to organism and habitat health and biodiversity. Predators and parasitoids can control these invasive organisms as a biological control service. Predatory species of bird can provide this biological control service, however they can also be adversely affected by non-native species introduction through competition for prey and proliferation of new diseases. The CWP Project must try to minimise introduction of non-native organisms that could become pests or introduce diseases to the existing ecosystem	As per previous Ornithology section under **Lifecycle and habitat services**, which concludes that with the addition of the primary and secondary mitigation measures, such as implementation of a biosecurity plan, that there will be no adverse significant effects**.**

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
	wherever possible in line with MSFD Descriptor 2.	
Recreational Services		
Chapter 9 – Fish, Shellfish and Turtle Ecology	Recreational services contribute over EU1.5 billion to the Irish economy each year (Norton et al., 2018). The recreational activity of fishing from the sea or shore contributed over EU600 million to this total in 2014 (Norton et al., 2018). In order to maintain this ecosystem service in the future, the CWP Project must ensure the population abundance, distribution, diversity and habitat of fish and shellfish is not adversely affected within the Project area in line with MSFD Descriptor 1.	As per previous Fish, Shellfish and Turtle Ecology section under **Lifecycle and habitat services,** which concludes that with the addition of the primary and secondary mitigation measures, such as implementation of a biosecurity plan, that there will be no adverse significant effects**.**
Chapter 10 - Ornithology	Recreational services contribute over EU1.5 billion to the Irish economy each year (Norton et al., 2018). Bird watching contributed over EU27 million to this total in 2014 (Norton et al., 2018). In order to maintain this ecosystem service in the future, the CWP Project must ensure the population abundance, distribution, diversity and habitat of birds is not adversely affected within the	As per previous Ornithology section under **Lifecycle and habitat services,** which concludes that with the addition of the primary and secondary mitigation measures, such as implementation of seasonal restrictions on construction activities, that there will be no adverse significant effects**.**

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
	Project area in line with MSFD Descriptor 1.	
Chapter 11 – Marine Mammals	Whale and dolphin watching contributed over EU9 million to the Irish economy in 2014 (Norton et al., 2018). In order to maintain this ecosystem service in the future, the CWP Project must ensure the population abundance, distribution, diversity and habitat of marine mammals is not adversely affected within the Project area in line with MSFD Descriptor 1.	As per previous Marine Mammal section under **Lifecycle and habitat services,** which concludes that with the addition of the primary and secondary mitigation measures, such as implementation of a MMMP, that there will be no adverse significant effects**.**
Chapter 15 – Seascape, Landscape and Visual Impacts	Other recreational activities associated with the seascape and marine landscape contributed over EU970 million to the Irish economy in 2014 (Norton et al., 2018). In order to maintain this ecosystem service in the future, the CWP Project must avoid, minimise and mitigate significant adverse impacts to the seascape and landscape within the Project area in line with policies outlined in the NMPF: • Seascape and Landscape Policy 1 • Social Benefits Policy. A search of the UKERC database, filtering for seascape and categories of	Primary mitigation measures include: • The Codling Bank array site is 13 – 22 km from the coastline, reducing the magnitude of visual impact when viewed from the shoreline. • The Codling Bank is significantly larger than other banks in the area, allowing the design of the array site to be in a layout extending away from the coastline as opposed to a long strip of WTGs running parallel to the coastline. The Applicant has sought to produce a visually balanced and coherent layout of WTGs when seen from key viewpoints, demonstrating a consistent rhythm and spacing. Furthermore, whilst outliers are present, there are no outlying WTGs that appear significantly detached from the rest of the array. • The Applicant has sought to reduce the number of WTGs as far as possible. This is evident in the proposed reduction in the number of WTGs from 150 (at EIA Scoping) to 75 (Option A) or 60 (Option B).

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
	humans interacting with the environment showed an acceptance of offshore wind farms by the general public, tourists and some fishermen. There was an overall negative effect on the seascape of areas with offshore wind farms, indicated by a number of different demographics. There are some positive and some negative impacts to cultural ecosystem services in relation to seascape, landscape and visual impacts.	• The Applicant has sought to reduce the number of OSSs as far as possible. This is evident in the proposed reduction in the total number of OSSs from up to five (at EIA Scoping) to three (for Option A and B). • To ensure compliance with SAR requirements and to reduce the potential effects on seascape, landscape and visual receptors, the Applicant has sought to align the OSSs as closely as possible with the rows of WTGs, with a consistent spacing. • The Applicant has sought to reduce the extent of lighting associated with the array to reduce night-time effects. Aviation lighting was initially proposed for all WTGs; however, it was agreed that such lighting would only be introduced on each WTG around the edge of the array site. Lighting associated with WTG numbers will be hooded to reduce light spill. To minimise light pollution further, OSSs will be unlit whilst they are unmanned. • An Ecological Vessel Management Plan (EVMP) has been prepared to determine vessel routing to and from construction sites and ports and to include a code of conduct for vessel operators. No additional mitigation is proposed. **No significant effect** is predicted for most seascape, landscape and visual impact receptors as a result of the Project. Significant effect is predicted for the LA1c The Bray Mountain Group with regards to direct / indirect long term (reversible) impacts on views / seascape / landscape and protected landscapes. There is a significant to very significant effect predicted for fourteen viewpoints with regards to direct / indirect long term (reversible) impacts on views / seascape / landscape and protected landscapes. There is a very significant effect on the settlements of Greystones and Kilcoole and the walking routes of Bray-Greystones Cliff Walk and Greystones to Wicklow Trail with regards to direct / indirect long term (reversible) impacts on views / seascape / landscape and protected landscapes. Embedded mitigation measures are in place throughout, although this does not alter the significance of the effects outlined.

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)

Chapter 16 – Shipping & Navigation	Recreational activities involving vessels include fishing, sailing and diving are included in the Recreational services contribution of over EU1.5 billion to the Irish economy each year (Norton et al., 2018). In order to maintain this provision, the CWP Project must avoid, minimise or mitigate significant adverse impacts on recreational vessel activities.
	
	A search of the UKERC database, filtering for human recreational boating and fishing activities showed an overall positive impact on cultural services, including a positive increase in catch per unit effort, and on use of seascape. Negative impacts were also recorded as potential effects on recreational fishing activity.
		Primary mitigation measures include:
		• A Navigational Safety Plan (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.
		• Suitable implementation and monitoring of cable protection (via burial, or external protection where burial to a suitable burial depth as identified via a cable burial risk assessment is not feasible).
		• An Emergency Response and Cooperation Plan (ERCoP) will be in place for the CWP Project. The ERCoP will detail liaison with SAR resources including the IRCG to ensure suitable emergency response plans and procedures are in place.
		• A Lighting and Marking Plan (LMP) has been prepared to capture construction and O&M phase lighting requirements for the offshore infrastructure and demarcation of the offshore development area such as construction buoy requirements.
		• Blade clearance of at least 22 m above HAT (in line with industry good practice and MGN 654).

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
		• Consideration of navigation safety and SAR in WTG design and layouts, including acceptable levels of Supervisory Control and Data Acquisitions (SCADA) systems. The EIAR impact assessment has concluded that the significance of risk for all potential impacts to shipping and navigation is **broadly acceptable** or **tolerable** and as low as reasonably practicable (ALARP), with **no significant adverse effects** anticipated.
Marine Heritage, Culture and Entertainment		
Chapter 14 – Marine Archaeology and Cultural Heritage	Inspiration for culture, art and design and benefits from engaging with marine heritage is difficult to quantify. This ecosystem service remains important to the Irish population. In order to maintain the provision of marine heritage, culture and entertainment as an ecosystem service, the CWP Project must avoid, minimise or mitigate harm to the significant of heritage assets in line with NMPF Heritage Assets Policy 1. A search of the UKERC database, filtering for archaeology indicates an overall negative impact on archaeological features during all stages of an offshore wind farm development. There is overall negative impact to cultural ecosystem	Primary mitigation measures include: • 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. • In order to mitigate the risk of damage to any previously unrecorded archaeological remains an agreed archaeological mitigation strategy or management plan, agreed with relevant archaeological curators, and Protocol for Archaeological Discoveries (PAD) will be in place. • Bedform clearance operations will be undertaken only where necessary, thereby minimising sediment disturbance and alteration to seabed morphology. Proposed additional mitigation includes: • Further investigation of potential P1 and P2 Palaeogeography targets. • Avoidance of A2 anomalies by use of LoD. • Assessment of future preconstruction survey magnetometer data by a qualified archaeological contractor. • A targeted archaeological walkover survey including metal detection is undertaken covering the intertidal zone, up to MHW. • If avoidance of the one known intertidal heritage receptor (1001–1003) is not possible, then it is recommended that the site is re-established to verify the

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
	services in relation to marine archaeology and cultural heritage.	feature and an archaeological recording is undertaken prior to construction works. **Major Adverse to Minor effect** is predicted for all marine archaeology and cultural heritage receptors as a result of the CWP Project. As a result, secondary mitigation measures including further geoarchaeological assessments and geotechnical samples, implementation of AEZs and LoD will be implemented. This residual effect from these additional mitigation measures are minor, moderate and major beneficial, concluding there will be no significant effects on marine archaeology and cultural heritage arising from the project. Other offshore wind farms that employed similar mitigation techniques include the Norfolk Vanguard (2018a) and Norfolk Boreas (2020) projects, which avoided previously identified anomalies (archaeological features) on and below the seabed, as identified by geophysical surveys.
Aesthetic Services		
Chapter 15 – Seascape, Landscape and Visual Impacts	The value of this ecosystem service relates to the beauty of the landscape for those viewing it. This is hard to quantify, but estimates have been made based on economic activities capitalising from a “sea view”. In 2014, aesthetic services contributed EU68 million to the Irish economy. In order to maintain the provision of aesthetic services, the CWP Project must avoid, minimise or mitigate significant adverse impacts on the seascape and landscape within the Project area in line with NMPF Seascape and Landscape Policy 1.	As per previous Seascape, Landscape and Visual Impacts section under **Recreational Services** which concludes that with the addition of the primary mitigation measures, such as implementation of a coherent and balanced layout and reduction in assets, there will still be some significant effects.

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
Spiritual and Emblematic Values		
Chapter 14 – Marine Archaeology and Cultural Heritage	It is difficult to quantify the spiritual and emblematic value held by individuals in relation to the marine environment. Marine archaeology and cultural heritage can provide benefits for associated spiritual and emblematic values e.g., the use of the Galway Hooker as a brewery logo. This ecosystem service remains important to the Irish population. In order to maintain the provision of aesthetic services, the CWP Project must avoid, minimise or mitigate significant adverse impacts on marine archaeology and cultural heritage within the Project area in line with NMPF Heritage Assets Policy 1and Social benefits Policy 1 & 2.	As per previous Marine Archaeology and Cultural Heritage section under **Marine Heritage, Culture and Entertainment,** which concludes there will be no significant effects on marine archaeology and cultural heritage arising from the project.
Chapter 15 – Seascape, Landscape and Visual Impacts	It is difficult to quantify the spiritual and emblematic value held by individuals in relation to the marine environment. Seascape, landscape and visual impacts can provide benefits for associated spiritual and emblematic values e.g., the seeking of inspiration from the environment they inhabit by indigenous people. This ecosystem service remains important to the Irish population.	As per previous Seascape, Landscape and Visual Impacts section under **Recreational Services,** which concludes that with the addition of the primary mitigation measures, such as implementation of a coherent and balanced layout and reduction in assets, there will still be some significant effects.

EIAR Chapter	Relevance to the CWP Project	Mitigation measures and Impact Assessment summary (relevant to the marine ecosystem service)
	In order to maintain the provision of aesthetic services, the CWP Project must avoid, minimise or mitigate significant adverse impacts on the seascape and landscape within the Project area in line with NMPF Seascape and Landscape Policy 1 and Social benefits Policy 1 & 2.	

5 Summary

47. Marine ecosystem services have been screened for possible interaction with the CWP Project. Those screened IN as relevant have been assessed against the information provided within the EIAR topic chapters and include primary mitigation measures. A search of the UKERC database has provided a brief summary of the overall findings of OWF studies undertaken within each relevant ecosystem service, including specific studies related to various UK OWFs and their mitigation measures.

48. Through reference to individual receptor assessments, including consideration of MSFD GES indicators, and the NMPF framework it is possible to conclude that there will be no material impact on any of the ecosystem services, and no impediment to the ability of normal ecosystem functions and services to function, as a result of the proposed CWP Project.

49. Critically there is also no anticipated loss of coastal habitat proposed or predicted as a result of the project, but there is, subject to proper planning requirements being met, the potential for CWP Project to contribute to a biodiversity net gain for coastal habitats.

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codling wind park

Planning Report

Appendix B

Response to Offshore Renewable Energy Development Plan Project Level Mitigation Measures

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Abbreviations

Abbreviation	Term in Full
ADD	Acoustic Deterrent Device
AEZ	Archaeological Exclusion Zone
BIM	Bord Iascaigh Mhara
CC	Construction / Decommissioning Cables
CD	Construction / Decommissioning Devices
CEA	Cumulative Effect Assessment
CEMP	Construction and Environmental Management Plan
CWP	Codling Wind Park
CWPL	Codling Wind Park Ltd
DAS	Digital Aerial Surveys
DAU	Department Application Unit
DECC	Department of Environment, Climate and Communications
DHLGH	Department of Housing, Local Government and Heritage
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EMF	Electromagnetic Field
ERCOP	Emergency Response Plan
EVMP	Ecological Vessel Management Plan
FLO	Fisheries Liaison Officer
FMMS	Fisheries Management and Mitigation Strategy
IAA	Irish Aviation Authority
IWDG	Irish Whale and Dolphin Group
JNCC	Joint Nature Conservation Committee
LMP	Lighting and Marking Plan
MCC	Marine Coordination Centre
MMMP	Marine Mammals Management Plan
NIS	Natura Impact Statement
NPWS	National Parks and Wildlife Service
NRA	Navigation Risk Assessment
NSP	Navigation Safety Plan

OC	Operation Cables
OD	Operation Devices
OECC	Offshore Export Cable Corridor
OandM	Operation and Maintenance
ORE	Offshore Renewable Energy
OREDP	Offshore Renewable Energy Development Plan
OSS	Offshore Substation
OTI	Onshore Transmission Infrastructure
OWF	Offshore Wind Farm
PAD	Protocol for Archaeological Discoveries
S	Survey
SFPA	Sea Fisheries Protection Authority
SI	Site Investigation
SPA	Special Protection Area
TMZ	Transponder Mandatory Zone
UXO	Unexploded Ordnance
WTG	Wind Turbine Generator

Definitions

Glossary	Meaning
the Applicant	The developer, Codling Wind Park Limited (CWPL).
array site	The area within which the wind turbine generators (WTGs), inter-array cables (IACs) and the offshore substation structures (OSSs) are proposed.
Codling Wind Park (CWP) Project	The proposed development as a whole is referred to as the Codling Wind Park (CWP) Project, comprising of the offshore infrastructure, the onshore infrastructure and any associated temporary works.
Codling Wind Park Limited (CWPL)	A joint venture between Fred. Olsen Seawind (FOS) and Électricité de France (EDF) Renewables, established to develop the CWP Project.
Environmental Impact Assessment (EIA)	A systematic means of assessing the likely significant effects of a proposed project, undertaken in accordance with the EIA Directive and the relevant Irish legislation.
Environmental Impact Assessment Report (EIAR)	The report prepared by the Applicant to describe the findings of the EIA for the CWP Project.
export cables	The cables, both onshore and offshore, that connect the offshore substations with the onshore substation.
generating station	Comprising the wind turbine generators (WTGs), inter array cables (IACs) and the interconnector cables.
inter-array cables (IACs)	The subsea electricity cables between each WTG between and the OSSs.
interconnector cables	The subsea electricity cables between OSSs
landfall	The point at which the offshore export cables are brought onshore and connected to the onshore export cables via the transition joint bays (TJB). For the CWP Project The landfall works include the installation of the offshore export cables within Dublin Bay out to approximately 4 km offshore, where water depths that are too shallow for conventional cable lay vessels to operate.
limit of deviation (LoD)	Locational flexibility of permanent and temporary infrastructure is described as a LoD from a specific point or alignment.
Maritime Area Consent (MAC)	A Maritime Area Consent (MAC) provides State authorisation for a prospective developer to undertake a maritime usage and occupy a specified part of the maritime area. A MAC is required to be in place before planning consent can be sought.
metocean	Meteorological and oceanographic data (for example metocean data or metocean conditions).
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 wind turbine generators (WTGs) from the offshore substation structures (OSSs) to the TJBs at the landfall.
offshore export cable corridor (OECC)	The area between the array site and the landfall, within which the offshore export cables will be installed along with cable protection and other temporary infrastructure for construction.
offshore infrastructure	The permanent offshore infrastructure, comprising of the WTGs, IACs, OSSs, interconnector cables, offshore export cables and other associated infrastructure such as cable and scour protection.
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.
OSS topside	The offshore substation topside structure resting on the OSS monopile foundation and housing all electrical and ancillary equipment. This includes all systems such as electrical, SCADA, safety and mechanical equipment.
OSS monopile foundation	The bottom fixed structure piled in to the seabed supporting the OSS topside. It consists of a monopile and a transition piece. It can include systems such as electrical, SCADA, cathodic protection, safety and mechanical equipment.
Offshore transmission infrastructure (OfTI)	The offshore transmission assets comprising the OSSs and offshore export cables. The EIAR considers both permanent and temporary works associated with the OfTI.
onshore transmission infrastructure (OTI)	The onshore transmission assets comprising the TJBs, onshore export cables and the onshore substation. The EIAR considers both permanent and temporary works associated with the OTI.
onshore substation	Site containing electrical equipment to enable connection to the national grid.
onshore substation site	The area within which permanent and temporary works will be undertaken to construction the onshore substation.
onshore substation site boundary	The physical boundary of the onshore substation site.
onshore substation operational site	The area within the operational site boundary within which operational activities will occur.
operations and maintenance (OandM) activities	Activities (e.g., monitoring, inspections, reactive repairs, planned maintenance) undertaken during the OandM phase of the CWP Project.
OandM phase	This is the period of time during which the CWP project will be operated and maintained.
operations and maintenance base (OMB)	The operational and maintenance facilities to support the CWP Project, including buildings / warehouses, laydown areas, cranes, parking and marine works such as pontoons for maintenance vessels.
parameters	Set of parameters by which the CWP Project is defined and which are used to form the basis of assessments.

Phase 1 Project	Under the special transition provisions in the Maritime Area Planning Act 2021, as amended (the MAP Act), the Minister for the Department of Environment, Climate and Communications (DECC) has responsibility for assessing and granting a Maritime Area Consent (MAC) for a first phase of offshore wind projects in Ireland. The Phase 1 Projects include Oriel Wind Park, Arklow Bank II, Dublin Array, North Irish Sea Array, Codling Wind Park and Skerd Rocks. A MAC has since been granted by DECC for each of the Phase 1 Projects.
planning application boundary	The area subject to the application for development consent, including all permanent and temporary works for the CWP Project.
transition joint bay (TJB)	This is required as part of the OTI and is located at the landfall. It is an underground bay housing a joint which connects the offshore and onshore export cables.
wind turbine generator	All the components of a wind turbine, including the tower, nacelle, and rotor.
Zone of Influence (ZoI)	Spatial extent of potential impacts resulting from the project.

1 INTRODUCTION

1. The tables hereafter provide a response to the project level mitigation measures included in the Offshore Renewable Energy Development Plan (OREDP). This appendix should be read in conjunction with the **Planning Report**. Instead of repeating throughout, please note that EIAR introductory Chapter **2 Policy and Legislative Context, Chapter 3 Site Selection and Consideration of Alternatives** and **Chapter 4 Project Description** provide supporting information to the mitigations presented in the table.

2. This appendix should also be read in conjunction with the **Natura Impact Statement (NIS)**, which concludes no adverse effect on the integrity of any European site designated under the Birds and/or Habitats Directive. This conclusion is drawn in some cases through the implementation of mitigation measures identified within this appendix and through the **Environmental Impact Assessment** (EIA) process, such as the implementation of the **Marine Mammal Mitigation Protocol** (**MMMP**) or seasonal restrictions on construction works within the intertidal area of the South Dublin Bay Special Protection Area (SPA), but the conclusions of the NIS are not repeated hereafter.

