

# **EIAR Scoping Report**

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## **CONTENTS**

1	VOL	UME A CHAPTER 1 INTRODUCTION	1
	1.1	Project Background	1
	1.2	BENEFITS OF THE PROPOSED DEVELOPMENT	6
	1.3	CURRENT STATUS AND CONSENT PROCESS FOR THE PROPOSED DEVELOPMENT	6
	1.4	AIM OF THE EIAR SCOPING REPORT	8
	1.5	THE APPLICANT	9
	1.6	CONTRIBUTION TO THE EIAR SCOPING REPORT	10
	1.7	EIAR SCOPING REPORT STRUCTURE	11
	1.8	References	12
2	VOL	UME A CHAPTER 2 PROPOSED PROGRAMME	13
3	VOL	UME A CHAPTER 3 STAKEHOLDER ENGAGEMENT AND CONSULTATION	14
	3.1	Approach to Consultation	14
	3.2	PRE-SCOPING CONSULTATION	14
	3.3	PLANNED SCOPING CONSULTATION	19
	3.4	TECHNICAL CONSULTATION	21
	3.5	COMMUNITY AND PUBLIC CONSULTATION	21
4	VOL	UME A CHAPTER 4 POLICY, PLANNING AND LEGISLATIVE CONTEXT	23
	4.1	INTRODUCTION	23
	4.2	NEED FOR THE PROPOSED DEVELOPMENT	23
	4.3	Policy and Legislative Framework	24
	4.4	References	.42



Ø	DP ENERGY	<b>4</b>	IBERDROLA
---	-----------	----------	-----------

5	VOL	UME A CHAPTER 5 SITE SELECTION AND ASSESSMENT OF ALTERNATIVES	. 46
6	VOL	UME A CHAPTER 6 THE PROPOSED DEVELOPMENT	. 48
	6.1	INTRODUCTION	48
	6.2	DESIGN EVOLUTION	48
	6.3	INFRASTRUCTURE OVERVIEW	49
	6.4	POTENTIAL OFFSHORE INFRASTRUCTURE ZONE	49
	6.5	POTENTIAL ONSHORE INFRASTRUCTURE ZONE	65
	6.6	Decommissioning	76
	6.7	References	77
7	VOL	UME A CHAPTER 7 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY	. 78
	7.1	INTRODUCTION	78
	7.2	Environmental Impact Assessment Report Process	78
	7.3	EIA SCREENING	80
	7.4	EIA SCOPING	81
	7.5	EIAR METHODOLOGY	81
	7.6	STRUCTURE AND CONTENT OF THE EIAR	92
	7.7	References	95
8	VOL	UME B EIAR WIDER SCHEME ASPECT CHAPTERS	. 96
	8.1	CHAPTER 1 POPULATION AND HUMAN HEALTH	97
	8.2	CHAPTER 2 SEASCAPE, LANDSCAPE AND VISUAL IMPACTS	117
	8.3	CHAPTER 3 CLIMATE	138
	8.4	Chapter 4 Major Accidents and/or Disasters	150
9	VOL	UME C EIAR OFFSHORE TOPIC-SPECIFIC CHAPTERS	158



DP ENERGY	BERDROLA
-----------	----------

9.1	CHAPTER 1 MARINE GEOLOGY, OCEANOGRAPHY AND PHYSICAL PROCESSES	
9.2	Chapter 2 Marine Water Quality	
9.3	Chapter 3 Underwater Noise and Vibration	213
9.4	CHAPTER 4 BENTHIC, EPIBENTHIC AND INTERTIDAL ECOLOGY	223
9.5	CHAPTER 5 MARINE MAMMALS AND MARINE TURTLES	240
9.6	Chapter 6 Offshore Ornithology	275
9.7	Chapter 7 Offshore Bats	
9.8	CHAPTER 8 FISH AND SHELLFISH ECOLOGY	
9.9	CHAPTER 9 COMMERCIAL FISHERIES	
9.10	Chapter 10 Shipping and Navigation	
9.11	CHAPTER 11 MARINE ARCHAEOLOGY AND CULTURAL HERITAGE	
9.12	CHAPTER 12 AVIATION AND RADAR	
9.13	CHAPTER 13 COASTAL AND MARINE INFRASTRUCTURE AND OTHER USERS	438
9.14	CHAPTER 14 OFFSHORE AIR QUALITY	458
9.15	CHAPTER 15 OFFSHORE AIRBORNE NOISE	
10 VO	LUME D EIAR ONSHORE TOPIC-SPECIFIC CHAPTERS	
10.1	CHAPTER 1 AIR QUALITY	464
10.2	CHAPTER 2 NOISE AND VIBRATION	478
10.3	Chapter 3 Land, Soils and Hydrogeology	
10.4	CHAPTER 4 SURFACE WATER, INCLUDING FLOOD RISK	516
10.5	Chapter 5 Biodiversity	537
10.6	CHAPTER 6 ARCHAEOLOGY AND CULTURAL HERITAGE	
10.7	Chapter 7 Roads and Traffic	
10.8	CHAPTER 8 MATERIAL ASSETS	613