Key to Project Phase:					
CC - Construction/ Decommissioning cables	CD - Construction / Decommissioning devices	OC - Operation cables	OD - Operation devices	S- Survey	

Appendix B.1 Geology, Geomorphology and Hydrography

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures in OREDP	Timescale	CWP Project Response	Application Reference
Changes in hydrodynamic / coastal processes and seabed morphology	CD/CC/OD	Site specific geophysical and geotechnical surveys to establish a baseline and inform the impact assessment for individual developments	Site/cable route selection stage. Project design stage. EIA stage.	Site specific surveys (including geophysical, metocean and benthic ecology) have been undertaken and used to inform the assessment presented in **Chapter 6 Marine Geology, Sediment and Coastal Processes**.	**Chapter 6 Marine Geology, Sediment and Coastal Processes**
Changes in hydrodynamic / coastal processes and seabed morphology	CD/CC/OD	Modelling of hydrodynamics and sediment transport	Site/cable route selection stage. Project design stage. EIA stage.	A Hydrodynamic Modelling study has been undertaken and is presented in **Chapter 6 Marine Geology, Sediment and Coastal Processes, Appendix 6.3**.	**Chapter 6 Marine Geology, Sediment and Coastal Processes, Appendix 6.3**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures in OREDP	Timescale	CWP Project Response	Application Reference
Changes in hydrodynamic / coastal processes and seabed morphology	CD/CC/OD	Avoidance of placement of devices in areas where sediment transport pathways are modelled as highly sensitive to change	Site/cable route selection stage. Project design stage. EIA stage.	The receptors in the CWP Project study area affected by the alteration to the hydrodynamic, wave and sediment regimes include the wider seabed, its morphology and underlying geology, the prevailing hydrodynamic and wave regime, and the sediment transport regime and coastal processes. Sensitivity of these receptors is assessed as low.	**Chapter 6 Marine Geology, Sediment and Coastal Processes**
Changes in hydrodynamic / coastal processes and seabed morphology	CD/CC/OD	Modelling the effects on coastal processes should form part of pre-project activities to optimise location	Site/cable route selection stage. Project design stage. EIA stage.	A Hydrodynamic Modelling study has been undertaken and is presented in **Chapter 6 Marine Geology, Sediment and Coastal Processes, Appendix 6.3**.	**Chapter 6 Marine Geology, Sediment and Coastal Processes, Appendix 6.3**
Changes in hydrodynamic / coastal processes and seabed morphology	CD/CC/OD	Avoidance of placement of devices within zones where coastal processes are modelled as highly sensitive to change	Site/cable route selection stage. Project design stage. EIA stage.	The receptors in the CWP Project study area affected by the alteration to the hydrodynamic, wave and sediment regimes include the wider seabed, its morphology and underlying geology, the prevailing hydrodynamic and wave regime, and the sediment transport regime and coastal processes. Sensitivity of these receptors is assessed as low.	**Chapter 6 Marine Geology, Sediment and Coastal Processes**

Appendix B.2 Seabed Contamination and Water Quality

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Accidental release of contaminants (hydraulic fluids/vessel fuel)	CD/CC/OD	Carry out potentially hazardous operations under appropriate weather/tide conditions	Project design stage. EIA stage. Project installation. Project operation and maintenance.	A **Navigation Risk Assessment** has been undertaken and presented as **Chapter 16 Shipping and Navigation**, **Appendix 16.3**. This assesses the meteorological conditions of the CWP Project offshore development area. A Marine Coordination Centre (MCC) will obtain and provide localised weather information for project vessels to plan the work being undertaken. A **Construction Environmental Management Plan** (**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: - measures proposed to ensure	**Chapter 16 Shipping and Navigation, Appendix 16.3** **CEMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				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; - Offshore waste management and disposal arrangements.	
Accidental release of contaminants (hydraulic fluids/vessel fuel)	CD/CC/OD	Use low toxicity and biodegradable materials	Project design stage. EIA stage. Project installation. Project operation and maintenance.	**Chapter 33 Summary of Mitigation and Monitoring**, confirms the CWP Project commitment that the use of Grouts will comply with the relevant maritime industry specifications which are designed for safety, and suitable for use in the marine environment. Drill fluids, where required, will comply with industry best practice and standards to minimise risk to the environment.	**Chapter 33 Summary of Mitigation and Monitoring**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Accidental release of contaminants (hydraulic fluids/vessel fuel)	CD/CC/OD	Use minimum quantities	Project design stage. EIA stage. Project installation. Project operation and maintenance.	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: • 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; and • offshore waste management and disposal arrangements.	**CEMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Accidental release of contaminants (hydraulic fluids/vessel fuel)	CD/CC/OD	Design for minimum maintenance	Project design stage. EIA stage. Project installation. Project operation and maintenance.	The proposed project has been designed using the most appropriate and best available design information which will minimise the need for maintenance (see **Chapter 4 Project Description**). Notwithstanding this, operation and maintenance activities have been comprehensively assessed across all relevant chapters of the EIAR, and mitigation measures secured within the **CEMP** to provide certainty on the management of any unforeseen pollution events.	**Relevant EIAR topic chapters** **CEMP**
Accidental release of contaminants (hydraulic fluids/vessel fuel)	CD/CC/OD	Risk assessment and contingency planning	Project design stage. EIA stage. Project installation. Project operation and maintenance.	A **Navigational Risk Assessment** has been undertaken and presented as **Chapter 16 Shipping and Navigation, Appendix 16.3**. A **Navigation Safety Plan** (**NSP**) has also been prepared for CWP Project. This includes Emergency Response Cooperation Planning.	**Chapter 16 Shipping and Navigation, Appendix 16.3** **NSP**
Accidental release of contaminants (hydraulic	CD/CC/OD	Implementation of SOPEP (Shipboard Oil Pollution Emergency Plan)	Project design stage. EIA stage.	A **CEMP** has been prepared to ensure appropriate controls are in place to manage environmental risks associated with the construction of	**CEMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
fluids/vessel fuel)			Project installation. Project operation and maintenance.	the CWP Project. It outlines environmental procedures that require consideration throughout the construction process, in accordance with legislative requirements and industry best practice. The **CEMP** includes 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.	
Disturbance of contaminated sediments	CD/CC	Avoid device/infrastructure placement within 500m of areas of known sediment contamination	Project design stage. EIA stage. Project installation. Project operation and maintenance.	A benthic intertidal and subtidal ecological survey covering the CWP array site and offshore export cable corridor (OECC) was undertaken and is presented in **Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**. A subset of 8 stations were sampled for contaminants analysis. Results showed low levels of chemical contaminants at stations sampled within the CWP Project area. The majority of contaminant levels at sampled stations were below the Irish Lower Action Levels and Cefas Action Level 1. Three stations had Arsenic levels slightly above the Irish Lower action level and one station	**Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				had Cadmium levels above the Irish lower action level, however all were under the Upper AL. Similarly, whilst one station had Zinc, and two stations had Cadmium levels slightly above Cefas AL1, they were well within AL2.	
Disturbance of contaminated sediments	CD/CC	Carry out pre-installation bottom surveys	Project design stage. EIA stage Project installation. Project operation and maintenance.	Pre-installation surveys will be carried out as proposed in various EIAR chapters.	**Relevant EIAR topic chapters**
Disturbance of contaminated sediments	CD/CC	Use installation methods that minimise disturbance of sediments	Project design stage. EIA stage. Project installation. Project operation and maintenance.	**Chapter 33 Summary of Mitigation and Monitoring**, confirms the CWP Project commitment that bedform clearance operations will be undertaken only where necessary, thereby minimising sediment disturbance and alteration to seabed morphology. During WTG installation, equipment such as jack up vessels (if required) are expected to remain in any one location for a limited period of time	**Chapter 33 Summary of Mitigation and Monitoring**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				(hours to a few days). This will ensure any impacts on the prevailing hydrodynamic, wave and sediment regimes and coastal processes is minimised.	
Disturbance of contaminated sediments	CD/CC	Carry out work in appropriate tidal conditions to minimise effect	Project design stage. EIA stage. Project installation. Project operation and maintenance.	During WTG installation, equipment such as jack up vessels (if required) are expected to remain in any one location for a limited period of time (hours to a few days). This will ensure any impacts on the prevailing hydrodynamic, wave and sediment regimes and coastal processes is minimised.	**Chapter 33 Summary of Mitigation and Monitoring**
Disturbance of contaminated sediments	CD/CC	Avoid sensitive time periods for local receptors	Project design stage. EIA stage. Project installation. Project operation and maintenance.	A benthic intertidal and subtidal ecological survey covering the CWP array site and OECC was undertaken and is presented in **Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**. A subset of 8 stations were sampled for contaminants analysis. Results showed low levels of chemical contaminants at stations sampled within the CWP Project area. Local receptors do not have a sensitivity to the levels predicted	N/A

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Disturbance of contaminated sediments	CD/CC	Risk assessment and contingency planning	Project design stage. EIA stage. Project installation. Project operation and maintenance.	A **Navigational Risk Assessment** has been undertaken and is presented in **Chapter 16 Shipping and Navigation, Appendix 16.3**. A **NSP** has also been prepared for CWP Project. This includes a Emergency Response Cooperation Planning. The EIAR assessments present and assess the risks associated with disturbance of contaminated sediments. The sediments found within the relevant areas of the CWP project that may be disturbed are of a low risk, and therefore a low risk of adverse effects.	**Chapter 16 Shipping and Navigation, Appendix 16.3** **NSP** **Various EIAR chapters**
Disturbance of contaminated sediments	CD/CC	If munitions are encountered advice such as that given in Department of the Marine and Natural Resources 2001 (Marine Notice No. 16 of 2001 (i.e. explosives picked up at sea in trawls or sighted; and ii. the removal of explosive items from	Project design stage. EIA stage. Project installation. Project operation and maintenance.	The implications of the potential need for UXO clearance are considered within the assessments provided within the EIAR. The risk of UXO encounter are considered very low. Notwithstanding this, the **CEMP** includes guidance such as prior to each stage of construction commencing, contractors will be responsible for undertaking risk assessments to understand the	**CEMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
		wrecks)) should be followed.		potential for unexploded ordnance being found within the offshore development areas. These will be used to specify safe working requirements, which may include advance magnetometer surveys at identified locations and appropriate training for site operatives. An Emergency Response Plan (ERCoP) will be prepared by contractors and this will be adhered to in the event of discovering unexploded ordnance. This will include notifications to the relevant authorities, emergency services, and stakeholders as required.	

Appendix B.3 Protected Sites and Species

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Degradation of protected sites	CC/CD	Careful site selection avoiding sensitive sites for devices and export cables (i.e. existing and proposed protected sites).	Site/cable route selection stage. Project design stage. EIA stage.	Site selection has avoided protected sites where practicable and introduced appropriate mitigation measures where avoidance is not practicable. See **Chapter 3 Site Selection and Consideration of Alternatives** and **Chapter 33 Summary of Mitigation and Monitoring** for site and receptor specific mitigations.	**Chapter 3 Site Selection and Consideration of Alternatives** **Chapter 33 Summary of Mitigation and Monitoring**
Degradation of protected sites	CC/CD	Modelling of sediment transport	Site/cable route selection stage. Project design stage. EIA stage.	A Hydrodynamic Modelling study has been undertaken and is presented in **Chapter 6 Marine Geology, Sediment and Coastal Processes, Appendix 6.3**.	**Chapter 6 Marine Geology, Sediment and Coastal Processes, Appendix 6.3**
Degradation of protected sites	CC/CD	Possible mitigation measures relevant to the specific interest features of the sites and their seasonal and other sensitivities are described elsewhere in this table for the relevant topic areas	Site/cable route selection stage. Project design stage. EIA stage.	Seasonal mitigations have been proposed where applicable for sensitive receptors.	**Chapter 33 Summary of Mitigation and Monitoring**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Degradation of protected sites	CC/CD	See sections below on benthic ecology, fish and shellfish, seabirds, turtles and marine mammals.	Site/cable route selection stage. Project design stage. EIA stage.		

Appendix B.4 Benthic Ecology

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Damage/loss to habitats and non-mobile species (All technologies)	S/CC/CD	Careful site selection avoiding sensitive sites for devices and export cables (i.e. areas with known sensitive intertidal and subtidal benthic habitats).	Survey. Site/cable route selection stage. Project design stage. EIA stage.	Positions of WTGs and Offshore Substation Structures (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. The locations of offshore infrastructure been selected 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 avoidance of sensitive habitats such as *Sabellaria spinulosa* reefs.	**Chapter 3 Site Selection and Consideration of Alternatives**
Damage/loss to habitats and non-mobile species (All technologies)	S/CC/CD	Benthic survey to characterise seabed and identify sensitive sites and species.	Survey. Site/cable route	A benthic intertidal and subtidal ecological survey covering the CWP array site and OECC was undertaken and is presented in **Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**.	**Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			selection stage. Project design stage. EIA stage.		
Damage/loss to habitats and non-mobile species (All technologies)	S/CC/CD	Avoid installation during sensitive seasons.	Survey. Site/cable route selection stage. Project design stage. EIA stage.	No sensitive periods identified.	**Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**
Suspended sediment and increased turbidity (All technologies)	S/CC/CD	Careful site selection avoiding sensitive sites for devices and export cables (i.e. areas with known sensitive intertidal and subtidal benthic habitats).	Survey. Site/cable route selection stage. Project design stage.	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. The locations of offshore infrastructure been developed to avoid known sensitive	**Chapter 3 Site Selection and Consideration of Alternatives**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			EIA stage.	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 reefs*.	
Suspended sediment and increased turbidity (All technologies)	S/CC/CD	Benthic survey to characterise seabed and identify sensitive sites and species.	Survey. Site/cable route selection stage. Project design stage. EIA stage.	A benthic intertidal and subtidal ecological survey covering the CWP array site and OECC was undertaken and is presented in **Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**.	**Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**
Suspended sediment and increased turbidity (All technologies)	S/CC/CD	Modelling of transport sediment.	Survey. Site/cable route selection stage.	A Hydrodynamic Modelling study was undertaken and is presented in **Chapter 6 Marine Geology, Sediments and Coastal Processes, Appendix 6.3.**	**Chapter 6 Marine Geology, Sediments and Coastal**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project design stage. EIA stage.		**Processes, Appendix 6.3**
Suspended sediment and increased turbidity (All technologies)	S/CC/CD	Avoid installation during sensitive seasons.	Survey. Site/cable route selection stage. Project design stage. EIA stage.	No sensitive periods identified.	**Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**
Smothering	CC/CD/S	Careful site selection avoiding sensitive sites for devices and export cables (i.e. areas with known sensitive intertidal and subtidal benthic habitats)	Survey. Site/cable route selection stage. Project design stage EIA stage.	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. The locations of offshore infrastructure been developed to avoid known sensitive ecological habitats, including areas with	**Chapter 3 Site Selection and Consideration of Alternatives**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				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 reefs*.	
Smothering	CC/CD/S	Benthic survey to characterise seabed and identify sensitive sites and species.	Survey. Site/cable route selection stage. Project design stage EIA stage.	A benthic intertidal and subtidal ecological survey covering the CWP array site and OECC was undertaken and is presented in **Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**.	**Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**
Smothering	CC/CD/S	Modelling of transport sediment.	Survey. Site/cable route selection stage. Project	A Hydrodynamic Modelling study undertaken and presented in **Chapter 6 Marine Geology, Sediments and Coastal Processes, Appendix 6.3.**	**Chapter 6 Marine Geology, Sediments and Coastal Processes, Appendix 6.3**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			design stage EIA stage.		
Smothering	CC/CD/S	Avoid installation during sensitive seasons	Survey. Site/cable route selection stage. Project design stage. EIA stage.	No sensitive periods identified for benthic ecology, and therefore no seasonal restrictions apply to benthic ecology.	**Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**
Contamination – from sediment disturbance	CC/CD/S	Avoid device/infrastructure placement within 500m of areas of known sediment contamination	Survey. Site/cable route selection stage. Project design stage. EIA stage.	A benthic intertidal and subtidal ecological survey covering the CWP array site and OECC was undertaken and is presented in **Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**. A subset of 8 stations were sampled for contaminants analysis. Results showed low levels of chemical contaminants at stations sampled within the CWP Project area. The majority of contaminants levels at sampled stations were below the Irish Lower Action Levels and Cefas Action Level 1.	**Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Contamination – from sediment disturbance	CC/CD/S	Survey to identify potential sources of seabed contamination	Survey. Site/cable route selection stage. Project design stage. EIA stage.	A benthic intertidal and subtidal ecological survey covering the CWP array site and OECC was undertaken and is presented in **Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**. A subset of 8 stations were sampled for contaminants analysis. Results showed low levels of chemical contaminants at stations sampled within the CWP Project area. The majority of contaminants levels at sampled stations were below the Irish Lower Action Levels and Cefas Action Level 1.	**Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**
Contamination – from sediment disturbance	CC/CD/S	Benthic survey to characterise seabed and identify sensitive sites and species	Survey Site/cable route selection stage. Project design stage. EIA stage.	A benthic intertidal and subtidal ecological survey covering the CWP array site and OECC was undertaken and is presented in **Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**.	**Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**
Scouring (Devices with fixed foundations/structures)	OD	Benthic survey to characterise seabed and identify sensitive sites and species	Project design stage. EIA stage.	A benthic intertidal and subtidal ecological survey covering the CWP array site and OECC was undertaken and is presented in **Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**.	**Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**
	OD	Modelling of transport sediment	Project design stage.	A Hydrodynamic Modelling study undertaken and presented in **Chapter 6**	**Chapter 6 Marine**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Scouring (Devices with fixed foundations/structures)			EIA stage.	**Marine Geology, Sediments and Coastal Processes, Appendix 6.3.**	**Geology, Sediments and Coastal Processes, Appendix 6.3**
	OD	Use of scour protection around fixed structure foundations to reduce effects of scour on habitats /non mobile species	Project design stage. EIA stage.	The impact assessment of long term habitat loss and habitat creation through scour and scour protection has been undertaken in **Chapter 8 Subtidal and Intertidal Ecology**.	**Chapter 8 Subtidal and Intertidal Ecology**
Accidental contamination (hydraulic fluids or vessel cargo/fuel)	CC/CD/OD	Design devices to minimise risk of leakage of pollutants	Project design stage. EIA stage. Project installation. Project operation and maintenance.	A **CEMP** has been prepared 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. The **CEMP** includes 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.	**CEMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Accidental contamination (hydraulic fluids or vessel cargo/fuel)	CC/CD/OD	Risk assessment and contingency planning	Project design stage. EIA stage. Project installation. Project operation and maintenance.	A **Navigational Risk Assessment** has been undertaken and presented as **Chapter 16 Shipping and Navigation, Appendix 16.3**. A **NSP** has also been prepared for CWP Project. This includes Emergency Response Cooperation Planning.	**Chapter 16 Shipping and Navigation, Appendix 16.3** **NSP**
Accidental contamination (hydraulic fluids or vessel cargo/fuel)	CC/CD/OD	Implementation of SOPEP (Shipboard Oil Pollution Emergency Plan)	Project design stage. EIA stage. Project installation. Project operation and maintenance.	A **CEMP** has been prepared 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. The **CEMP** includes 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.	**CEMP**
Accidental contamination	CC/CD/OD	Benthic survey to characterise seabed and identify	Project design stage.	A benthic intertidal and subtidal ecological survey covering the CWP array site and OECC was undertaken and is presented in	**Chapter 8 Subtidal and Intertidal**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
(hydraulic fluids or vessel cargo/fuel)		sensitive sites and species	EIA stage. Project installation. Project operation and maintenance.	**Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3.**	**Ecology, Appendix 8.3**
Changes in wave regime and tidal flow	OD	Benthic survey to characterise seabed and identify habitats and species sensitive to changes in wave or tidal regimes	Project design stage. EIA stage.	A benthic intertidal and subtidal ecological survey covering the CWP array site and OECC was undertaken and is presented in **Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3.**	**Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3**
Changes in wave regime and tidal flow	OD	Hydrodynamic modelling to determine potential for energy extraction in certain locations	Project design stage. EIA stage	A Hydrodynamic Modelling study was undertaken to support determination of the baseline hydrodynamic and wave regimes prevailing within the planning application boundary and wider region. These models, form the driving models for post construction and sediment transport simulations performed to support the assessment of potential impacts of the CWP project upon relevant receptors. It is presented in **Chapter 6 Marine Geology, Sediments and Coastal Processes, Appendix 6.3.**	**Chapter 6 Marine Geology, Sediments and Coastal Processes, Appendix 6.3**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Changes in wave regime and tidal flow	OD	Avoidance of important habitats though careful site selection	Project design stage. EIA stage	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. 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 avoidance of sensitive habitats such as *Sabellaria spinulosa reefs*.	**Chapter 3 Site Selection and Consideration of Alternatives**
Changes in wave regime and tidal flow	OD	Ensure adequate spacing between wave and tidal developments to reduce potential for energy extraction	Project design stage. EIA stage	N/A the proposed CWP project is not a wave or tidal development.	N/A

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Substratum change	CC/CD/OD	Careful site selection avoiding sensitive sites for devices and export cables (i.e. areas with known sensitive intertidal and subtidal benthic habitats)	Site/cable route selection stage. Project design stage. EIA stage.	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. 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 avoidance of sensitive habitats such as *Sabellaria spinulosa reefs*	**Chapter 3 Site Selection and Consideration of Alternatives**
Substratum change	CC/CD/OD	Benthic survey to characterise seabed and identify sensitive sites and species	Site/cable route selection stage. Project design stage.	A benthic intertidal and subtidal ecological survey covering the CWP array site and OECC was undertaken and is presented in **Chapter 8 Subtidal and Intertidal Ecology, Appendix 8.3.**	**Chapter 8 Subtidal and Intertidal Ecology. Appendix 8.3**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			EIA stage		

Appendix B.5 Fish and Shellfish

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Disturbance	S/CC/CD/OC/OD	Surveys to identify key breeding and migration routes	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Operation	It was agreed through consultation with the Sea Fisheries Protection Authority (SFPA) and Department of Housing Local Government and Heritage (DHLGH) that no site-specific fish or shellfish surveys needed to be undertaken during the baseline site investigation survey campaign. Baseline surveys for fish seldom yield additional data that is not already available from fisheries landings data or existing survey data and often use intrusive sampling methods. Through consultation with statutory and non-statutory organisations, several data sources have been deemed sufficient to develop a baseline for fish, shellfish and turtles ecology to allow a robust impact assessment. A comprehensive desk-based review was undertaken to inform the baseline for fish, shellfish and turtles ecology, which can be found in **Chapter 9 Fish, Shellfish and Turtle Ecology**.	**Chapter 9 Fish, Shellfish and Turtles Ecology**
Disturbance	S/CC/CD/OC/OD	Avoid sensitive sites/areas where possible	Site/cable route selection stage.	The CWP project does not adversely affect any sensitive sites or seasons of relevance for fish and shellfish.	**Chapter 3 Site Selection and Consideration of Alternatives**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project design stage. EIA stage. Project installation. Operation.		**Chapter 9 Fish, Shellfish and Turtles Ecology**
Disturbance	S/CC/CD/OC/OD	Where development occurs near to sensitive sites/areas avoid installation during sensitive seasons	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Operation	**Chapter 33 Summary of Mitigation and Monitoring** confirms the CWP Project commitment that piling works along the River Liffey Channel will not be permitted between March and May to avoid noise impact during the smolt run.	**Chapter 33 Summary of Mitigation and Monitoring**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Disturbance	S/CC/CD/OC/OD	Programme survey and installation works associated with a species project to reduce potential for noisy or other disturbing activities to occur at the same time	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Operation	Survey works will not be undertaken at the same time as other noisy activities as this would affect the quality of the data. Piling works along the River Liffey Channel will not be permitted between March and May to avoid noise impact during the smolt run.	**Chapter 9 Fish, Shellfish and Turtles Ecology**
Disturbance	S/CC/CD/OC/OD	Programme survey and development installation works for a number of projects to reduce potential for installation periods to coincide with other developments to reduce potential for cumulative	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Operation	No significant effects as a result of the project alone, or cumulatively with other development have been identified. As such there is not a requirement for programming of multiple survey and other developments. Further to this construction phase effects are mitigated through application of a **Marine Mammal Mitigation Protocol** (**MMMP**) which also applies to fish.	**Chapter 9 Fish, Shellfish and Turtles Ecology** **MMMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
		effects from developments			
Disturbance	S/CC/CD/OC/OD	Programme maintenance works to avoid sensitive seasons e.g. breeding and migration	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Operation.	No significant effects identified during operation and maintenance period. As such there is not a requirement for programming of multiple survey and other developments. Further to this, construction phase effects mitigated through application of a **MMMP** which also applies to fish.	**Chapter 9 Fish, Shellfish and Turtles Ecology** **MMMP**
Displacement	S/CC/CD/CD/OC/OD	Surveys to identify key breeding and migration routes	Site/cable route selection stage. Project design stage. EIA stage.	It was agreed through consultation with the SFPA and DHLGH that no site-specific fish or shellfish surveys needed to be undertaken during the baseline site investigation survey campaign. Baseline surveys for fish seldom yield additional data that is not already available from fisheries landings data or existing survey data and often use intrusive sampling methods. Through consultation with statutory and non-statutory organisations,	**Chapter 9 Fish, Shellfish and Turtle Ecology**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Operation.	several data sources have been deemed sufficient to develop a baseline for fish, shellfish and turtles ecology to allow a robust impact assessment. A comprehensive desk-based review was undertaken to inform the baseline for fish, shellfish and turtles ecology, which can be found in **Chapter 9 Fish, Shellfish and Turtles Ecology**.	
Displacement	S/CC/CD/CD/OC/OD	Avoid locating developments on key migration routes or in key breeding areas	Site/cable route selection stage. Project design stage. EIA stage. Operation.	The CWP project does not adversely affect any migration routes or breeding areas of relevance for fish and shellfish.	**Chapter 9 Fish, Shellfish and Turtles Ecology**
Displacement	S/CC/CD/CD/OC/OD	Where development occurs near to sensitive sites/areas avoid installation during sensitive seasons	Site/cable route selection stage. Project design stage.	**Chapter 33 Summary of Mitigation and Monitoring,** confirms the CWP Project commitment that piling works along the River Liffey Channel will not be permitted between March and May to avoid noise impact during the smolt run.	**Chapter 33 Summary of Mitigation and Monitoring**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			EIA stage. Operation.		
Displacement	S/CC/CD/CD/OC/OD	Programme survey and installation works associated with a species project to reduce potential for noisy or other disturbing activities to occur at the same time	Site/cable route selection stage. Project design stage. EIA stage.	Survey works will not be undertaken at the same time as other noisy activities as this would affect the quality of the data. Piling works along the River Liffey Channel will not be permitted between March and May to avoid noise impact during the smolt run.	**Chapter 9 Fish, Shellfish and Turtles Ecology**
Displacement	S/CC/CD/CD/OC/OD	Programme survey and development installation works for a number of projects to reduce potential for installation periods to coincide with other developments to reduce potential for cumulative	Site/cable route selection stage. Project design stage. EIA stage.	Significant cumulative effects not identified, and significant project alone effects not identified. Construction phase effects mitigated through application of a **MMMP** which also applies to fish. The conclusions of the EIAR are that there are no significant effects anticipated, and as such there is not a requirement for programming of activities between projects.	**Chapter 9 Fish, Shellfish and Turtles Ecology**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
		effects from developments			
Displacement	S/CC/CD/CD/OC/OD	Programme maintenance works to avoid sensitive seasons e.g. breeding and migration	Site/cable route selection stage. Project design stage. EIA stage.	Significant effects not identified during operation and maintenance period. Construction phase effects mitigated through application of a **MMMP** which also applies to fish.	**Chapter 9 Fish, Shellfish and Turtles Ecology** **MMMP**
Smothering	CC/CD	Avoid sensitive sites / species / periods	Project design stage. EIA stage. Project installation.	Bedform clearance operations will be undertaken only where necessary, thereby minimising sediment disturbance and alteration to seabed morphology. The potential overlap of spawning or nursery areas is negligible within the context of the Study Area, particularly when it is considered that the area of greatest SSC will be within 1 km of the activities, and outside this area, the SSC levels will rapidly decrease as the plume disperses. Given the mobile nature of these fish species (except sandeel), and	**Chapter 9 Fish, Shellfish and Turtles Ecology.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				the size of the spawning areas relative to the area affected by increased SSC, it is considered that individuals will be able to avoid the affected area, if required, noting it will be well within the tolerance of all species, with no impact on overall spawning efficacy, and that there will be sufficient suitable alternative habitat available to ensure effects are negligible.	
Noise	S/CC/CD/OD	Implementation of the NPWS Code of Practice for the Protection of Marine Mammals during Acoustic Seafloor Surveys in Irish Waters. This applies to all activities licensed under the Foreshore Consent and other activities such as geophysical surveys which also require consent under the Wildlife Act	Survey Project design stage. EIA stage. Project installation. Project Operation and Maintenance.	The **MMMP** considers the following guidance: • NPWS (2014): Guidance document for minimising the acoustic impact of man-made sound sources on marine mammals; • IWDG (2020): IWDG policy on offshore windfarm development; JNCC (2010b): Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise; • JNCC (2010a): JNCC guidelines for minimising the risk of injury to marine mammals from using explosives; and • JNCC (2023): DRAFT guidelines for minimising the risk of injury to marine	**MMMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
		and Habitats Directive		mammals from unexploded ordnance clearance in the marine environment.	
Noise	S/CC/CD/OD	Adherence to IWDC recommendations to minimise impacts on marine mammals (Irish Whale and Dolphin Group 2005)	Survey Project design stage. EIA stage. Project installation. Project Operation and Maintenance.		
Noise	S/CC/CD/OD	Undertaking studies to determine site specific noise effects	Survey Project design stage. EIA stage. Project installation. Project Operation and Maintenance.	An Underwater Noise Assessment was undertaken and is provided in **Chapter 9 Fish, Shellfish and Turtles Ecology, Appendix 9.4**. Four representative modelling locations were chosen to give spatial variation across the site as well as accounting for changes in water depth. At each location three monopile foundation modelling scenarios were also considered. Noise sources other than piling were considered using a high-level, simple modelling approach, including cable laying, dredging, drilling, rock	**Chapter 9 Fish, Shellfish and Turtles Ecology, Appendix 9.4**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				placement, vessel movements, and operational WTG noise.	
Noise	S/CC/CD/OD	Minimise use of high noise emission activities such as impact piling	Survey Project design stage. EIA stage Project installation. Project Operation and Maintenance.	CWP have demonstrated that the project can be constructed through traditional percussive piling methods whilst avoiding significant adverse effects on marine mammals (**Chapter 11 Marine Mammals**). However, as a responsible developer the Applicant continue to review available technology and where new piling hammer technology is available with a demonstrable reduction in noise at source CWP will review and adopt the technology if available.	**Chapter 11 Marine Mammals** **MMMP**
Noise	S/CC/CD/OD	Avoid installation during sensitive periods (breeding and migration)	Survey Project design stage. EIA stage. Project installation. Project Operation and Maintenance.	**Chapter 33 Summary of Mitigation and Monitoring**, confirms the CWP Project commitment that piling works along the River Liffey Channel will not be permitted between March and May to avoid noise impact during the smolt run.	**Chapter 33 Summary of Mitigation and Monitoring.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Noise	S/CC/CD/OD	Consider using alternatives (i.e. clump weights, gravity bases, routeing cables through soft sandy sediment or use cable protection rather than burial)	Survey Project design stage. EIA stage. Project installation. Project Operation and Maintenance.	Cables have been routed through sediments suitable for burial where practicable. Cable protection will be used where burial is not possible.	**Chapter 3 Site Selection and Consideration of Alternatives**
Noise	S/CC/CD/OD	"Soft starting" piling activities/passive acoustic deterrents – gradually increasing noise produced to allow fish to move away from activities	Survey Project design stage. EIA stage. Project installation. Project Operation and Maintenance.	The **MMMP** includes the use of a soft-start to pile driving. This involves a gradual ramping up of the piling power over an incremental time period in order to reach full power. Starting the activity at a lower power will allow for nearby marine species, including fish, to flee the area, reducing the likelihood of mortality and injury effects (JNCC, 2010).	**MMMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Noise	S/CC/CD/OD	Underwater noise during operation may be beneficial in alerting species to the presence of the device, reducing the risk of collisions. This requires further research.	Survey Project design stage. EIA stage. Project installation. Project Operation and Maintenance.	An Underwater Noise Assessment was undertaken and is provided in **Chapter 9 Fish, Shellfish and Turtles Ecology, Appendix 9.4**. Four representative modelling locations were chosen to give spatial variation across the site as well as accounting for changes in water depth. At each location three monopile foundation modelling scenarios were also considered. Noise sources other than piling were considered using a high-level, simple modelling approach, including cable laying, dredging, drilling, rock placement, vessel movements, and operational WTG noise.	**Chapter 9 Fish, Shellfish and Turtles Ecology, Appendix 9.4**
Noise	S/CC/CD/OD	Noise from operating turbines can be reduced by using isolators. However, this has not been tested over long term and to account for cumulative effects	Survey Project design stage. EIA stage. Project installation. Project Operation and Maintenance	The assessment concludes no significant effects from operational turbines, and no further mitigation is proposed.	**Chapter 11 Marine Mammals**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Noise	S/CC/CD/OD	Use sound insulation on equipment	Survey Project design stage. EIA stage. Project installation. Project Operation and Maintenance.	The assessment concludes no significant effects from operational turbines, and no further mitigation is required.	**Chapter 11 Marine Mammals**
Noise	S/CC/CD/OD	Use of bubble curtains or other methods to discourage species from entering areas (this is expensive and may only be effective in shallow water)	Survey Project design stage. EIA stage. Project installation. Project Operation and Maintenance.	CWP have demonstrated that the project can be constructed through traditional percussive piling methods whilst avoiding significant adverse effects **Chapter 11 Marine Mammals,** however as a responsible developer the Applicant will continue to review available technology and where new hammer technology is available with a demonstrable reduction in noise at source CWP will review and adopt the technology if available.	**Chapter 11 Marine Mammals**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Noise	S/CC/CD/OD	Investigate options for the use of acoustic deterrents (where suitable) or other disturbance devices to scare sensitive species away	Survey Project design stage. EIA stage Project installation. Project Operation and Maintenance.	The CWP project describes the use of acoustic deterrent devices (ADDs) in the **MMMP**. It is important that where ADDs are to be used, the duration of their use is balanced against the increased disturbance impact to marine mammals caused by their use. Therefore, where ADDs are used for mitigation purposes, the duration of their activation would need to be discussed and agreed with NPWS to ensure that the additional impact of disturbance is proportional.	**MMMP**
Noise	S/CC/CD/OD	Use of passive acoustic monitoring, if calibrated and available, to facilitate implementation of exclusion area during noisy activities	Survey Project design stage. EIA stage. Project installation. Project Operation and Maintenance.	The **MMMP** includes the commitment that pre-piling PAM will be implemented, given the proposed CWP project will require piling during periods of limited visibility and in the hours of darkness.	**MMMP**
Noise	S/CC/CD/OD	Time noisy activities for individual	Survey Project design stage.	Significant project alone and cumulative effects on marine mammals have not	**Chapter 11 Marine Mammals**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
		developments to avoid cumulative effect	EIA stage. Project installation. Project Operation and Maintenance.	been identified following implementation of the mitigation proposed in the **MMMP**. The conclusions are that there are no significant effects anticipated, and as such there is not a requirement for programming of activities between projects.	**MMMP**
Noise	S/CC/CD/OD	Programme developments to reduce potential for adverse cumulative/in-combination effects e.g. noise from piling or other activities (surveying) from a number of developments to occur at the same time	Survey Project design stage. EIA stage. Project installation. Project Operation and Maintenance.	Significant cumulative effects not identified, and significant project alone effects not identified. Construction phase effects mitigated through application of a **MMMP** which also applies to fish. The conclusions are that there are no significant effects anticipated, and as such there is not a requirement for programming of activities between projects.	**Chapter 11 Marine Mammals**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Collision	CC/CD/OD	Design device to minimise risk of collision	Site/cable route selection stage. Project design stage. EIA stage. Project Installation. Project operation and maintenance.	Vessels will use predefined routes and will travel at slow speeds to reduce risk of accidental vessel collision where possible. An **Ecological Vessel Management Plan** (EVMP) has been prepared to determine vessel routing to and from construction sites and ports and to include a code of conduct for vessel operators. The EVMP includes details of: • The types and specifications of vessels for the CWP Project; How vessels will be monitored and coordinated; and • The use of defined transit routes to site from key construction and operation ports, where practicable to do so.	**EVMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Collision	CC/CD/OD	Do not site devices in particularly sensitive areas – e.g. migration routes, feeding, breeding areas or near to main haul routes	Site/cable route selection stage. Project design stage. EIA stage. Project Installation. Project operation and maintenance.	WTG layout options have been developed to avoid or minimise interaction 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.	**Chapter 3 Site Selection and Consideration of Alternatives**
Collision	CC/CD/OD	Increase device visibility, or use of acoustic deterrent devices	Site/cable route selection stage. Project design stage. EIA stage. Project Installation.	The **MMMP** proposes mitigation to reduce the cumulative auditory injury (PTS) risk from pile driving activities to negligible levels, including: • the use of acoustic deterrent devices (ADDs) to deter marine mammals from the immediate vicinity of the pile; • the use of at source noise abatement methods; and • the use of alternative piling methods.	**MMMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project operation and maintenance.	The final piling **MMMP** with selected mitigation measures will be provided post consent once a piling contractor is in place and final detailed installation methods are known.	
Collision	CC/CD/OD	Seasonal restrictions could be placed on operation to avoid impacting on marine mammals at vulnerable times such as breeding season	Site/cable route selection stage. Project design stage. EIA stage. Project Installation. Project operation and maintenance.	N/A - in the context of OWF ORE, applicable to tidal turbines only.	
Collision	CC/CD/OD	Soften collision by adding smooth edges or padding	Site/cable route selection stage.	N/A - in the context of OWF ORE, applicable to tidal turbines only.	

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project design stage. EIA stage. Project Installation. Project operation and maintenance.		
Collision	CC/CD/OD	Protect against entrapment by incorporating escape hatches into device design	Site/cable route selection stage Project design stage. EIA stage. Project Installation. Project operation and maintenance.	N/A - in the context of OWF ORE, applicable to tidal turbines only.	

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Collision	CC/CD/OD	Use of protective screens to prevent marine organisms (fish) from entering the device (i.e. shrouded turbines)	Site/cable route selection stage. Project design stage. EIA stage. Project Installation. Project operation and maintenance.	N/A - in the context of OWF ORE, applicable to tidal turbines only.	
Collision	CC/CD/OD	Use of protective netting or grids	Site/cable route selection stage. Project design stage. EIA stage. Project Installation	N/A - in the context of OWF ORE, applicable to tidal turbines only.	

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project operation and maintenance.		
Hydraulic injury	OD	Use of protective screens to prevent marine organisms from entering the device (i.e. shrouded turbines)	Site/cable route selection stage. Project design stage. EIA stage. Project operation.	N/A - in the context of OWF ORE, applicable to tidal turbines only.	
Hydraulic injury	OD	Do not site devices in particularly sensitive areas – e.g. migration routes, feeding, breeding areas	Site/cable route selection stage. Project design stage. EIA stage. Project operation.	WTG layout options have developed to avoid or minimise interaction 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.	**Chapter 3 Site Selection and Consideration of Alternatives**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Accidental contamination (hydraulic fluids or vessel fuel/cargo)	CC/CD/OD	Design devices to minimise risk of leakage of pollutants	Project design stage. EIA stage. Project installation. Project operation and maintenance.	A **CEMP** has been prepared 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. The **CEMP** includes 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.	**CEMP**
Accidental contamination (hydraulic fluids or vessel fuel/cargo)	CC/CD/OD	Risk assessment and contingency planning	Project design stage. EIA stage. Project installation. Project operation and maintenance.	A **CEMP** has been prepared 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. The **CEMP** includes 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.	**CEMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Accidental contamination (hydraulic fluids or vessel fuel/cargo)	CC/CD/OD	Design to reduce risk	Project design stage. EIA stage. Project installation. Project operation and maintenance.	All materials used in the operation and maintenance of the CWP Project, will be certified as safe for use within the marine environment. It is likely that antifouling paints, amongst other potential contaminants, are widely used by existing infrastructure and vessels in the area, therefore detectable increases in potential contaminants from the construction phase are considered unlikely.	**Chapter 9 Fish, Shellfish and Turtle Ecology**
Accidental contamination (hydraulic fluids or vessel fuel/cargo)	CC/CD/OD	Avoid shipping routes where collision risk is high	Project design stage. EIA stage. Project installation. Project operation and maintenance.	Vessels will use predefined routes and will travel at slow speeds to reduce risk of accidental vessel collision where possible. An **EVMP** has been prepared to determine vessel routing to and from construction sites and ports and to include a code of conduct for vessel operators. The EVMP includes details of: • The types and specifications of vessels for the CWP Project; • How vessels will be monitored and coordinated; and • The use of defined transit routes to site from key construction and	**EVMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				operation ports, where practicable to do so.	
Accidental contamination (hydraulic fluids or vessel fuel/cargo)	CC/CD/OD	Implementation of SOPEP (Shipboard Oil Pollution Emergency Plan)	Project design stage. EIA stage. Project installation. Project operation and maintenance	A **CEMP** has been prepared 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. The **CEMP** includes 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.	**CEMP**
Habitat exclusion	OD	No specific mitigation identified	Site/cable route selection stage. Project design stage. EIA stage	Noted - no specific mitigation identified.	
Substratum loss	CD/CC/OD	Avoid sensitive sites/species	Site/cable route	Positions of WTGs and OSSs have been informed by a wide range of site specific data, including metocean data (e.g. wind	**Chapter 33 Summary of**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			selection stage. Project design stage. EIA stage	speed and direction), geophysical and geotechnical survey data (e.g. bathymetry), environmental data (e.g. benthic surveys and archaeological assessment) and stakeholder consultation. 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 avoidance of sensitive habitats such as *Sabellaria spinulosa reefs*.	**Mitigation and Monitoring**.
Substratum loss	CD/CC/OD	Site specific surveys to establish a baseline and inform the impact assessment for individual developments	Site/cable route selection stage. Project design stage. EIA stage.	It was agreed through consultation with the SFPA and DHLGH that no site-specific fish or shellfish surveys needed to be undertaken during the baseline site investigation survey campaign. Baseline surveys for fish seldom yield additional data that is not already available from fisheries landings data or existing survey data and often use intrusive sampling methods. Through consultation with	**Chapter 9 Fish, Shellfish and Turtles Ecology**.