11	VOL	UME E INTERACTION OF EFFECTS AND SUMMARY OF CUMULATIVE AND TRANSBOUNDARY EFFECTS	,
AND	MOM	NITORING AND MITIGATION MEASURES	622
1	1.1	INTRODUCTION	.622
1	1.2	CHAPTER 1 INTERACTION OF EFFECTS	.622
1	1.3	CHAPTER 2 SUMMARY OF CUMULATIVE EFFECTS	.622
1	1.4	CHAPTER 3 SUMMARY OF TRANSBOUNDARY EFFECTS	.623
1	1.5	CHAPTER 4 SUMMARY OF MONITORING AND MITIGATION MEASURES	.623
APP	ENDIX	( 1 TECHNICAL STAKEHOLDERS	625
APP	ENDIX	( 2 AIR QUALITY	631



## LIST OF TABLES

Table 1.1 Structure of this EIAR Scoping Report    11
Table 3.1 Early Initial Consultation undertaken for IEMEP    15
Table 4.1 European Directives and Policy Context    25
Table 4.2 National Policies    30
Table 6.1 Indicative Wind Turbine Generator Parameters         54
Table 6.2 Potential Anchoring System Options    58
Table 7.1 Description of Effects (EPA, 2022)
Table 7.2 Proposed Structure of Multi-Volume Development Permission application and Supporting
Documentation
Table 7.3 Proposed Structure of the EIAR94
Table 8.1 Data Sources used to inform the Population and Human Health chapter of this EIAR Scoping
Report and that will be considered further within the EIAR99
Table 8.2 Summary of Potential Impacts Relating to Population and Human Health. Topics Proposed to
be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR113
Table 8.3: Summary of Proposed Key Technical Stakeholders Population and Human Health
Table 8.4 Data Sources used to inform the Seascape, Landscape and Visual Impacts chapter of this EIAR
Scoping Report and that will be considered further within the EIAR
Table 8.5 Seascape / Landscape Value and Sensitivity    122
Table 8.6 Magnitude of Seascape or Landscape Impacts       123
Table 8.7 Impact Significance Matrix    124
Table 8.8 Magnitude of Visual Impact