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				statutory and non-statutory organisations, several data sources have been deemed sufficient to develop a baseline for fish, shellfish and turtles ecology to allow a robust impact assessment. A comprehensive desk-based review was undertaken to inform the baseline for fish, shellfish and turtles ecology, which can be found in Chapter 9 Fish, Shellfish and Turtles Ecology.	
Substratum loss	CD/CC/OD	Workshops with expert representatives from the Marine Institute, BIM, NPWS, industry and other appropriate bodies	Site/cable route selection stage. Project design stage. EIA stage.	Consultation was undertaken with Marine Institute, Bord Iascaigh Mhara (BIM), Department of Housing, Local Government and Heritage (DHLGH), Sea Fisheries Protection Authority (SFPA) and Inland Fisheries Ireland (IFI). Details are provided in **Chapter 9 Fish, Shellfish and Turtle Ecology**.	**Chapter 9 Fish, Shellfish and Turtle Ecology**
Changes in wave and tidal regime	OD	Avoid sensitive sites/species/ periods	Site/cable route selection stage. Project design stage. EIA stage.	Bedform clearance operations will be undertaken only where necessary, thereby minimising sediment disturbance and alteration to seabed morphology.	**Chapter 33 Summary of Mitigation and Monitoring**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Barrier to movement	OD	Detailed studies to identify location of key migration corridors and sensitive habitats	Site/cable route selection stage. Project design stage EIA stage.	Through consultation with statutory and non-statutory organisations, several data sources have been deemed sufficient to develop a baseline for fish, shellfish and turtles ecology to allow a robust impact assessment. A comprehensive desk-based review was undertaken to inform the baseline for fish, shellfish and turtles ecology, which can be found in **Chapter 9 Fish, Shellfish and Turtle Ecology**.	**Chapter 9 Fish, Shellfish and Turtles Ecology**
Barrier to movement	OD	Avoid large installations in migratory corridors	Site/cable route selection stage. Project design stage. EIA stage.	Piling works along the River Liffey Channel will not be permitted between March and May (inclusive) to avoid noise impact during the smolt run which occurs in the Liffey between these months.	**Chapter 9 Fish, Shellfish and Turtles Ecology**
Barrier to movement	OD	Avoid installation of a number of developments on migratory corridors	Site/cable route selection stage. Project design stage EIA stage	Migratory movements occur across broad geographic fronts, of which the CWP Project WTG array occupies a very small proportion. During the operational phase there are no meaningful impacts anticipated on migratory fish. During construction, for works located in the Liffey river only, the following mitigation for Atlantic Salmon and Sea	**Chapter 9 Fish, Shellfish and Turtle Ecology**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				Trout smolt is considered to negate the above described effects on the smolt run and will allow unimpeded downstream migration of the smolt: • Piling works along the River Liffey Channel will not be permitted between March and May (inclusive) to avoid noise impact during the smolt run which occurs in the Liffey between these months (CEFAS, n. d.; ESB, 2022).	
Barrier to movement	OD	Avoid sensitive areas (breeding, feeding and nursery areas)	Site/cable route selection stage. Project design stage. EIA stage	Migratory movements occur across broad geographic fronts, of which the CWP Project WTG array occupies a very small proportion. During the operational phase there are no meaningful impacts anticipated on migratory fish or sensitive areas for fish. The locations of offshore infrastructure been developed to avoid known sensitive ecological habitats. The WTG layout options have been developed to avoid or minimise interaction 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.	**Chapter 33 Summary of Mitigation and Monitoring**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Barrier to movement	OD	Avoid placement of devices within constrained areas where array could completely block or cause a significant perceptual barrier to fish	Site/cable route selection stage. Project design stage. EIA stage.	CWP is not located in a constrained area, it is 13-22km off the east coast of Ireland, at County Wicklow.	
EMF	OC/OD	Cable configuration and orientation can reduce field strength	Project design stage. EIA stage.	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, and minimise risks arising from Electromagnetic fields.	**Chapter 33 Summary of Mitigation and Monitoring**
EMF	OC/OD	Cable burial, where possible to minimise field effect at the seabed	Project design stage. EIA stage.	Cables will be suitably buried or protected by other means where burial is not practicable. This will reduce the potential for effects relating to the presence of Electromagnetic Fields (EMF). Where required, cable protection will be used (for further details, refer to **Chapter 4 Project Description).**	**Chapter 33 Summary of Mitigation and Monitoring.**

Appendix B.6 Marine Birds

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Physical disturbance	S/CC/CD/OC/OD	Surveys to identify key breeding and foraging sites, moulting and migration	Site/cable route selection stage Project design stage. EIA stage. Project Installation Operation.	Several site specific surveys have been carried out, details can be found in **Chapter 10 Ornithology,** and in **Appendix 10.5 Baseline Characterisation Report**. Baseline characterisation for the Array Site relates to contemporary records derived from 24 Digital Aerial Surveys (DAS), undertaken approximately monthly between May 2020 and April 2022 and 15 boat-based European Seabirds At Sea (ESAS) surveys undertaken between October 2018 and August 2020. Baseline characterisation for the OECC intertidal landfall area relates to contemporary records from 81 intertidal diurnal landfall surveys undertaken approximately twice per month between October 2019 and March 2023.	**Chapter 10 Ornithology, Appendix 10.5 Baseline Characterisation Report**
		Where development occurs near to sensitive sites/areas avoid installation during sensitive seasons (i.e. breeding and moulting)		A Breeding Tern Mitigation Strategy has been prepared to mitigate potential impacts to the tern colonies located close to the onshore substation site. The strategy details several mitigation	**Chapter 10 Ornithology** **Chapter 33 Summary of Mitigation and Monitoring**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				measures including restricted working periods, visual screening, construction sequencing, noise and lighting limits and monitoring and response measures. Full details of the measures proposed are provided in EIAR **Chapter 10 Ornithology.** Further mitigation measures associated with the installation of export cables and onshore infrastructure within the nearshore, intertidal and landfall are provided in **Chapter 33 Summary of Mitigation and Monitoring.**	
Physical disturbance	S/CC/CD/OC/OD	Programme survey and installation works associated with a species project to reduce potential for noisy or other disturbing activities to occur at the same time	Site/cable route selection stage. Project design stage. EIA stage. Project Installation Operation.	Survey works will not be undertaken at the same time as other noisy activities as this would affect the quality of the data.	
Physical disturbance	S/CC/CD/OC/OD	Programme survey and development installation works for a number of	Site/cable route selection stage.	A Cumulative Effects Assessment has been undertaken and is provided in **Chapter 10**	**Chapter 10 Ornithology, Appendix 10.1 CEA**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
		projects to reduce potential for installation periods to coincide with other developments to reduce potential for cumulative effects from developments	Project design stage. EIA stage. Project Installation Operation.	**Ornithology, Appendix 10.1 CEA**. The conclusions are that there are no significant effects anticipated, and as such there is not a requirement for programming of activities between projects.	
Physical disturbance	S/CC/CD/OC/OD	Programme maintenance works to avoid sensitive seasons e.g. breeding	Site/cable route selection stage Project design stage. EIA stage. Project Installation Operation.	No significant effects are identified for disturbance during the operational phase of the proposed project, and as such there are no sensitive seasons that require specific avoidance.	**Chapter 10 Ornithology** **Chapter 33 Summary of Mitigation and Monitoring**.
		Avoid sensitive sites/areas where possible (i.e. SPAs)	Site/cable route selection stage. Project design stage. EIA stage. Project	Two SPAs overlap with the Planning Application Boundary: South Dublin Bay and River Tolka Estuary SPA and The Murrough SPA (following a revision of the latter site's boundaries in 2023). Two additional European Sites are considered to be functionally linked with South Dubin Bay and River Tolka Estuary SPA: North Bull	NIS

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Installation Operation.	Island SPA (on account of overlap of wintering wildfowl and wader site use across the wider Dublin Bay area) and Dalkey Islands SPA (on account of overlap of post-breeding tern aggregation site use across the wider South Dublin Bay area).	
Physical disturbance	S/CC/CD/OC/OD	Site-specific surveys at project level to identify the presence of key foraging hotspots and/or resting areas and to aid site selection	Site/cable route selection stage. Project design stage. EIA stage. Project Installation Operation.	Several site specific surveys have been carried out, details can be found **in Chapter 10 Ornithology, and in Appendix 10.5 Baseline Characterisation Report**. Baseline characterisation for the Array Site relates to contemporary records derived from 24 Digital Aerial Surveys (DAS), undertaken approximately monthly between May 2020 and April 2022 and 15 boat-based European Seabirds At Sea (ESAS) surveys undertaken between October 2018 and August 2020. Baseline characterisation for the OECC intertidal landfall area relates to contemporary records from 81 intertidal diurnal landfall surveys undertaken approximately twice per month between October 2019 and March 2023.	**Chapter 10 Ornithology and Appendix 10.5 Baseline Characterisation Report.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Displacement	S/CC/CD/OC/OD	Surveys to identify key breeding and foraging sites and migration routes	Site/cable route selection stage Project design stage. EIA stage. Operation.	Several site specific surveys have been carried out, details can be found in **Chapter 10 Ornithology, and in Appendix 10.5 Baseline Characterisation Report**. Baseline characterisation for the Array Site relates to contemporary records derived from 24 Digital Aerial Surveys (DAS), undertaken approximately monthly between May 2020 and April 2022 and 15 boat-based European Seabirds At Sea (ESAS) surveys undertaken between October 2018 and August 2020. Baseline characterisation for the OECC intertidal landfall area relates to contemporary records from 81 intertidal diurnal landfall surveys undertaken approximately twice per month between October 2019 and March 2023.	**Chapter 10 Ornithology and Appendix 10.5 Baseline Characterisation Report.**
Displacement	S/CC/CD/OC/OD	Avoid locating developments on key migration routes or in key breeding and foraging areas	Site/cable route selection stage. Project design stage. EIA stage. Operation.	The assessment of effects on ornithological receptors, and specifically migration routes, breeding and foraging resources, has concluded no significant effects. This conclusion is as a result of the low level of disturbance and displacement, which is in itself a function of the location of the	

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				proposed CWP Project and therefore a positive reflection of the site selection process.	
Displacement	S/CC/CD/OC/OD	Where development occurs near to sensitive sites/areas avoid installation during sensitive seasons	Site/cable route selection stage. Project design stage. EIA stage. Operation.	A Breeding Tern Mitigation Strategy has been prepared to mitigate potential impacts to the tern colonies located close to the onshore substation site. The strategy details several mitigation measures including restricted working periods, visual screening, construction sequencing, noise and lighting limits and monitoring and response measures. Full details of the measures proposed are provided in EIAR Chapter 10 Ornithology. Further mitigation measures associated with the installation of export cables and onshore infrastructure within the nearshore, intertidal and landfall are provided in **Chapter 33 Summary of Mitigation and Monitoring.**	**Chapter 10 Ornithology** **Chapter 33 Summary of Mitigation and Monitoring**
Displacement	S/CC/CD/OC/OD	Programme survey and installation works associated with a species project to reduce potential for noisy or other disturbing	Site/cable route selection stage. Project design stage.	Vegetation removal/clearance will commence outside of the breeding bird season (which is from 1 March to 31 August inclusive) to avoid impacts on nesting birds. Where the construction programme does not	**Chapter 33 Summary of Mitigation and Monitoring**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
		activities to occur at the same time	EIA stage. Operation.	allow this time restriction to be observed, then these areas will be inspected by the Ecological Clerk of Works (ECoW) for the presence of breeding birds prior to commencement of construction works. Where any nests are found, the appointed ECoW will provide recommendations as to whether a licence is required for vegetation removal and will detail the process for obtaining such derogation licence from the NPWS. The Environmental Management Framework for the CWP Project including the role and responsibilities of the appointed ECoW are described in the **CEMP**.	
Displacement	S/CC/CD/OC/OD	Programme survey and development installation works for a number of projects to reduce potential for installation periods to coincide with other developments to reduce potential for cumulative effects from developments	Site/cable route selection stage. Project design stage. EIA stage. Operation.	A Cumulative Effects Assessment has been undertaken and is provided in Chapter 10 Ornithology: Appendix 10.1 CEA, and concludes no significant effects from the project alone or cumulatively with other plans and projects. As such there is no requirement for strategic programme management and/or avoidance of survey and CWP Project installation works coinciding.	**Chapter 10 Ornithology, Appendix 10.1 CEA**.

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
		Programme maintenance works to avoid sensitive seasons e.g. breeding		No significant effects are identified for disturbance during the operational phase of the proposed project, and as such there are no sensitive seasons that require specific avoidance.	
Noise	S/CD/CC/OD/OC	Implementation of the Code of Practice for the Protection of Marine Mammals during Acoustic Seafloor Surveys in Irish Waters. This applies to all activities licensed under the Foreshore Consent and other activities such as geophysical surveys which also require consent under the Wildlife Act and Habitats Directive	Site/cable route selection stage. Project design stage. EIA stage. Operation.	A Marine Mammal Mitigation Protocol (MMMP) has been prepared to outline the mitigation requirements for minimising the impacts on marine mammals during the construction of the CWP Project. The MMMP will be implemented by the Applicant and its appointed contractor(s) and will be secured through conditions of the CWP Project consent. It will be a live document which will be updated and submitted to the relevant authority, prior to the start of construction.	Marine Mammal Mitigation Protocol.
Noise	S/CD/CC/OD/OC	Minimise use of high noise emission activities such as impact piling or blasting	Site/cable route selection stage. Project design stage. EIA stage. Operation.	Construction noise will be managed in accordance with British Standard BS 5228 1:2009 'Code of Practice for Noise and Vibration Control on Construction and Open Sites –Part 1: Noise'. The appointed contractor will put in place the most appropriate noise control measures to ensure that the works in each	Other Documents: **CEMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				area comply with the limits detailed in **Chapter 24 Noise and Vibration** and so that minimisation of noise is achieved by best means practicable. Measures to control noise from construction activities are described in **Chapter 24 Noise and Vibration and the CEMP**.	
Noise	S/CD/CC/OD/OC	Avoid installation during sensitive periods (breeding, foraging and migration)	Site/cable route selection stage. Project design stage. EIA stage. Operation.	A Breeding Tern Mitigation Strategy has been prepared to mitigate potential impacts to the tern colonies located close to the onshore substation site. The strategy details several mitigation measures including restricted working periods, visual screening, construction sequencing, noise and lighting limits and monitoring and response measures. Full details of the measures proposed are provided in EIAR **Chapter 10 Ornithology**. Further mitigation measures associated with the installation of export cables and onshore infrastructure within the nearshore, intertidal and landfall are provided in **Chapter 33 Summary of Mitigation and Monitoring**.	**Chapter 10 Ornithology. Chapter 33 Summary of Mitigation and Monitoring.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Noise	S/CD/CC/OD/OC	Use full sound insulation on plant equipment device design	Site/cable route selection stage. Project design stage. EIA stage. Operation.	Construction noise will be managed in accordance with British Standard BS 5228 1:2009 'Code of Practice for Noise and Vibration Control on Construction and Open Sites –Part 1: Noise'. The appointed contractor will put in place the most appropriate noise control measures to ensure that the works in each area comply with the limits detailed in Chapter 24 Noise and Vibration and so that minimisation of noise is achieved by best means practicable. Measures to control noise from construction activities are described in **Chapter 24 Noise and Vibration** and the **CEMP.**	**CEMP**
Noise	S/CD/CC/OD/OC	"Soft starting" piling activities/passive acoustic deterrents – gradually increasing noise produced to allow birds to move away from activities	Site/cable route selection stage. Project design stage. EIA stage Operation.	Part of the primary mitigation measures (in the MMMP) includes the use of a soft-start to pile driving. This involves a gradual ramping up of the piling power over an incremental time period in order to reach full power. It is thought that starting the activity at a lower power will allow for nearby marine species, including fish, to flee the area, reducing the likelihood of mortality and injury effects (JNCC, 2010).	**MMMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Noise	S/CD/CC/OD/OC	Consider using alternatives (i.e. clump weights, gravity bases, routeing cables through soft sandy sediment or use cable protection rather than burial)	Site/cable route selection stage. Project design stage. EIA stage. Operation.	Cables have been routed through sediments suitable for burial where practicable. Cable protection will be used where burial is not possible.	
Noise	S/CD/CC/OD/OC	Underwater noise during operation may be beneficial in alerting species to the presence of the device, reducing the risk of collisions. This requires further research	Site/cable route selection stage. Project design stage. EIA stage. Operation.	An Underwater Noise Assessment was undertaken and is provided in **Chapter 9 Fish, Shellfish and Turtles Ecology: Appendix 9.4**. Noise sources other than piling were considered using a high-level, simple modelling approach, including cable laying, dredging, drilling, rock placement, vessel movements, and operational WTG noise.	**Chapter 9 Fish, Shellfish and Turtles Ecology Appendix 9.4**
Noise	S/CD/CC/OD/OC	Noise from operating turbines can be reduced by using isolators. However this has not been tested over long term and to account for cumulative effects	Site/cable route selection stage. Project design stage. EIA stage.	The assessment concludes no significant effects from operational turbines, and no further mitigation is required.	**Chapter 10 Ornithology. Chapter 33 Summary of Mitigation and Monitoring.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Operation.		
Noise	S/CD/CC/OD/OC	Use sound insulation on equipment	Site/cable route selection stage. Project design stage. EIA stage. Operation.	The assessment concludes no significant effects from operational turbines, and no further mitigation is required.	**Chapter 10 Ornithology** **Chapter 33 Summary of Mitigation and Monitoring**
Noise	S/CD/CC/OD/OC	Use of bubble curtains around the piles or other methods to discourage species from entering areas (this is expensive and may only be effective in shallow water)	Site/cable route selection stage. Project design stage. EIA stage. Operation.	CWP have demonstrated that the project can be constructed through traditional percussive piling methods whilst avoiding significant adverse effects (**Chapter 11 Marine Mammals**), however as a responsible developer CWP will continue to review available technology and where new hammer technology is available with a demonstrable reduction in noise at source CWP will review and adopt the technology if available.	**Chapter 10 Ornithology** **Chapter 33 Summary of Mitigation and Monitoring**
Noise	S/CD/CC/OD/OC	Investigate options for the use of acoustic deterrents (where	Site/cable route selection stage.	The Marine Mammal Mitigation Protocol includes details of a draft piling MMMP that could be	**MMMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
		suitable) or other disturbance devices to scare sensitive species away	Project design stage. EIA stage. Operation.	implemented to reduce the cumulative auditory injury (PTS) risk from pile driving activities to negligible levels, including: - the use of acoustic deterrent devices (ADDs) to deter marine mammals from the immediate vicinity of the pile, - the use of at source noise abatement methods; and - the use of alternative piling methods. The final piling MMMP with selected mitigation measures will be provided post consent once a piling contractor is in place and final detailed installation methods are known.	
Noise	S/CD/CC/OD/OC	Use of passive acoustic monitoring to facilitate implementation of exclusion area during noisy activities	Site/cable route selection stage. Project design stage. EIA stage. Operation.	The MMMP includes the commitment that pre-piling PAM will be implemented, given the proposed CWP project will require piling during periods of limited visibility and in the hours of darkness.	**MMMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Noise	S/CD/CC/OD/OC	Programme developments to reduce potential for adverse cumulative/ in-combination effects e.g. noise from piling or other activities (surveying) from a number of developments to occur at the same time.	Site/cable route selection stage. Project design stage. EIA stage. Operation.	A Cumulative Effects Assessment has been undertaken and is provided in **Chapter 10 Ornithology: Appendix 10.1 CEA**. The assessment has concluded that there are no adverse effects from the project alone or cumulatively with regard to piling and noise from other sources.	**Chapter 10 Ornithology: Appendix 10.1 CEA**.
Noise	S/CD/CC/OD/OC	Time noisy activities for individual developments to avoid cumulative effects	Site/cable route selection stage. Project design stage. EIA stage. Operation.	A Cumulative Effects Assessment has been undertaken and is provided in **Chapter 10 Ornithology: Appendix 10.1 CEA**. The assessment has concluded that there are no adverse effects from the project alone or cumulatively with regard to piling and noise from other sources, as such there is not a requirement for programming of activities between projects.	**Chapter 10 Ornithology: Appendix 10.1 CEA**.
Accidental contamination (hydraulic fluids or vessel fuel/cargo)	CC/CD/OD	Design devices to minimise risk of leakage of pollutants	Project design stage. EIA stage. Project installation.	A **CEMP** has been prepared 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	Other Documents: **CEMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project operation and maintenance.	process, in accordance with legislative requirements and industry best practice. The **CEMP** includes 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.	
Accidental contamination (hydraulic fluids or vessel fuel/cargo)	CC/CD/OD	Risk assessment and contingency planning	Project design stage. EIA stage. Project installation. Project operation and maintenance	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: - 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	Other Documents: **CEMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				the CWP Project; - 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.	
Accidental contamination (hydraulic fluids or vessel fuel/cargo)	CC/CD/OD	Design to reduce risk	Project design stage. EIA stage. Project installation. Project operation and maintenance.	All materials used in the operation and maintenance of the CWP Project, will be certified as safe for use within the marine environment. It is likely that antifouling paints, amongst other potential contaminants, are widely used by existing infrastructure and vessels in the area, therefore detectable increases in potential contaminants from the construction phase are considered unlikely.	**Chapter 9 Fish, Shellfish and Turtles Ecology.**
Accidental contamination (hydraulic fluids or vessel fuel/cargo)	CC/CD/OD	Avoid shipping routes where collision risk is high	Project design stage. EIA stage. Project installation. Project operation	Vessels will use predefined routes and will travel at slow speeds to reduce risk of accidental vessel collision where possible. An **EVMP**has been prepared to determine vessel routing to and from construction sites and ports and to include a code of conduct for vessel operators. The EVMP includes details of:	**EVMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			and maintenance.	- The types and specifications of vessels for the CWP Project; - How vessels will be monitored and coordinated; and - The use of defined transit routes to site from key construction and operation ports, where practicable to do so.	
Accidental contamination (hydraulic fluids or vessel fuel/cargo)	CC/CD/OD	Implementation of SOPEP (Shipboard Oil Pollution Emergency Plan)	Project design stage. EIA stage. Project installation. Project operation and maintenance.	A **CEMP** has been prepared 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. The **CEMP** includes 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.	**CEMP**
Collision Risk	OD	Appropriate siting of developments e.g. away from seabird breeding colonies, important feeding/roosting areas,	Site/cable route selection stage. Project design stage.	A collision risk modelling report has been provided as Appendix 10.3 which provides detailed methods and results of avian collision risk modelling (CRM) carried out for the	**Chapter 10 Ornithology** **Appendix 10.3 Collision Risk Modelling.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
		near shore areas and "migration corridors"	EIA stage. Project installation.	CWP Project for six seabird species and thirty-eight migratory species. These were identified on the basis of a desk-based review of species sensitivity to collision mortality, generic proportions of species flight activity corresponding with project rotor swept altitude ranges and flight densities recorded within the Array Site during baseline surveys. The project assessment concludes no adverse effects, inclusive of potential impacts on migratory species and migration corridors.	
Collision Risk	OD	Alignment of turbines in rows parallel to the main migratory direction	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	Migratory movements occur across broad geographic fronts, of which the project turbine array occupies a very small proportion. As such, the large majority of migrants will avoid impacts entirely, while those individuals which would otherwise pass through the array site may generally avoid doing so (should they choose to do so), though subtle alterations to flight trajectories or altitudes. Such changes (if any) to migratory flight paths may, at most, increase migratory energetic costs only negligibly and in such a way as to	**Chapter 10 Ornithology.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				have no noticeable effect upon survival rates or future reproductive outputs (Masden et al, 2009).	
Collision Risk	OD	Adequate spacing between developments to allow migration between wind farms	Project design stage. EIA stage. Project installation. Project operation and maintenance.	Migratory movements occur across broad geographic fronts, of which the project turbine array occupies a very small proportion. As such, the large majority of migrants will avoid impacts entirely, while those individuals which would otherwise pass through the array site may generally avoid doing so (should they choose to do so), though subtle alterations to flight trajectories or altitudes. Such changes (if any) to migratory flight paths may, at most, increase migratory energetic costs only negligibly and in such a way as to have no noticeable effect upon survival rates or future reproductive outputs (Masden et al, 2009).	**Chapter 10 Ornithology.**
Collision Risk	OD	Avoid siting offshore windfarms in key offshore resting, roosting and foraging areas or near coastal breeding/roosting areas	Project design stage. EIA stage. Project installation.	A collision risk modelling report has been provided as Appendix 10.3 which provides detailed methods and results of avian collision risk modelling (CRM) carried out for the CWP Project for six seabird species and thirty-eight migratory species.	Appendix 10.3 Collision Risk Modelling.

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project operation and maintenance.	These were identified on the basis of a desk-based review of species sensitivity to collision mortality, generic proportions of species flight activity corresponding with project rotor swept altitude ranges and flight densities recorded within the Array Site during baseline surveys.	
Collision Risk	OD	Shut-down of turbines at night with bad weather/visibility and high migration intensity	Project design stage. EIA stage. Project installation. Project operation and maintenance.	A collision risk modelling report has been provided as Appendix 10.3 which provides detailed methods and results of avian collision risk modelling (CRM) carried out for the CWP Project for six seabird species and thirty-eight migratory species. These were identified on the basis of a desk-based review of species sensitivity to collision mortality, generic proportions of species flight activity corresponding with project rotor swept altitude ranges and flight densities recorded within the Array Site during baseline surveys. The assessment concludes no significant adverse effects on migratory and non-migratory species and as such there is no requirement for shut down of turbines.	**Chapter 10 Ornithology** Appendix 10.3 Collision Risk Modelling.

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Collision Risk	OD	Avoiding large-scale continuous illumination	Project design stage. EIA stage. Project installation. Project operation and maintenance.	The impact of light associated with offshore construction works shall be reduced through proper placement of light sources in addition to using lights with high directionality. The amount of lighting should be targeted to achieve minimum required or necessary light levels, by reducing the number of lights or by moving from general area lighting to specifically focused task-based lighting. To reduce the level of artificial lighting, all temporary lighting associated with the construction works will be placed strategically by the appointed Contractor following consultation with the appointed ECoW. This will ensure that illumination beyond the works area is controlled. Lighting will be cowled and directional to reduce significant light splay.	**Chapter 33 Summary of Mitigation and Monitoring**.
Collision Risk	OD	Measures to make wind turbines more recognisable to birds	Project design stage. EIA stage. Project installation.	All WTGs for both layout options will feature a minimum blade tip clearance of 36 m above Mean Sean Level (MSL) (+37.72m LAT). This is beyond the minimum 22 m clearance required for safety of navigation and has been set by the Applicant to reduce the potential	**Chapter 33 Summary of Mitigation and Monitoring.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project operation and maintenance.	collision risk for offshore ornithology receptors. The conclusions of the EIAR are that there are no significant effects anticipated, and as such there is not a requirement for further mitigation.	
Habitat exclusion	OD	Appropriate siting of developments e.g. away from important feeding/roosting areas	Site/cable route selection stage. Project design stage. EIA stage.	Several site specific surveys have been carried out, details can be found in **Chapter 10 Ornithology**, and in Appendix 10.5 Baseline Characterisation Report. Baseline characterisation for the Array Site relates to contemporary records derived from 24 Digital Aerial Surveys (DAS), undertaken approximately monthly between May 2020 and April 2022 and 15 boat-based European Seabirds At Sea (ESAS) surveys undertaken between October 2018 and August 2020. Baseline characterisation for the OECC intertidal landfall area relates to contemporary records from 81 intertidal diurnal landfall surveys undertaken approximately twice per month between October 2019 and March 2023.	**Chapter 10 Ornithology and Appendix 10.5 Baseline Characterisation Report**.

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Barrier to movement	OD	Appropriate siting of developments e.g. away from seabird breeding colonies, important feeding/roosting areas, near shore areas and “migration corridors”	Site/cable route selection stage. Project design stage. EIA stage.	Migratory movements are assumed to occur across broad geographic fronts, of which the CWP Project turbine array occupies a very small proportion within an area that is unlikely to correspond with areas of high importance for migratory species. As such, the large majority of migrants migrating individuals within flyway populations will avoid impacts entirely, while those individuals which would otherwise pass through the array site may generally avoid doing so (should they choose to do so), though subtle alterations to flight trajectories or altitudes. Further information is provided in **Chapter 10 Ornithology**.	**Chapter 10 Ornithology**.
Barrier to movement	OD	Detailed studies to identify location of key migration corridors and sensitive habitats	Site/cable route selection stage. Project design stage. EIA stage.	Several site specific surveys have been carried out, details can be found in **Chapter 10 Ornithology, and in Appendix 10.5 Baseline Characterisation Report**. Baseline characterisation for the Array Site relates to contemporary records derived from 24 Digital Aerial Surveys (DAS), undertaken approximately monthly between May 2020 and April 2022 and 15	**Chapter 10 Ornithology and Appendix 10.5 Baseline Characterisation Report.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				boat-based European Seabirds At Sea (ESAS) surveys undertaken between October 2018 and August 2020. Baseline characterisation for the OECC intertidal landfall area relates to contemporary records from 81 intertidal diurnal landfall surveys undertaken approximately twice per month between October 2019 and March 2023.	
Barrier to movement	OD	Avoid large installations in migratory corridors	Site/cable route selection stage. Project design stage. EIA stage.	Migratory movements are assumed to occur across broad geographic fronts, of which the CWP Project turbine array occupies a very small proportion within an area that is unlikely to correspond with areas of high importance for migratory species. As such, the large majority of migrants migrating individuals within flyway populations will avoid impacts entirely, while those individuals which would otherwise pass through the array site may generally avoid doing so (should they choose to do so), though subtle alterations to flight trajectories or altitudes. Further information is provided in **Chapter 10 Ornithology**.	**Chapter 10 Ornithology.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Barrier to movement	OD	Avoid installation of a number of developments on migratory corridors	Site/cable route selection stage. Project design stage. EIA stage.	Migratory movements are assumed to occur across broad geographic fronts, of which the CWP Project turbine array occupies a very small proportion within an area that is unlikely to correspond with areas of high importance for migratory species. As such, the large majority of migrants migrating individuals within flyway populations will avoid impacts entirely, while those individuals which would otherwise pass through the array site may generally avoid doing so (should they choose to do so), though subtle alterations to flight trajectories or altitudes. Further information is provided in **Chapter 10 Ornithology**.	**Chapter 10 Ornithology.**
EMF	OC/OD	Cable configuration and orientation can reduce field strength	Project design stage. EIA stage.	Cables will be suitably buried or protected by other means where burial is not practicable. This will reduce the potential for effects relating to the presence of EMF. Where required, cable protection will be used (for further details, refer to **Chapter 4 Project Description**).	**Chapter 10 Ornithology** **Chapter 33 Summary of Mitigation and Monitoring** **Chapter 3 Site Selection and Consideration of Alternatives**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
EMF	OC/OD	Cable burial, where possible to minimise field effect at the seabed	Project design stage. EIA stage.	Cables will be suitably buried or protected by other means where burial is not practicable. This will reduce the potential for effects relating to the presence of EMF.	**Chapter 33 Summary of Mitigation and Monitoring**

Appendix B.7 Marine Mammals

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Physical disturbance	S/CC/CD/OC/OD	Surveys to identify key breeding and foraging sites, nursery areas (cetaceans) haul out (seals), moulting and migration routes	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	In order to provide site specific and up to date information on which to base the impact assessment, site specific surveys were conducted. This included visual boat-based surveys undertaken between April 2013 and March 2014 (13 months), and October 2018 and January 2020 (12 months) by Natural Power. In addition to this, 24 months of Digital Aerial Surveys (DAS) were undertaken between May 2020 and April 2022. Site specific landfall surveys were undertaken at the intertidal area of the CWP Project site. Although marine mammals were not the target group for these surveys a total of 11 grey seals, two harbour seals and five harbour porpoises were recorded. More details are provided in **Chapter 11 Marine Mammals: Appendix 11.3 Baseline Technical Report**.	**Chapter 11 Marine Mammals: Appendix 11.3 Baseline Technical Report.**
Physical disturbance	S/CC/CD/OC/OD	Detailed study would be required to examine marine mammal distribution around the coast in order to fully	Site/cable route selection stage.	A comprehensive desk-based review was undertaken to inform the baseline for marine mammals, more details are provided in **Chapter 11**	**Chapter 11 Marine Mammals: Appendix 11.3 Baseline Technical Report.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
		understand and mitigate for this risk	Project design stage. EIA stage. Project installation.	**Marine Mammals: Appendix 11.3 Baseline Technical Report**.	
Physical disturbance	S/CC/CD/OC/OD	Avoid sensitive sites/areas where possible	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	All sensitive sites for marine mammals have been avoided with regards direct interaction, and significant effects have been avoided through the application of mitigation	Marine Mammal Mitigation Protocol.
Physical disturbance	S/CC/CD/OC/OD	Where development occurs near to sensitive sites/areas avoid installation during sensitive seasons	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	Installation would be managed through the use of a Marine Mammal Mitigation Protocol to reduce impact of construction activities. The conclusions of the EIAR are that there are no significant effects anticipated, and as such there is not a requirement for programming	Marine Mammal Mitigation Protocol.

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				seasonal sensitivities for marine mammals.	
Physical disturbance	S/CC/CD/OC/OD	Programme survey and installation works associated with a species project to reduce potential for noisy or other disturbing activities to occur at the same time	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	Survey works would not be undertaken with other noisy activities as this would reduce the data quality.	
Physical disturbance	S/CC/CD/OC/OD	Programme survey and development installation works for a number of projects to reduce potential for installation periods to coincide with other developments to reduce potential for cumulative effects from developments	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	A Cumulative Effects Assessment has been undertaken and is provided in **Chapter 11 Marine mammals: Appendix 11.1 CEA**, with the conclusion drawn that there are no significant effects from the project alone or cumulatively with other activities, and as such there is not a requirement for programming of activities between other projects.	**Chapter 11 Marine Mammals** **Appendix 11.1 CEA.**
Physical disturbance	S/CC/CD/OC/OD	Programme maintenance works to avoid sensitive seasons e.g. breeding	Site/cable route selection stage. Project design stage.	The assessment of maintenance activities, and construction activities, has concluded no adverse effects on marine mammals during breeding seasons or more broadly. As such there is no demonstrated need for seasonal restrictions.	**Chapter 11 Marine Mammals**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			EIA stage. Project installation.		
Displacement	S/CC/CD/OC/OD	Surveys to identify key breeding and foraging sites, nursery areas (cetaceans) haul out (seals) and migration routes	Site/cable route selection stage. Project design stage. EIA stage. Operation.	In order to provide site specific and up to date information on which to base the impact assessment, site specific surveys were conducted. This included visual boat-based surveys undertaken between April 2013 and March 2014 (13 months), and October 2018 and January 2020 (12 months) by Natural Power. In addition to this, 24 months of Digital Aerial Surveys (DAS) were undertaken between May 2020 and April 2022. Site specific landfall surveys were undertaken at the intertidal area of the CWP Project site. Although marine mammals were not the target group for these surveys a total of 11 grey seals, two harbour seals and five harbour porpoises were recorded. More details are provided in **Chapter 11 Marine Mammals: Appendix 11.3 Baseline Technical Report**.	**Chapter 11 Marine Mammals: Appendix 11.3 Baseline Technical Report.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Displacement	S/CC/CD/OC/OD	Avoid locating developments on key migration routes or in key breeding and foraging areas	Site/cable route selection stage. Project design stage. EIA stage. Operation.	All key areas for marine mammals have been avoided with regards direct interaction, and significant effects have been avoided through the application of mitigation. There are no key migration routes for marine mammals noted within the proposed CWP Project's zone of influence.	**Marine Mammal Mitigation Protocol.**
Displacement	S/CC/CD/OC/OD	Where development occurs near to sensitive sites/areas avoid installation during sensitive seasons	Site/cable route selection stage Project design stage. EIA stage. Operation.	Installation would be managed through the use of a Marine Mammal Mitigation Protocol to reduce impact of construction activities.	**Marine Mammal Mitigation Protocol.**
Displacement	S/CC/CD/OC/OD	Programme survey and installation works associated with a species project to reduce potential for noisy or other disturbing activities to occur at the same time	Site/cable route selection stage. Project design stage. EIA stage. Operation.	Survey works would not be undertaken with other noisy activities as this would reduce the data quality.	

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Displacement	S/CC/CD/OC/OD	Programme survey and development installation works for a number of projects to reduce potential for installation periods to coincide with other developments to reduce potential for cumulative effects from developments	Site/cable route selection stage. Project design stage. EIA stage. Operation.	A Cumulative Effects Assessment (CEA) has been undertaken and is provided in **Chapter 11 Marine mammals: Appendix 11.1 CEA**, with the conclusion drawn that there are no significant effects from the project alone or cumulatively with other activities, and as such there is not a requirement for programming of activities between projects.	**Chapter 11 Marine mammals: Appendix 11.1 CEA.**
Displacement	S/CC/CD/OC/OD	Programme maintenance works to avoid sensitive seasons e.g. breeding	Site/cable route selection stage. Project design stage. EIA stage. Operation.	The assessment of maintenance activities, and construction activities, has concluded no adverse effects on marine mammals during breeding seasons or more broadly. As such there is no demonstrated need for seasonal restrictions.	**Chapter 11 Marine Mammals**
Noise	S/CC/CD/OD/OC	Implementation of the Code of Practice for the Protection of Marine Mammals during Acoustic Seafloor Surveys in Irish Waters. This applies to all activities licensed under the Foreshore Consent and other activities such	Survey Project design stage. EIA stage. Project installation.	A **Marine Mammal Mitigation Protocol** (MMMP) has been prepared to outline the mitigation requirements for minimising the impacts on marine mammals during the construction of the CWP Project. The MMMP will be implemented by the Applicant and its appointed contractor(s) and will be secured through conditions of	**Marine Mammal Mitigation Protocol.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
		as geophysical surveys which also require consent under the Wildlife Act and Habitats Directive	Project operation and maintenance.	the CWP Project consent. It will be a live document which will be updated and submitted to the relevant authority, prior to the start of construction.	
Noise	S/CC/CD/OD/OC	Minimise use of high noise emission activities such as impact piling and blasting	Survey Project design stage. EIA stage. Project installation. Project operation and maintenance.	CWP has sought to reduce the number of turbines as far as possible. This is evident in the proposed reduction in the number of WTGs from up to 140 (at EIA Scoping) to 75 (Option A) or 60 (Option B). CWP has also sought to reduce the number of OSSs as far as practicable. This is evident in the proposed reduction in the total number of OSSs from up to five (at EIA Scoping) to 3 (for Option A and B). As a responsible developer CWP will continue to review available technology and where new hammer technology is available with a demonstrable reduction in noise at source CWP will review and adopt the technology if available.	**Chapter 33 Summary of Mitigation and Monitoring.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Noise	S/CC/CD/OD/OC	Avoid installation during sensitive periods (breeding, foraging, haul out, migration)	Survey. Project design stage. EIA stage. Project installation. Project operation and maintenance.	Installation would be managed through the use of a MMMP to reduce impact of construction activities. The assessment of maintenance activities, and construction activities, has concluded no adverse effects on marine mammals during breeding seasons or more broadly. As such there is no demonstrated need for seasonal restrictions.	**Marine Mammal Mitigation Protocol.**
Noise	S/CC/CD/OD/OC	"Soft starting" piling activities/passive acoustic deterrents – gradually increasing noise produced to allow mammals/fish to move away from activities	Survey. Project design stage. EIA stage. Project installation. Project operation and maintenance.	Part of the primary mitigation measures (in the MMMP) includes the use of a soft-start to pile driving. This involves a gradual ramping up of the piling power over an incremental time period in order to reach full power. It is thought that starting the activity at a lower power will allow for nearby marine species, including fish, to flee the area, reducing the likelihood of mortality and injury effects (JNCC, 2010).	**Marine Mammal Mitigation Protocol.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Noise	S/CC/CD/OD/OC	Consider using alternatives (i.e. clump weights, gravity bases, routeing cables through soft sandy sediment or use cable protection rather than burial)	Survey. Project design stage. EIA stage. Project installation. Project operation and maintenance.	Cables have been routed through sediments suitable for burial where practicable. Cable protection will be used where burial is not possible.	
Noise	S/CC/CD/OD/OC	Underwater noise during operation may be beneficial in alerting species to the presence of the device, reducing the risk of collisions. This requires further research	Survey. Project design stage. EIA stage. Project installation. Project operation and maintenance.	An **Underwater Noise Assessment** was undertaken and is provided in **Chapter 9 Fish, Shellfish and Turtles Ecology: Appendix 9.4**. Noise sources other than piling were considered using a high-level, simple modelling approach, including cable laying, dredging, drilling, rock placement, vessel movements, and operational WTG noise.	**Chapter 9 Fish, Shellfish and Turtles Ecology Appendix 9.4.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Noise	S/CC/CD/OD/OC	Noise from operating turbines can be reduced by using isolators. However this has not been tested over long term and to account for cumulative effects	Survey. Project design stage. EIA stage. Project installation. Project operation and maintenance.	The assessment concludes no significant effects from operational turbines, and no further mitigation is required.	**Chapter 11 Marine Mammals**
Noise	S/CC/CD/OD/OC	Use sound insulation on equipment	Survey. Project design stage. EIA stage. Project installation. Project operation and maintenance.	The assessment concludes no significant effects from operational turbines, and no further mitigation is required.	**Chapter 11 Marine Mammals**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Noise	S/CC/CD/OD/OC	Use of bubble curtains and other methods to discourage species from entering areas (this is expensive and may only be effective in shallow water)	Survey. Project design stage. EIA stage. Project installation. Project operation and maintenance.	CWP have demonstrated that the project can be constructed through traditional percussive piling methods whilst avoiding significant adverse effects (**Chapter 11: Marine Mammals**), however as a responsible developer CWP will continue to review available technology and where new hammer technology is available with a demonstrable reduction in noise at source CWP will review and adopt the technology if available.	**Chapter 11 Marine Mammals** **Marine Mammal Mitigation Protocol**
Noise	S/CC/CD/OD/OC	Investigate options for the use of acoustic deterrents (where suitable) or other disturbance devices to scare sensitive species away	Survey. Project design stage. EIA stage. Project installation. Project operation and maintenance.	The **Marine Mammal Mitigation Protocol** includes details of a draft piling MMMP that could be implemented to reduce the cumulative auditory injury (PTS) risk from pile driving activities to negligible levels, including: - the use of acoustic deterrent devices (ADDs) to deter marine mammals from the immediate vicinity of the pile, - the use of at source noise abatement methods; and - the use of alternative piling methods. The final piling MMMP with selected	**Marine Mammal Mitigation Protocol.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				mitigation measures will be provided post consent once a piling contractor is in place and final detailed installation methods are known.	
Noise	S/CC/CD/OD/OC	Programme developments to reduce potential for adverse cumulative/in-combination effects e.g. noise from piling or other activities (surveying) from a number of developments to occur at the same time	Survey. Project design stage. EIA stage. Project installation. Project operation and maintenance.	A Cumulative Effects Assessment has been undertaken and is provided in **Chapter 11 Marine mammals: Appendix 11.1 CEA**, with the conclusion drawn that there are no significant effects from the project alone or cumulatively with other activities. The conclusions are that there are no significant effects anticipated, and as such there is not a requirement for programming of activities between projects.	**Chapter 11 Marine mammals: Appendix 11.1 CEA.**
Noise	S/CC/CD/OD/OC	Use of mammal observers and passive acoustic monitoring to facilitate implementation of exclusion zone during noisy activities	Survey. Project design stage. EIA stage. Project installation. Project operation	The MMMP includes the commitment that pre-piling PAM will be implemented, given the proposed CWP project will require piling during periods of limited visibility and in the hours of darkness. The use of MMOs has been a common form of observational monitoring in the USA and UK since the 1980/90s and is now seen as an industry standard practice.	**Marine Mammal Mitigation Protocol.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			and maintenance.		
Noise	S/CC/CD/OD/OC	Time noisy activities for individual developments to avoid cumulative effect	Survey. Project design stage. EIA stage. Project installation. Project operation and maintenance.	A Cumulative Effects Assessment has been undertaken and is provided in **Chapter 11 Marine mammals: Appendix 11.1 CEA**, with the conclusion drawn that there are no significant effects from the project alone or cumulatively with other activities. The conclusions are that there are no significant effects anticipated, and as such there is not a requirement for programming of activities between projects.	**Chapter 11 Marine mammals: Appendix 11.1 CEA.**
Noise	S/CC/CD/OD/OC	Use of IWDG recommendations for multibeam survey and cetacean impacts	Survey. Project design stage EIA stage. Project installation. Project operation and maintenance.	IWDG recommendations, Irish guidance, and international best practice has been applied throughout the assessment of potential effects on marine mammals that may arise from the proposed CWP Project.	**Marine Mammal Mitigation Protocol.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Collision Risk	CD/CC/OD	Design device to minimise risk of collision	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Project operation and maintenance.	Vessels will use predefined routes and will travel at slow speeds to reduce risk of accidental vessel collision where possible. An **EVMP** has been prepared to determine vessel routing to and from construction sites and ports and to include a code of conduct for vessel operators. The EVMP includes details of: - The types and specifications of vessels for the CWP Project; - How vessels will be monitored and coordinated; and - The use of defined transit routes to site from key construction and operation ports, where practicable to do so.	**EVMP.**
Collision Risk	CD/CC/OD	Do not site devices in particularly sensitive areas – e.g. migration routes, feeding, breeding areas or near to main haul routes	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	In order to provide site specific and up to date information on which to base the impact assessment, site specific surveys were conducted. This included visual boat-based surveys undertaken between April 2013 and March 2014 (13 months), and October 2018 and January 2020 (12 months) by Natural Power. In addition to this, 24 months of Digital Aerial Surveys (DAS) were undertaken between May 2020 and	**Chapter 11 Marine Mammals: Appendix 11.3 Baseline Technical Report.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project operation and maintenance.	April 2022. Site specific landfall surveys were undertaken at the intertidal area of the CWP Project site. Although marine mammals were not the target group for these surveys a total of 11 grey seals, two harbour seals and five harbour porpoises were recorded. More details are provided in **Chapter 11 Marine Mammals**: Appendix 11.3 Baseline Technical Report.	
Collision Risk	CD/CC/OD	Increase device visibility, or use of acoustic deterrent devices	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Project operation and maintenance.	The **Marine Mammal Mitigation Protocol** includes details of a draft piling MMMP that could be implemented to reduce the cumulative auditory injury (PTS) risk from pile driving activities to negligible levels, including: - the use of acoustic deterrent devices (ADDs) to deter marine mammals from the immediate vicinity of the pile, - the use of at source noise abatement methods; and - the use of alternative piling methods. The final piling MMMP with selected mitigation measures will be provided post consent once a piling contractor is in place and final	**Other Documents: Marine Mammal Mitigation Protocol.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				detailed installation methods are known.	
Collision Risk	CD/CC/OD	Enforce speed limits for vessels used in construction and establish a code of conduct to avoid disturbance to marine mammals both during construction activities and in transit to the construction area if entering areas of high animal abundance	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Project operation and maintenance.	Vessels will use predefined routes and will travel at slow speeds to reduce risk of accidental vessel collision where possible. An **EVMP** has been prepared to determine vessel routing to and from construction sites and ports and to include a code of conduct for vessel operators. The EVMP includes details of: - The types and specifications of vessels for the CWP Project; - How vessels will be monitored and coordinated; and - The use of defined transit routes to site from key construction and operation ports, where practicable to do so.	**EVMP.**
Collision Risk	CD/CC/OD	Use of protective netting or grids	Site/cable route selection stage.	N/A in the context of OWF ORE, applicable to tidal turbines only.	