Table 8.9 Summary of Potential Impacts Relating to Seascape, Landscape and Visual Impacts. Topics
Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR
Table 8.10: Summary of Proposed Key Technical Stakeholders Seascape, Landscape and Visual Impacts.
Table 8.11 Data Sources used to inform the Climate chapter of this EIAR Scoping Report and that will be
considered further within the EIAR141
Table 8.12 Construction GHG Assessment Scope       142
Table 8.13 Summary of Potential Impacts Relating to Climate. Topics Proposed to be Scoped In ( $\checkmark$ ) and
Out (x) of future EIAR146
Table 8.14: Summary of Proposed Key Technical Stakeholders Climate
Table 8.15: Summary of Proposed Key Technical Stakeholders Major Accidents and/or Disasters 156
Table 9.1. Data Sources used to inform the Marine Geology, Oceanography and Physical Processes
charter of this FIAD Cooping Depart and that will be considered further within the FIAD
chapter of this EIAR Scoping Report and that will be considered further within the EIAR
Table 9.2. Proposed Baseline Surveys to inform the EIAR       161
Table 9.2. Proposed Baseline Surveys to inform the EIAR161Table 9.3. Marine Geology, Oceanography and Physical Processes Receptors163
Table 9.2. Proposed Baseline Surveys to inform the EIAR161Table 9.3. Marine Geology, Oceanography and Physical Processes Receptors163Table 9.4. Summary of Potential Impacts Relating to Marine Geology, Oceanography and Physical
Chapter of this EIAR Scoping Report and that will be considered further within the EIAR160Table 9.2. Proposed Baseline Surveys to inform the EIAR161Table 9.3. Marine Geology, Oceanography and Physical Processes Receptors163Table 9.4. Summary of Potential Impacts Relating to Marine Geology, Oceanography and Physical163Processes. Topics Proposed to be Scoped In (✓) and Out (x) of future EIAR192
<ul> <li>Table 9.2. Proposed Baseline Surveys to inform the EIAR</li></ul>
Table 9.2. Proposed Baseline Surveys to inform the EIAR       161         Table 9.3. Marine Geology, Oceanography and Physical Processes Receptors       163         Table 9.4. Summary of Potential Impacts Relating to Marine Geology, Oceanography and Physical       163         Processes. Topics Proposed to be Scoped In (✓) and Out (x) of future EIAR       192         Table 9.5. Summary of Proposed Key Technical Stakeholders Marine Geology, Oceanography and       193
Table 9.2. Proposed Baseline Surveys to inform the EIAR       161         Table 9.3. Marine Geology, Oceanography and Physical Processes Receptors       163         Table 9.4. Summary of Potential Impacts Relating to Marine Geology, Oceanography and Physical       163         Processes. Topics Proposed to be Scoped In (✓) and Out (x) of future EIAR       192         Table 9.5. Summary of Proposed Key Technical Stakeholders Marine Geology, Oceanography and       193         Table 9.6. Data Sources used to inform the Marine Water Quality chapter of this EIAR Scoping Report       193
Table 9.2. Proposed Baseline Surveys to inform the EIAR       161         Table 9.3. Marine Geology, Oceanography and Physical Processes Receptors.       163         Table 9.4. Summary of Potential Impacts Relating to Marine Geology, Oceanography and Physical       163         Processes. Topics Proposed to be Scoped In (✓) and Out (x) of future EIAR.       192         Table 9.5. Summary of Proposed Key Technical Stakeholders Marine Geology, Oceanography and       193         Table 9.6. Data Sources used to inform the Marine Water Quality chapter of this EIAR Scoping Report and that will be considered further within the EIAR       200



Table 9.8. WFD Water Bodies and Classifications (2013-2018) (Environmental Protection Agency, 2022b)
Table 9.9. Summary of Potential Impacts Relating to Marine Water Quality. Topics Proposed to be
Scoped In (✓) and Out (x) of future EIAR209
Table 9.10. Summary of Proposed Key Technical Stakeholders Marine Water Quality
Table 9.11. Summary of Potential Impacts relating to Underwater Noise. Topics Proposed to be Scoped
In ( $\checkmark$ ) and Out (x) of future EIAR219
Table 9.12: Summary of Proposed Key Technical Stakeholders Underwater Noise and Vibration221
Table 9.13. Data sources used to inform the Benthic, Epibenthic and Intertidal Ecology chapter of this
EIAR Scoping Report and that will be considered further within the EIAR
Table 9.14. Proposed Baseline Surveys to inform the EIAR         225
Table 9.15 European Sites Designated for Marine Habitats or Species within 15 km of The Proposed
Development
Table 9.16 Summary of Potential Impacts Relating to Benthic, Epibenthic and Intertidal Ecology. Topics
Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR235
Table 9.17: Summary of Proposed Key Technical Stakeholders Benthic, Epibenthic and Intertidal Ecology.
Table 9.18 Summary of Data Sources that have been used to inform the Marine Mammals and Marine
Turtles chapter of this EIAR Scoping Report and that will be considered further within the EIAR
Table 9.19 Definitions of Levels of Magnitude for Marine Mammals         245
Table 9.20 Raw Count Marine Mammal Sightings during the Digital Aerial Surveys from April 2021 to
April 2022



Table 9.21 Summary of desk-based review on existing information on the presence and abundance of
Cetacean Species
Table 9.22 Summary of Desk-Based Review on Existing Information on the Presence and Abundance of
Seal Species
Table 9.23 Current Favourable Conservation Status of Seal Species (NPWS, 2019)       257
Table 9.24 Summary of Potential Impacts Relating to Marine Mammals and Marine Turtles. Topics
Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR
Table 9.25 Summary of Proposed Key Technical Stakeholders for Marine Mammals and Marine Turtles
Table 9.26 Monthly Raw Species Count from the Digital Aerial Survey Data Available to Date (April 2021
– April 2022)
Table 9.27 Summary of impacts relating to Offshore Ornithology. Topics Proposed to be Scoped In ( $\checkmark$ )
and Out (x) of future EIAR
Table 9.28 Summary of Proposed Key Technical Stakeholders Offshore Ornithology
Table 9.29 Summary of Impacts Relating to Bats in the offshore environment. Topics proposed to be
Scoped In ( $\checkmark$ ) and Out (x) of future EIAR
Table 9.30: Summary of Proposed Key Technical Stakeholders for Offshore Bats.         304
Table 9.31 Data Sources used to inform the Fish and Shellfish Ecology chapter of this EIAR Scoping
Report and that will be considered further within the EIAR
Table 9.32 Irish landings by Irish vessels in 2020 (Sea Fisheries Protection Authority, 2020)
Table 9.33 Maximum density of elasmobranch species recorded in Fish and Shellfish Ecology Topic-
specific Study Area by the Irish Groundfish Survey in 2019