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project design stage. EIA stage. Project installation. Project operation and maintenance.		
Collision Risk	CD/CC/OD	Seasonal restrictions could be placed on operation to avoid impacting on marine mammals at vulnerable times such as breeding season	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Project operation and maintenance.	No significant effects are identified for disturbance during the operational phase of the proposed project, and as such there are no sensitive seasons that require specific avoidance.	

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Collision Risk	CD/CC/OD	The use of acoustic deterrents such as pingers or acoustic harassment devices	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Project operation and maintenance.	The **Marine Mammal Mitigation Protoco**l includes details of a draft piling MMMP that could be implemented to reduce the cumulative auditory injury (PTS) risk from pile driving activities to negligible levels, including: - the use of acoustic deterrent devices (ADDs) to deter marine mammals from the immediate vicinity of the pile, - the use of at source noise abatement methods; and - the use of alternative piling methods. The final piling MMMP with selected mitigation measures will be provided post consent once a piling contractor is in place and final detailed installation methods are known.	**Other Documents: Marine Mammal Mitigation Protocol.**
Collision Risk	CD/CC/OD	Soften collision by adding smooth edges or padding	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	This impact pathway is not relevant for offshore wind, and is more directly applicable to tidal ORE.	

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project operation and maintenance.		
Collision Risk	CD/CC/OD	Protect against entrapment by incorporating escape hatches into device design	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Project operation and maintenance.	This impact pathway is not relevant for offshore wind, and is more directly applicable to tidal ORE.	
Collision Risk	CD/CC/OD	Use of protective screens to prevent marine organisms from entering the device (i.e. shrouded turbines)	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Project operation	This impact pathway is not relevant for offshore wind, and is more directly applicable to tidal ORE.	

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			and maintenance.		
Collision Risk	CD/CC/OD	Survey to identify potential for offshore bat activity in proposed development area	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Project operation and maintenance.	A comprehensive desk-based review was undertaken to inform the baseline for offshore bats. In order to provide site specific and up to date information on which to base the impact assessment, detailed bat activity surveys were undertaken. The timing of the surveys was designed to detect any bat activity over the potential spring and autumn migration periods, with detectors deployed for approximately 12 weeks during each period. More information is provided in **Chapter 13 Offshore Bats.**	**Chapter 13 Offshore Bats.**
Collision Risk	CD/CC/OD	Alignment of turbines in rows parallel to the main migratory direction	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	No significant effects are identified for disturbance during the operational phase of the proposed project, and as such there are no sensitive seasons that require specific avoidance.	**Chapter 11 Marine Mammals**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project operation and maintenance.		
Collision Risk	CD/CC/OD	Adequate spacing between developments to allow migration between wind farms;	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Project operation and maintenance.	Phase 1 windfarms are spaced apart along the east coast of Ireland, allowing migration between wind farms.	**Chapter 3 Site Selection and Consideration of Alternatives**
Collision Risk	CD/CC/OD	Shut-down of turbines at night with bad weather/visibility and high migration intensity;	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Project operation	No significant effects are identified for disturbance during the operational phase of the proposed project, and as such there are no shut downs proposed.	**Chapter 11 Marine Mammals**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			and maintenance.		
Collision Risk	CD/CC/OD	Avoiding large-scale continuous illumination	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Project operation and maintenance.	The impact of light associated with offshore construction works shall be reduced through proper placement of light sources in addition to using lights with high directionality. The amount of lighting should be targeted to achieve minimum required or necessary light levels, by reducing the number of lights or by moving from general area lighting to specifically focused task-based lighting. To reduce the level of artificial lighting, all temporary lighting associated with the construction works will be placed strategically by the appointed Contractor following consultation with the appointed ECoW. This will ensure that illumination beyond the works area is controlled. Lighting will be cowled and directional to reduce significant light splay.	**Chapter 33 Summary of Mitigation and Monitoring.**
Accidental contamination (hydraulic fluids or vessel cargo/fuel)	CC/CD/OD	Design devices to minimise risk of leakage of pollutants	Project design stage. EIA stage.	A **CEMP** has been prepared to ensure appropriate controls are in place to manage environmental risks associated with the construction of the CWP Project. It outlines environmental procedures	**Other Documents: CEMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project installation. Project operation and maintenance.	that require consideration throughout the construction process, in accordance with legislative requirements and industry best practice. The **CEMP** includes 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.	
Accidental contamination (hydraulic fluids or vessel cargo/fuel)	CC/CD/OD	Risk assessment and contingency planning	Project design stage. EIA stage. Project installation. Project operation and maintenance.	A **CEMP** has been prepared 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. The **CEMP** includes 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.	**Other Documents: CEMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
		Design to reduce risk	Project design stage. EIA stage. Project installation. Project operation and maintenance.	All materials used in the operation and maintenance of the CWP Project, will be certified as safe for use within the marine environment. It is likely that antifouling paints, amongst other potential contaminants, are widely used by existing infrastructure and vessels in the area, therefore detectable increases in potential contaminants from the construction phase are considered unlikely.	**Chapter 9 Fish, Shellfish and Turtles Ecology.**
Accidental contamination (hydraulic fluids or vessel cargo/fuel)	CC/CD/OD	Avoid shipping routes where collision risk is high	Project design stage. EIA stage. Project installation. Project operation and maintenance.	Vessels will use predefined routes and will travel at slow speeds to reduce risk of accidental vessel collision where possible. An **EVMP** has been prepared to determine vessel routing to and from construction sites and ports and to include a code of conduct for vessel operators. The EVMP includes details of: - The types and specifications of vessels for the CWP Project; - How vessels will be monitored and coordinated; and - The use of defined transit routes to site from key construction and operation ports, where practicable to do so.	**EVMP.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Accidental contamination (hydraulic fluids or vessel cargo/fuel)	CC/CD/OD	Implementation of SOPEP (Shipboard Oil Pollution Emergency Plan)	Project design stage. EIA stage. Project installation. Project operation and maintenance.	A **CEMP** has been prepared 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. The **CEMP** includes 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.	**Other Documents: CEMP**
Habitat Exclusion	OD	Avoid sensitive sites/species	Site/cable route selection stage. Project design stage. EIA stage	No significant effects are identified as a result of the proposed development, sensitive habitats have been avoided or impacts mitigated where relevant.	**Chapter 3 Site Selection and Consideration of Alternatives**
Habitat Exclusion	OD	Surveys of habitat use by marine mammals	Site/cable route selection stage. Project design stage.	In order to provide site specific and up to date information on which to base the impact assessment, site specific surveys were conducted. This included visual boat-based surveys undertaken between April	**Chapter 11 Marine Mammals: Appendix 11.3 Baseline Technical Report.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			EIA stage.	2013 and March 2014 (13 months), and October 2018 and January 2020 (12 months) by Natural Power. In addition to this, 24 months of Digital Aerial Surveys (DAS) were undertaken between May 2020 and April 2022. Site specific landfall surveys were undertaken at the intertidal area of the CWP Project site. Although marine mammals were not the target group for these surveys a total of 11 grey seals, two harbour seals and five harbour porpoises were recorded. More details are provided in **Chapter 11 Marine Mammals: Appendix 11.3 Baseline Technical Report.**	
Barrier to movement	CC/CD/OD	Detailed studies to identify location of key migration corridors and sensitive habitats	Site/cable route selection stage. Project design stage. EIA stage.	In order to provide site specific and up to date information on which to base the impact assessment, site specific surveys were conducted. This included visual boat-based surveys undertaken between April 2013 and March 2014 (13 months), and October 2018 and January 2020 (12 months) by Natural Power. In addition to this, 24 months of Digital Aerial Surveys (DAS) were undertaken between May 2020 and April 2022. Site specific landfall surveys were undertaken at the	**Chapter 11 Marine Mammals: Appendix 11.3 Baseline Technical Report.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				intertidal area of the CWP Project site. Although marine mammals were not the target group for these surveys a total of 11 grey seals, two harbour seals and five harbour porpoises were recorded. More details are provided in Chapter 11 Marine Mammals: Appendix 11.3 Baseline Technical Report.	
Barrier to movement	CC/CD/OD	Detailed study would be required to examine coastal distribution in order to mitigate for this risk	Site/cable route selection stage. Project design stage. EIA stage.	Site specific landfall surveys were undertaken at the intertidal area of the CWP Project site. Although marine mammals were not the target group for these surveys a total of 11 grey seals, two harbour seals and five harbour porpoises were recorded. More details are provided in **Chapter 11 Marine Mammals: Appendix 11.3 Baseline Technical Report.** The assessment concludes no significant adverse effects, in the context of both the EIAR and NIS, with no anticipated barriers to movement for marine mammals during the construction and operational phase of the project.	**Chapter 11 Marine Mammals: Appendix 11.3 Baseline Technical Report.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Barrier to movement	CC/CD/OD	Avoid large installations in migratory corridors	Site/cable route selection stage. Project design stage. EIA stage.	A number of studies have reported the presence of marine mammals within wind farm footprints. For example, at the Horns Rev and Nysted offshore wind farms in Denmark, long-term monitoring showed that both harbour porpoise and harbour seals were sighted regularly within the operational OWFs, and within two years of operation, the populations had returned to levels that were comparable with the wider area (Diederichs et al., 2008). Similarly, a monitoring programme at the Egmond an Zee OWF in the Netherlands reported that significantly more porpoise activity was recorded within the OWF compared to the reference area during the operational phase (Scheidat et al., 2011) indicating the presence of the windfarm was not adversely affecting harbour porpoise presence. Other studies at Dutch and Danish OWFs (Lindeboom et al., 2011) also suggest that harbour porpoise may be attracted to increased foraging opportunities within operating offshore wind farms. In addition,	**Chapter 11 Marine Mammals: Appendix 11.3 Baseline Technical Report.**
Barrier to movement	CC/CD/OD	Avoid installation of a number of developments on migratory corridors	Site/cable route selection stage. Project design stage. EIA stage.		

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				tagging work by Russell et al. (2014) found that some tagged harbour and grey seals demonstrated grid-like movement patterns as these animals moved between individual WTGs, strongly suggestive of these structures being used for foraging. Previous reviews have also concluded that operational wind farm noise will have negligible barrier effects (Madsen et al., 2006, Teilmann et al., 2006a, Teilmann et al., 2006b, CEFAS, 2010, Brasseur et al., 2012). Thus it is not expected that O&M activities will result in a permanent barrier to the movement of marine mammals in the area.	
Barrier to movement	CC/CD/OD	Avoid sensitive areas (breeding, feeding and nursery areas)	Site/cable route selection stage. Project design stage. EIA stage.	No significant effects are identified as a result of the proposed development, sensitive habitats have been avoided or impacts mitigated where relevant.	**Chapter 11 Marine Mammals: Appendix 11.3 Baseline Technical Report.**
Barrier to movement	CC/CD/OD	Avoid placement of devices within constrained areas where array could completely block or	Site/cable route selection stage.	The CWP Project is located 13-22km off the east coast of Ireland, it is not located within a constrained area.	**Chapter 11 Marine Mammals: Appendix 11.3 Baseline Technical Report.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
		cause a significant perceptual barrier to marine mammals	Project design stage. EIA stage		
EMF	OC/OD	Cable configuration and orientation can reduce field strength	Project design stage. EIA stage.	Existing evidence suggests that the levels of EMFs emitted by offshore renewable energy export cables are at a level low enough that there is no potential for direct significant impacts on marine mammals (Copping and Hemery, 2020). There is no evidence that seals can detect or respond to EMF, however, some species of cetaceans may be able to detect variations in magnetic fields (Normandeau et al., 2011). Given that marine mammals are known to closely associate with offshore wind farm structures (Scheidat et al., 2011, Russell et al., 2014), it is predicted that the magnitude and vulnerability score for direct EMF impacts would be negligible.	**Chapter 11 Marine Mammals**
EMF	OC/OD	Cable burial, where possible to minimise field effect at the seabed	Project design stage. EIA stage.	Cables will be suitably buried or protected by other means where burial is not practicable. This will reduce the potential for effects relating to the presence of EMF.	**Chapter 33 Summary of Mitigation and Monitoring.**

Appendix B.8 Marine Reptiles

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Collision	CC/CD/OD	Design device for minimal impact	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Project operation and maintenance.	CWP has sought to reduce the number of turbines as far as possible. This is evident in the proposed reduction in the number of WTGs from up to 140 (at EIA Scoping) to 75 (Option A) or 60 (Option B). CWP has also sought to reduce the number of OSSs as far as practicable. This is evident in the proposed reduction in the total number of OSSs from up to five (at EIA Scoping) to 3 (for Option A and B).	**Chapter 33 Summary of Mitigation and Monitoring.**
Collision	CC/CD/OD	Do not site devices in particularly sensitive areas – e.g. migration routes, feeding, breeding areas	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Project operation and maintenance.	No marine turtles were recorded during the CWP Project's monthly site-specific surveys. Two sightings of leatherback turtle off the counties of Cork and Clare were recorded within the last 12 months on the IWDG citizen science recording scheme. No recordings on the east coast of Ireland were noted during the ObSERVE surveys (Rogan et al., 2018). Between 1910 – 2018 a total of 1997 marine turtles were recorded in Irish and UK waters (Botterell et al, 2020;). The majority of these sightings were	**Chapter 9 Fish, Shellfish and Turtles Ecology.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				of the leatherback turtles with recordings along the entirety of the Irish coastline between May and November. Recordings have declined in the last decade (Botterell et al., 2020). It has been estimated that 0.06 leatherbacks are found per 100 km2 in the Celtic and Irish Seas (Doyle et al., 2008). No significant effects are identified as a result of the proposed development, sensitive areas have been avoided or impacts mitigated where relevant.	
Collision	CC/CD/OD	Increase device visibility, or use of acoustic deterrent devices	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Project operation and maintenance.	The Marine Mammal Mitigation Protocol includes details that could be implemented to reduce the cumulative auditory injury (PTS) risk from pile driving activities to negligible levels, including: - the use of ADDs to deter marine mammals from the immediate vicinity of the pile, - the use of at source noise abatement methods; and - the use of alternative piling methods. The final piling MMMP with selected mitigation measures will be provided post consent once a piling contractor is in place and final detailed installation methods are known.	**Other Documents: Marine Mammal Mitigation Protocol**.

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Collision	CC/CD/OD	Enforce speed limits for vessels used in construction and establish a code of conduct to avoid disturbance to marine reptiles both during construction activities and in transit to the construction area if entering areas of high animal abundance	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Project operation and maintenance.	Vessels will use predefined routes and will travel at slow speeds to reduce risk of accidental vessel collision where possible. An EVMP has been prepared to determine vessel routing to and from construction sites and ports and to include a code of conduct for vessel operators. The EVMP includes details of: - The types and specifications of vessels for the CWP Project; - How vessels will be monitored and coordinated; and - The use of defined transit routes to site from key construction and operation ports, where practicable to do so.	**EVMP.**
Collision	CC/CD/OD	Use of protective netting or grids	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	Protective grids are not applicable for the proposed technology, as it is a wind project rather than a tidal turbine project or hydro electric project for which entrainment is an issue.	N/A

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project operation and maintenance.		
Collision	CC/CD/OD	Seasonal restrictions could be placed on operation to avoid impacting on marine reptiles at vulnerable times such as breeding season	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Project operation and maintenance.	No marine turtles were recorded during the CWP Project's monthly site-specific surveys. Two sightings of leatherback turtle off the counties of Cork and Clare were recorded within the last 12 months on the IWDG citizen science recording scheme. No recordings on the east coast of Ireland were noted during the ObSERVE surveys (Rogan et al., 2018). Between 1910 – 2018 a total of 1997 marine turtles were recorded in Irish and UK waters (Botterell et al, 2020;). The majority of these sightings were of the leatherback turtles with recordings along the entirety of the Irish coastline between May and November. Recordings have declined in the last decade (Botterell et al., 2020). It has been estimated that 0.06 leatherbacks are found per 100 km2 in the Celtic and Irish Seas (Doyle et al., 2008). No significant effects are identified as a result of the proposed development, sensitive habitats and periods have	**Chapter 9 Fish, Shellfish and Turtles Ecology.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				been avoided or impacts mitigated where relevant.	
Collision	CC/CD/OD	The use of acoustic deterrents such as pingers or acoustic harassment devices	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Project operation and maintenance.	The Marine Mammal Mitigation Protocol includes details of a draft piling MMMP that could be implemented to reduce the cumulative auditory injury (PTS) risk from pile driving activities to negligible levels, including: - the use of ADDs to deter marine mammals from the immediate vicinity of the pile, - the use of at source noise abatement methods; and - the use of alternative piling methods. The final piling MMMP with selected mitigation measures will be provided post consent once a piling contractor is in place and final detailed installation methods are known.	**Other Documents: Marine Mammal Mitigation Protocol.**
Collision	CC/CD/OD	Soften collision by adding smooth edges or padding	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	N/A in the context of OWF ORE, applicable to tidal turbines only	

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project operation and maintenance.		
Collision	CC/CD/OD	Protect against entrapment by incorporating escape hatches into device design	Site/cable route selection stage. Project design stage. EIA stage. Project installation. Project operation and maintenance.	N/A in the context of OWF ORE, applicable to tidal turbines only	
Accidental Contamination (hydraulic fluids or vessel cargo/fuel)	CC/CD/OD	Design devices to minimise risk of leakage of pollutants	Project design stage. EIA stage. Project installation. Project operation and maintenance.	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: - measures proposed to ensure effective handling of chemicals, oils	**Other Documents - CEMP.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				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; - 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.	
Accidental Contamination (hydraulic fluids or vessel cargo/fuel)	CC/CD/OD	Risk assessment and contingency planning	Project design stage. EIA stage. Project installation. Project operation and maintenance.	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: - a Marine Pollution Prevention and Contingency Plan to address the procedures to be followed in the event of a marine pollution incident	**Other Documents: CEMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				originating from the operations of the CWP Project;	
Accidental Contamination (hydraulic fluids or vessel cargo/fuel)	CC/CD/OD	Design to reduce risk	Project design stage. EIA stage. Project installation. Project operation and maintenance.	Vessels will use predefined routes and will travel at slow speeds to reduce risk of accidental vessel collision where possible. An **EVMP** has been prepared to determine vessel routing to and from construction sites and ports and to include a code of conduct for vessel operators. The EVMP includes details of: - The types and specifications of vessels for the CWP Project; - How vessels will be monitored and coordinated; and - The use of defined transit routes to site from key construction and operation ports, where practicable to do so.	**EVMP.**
Accidental Contamination (hydraulic fluids or vessel cargo/fuel)	CC/CD/OD	Implementation of SOPEP (Shipboard Oil Pollution Emergency Plan)	Project design stage. EIA stage. Project installation.	A **CEMP** has been prepared 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	**Other Documents - CEMP.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project operation and maintenance.	industry best practice. The **CEMP** includes 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.	
Barrier to movement	OD	Detailed study would be required to examine coastal distribution in order to mitigate for this risk and avoid large installations in migratory corridors	Site/cable route selection stage. Project design stage. EIA stage.	It was agreed through consultation with the SFPA and DHLGH that no site-specific fish or shellfish surveys needed to be undertaken during the baseline site investigation survey campaign. Baseline surveys for fish seldom yield additional data that is not already available from fisheries landings data or existing survey data and often use intrusive sampling methods. Through consultation with statutory and non-statutory organisations data sources have been deemed sufficient to develop a baseline for fish, shellfish and turtle ecology which will allow a robust impact assessment to be undertaken.	**Chapter 9 Fish. Shellfish and Turtles Ecology.**
Barrier to movement	OD	Avoid sensitive areas	Site/cable route selection stage. Project design stage.	No marine turtles were recorded during the CWP Project's monthly site-specific surveys. Two sightings of leatherback turtle off the counties of Cork and Clare were recorded within the last 12 months on the IWDG	**Chapter 9 Fish, Shellfish and Turtle Ecology.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			EIA stage.	citizen science recording scheme. No recordings on the east coast of Ireland were noted during the ObSERVE surveys (Rogan et al., 2018). Between 1910 – 2018 a total of 1997 marine turtles were recorded in Irish and UK waters (Botterell et al, 2020;). The majority of these sightings were of the leatherback turtles with recordings along the entirety of the Irish coastline between May and November. Recordings have declined in the last decade (Botterell et al., 2020). It has been estimated that 0.06 leatherbacks are found per 100 km2 in the Celtic and Irish Seas (Doyle et al., 2008).	
Barrier to movement	OD	Orientating arrays parallel to the coastline rather than perpendicular to the coastline may help minimise a barrier effect as marine reptiles swim past	Site/cable route selection stage. Project design stage. EIA stage.	The array site is orientated parallel to the coastline.	**Chapter 4 project description**
Barrier to movement	OD	Avoid placement of devices within constrained areas where array could completely	Site/cable route selection stage.	The CWP Project is located 13-22km off the east coast of Ireland, it is not located within a constrained area.	**Chapter 9 Fish, Shellfish and Turtle ecology**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
		block or cause a significant perceptual barrier to marine reptiles	Project design stage. EIA stage.		
Noise	S/CC/CD/OC/OD	No specific mitigation identified	N/A		
EMF	OD/OC	Cable configuration and orientation can reduce field strength	Project design stage. EIA stage.	Cables will be suitably buried or protected by other means where burial is not practicable. This will reduce the potential for effects relating to the presence of EMF.	**Chapter 33 Summary of Mitigation and Monitoring.**
EMF	OD/OC	Cable burial, where possible to minimise field effect at the seabed		Cables will be suitably buried or protected by other means where burial is not practicable. This will reduce the potential for effects relating to the presence of EMF.	**Chapter 33 Summary of Mitigation and Monitoring.**
Habitat exclusion	OD	No specific mitigation identified	Site/cable route selection stage. Project design stage. EIA stage.	Not applicable, no key habitats for marine reptiles identified.	**Chapter 9 Fish, Shellfish and Turtle ecology**

Appendix B.9 Marine and Coastal Archaeology and Wrecks

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Direct disturbance of unknown and known sites	CC/CD	Conform to the legislative requirements of the National Monuments Acts 1930-2004 and follow the codes of practice published by the National Monument Service (NMS)	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	A Protocol for Archaeological Discoveries (PAD) will be in place for the CWP Project. A PAD is proposed for reporting and investigating unexpected archaeological discoveries encountered during the different phases of the project, with a Retained Archaeologist providing guidance and advising industry staff on the implementation of the PAD. The PAD also makes provision for the implementation of temporary exclusion zones around areas of possible archaeological interest, for prompt archaeological advice, and, if necessary, for archaeological inspection of important features prior to further activities in the vicinity. The PAD provides a mechanism to comply with the Irish legislation, including notification to the UAU, and accords with the Code of Practice for Seabed Developers (JNAPC, 2006).	**Chapter 33 Summary of Mitigation and Monitoring.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Direct disturbance of unknown and known sites	CC/CD	Carry out seabed investigations in preferred site locations prior to device installation	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	Positions of WTGs and OSSs have been informed by a wide range of site specific data, including geophysical and geotechnical survey data, used to identify potential archaeological receptors within the offshore CWP Project area. Consequently, 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. For features assigned A2 archaeological discrimination rating (potential seabed features), no AEZs are recommended. However, these features have been avoided, where possible. Where this has not been possible, further appraisal is proposed prior to construction. For example, where geophysical surveys may be undertaken in advance of the CWP Project, or during a UXO survey, it is recommended that the data will be assessed by a suitably qualified archaeological contractor. This will confirm the presence of ferrous	**Chapter 33 Summary of Mitigation and Monitoring.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				material at the location of features identified during the initial assessment, as well as helping to identify any additional ferrous features of archaeological potential within the offshore CWP Project area. Further investigations mean that anomalies can either have their archaeological value removed, if they prove to be of non-anthropogenic nature or modern, or their value as archaeological assets confirmed. If their value is confirmed, mitigation in the form of either avoidance (which may be enacted by the implementation of an AEZ) or through remedying or offsetting measures including a Protocol for Archaeological Discoveries (PAD) is recommended.	
Direct disturbance of unknown and known sites	CC/CD	Avoid sites of interest and exclusion zones for marine archaeology	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	A summary of the key actions taken to avoid or otherwise reduce impacts to marine archaeology is provided below: - 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	**Chapter 33 Summary of Mitigation and Monitoring.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				construction, operational, or decommissioning phases. - 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.	
Direct disturbance of unknown and known sites	CC/CD	Submit any artefacts recovered to the NMS	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	A PAD will be in place for the CWP Project. A PAD is proposed for reporting and investigating unexpected archaeological discoveries encountered during the different phases of the project, with a Retained Archaeologist providing guidance and advising industry staff on the implementation of the PAD. The PAD also makes provision for the implementation of temporary exclusion zones around areas of possible archaeological interest, for prompt archaeological advice, and, if necessary, for archaeological inspection of important features prior to further activities in the vicinity. The PAD provides a mechanism to comply with the Irish legislation, including notification to the UAU, and accords with the Code of Practice for Seabed Developers (JNAPC, 2006).	**Chapter 33 Summary of Mitigation and Monitoring.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Direct disturbance of unknown and known sites	CC/CD	Avoid protected and other sites of interest	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	All identified sites have been avoided, with AEZs applied where applicable.	**Chapter 33 Summary of Mitigation and Monitoring.**
Direct disturbance of unknown and known sites	CC/CD	In addition to desk based studies, carry out field walkovers in preferred terrestrial site locations to determine need for site investigations (geophysical surveys/trial trenching) in consultation with the NMS and Local Authorities	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	With regards to intertidal heritage assets, in addition to the characterisation surveys and studies reported within **Chapter 14**, a targeted archaeological walkover survey shall be undertaken along the final offshore export cable alignments within the OECC. This will enable the identification of any further cultural heritage receptors with surface expression along the proposed cable routes leading up to the landfall. Furthermore, a metal detection survey, including excavation of identified targets is recommended to identify any material of archaeological potential located along the proposed cable alignments. For the one known intertidal heritage receptor (1001–1003) it is recommended that the site is re-	**Chapter 14 Marine Archaeology and Cultural Heritage** **Chapter 33 Summary of Mitigation and Monitoring.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				established to verify the feature and an archaeological recording is undertaken prior to construction works. This would entail a photographic record, drawing record and assessment, following current best practice and guidance outlined in the Framework and Principles for the Protection of the Archaeological Heritage (1999) and Policy and Guidelines on Archaeological Excavation (1999) Mitigation in the form of avoidance (which may be enacted by the implementation of an AEZ) shall be prioritised for all material of archaeological potential within the intertidal area.	
Changes to sediment regime	OC/OD	Conform to the legislative requirements of the National Monuments Acts 1930-2004 and follow the codes of practice published by the NMS	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	Consultation was undertaken with Development Applications Unit (DAU) on behalf of NMS. Surveys shall be licenced under the National Monuments Acts 1930-2004. CWP Project will conform to The National Monuments Act 1930 and the National Monuments (Amendments) Act 1954 to 2004.	**Chapter 14 Marine Archaeology and Cultural Heritage.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Changes to sediment regime	OC/OD	Carry out seabed investigations in preferred site locations prior to device installation in consultation with the Underwater Archaeology Unit of the NMS	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	In order to provide site specific and up to date information on which to base the impact assessment, an intertidal walkover survey was conducted in South Dublin Bay. A metal detection survey was also undertaken in advance of geotechnical works in South Dublin Bay in March 2022 (Wessex Archaeology 2022). As part of the onshore substation works of the CWP Project a geophysical survey was undertaken in Dublin Port by Hydromaster Ltd, with advice from ADCO (Hydromaster 2022). This aimed to identify seabed features within four defined zones and recommend further work on sites of archaeological potential. A number of geophysical survey data sources were also consulted during this assessment. Further details are provided in **Chapter 14 Marine Archaeology and Cultural Heritage.**	**Chapter 14 Marine Archaeology and Cultural Heritage.**
Changes to sediment regime	OC/OD	Avoid sites of interest and exclusion zones for marine archaeology	Site/cable route selection stage. Project design stage. EIA stage.	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	**Chapter 33 Summary of Mitigation and Monitoring.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project installation.	data (e.g. benthic surveys and archaeological assessment) and stakeholder consultation. Designing and optimising the layout of the 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 to marine archaeology is provided below: - 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. - 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.	
Changes to sediment regime	OC/OD	Record and report potential archaeological and vessel remains to the NMS	Site/cable route selection stage. Project design stage. EIA stage.	A PAD will be in place for the CWP Project. A PAD is proposed for reporting and investigating unexpected archaeological discoveries encountered during the different phases of the project, with a Retained Archaeologist providing	**Chapter 33 Summary of Mitigation and Monitoring.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project installation.	guidance and advising industry staff on the implementation of the PAD. The PAD also makes provision for the implementation of temporary exclusion zones around areas of possible archaeological interest, for prompt archaeological advice, and, if necessary, for archaeological inspection of important features prior to further activities in the vicinity. The PAD provides a mechanism to comply with the Irish legislation, including notification to the UAU, and accords with the Code of Practice for Seabed Developers (JNAPC, 2006).	
Data acquisition	CC/CD	Conform to the legislative requirements of the National Monuments Acts 1930-2004 and follow the codes of practice published by the NMS	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	A PAD will be in place for the CWP Project. A PAD is proposed for reporting and investigating unexpected archaeological discoveries encountered during the different phases of the project, with a Retained Archaeologist providing guidance and advising industry staff on the implementation of the PAD. The PAD also makes provision for the implementation of temporary exclusion zones around areas of possible archaeological interest, for prompt archaeological advice, and, if necessary, for archaeological inspection of important features prior	**Chapter 33 Summary of Mitigation and Monitoring.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				to further activities in the vicinity. The PAD provides a mechanism to comply with the Irish legislation, including notification to the UAU, and accords with the Code of Practice for Seabed Developers (JNAPC, 2006).	
Data acquisition	CC/CD	Record and report potential archaeological and vessel remains to the NMS	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	A PAD will be in place for the CWP Project. A PAD is proposed for reporting and investigating unexpected archaeological discoveries encountered during the different phases of the project, with a Retained Archaeologist providing guidance and advising industry staff on the implementation of the PAD. The PAD also makes provision for the implementation of temporary exclusion zones around areas of possible archaeological interest, for prompt archaeological advice, and, if necessary, for archaeological inspection of important features prior to further activities in the vicinity. The PAD provides a mechanism to comply with the Irish legislation, including notification to the UAU, and accords with the Code of Practice for Seabed Developers (JNAPC, 2006).	**Chapter 33 Summary of Mitigation and Monitoring.**

Appendix B.10 Commercial Fisheries

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Direct disturbance	CC/CD	Avoid device placement in sensitive areas	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	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 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 key action taken to avoid or otherwise reduce impacts includes WTG layout options developed to avoid or minimise interaction 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.	**Chapter 33 Summary of Mitigation and Monitoring.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Direct disturbance	CC/CD	Avoid key and peak fishing seasons for installation	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	CWP has considered fishing activity density when planning site investigation (SI) activities, aiming to minimise disruption during the peak fishing season.	**FMMS**
Direct disturbance	CC/CD	Clear area of debris post installation	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	Contractors appointed by CWPL will be required to follow a code of good practice to ensure external communication is accurate and to aid co-existence with the fishing industry. It is anticipated that the code of good practice will include the following: • Ensure that any project related debris accidently dropped is removed as practicably and safely as possible and reported to fisheries stakeholders as appropriate	**FMMS**
Direct disturbance	CC/CD	Early liaison with the fishing industry could help identify key fishing areas, particularly in the area where there is a	Site/cable route selection stage. Project design stage.	A **Fisheries Management and Mitigation Strategy** (FMMS) and a Fisheries Liaison Officer (FLO) have been provided for the CWP	**Chapter 33 Summary of Mitigation and Monitoring.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
		lack of fishing effort distribution information for vessels under 15m	EIA stage. Project installation.	Project to aid liaison with the local fishing industry.	
Direct disturbance	CC/CD	Minimise effects by using procedures and structures that reduce the area of seabed disturbed for turbine foundations	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	• There will be no legislation to prevent fishing within the windfarm site and along the export cable route • The preferred turbine layout(s) has been amended to minimise interaction with key fishing grounds • The export cable route with the least overlap with fishing grounds has been selected.	**FMMS**
Temporary displacement from traditional fishing grounds	CC/CD	Avoid device placement in sensitive areas	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	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 WTGs has considered multiple constraints identified from analysis of these datasets, alongside the	**Chapter 33 Summary of Mitigation and Monitoring.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				consideration of layout principles taken from relevant guidance on the design of OWFs. A key action taken to avoid or otherwise reduce impacts includes WTG layout options developed to avoid or minimise interaction 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.	
Temporary displacement from traditional fishing grounds	CC/CD	Avoid key and peak fishing seasons	Site/cable route selection stage. Project design stage. EIA stage. Project installation.	CWP has considered fishing activity density when planning site investigation (SI) activities, aiming to minimise disruption during the peak fishing season. The assessment has considered the risk of displacement during key and peak fishing seasons and has concluded no significant adverse effects will occur, following implementation of the **FMMS**.	**FMMS**
Temporary displacement from traditional fishing grounds	CC/CD	Liaison with the fishing community to keep them informed of installation operations	Site/cable route selection stage. Project design stage.	A **Fisheries Management and Mitigation Strategy** (FMMS) and a Fisheries Liaison Officer (FLO) have been provided for the CWP Project to aid liaison with the local fishing industry.	**Chapter 33 Summary of Mitigation and Monitoring.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			EIA stage. Project installation.		
Long term displacement from traditional fishing grounds	OC/OD	Avoid device placement in sensitive areas	Site/cable route selection stage. Project design stage. EIA stage. Project operation and maintenance.	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 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 key action taken to avoid or otherwise reduce impacts includes WTG layout options developed to avoid or minimise interaction 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.	**Chapter 33 Summary of Mitigation and Monitoring.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Long term displacement from traditional fishing grounds	OC/OD	Consider spacing of turbines at wide enough intervals to permit use of mobile fishing gear	Site/cable route selection stage. Project design stage. EIA stage. Project operation and maintenance.	The CWP Project is fully committed to co-existence with the fishing industry within the array site and support resumption of fishing during the operational and maintenance phase. Turbine spacing is such that the assessment concludes that there will be no long term significant adverse effects on the existing and anticipated future fishing activities within the CWP project area.	**Chapter 12 Commercial Fisheries.**
Long term displacement from traditional fishing grounds	OC/OD	Workshops with expert representatives from the Marine Institute, BIM, industry and other appropriate bodies	Site/cable route selection stage. Project design stage. EIA stage. Project operation and maintenance.	Consultation was undertaken with Marine Institute, Bord Iascaigh Mhara (BIM), Sea Fisheries Protection Authority (SFPA) and Inland Fisheries Ireland (IFI). Details are provided in **Chapter 12 Commercial Fisheries.**	**Chapter 12 Commercial Fisheries.**
Long term displacement from traditional fishing grounds	OC/OD	Liaison with industry and BIM	Site/cable route selection stage. Project design stage. EIA stage	Consultation was undertaken with Marine Institute, Bord Iascaigh Mhara (BIM), Sea Fisheries Protection Authority (SFPA) and Inland Fisheries Ireland (IFI). Details are provided in **Chapter 12 Commercial Fisheries**.	**Chapter 12 Commercial Fisheries.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project operation and maintenance.		

Appendix B.11 Aquaculture – not applicable

Appendix B.12 Ports, Shipping and Navigation

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Displacement of shipping	CD/CC/OD	Where feasible site devices away from constraints and areas of high vessel densities	Site/cable route selection stage. Project design stage. Project installation. Project operation and maintenance.	Three vessel traffic surveys were undertaken, where both AIS and non-AIS vessels were recorded, supplemented with visual observation data where available. In addition to the site specific surveys, a comprehensive desk-based review was undertaken to inform the baseline for shipping and navigation. Further information is provided in **Chapter 16 Shipping and Navigation.**	**Chapter 16 Shipping and Navigation**
Displacement of shipping	CD/CC/OD	Undertake a navigation risk assessment which should include a survey of all vessels in the vicinity of the proposed development	Site/cable route selection stage. Project design stage. Project installation. Project operation and maintenance.	A **Navigational Risk Assessment** has been undertaken and presented as **Chapter 16 Shipping and Navigation**, **Appendix 16.3**. The assessment presents a detailed characterisation of the vessels within the vicinity, in accordance with good international practice. This includes seasonal surveys.	**Chapter 16 Shipping and Navigation, Appendix 16.3**
Decreased trade/supply	CD/CC/OD	Maintain good communications with the relevant ports	Site/cable route selection stage.	CWP Project will ensure all parties on the marine stakeholder distribution list are made fully aware of the completion of the	**NSP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project design stage. EIA stage. Project installation stage. Project operation and maintenance.	construction works and commissioning of the CWP Project. CWP Project will ensure that relevant stakeholders are informed via NtM of any planned and unplanned maintenance activities that are outside the day-to-day maintenance activities associated with the CWP Project.	
Decreased trade/supply	CD/CC/OD	Issue the appropriate notifications during installation and maintenance	Site/cable route selection stage. Project design stage. EIA stage. Project installation stage. Project operation and maintenance.	A NSP has been produced to document the associated measures that will be in place. The document covers the following areas, inclusive of promulgation of information through appropriate NtMs: • Specific navigational safety measures to be implemented during the construction phase; • Specific navigational safety measures to be implemented during the operations and maintenance phase; • How information relating to the CWP Project will be promulgated; • Approach to indicative transit corridors from relevant ports to the array site; and	**NSP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				• Consideration for areas where anchoring may occur and where it will not occur.	
Decreased trade/supply	CD/CC/OD	Site selection for device arrays to take into account the requirement for continued access to port and harbours	Site/cable route selection stage. Project design stage. EIA stage. Project installation stage. Project operation and maintenance.	Three vessel traffic surveys were undertaken, where both AIS and non-AIS vessels were recorded, supplemented with visual observation data where available. In addition to the site specific surveys, a comprehensive desk-based review was undertaken to inform the baseline for shipping and navigation. Further information is provided in **Chapter 16 Shipping and Navigation**.	**Chapter 16 Shipping and Navigation**
Reduced visibility	CD/CC/OD	Avoiding areas of high vessel densities and areas constrained by land e.g. adjacent to the entrances of ports and Lochs	Site/cable route selection stage. Project design stage. EIA stage. Project installation stage. Project operation and maintenance.	Three vessel traffic surveys were undertaken, where both AIS and non-AIS vessels were recorded, supplemented with visual observation data where available. In addition to the site specific surveys, a comprehensive desk-based review was undertaken to inform the baseline for shipping and navigation. Further information is provided in **Chapter 16 Shipping and Navigation**.	**Chapter 16 Shipping and Navigation**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Reduced visibility	CD/CC/OD	In busy shipping areas, potential effects may be reduced by minimising the period of installation, the number of vessels required and the area occupied during installation would reduce the potential impact on visibility	Site/cable route selection stage. Project design stage. EIA stage. Project installation stage. Project operation and maintenance.	CWP has sought to reduce the number of turbines as far as possible. This is evident in the proposed reduction in the number of WTGs from up to 140 (at EIA Scoping) to 75 (Option A) or 60 (Option B). CWP has also sought to reduce the number of OSSs as far as practicable. This is evident in the proposed reduction in the total number of OSSs from up to five (at EIA Scoping) to 3 (for Option A and B). The assessment concludes that there will be no significant adverse effects on regional shipping areas.	**Chapter 33 Summary of Mitigation and Monitoring**
Reduced visibility	CD/CC/OD	Any vessels and devices should be lit and marked in accordance with the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) guidelines, in agreement with the Commissioners of Irish Lights	Site/cable route selection stage. Project design stage. EIA stage. Project installation stage.	A **Lighting and Marking Plan** (LMP) has been prepared to capture construction and OandM phase lighting requirements for the offshore infrastructure and demarcation of the offshore CWP Project area such as construction buoy requirements. The LMP includes details of: - Marking and lighting of the array site in agreement with Irish Lights and in line with IALA G1162 (IALA, 2021a);	**LMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project operation and maintenance.	- Buoyed construction area around the array in agreement with Irish Lights; and - Specific requirements in terms of aviation lighting to be installed on the turbines. The LMP will be prepared in consultation with the IAA, DoD and IRCG. It will take into account DoD's requirement for WTGs to be observable to night vision equipment. The LMP will ensure appropriate lighting is in place to facilitate aeronautical safety. The LMP will be implemented by the Applicant and its appointed contractor(s) and will be secured through conditions of the CWP Project consent. It will be a live document which will be updated and submitted to the relevant authority, prior to the start of construction.	

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Collision Risk	CD/CD/OD	Avoid constrained areas or areas of high shipping densities and regularly used shipping routes	Site/cable route selection stage. Project design stage. EIA stage. Project installation stage. Project operation and maintenance.	Three vessel traffic surveys were undertaken, where both AIS and non-AIS vessels were recorded, supplemented with visual observation data where available. In addition to the site specific surveys, a comprehensive desk-based review was undertaken to inform the baseline for shipping and navigation. Further information is provided in **Chapter 16 Shipping and Navigation.** The characterisation surveys confirm that the proposed CWP project is not within heavily constrained or areas of high shipping densities. As such it is concluded that there are no significant adverse effects on shipping.	**Chapter 16 Shipping and Navigation**
Collision Risk	CD/CD/OD	In busy shipping areas, potential effects may be reduced by minimising the period of installation, the number of vessels required and the area occupied during installation	Site/cable route selection stage. Project design stage. EIA stage.	CWP has sought to reduce the number of turbines as far as possible. This is evident in the proposed reduction in the number of WTGs from up to 140 (at EIA Scoping) to 75 (Option A) or 60 (Option B). CWP has also sought to reduce the number of OSSs as far as practicable. This is evident in the proposed reduction in the	**Chapter 33 Summary of Mitigation and Monitoring**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project installation stage. Project operation and maintenance.	total number of OSSs from up to five (at EIA Scoping) to 3 (for Option A and B). It is concluded that there are no significant adverse effects on shipping.	
Collision Risk	CD/CD/OD	Maintain good communications with the relevant ports, and issue the appropriate notifications during installation, maintenance, and decommissioning	Site/cable route selection stage. Project design stage. EIA stage Project installation stage. Project operation and maintenance.	A NSP has been produced to document the associated measures that will be in place. The document covers the following: • Specific navigational safety measures to be implemented during the construction phase; • Specific navigational safety measures to be implemented during the operations and maintenance phase; • How information relating to the CWP Project will be promulgated; • Approach to indicative transit corridors from relevant ports to the array site; and • Consideration for areas where anchoring may occur and where it will not occur.	**NSP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Collision Risk	CD/CD/OD	The scale of potential effect on navigation should be assessed as part of the EIA and **Navigational Risk Assessment** as outlined above	Site/cable route selection stage. Project design stage. EIA stage. Project installation stage . Project operation and maintenance.	Assessed within **Chapter 16 Shipping and Navigation.** It is concluded that there are no significant adverse effects on shipping.	**Chapter 16 Shipping and Navigation**

Appendix B.13 Recreation and Tourism

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Access Restrictions	CC/CD/OD	Undertake construction, where possible, outside of peak tourist seasons (June to September) to minimise disruption to visitors and local people	Site/cable route selection stage. Project design stage. Project. EIA stage.	Restrictions are in place for piling activities onshore due to potential disturbance of Ornithology receptors. Construction noise will be managed in accordance with British Standard BS 5228 1:2009 'Code of Practice for Noise and Vibration Control on Construction and Open Sites –Part 1: Noise'. The appointed contractor will put in place the most appropriate noise control measures to ensure that the works in each area comply with the limits detailed in **Chapter 24 Noise and Vibration** and so that minimisation of noise is achieved by best means practicable. Measures to control noise from construction activities are described in **Chapter 24 Noise and Vibration** and the **CEMP**. There are no significant adverse effects anticipated to visitors and/or local people as a result of the construction of the CWP project.	**CEMP**
Access Restrictions	CC/CD/OD	Identify and avoid popular routes for sailing or other water sports such as kayaking	Site/cable route selection stage.	A **Navigational Risk Assessment** has been undertaken and presented as **Chapter 16 Shipping and Navigation, Appendix 16.3**.	**Chapter 16 Shipping and Navigation, Appendix 16.3**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project design stage. Project. EIA stage	Recreational vessels were predominantly observed within coastal regions, transiting to/from various harbours on the coast. CWP Project sits 13-22 km off the coast and therefore would be unlikely to have kayakers within the array site. There are, therefore no significant adverse effects predicted as a result of the project.	**Navigational Risk Assessment**
Access Restrictions	CC/CD/OD	Where possible, facilitate safe access through arrays for sailing or other water sports	Site/cable route selection stage. Project design stage. Project. EIA stage.	A **NSP** has been produced to document the associated measures that will be in place. The document covers the following: • Specific navigational safety measures to be implemented during the construction phase; • Specific navigational safety measures to be implemented during the operations and maintenance phase; • How information relating to the CWP Project will be promulgated; • Approach to indicative transit corridors from relevant ports to the array site; and • Consideration for areas where anchoring may occur and where it will not occur.	**NSP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Noise	CC/CD/OD	Avoid key recreational periods for installation works	Site/cable route selection stage. Project design stage. EIA stage. Project installation stage.	Restrictions are in place for piling activities onshore due to potential disturbance of Ornithology receptors. Construction noise will be managed in accordance with British Standard BS 5228 1:2009 'Code of Practice for Noise and Vibration Control on Construction and Open Sites –Part 1: Noise'. The appointed contractor will put in place the most appropriate noise control measures to ensure that the works in each area comply with the limits detailed in **Chapter 24 Noise and Vibration** and so that minimisation of noise is achieved by best means practicable. Measures to control noise from construction activities are described in **Chapter 24 Noise and Vibration** and the **CEMP**.	**CEMP**
Noise	CC/CD/OD	Identify and avoid popular recreational areas when possible	Site/cable route selection stage. Project design stage. EIA stage. Project installation stage.	Impact on recreation has been considered within **Chapter 29 Population** of the EIAR. The onshore CWP Project area Occupies an area of 23.1 Ha and is Located entirely on the Poolbeg Peninsula in an industrial area adjacent to energy generation, waste management, wastewater treatment and port activities. The primary land use/activities adjacent to the OTI and	**Chapter 29 Population**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				Landfall is industrial, with some commercial properties within 1 km of the onshore substation. There are a number of sea-based recreational amenities which are located along the coastline within the study area and where it could be considered that persons using the amenity of the sea from these locations could be impacted by the proposed offshore infrastructure, however impacts have been assessed as part of the EIAR.	
Safety and Collision Risk	CC/CD/OD/OC	Avoid popular cruising routes, diving areas and key water sport locations	Site/cable route selection stage. Project design stage. Project EIA stage. Project installation stage. Project operation.	A **Navigational Risk Assessment** has been undertaken and presented as **Chapter 16 Shipping and Navigation, Appendix 16.3.** The assessment concludes that there will be no significant adverse effects on recreational sailing activities.	**Chapter 16 Shipping and Navigation, Appendix 16.3** **Navigational Risk Assessment**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Safety and Collision Risk	CC/CD/OD/OC	Incorporate suitable safety features such as lighting, netting and buoys into the device design	Site/cable route selection stage. Project design stage. Project. EIA stage. Project installation stage. Project operation.	A LMP has been prepared to capture construction and OandM phase lighting requirements for the offshore infrastructure and demarcation of the offshore CWP Project area such as construction buoy requirements. The LMP includes details of: - Marking and lighting of the array site in agreement with Irish Lights and in line with IALA G1162 (IALA, 2021a); - Buoyed construction area around the array in agreement with Irish Lights; and - Specific requirements in terms of aviation lighting to be installed on the turbines. The LMP will be prepared in consultation with the IAA, DoD and IRCG. It will take into account DoD's requirement for WTGs to be observable to night vision equipment. Netting/buoys are not appropriate for OWF.	**Other Documents: LMP.**
Safety and Collision Risk	CC/CD/OD/OC	Provide suitable information for the public regarding safety	Site/cable route selection stage. Project design stage.	Measures to avoid or otherwise minimise disturbance to both human and ecological receptors are included in the **CEMP**. This will include public safety measures and information distribution.	**Other Documents: CEMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project. EIA stage. Project installation stage. Project operation.		
Safety and Collision Risk	CC/CD/OD/OC	Restrict access to construction sites	Site/cable route selection stage. Project design stage. Project. EIA stage. Project installation stage. Project operation.	Measures to avoid or otherwise minimise disturbance to both human and ecological receptors are included in the **CEMP,** and the **LMP** with regards appropriate lighting and marking of the offshore environment.	**Other Documents: CEMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Safety and Collision Risk	CC/CD/OD/OC	Observe good practice during construction, removal and maintenance	Site/cable route selection stage. Project design stage. Project. EIA stage. Project installation stage. Project operation.	Measures to avoid or otherwise minimise disturbance to both human and ecological receptors are included in the **CEMP**. The **CEMP** outlines a series of noise abatement measures that will be adopted by the Applicants contractors in accordance with British Standard BS 5228 1:2009 to reduce the level of noise during the construction phase. Similar good practise will continue throughout operation and decommissioning phases.	**Other Documents: CEMP**
Disturbance to Wildlife	CC/CD/OD/OC	Avoid areas that are popular with tourists and wildlife tour operators	Site/cable route selection stage. Project design stage. Project EIA stage.	The OTI and Landfall study area incorporates Dublin City Centre which is a significant tourist destination, but it is detached from the Pembroke East A ED and the Poolbeg Peninsula, where the onshore CWP Project and intertidal areas are located. The Poolbeg Peninsula does not support a significant tourism economy of note. The Offshore Infrastructure study area contains several areas that are home to a tourism economy, notably the areas or Bray, Greystones, and	**Chapter 29 Population.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				Dublin City as a whole. These areas experience considerable tourist visits and tourism spend. Operational activity in the OTI and Landfall study area will be limited to Occasional maintenance and will not result in any significant impacts on the tourism economy of the area . The onshore substation will be unmanned during the OandM phase, any maintenance activity at the substation would be temporary. However, due to the absence of physical infrastructure within the tourism economy areas, the tourism economy could be considered as having Low sensitivity due to its relative distance from the works.	
Disturbance to Wildlife	CC/CD/OD/OC	Other mitigation measures aimed at reducing or avoiding disturbance to wildlife including sea mammals and birds is set out in the relevant parts of this table	Site/cable route selection stage. Project design stage. Project EIA stage.	Noted.	

Appendix B.14 Aviation Radar

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Collision	OD	Ensure wind devices are lit with aviation lights in accordance with OAM 09/02 “Offshore Wind Farms Conspicuity Requirements”	Site selection stage. Project design stage. Project. EIA stage. Project installation stage. Project operation.	A **LMP** has been prepared to capture construction and O&M phase lighting requirements for the offshore infrastructure and demarcation of the offshore CWP Project area such as construction buoy requirements. The LMP includes details of: - Marking and lighting of the array site in agreement with Irish Lights and in line with IALA G1162 (IALA, 2021a); - Buoyed construction area around the array in agreement with Irish Lights; and - Specific requirements in terms of aviation lighting to be installed on the turbines. The LMP will be prepared in consultation with the IAA, DoD and IRCG. It will take into account DoD’s requirement for WTGs to be observable to night vision equipment. The LMP will ensure appropriate lighting is in place to facilitate aeronautical safety.	**LMP**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
		As required under the Obstacles to Aircraft in Flight Order, S.I. 215 of 2005, provide notification of the erection of wind devices to the Irish Aviation Authority (IAA)		The IAA will be informed of the locations, heights and lighting status of the wind turbines, including estimated and actual dates of construction and the maximum heights of any construction equipment to be used, prior to the start of construction, to allow inclusion on aviation charts and in the IAA IAIP. This will comply with OREDP (DCCAE, 2014) which requires the IAA to be notified of the construction and location of wind turbines.	**Chapter 33 Summary of Mitigation and Monitoring**
Radar Interference	OD	Consultation with the IAA will be required and the location of wind devices supplied so they can be accurately plotted on the radar and any signals received from that area will not be confused with aeroplanes	Site/cable route selection stage. Project design stage. Project. EIA stage.	**Chapter 17 Aviation Military and Radar** presents consultation with relevant authorities including IAA. There are no significant adverse effects predicted as a result of the proposed CWP project on radar operations, inclusive of Dublin Airport ATC.	**Chapter 33 Summary of Mitigation and Monitoring**

Appendix B.15 Military Exercise Areas

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Disruption to general activities	CC/CD/OD/OC	Avoidance of byelawed and danger sites	Site/cable route selection stage. Project design stage. Project installation.	The proposed CWP Project is outside any promulgated Military Exercise Areas.	**Chapter 17 Aviation, Military and Radar**
Disruption to general activities	CC/CD/OD/OC	Carry out site selection studies in conjunction with liaison with the Department of Defence and the Ministry of Defence, UK where applicable	Site/cable route selection stage. Project design stage. Project installation.	The proposed CWP Project is outside any promulgated Military Exercise Areas. MoD responded to the CWP Offshore Scoping Response on 20 January 2021 (reiterated on 15 November 2022) confirming that, as the CWP Project falls within Irish Territorial Waters and that the turbines will be lit in accordance with IAA regulations, they had no objection to, or concerns about, the impacts of the proposed CWP Project. As there is no meaningful effect-receptor pathway this impact has therefore been scoped out of further assessment.	**Chapter 17 Aviation, Military and Radar**

Appendix B.16 Cables and Pipelines

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Direct damage	CC/CD/OC/OD	Use of recommended 500m avoidance zone	Site/cable route selection stage. Project design stage.	For the consideration of potential array sites on the east coast of Ireland, a thorough site selection process was developed that considered all aspects of the site that would have a bearing on the economic viability and the technical and environmental acceptability of an eventual OWF CWP Project in that area. This included an analysis of existing underwater pipelines and cables. As a result of this constraints analysis the array site boundary has been selected to avoid active utility assets such as underwater pipelines and cables. Likewise, the route selection for the OECC has been informed by the location of existing seabed infrastructure. The OECC has sought to take into account known subsea obstructions including cables and pipelines by enabling perpendicular crossings where possible.	**Chapter 33 Summary of Mitigation and Monitoring**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Direct damage	CC/CD/OC/OD	Use of crossing agreements in accordance with The International Cable Protection Committee (ICPC) guidelines	Site/cable route selection stage. Project design stage. Project installation.	Consultation with existing cable operators, approval of cable crossing agreements prior to decommissioning and adherence with relevant legislation and guidance at the time of decommissioning will be required to ensure that cable crossings are appropriately designed to mitigate environmental effects and damage to existing operational cables.	**Chapter 33 Summary of Mitigation and Monitoring**
Direct damage	CC/CD/OC/OD	The seabed lease pertaining to existing infrastructure will legally need to be observed when selecting sites for devices and export cables	Site/cable route selection stage. Project design stage. Project installation.	Current Authorisations for oil and gas exploration, as leased and regulated by DECC have been reviewed within the study area. The nearest oil and gas exploration to the array site took place in the Kish Bank Basin to the north of the array site. There is one oil and gas exploration area (SEL2/11) located within the study area. The licence for this exploration area expired in August 2020 (DECC, 2020), and therefore is no longer an 'authorised' active exploration licence. In February 2021, DECC confirmed it would no longer be accepting new applications for exploration licences for natural gas or oil.	**Chapter 18 Marine Infrastructure**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Access Restrictions	CC/CD/OC/OD	Use of recommended 500m avoidance zone	Site/cable route selection stage. Project design stage.	For the consideration of potential array sites on the east coast of Ireland, a thorough site selection process was developed that considered all aspects of the site that would have a bearing on the economic viability and the technical and environmental acceptability of an eventual OWF CWP Project in that area. This included an analysis of existing underwater pipelines and cables. As a result of this constraints analysis the array site boundary has been selected to avoid active utility assets such as underwater pipelines and cables. Likewise, the route selection for the OECC has been informed by the location of existing seabed infrastructure. The OECC has sought to take into account known subsea obstructions including cables and pipelines by enabling perpendicular crossings where possible.	**Chapter 33 Summary of Mitigation and Monitoring**
Access Restrictions	CC/CD/OC/OD	Use of crossing agreements in accordance with ICPC guidelines	Site/cable route selection stage. Project design stage	Consultation with existing cable operators, approval of cable crossing agreements prior to decommissioning and adherence with relevant legislation and guidance at the time of decommissioning will be required to ensure that cable crossings are	**Chapter 33 Summary of Mitigation and Monitoring**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				appropriately designed to mitigate environmental effects and damage to existing operational cables.	
Access Restrictions	CC/CD/OC/OD	The seabed lease pertaining to existing infrastructure will legally need to be observed when selecting sites for devices and export cables	Site/cable route selection stage. Project design stage.	Current Authorisations for oil and gas exploration, as leased and regulated by DECC have been reviewed within the study area. The nearest oil and gas exploration to the array site took place in the Kish Bank Basin to the north of the array site. There is one oil and gas exploration area (SEL2/11) located within the study area. The licence for this exploration area expired in August 2020 (DECC, 2020), and therefore is no longer an 'authorised' active exploration licence. In February 2021, DECC confirmed it would no longer be accepting new applications for exploration licences for natural gas or oil.	**Chapter 18 Marine Infrastructure**
Dredging and Disposal Areas	CC/CD/OD/OC	Avoid development within 500m of dredging and/or disposal sites	Site/cable route selection stage. Project design stage. Project installation.	The Foreshore and Dumping at Sea (Amendment) Act 2009 (EPA, 2009) makes it the function of the EPA to issue Dumping at Sea Permits. A number of marine disposal sites have been identified within the study area, however no marine disposal sites occur within the offshore CWP Project area.	**Chapter 18 Marine Infrastructure.**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
			Project operation and maintenance.		
Dredging and Disposal Areas	CC/CD/OD/OC	Notification of port and harbour authorities of the proposed works	Site/cable route selection stage. Project design stage. Project installation. Project operation and maintenance.	A NSP has been prepared for shipping and navigation purposes, including the safe navigation of fishing vessels. The NSP includes details of: - Consultation with the relevant harbour authorities;	**Other Documents: NSP**

Appendix B.17 Existing Renewable Energy Infrastructure

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Access restrictions	CC/CD/OD/OC	Careful site selection to factor in the access needs of existing infrastructure to ensure that the proposed sites do not conflict with the activities of existing renewable energy infrastructure	Site/cable route selection stage. Project design stage. Project EIA stage. Project operation and maintenance.	There is currently only one operational offshore wind farm in Ireland, Arklow Bank Phase 1, and it is located south (18 km) of the CWP Project and is outside the study area.	Chapter 18 Marine Infrastructure.
Access restrictions	CC/CD/OD/OC	Communication with existing wind farm operators	Site/cable route selection stage. Project design stage. Project EIA stage. Project operation and maintenance.	All five of the Phase 1 windfarm developers have been communicating regularly and have encouraged alignment and data sharing where practicable.	
Removal of energy resource	OD/OC	Careful site selection taking into account resource assessment and modelling to determine if and how	Site/cable route selection stage.	There is currently only one operational offshore wind farm in Ireland, Arklow Bank Phase 1, and it is located south (18 km) of the CWP Project.	Chapter 18 Marine Infrastructure.

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
		commercial-scale arrays could co-exist with the existing renewable energy infrastructure	Project design stage. Project EIA stage.	Future offshore wind farm projects are considered, however there is significant uncertainty with respect to any Phase 2 CWP Projects, with any future offshore wind farm projects expected to be subject to the Designated Maritime Area Plan process. No wave and tidal CWP Project sites are located on the East coast of Ireland.	

Appendix B.18 Natural Gas CO_2 Storage

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Sterilisation of region	OD/OC	No specific mitigation measures identified	Site/cable route selection stage. Project design stage. Project EIA stage	N/A	
Sterilisation of region	OD/OC	Consultation with the relevant regulatory body to establish areas of search for possible future gas/carbon storage sites within Irish waters	Site/cable route selection stage. Project design stage. Project EIA stage.	Future offshore wind farm projects are considered, however there is significant uncertainty with respect to any Phase 2 CWP Projects, with any future offshore wind farm projects expected to be subject to the Designated Maritime Area Plan process.	**Chapter 18 Marine Infrastructure.**

Appendix B.19 Seascape

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Effects on seascape from offshore wind developments	CD/OD	Consideration should be given to locating devices at a maximum distance from the shore/coast (within technological constraints)	Project Design Stage.	The distance of the array site from the coastline (13 – 22 km) presents the advantage of reducing the magnitude of visual impact when viewed from the shoreline when compared to other potential sites areas located closer to the shoreline.	**Chapter 15 Seascape, Landscape and Visual Impact Assessment (SLVIA)** **Chapter 3 Site Selection and Consideration of Alternatives**
Effects on seascape from offshore wind developments	CD/OD	Wind farms should not be sited where they appear to block or close the entrance to bays/ loughs/ narrows/ sounds or where they separate a bay from the open sea	Project Design Stage.	CWP Project is located 13-22km on the east coast of Ireland, off County Wicklow. It will not block or close the entrance to bays/ loughs/ narrows/ sounds or where they separate a bay from the open sea	**Chapter 15 Seascape, Landscape and Visual Impact Assessment (SLVIA)**
Effects on seascape from offshore wind developments	CD/OD	Wind farms should reflect the shape of the coastline and align with the dominant coastal edge	Project Design Stage.	Codling Bank is significantly larger than the other banks in the area, it allows the design of the array site to be in a layout extending away from the coastline, rather than confined to a long strip of turbines WTGs running parallel to the coastline, as would be the case for other sites considered on the east coast. This both increases the energy yield of the site as the WTGs would be	**Chapter 15 Seascape, Landscape and Visual Impact Assessment (SLVIA)**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				located perpendicular to the prevailing wind direction, providing maximum wind capture, and also significantly reduces the horizontal extent of the wind farm when viewed from the coastline, thus markedly reducing the degree and magnitude of visual impact from the coastline.	
Effects on seascape from offshore wind developments	CD/OD	Wind farms should not be sited where they have the potential to fill a bay. The open, expansive nature of the water surface area should be allowed to continue to dominate	Project Design Stage.	CWP Project is located 13-22km on the east coast of Ireland, off County Wicklow. It will not fill a bay.	**Chapter 15 Seascape, Landscape and Visual Impact Assessment (SLVIA)**
Effects on seascape from offshore wind developments	CD/OD	Wind farms should avoid locations near scattered settlements, as the scale of the array has the potential to dominate the fragmented pattern of the settlement	Project Design Stage.	The distance of the array site from the coastline (13 – 22 km) presents the advantage of reducing the magnitude of visual impact when viewed from the shoreline when compared to other potential sites areas located closer to the shoreline.	**Chapter 15 Seascape, Landscape and Visual Impact Assessment (SLVIA).**
Effects on seascape from offshore wind developments	CD/OD	Wind farms should be avoided where they conflict with the scale and subtleties of complex, indented coastal forms	Project Design Stage	The distance of the array site from the coastline (13 – 22 km) presents the advantage of reducing the magnitude of visual impact when viewed from the shoreline when compared to other potential sites	**Chapter 15 Seascape, Landscape and Visual Impact Assessment (SLVIA).**

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
				areas located closer to the shoreline.	
Effects on seascape from offshore wind developments	CD/OD	Consideration should be given to locating devices in already industrialised and developed seascapes	Project Design Stage.	Onshore substation has been located within an already industrialised area of Dublin, Poolbeg Peninsula.	

Appendix B.20 Climate

Potential Effect	CWP Project Phase	Suggested Project Level Mitigation Measures	Timescale	CWP Project Response	Application Reference
Potential sterilisation of future gas/carbon storage areas	OC/OD	Consultation to establish areas of search for possible future gas/carbon storage sites within Irish waters	Site selection. Project design.	Not applicable, no areas of search for possible future gas/CCS identified.	