Table 9.34 Summary of sites designated for fish and shellfish species within 100 km (moving around the
coast) of The Proposed Development
Table 9.35 Summary of Potential Impacts Relating to Fish and Shellfish Ecology. Topics Proposed to be
Scoped In ( $\checkmark$ ) and Out (x) of future EIAR
Table 9.36: Summary of Proposed Key Technical Stakeholders Fish and Shellfish Ecology
Table 9.37 Data Sources used to inform the Commercial Fisheries chapter of this EIAR Scoping Report
and that will be considered further within the EIAR
Table 9.38 Key demersal finfish fisheries and methods within the Commercial Fisheries Topic-specific
Study Area
Table 9.39 Key pelagic finfish fisheries and methods within the Commercial Fisheries Topic-specific Study
Area
Table 9.40 Key shellfish fisheries and methods within the Commercial Fisheries Topic-specific Study Area
Table 9.41 Summary of Potential Impacts Related to Commercial Fisheries. Topics Proposed to be
Scoped In (✓) and Out (x) of future EIAR
Table 9.42: Summary of Proposed Key Technical Stakeholders Commercial Fisheries
Table 9.43 Data Sources Used to Inform Shipping and Navigation chapter of this EIAR Scoping Report and
that will be considered further within the EIAR
Table 9.44 Risk Ranking Matrix for Determining Significance of Risk
Table 9.45 Summary of Potential Impacts Relating to Shipping and Navigation. Topics Proposed to be
Scoped In (✓) and Out (x)of future EIAR401
Table 9.46: Summary of Proposed Key Technical Stakeholders Shipping and Navigation



Table 9.47 Desk-Based Sources for the Assessment of Marine Archaeology and Cultural Heritage chapter
of this EIAR Scoping Report and that will be considered further within the EIAR
Table 9.48 Proposed Baseline Surveys to inform the EIAR
Table 9.49 Summary of impacts relating to Marine Archaeology and Cultural Heritage. Topics Proposed
to be Scoped In ( $\checkmark$ ) and Out (x) of the future EIAR
Table 9.50 Summary of Proposed Key Technical Stakeholders Marine Archaeology and Cultural Heritage
Table 9.51 Summary of impacts relating to Aviation and Radar. Topics Proposed to be Scoped In ( $\checkmark$ ) and
Out (x) of the future EIAR
Table 9.52: Summary of Proposed Key Technical Stakeholders Aviation and Radar.         435
Table 9.53 Summary of Impacts relating to Coastal and Marine Infrastructure and Other Users. Topics
Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR453
Table 9.54: Summary of Proposed Key Technical Stakeholders Coastal and Marine Infrastructure and
Other Users
Table 9.55 Summary of Impacts Relating to Offshore Air Quality. Topics Proposed to be Scoped In ( $\checkmark$ )
and Out (x) of future EIAR
Table 9.56 Summary of Impacts Relating to Offshore Airborne Noise. Topics Proposed to be Scoped In
( $\checkmark$ ) and Out (x) of future EIAR
Table 10.1 Relevant Air Quality Standards    465
Table 10.2 Data Sources used to inform the Air Quality chapter of this EIAR Scoping Report and that will
be considered further within the EIAR
Table 10.3 Annual mean NO2 concentrations



Table 10.4 Annual mean PM <sub>10</sub> concentrations
Table 10.5 Annual mean PM2.5 concentrations    472
Table 10.6 Summary of Potential Impacts Relating to Onshore Air Quality. Topics proposed to be Scoped
In ( $\checkmark$ ) and Out (x) and future EIAR
Table 10.7: Summary of Proposed Key Technical Stakeholders Air Quality.         476
Table 10.8 Data Sources used to inform the Noise and Vibration chapter of this EIAR Scoping Report and
that will be considered further within the EIAR
Table 10.9: Threshold of potential significant effects due to construction noise at sensitive receptors
(residential)
Table 10.10 BS 5228 Part 2 guidance on the human perception effects of vibration due to construction
activity and significance of effect
Table 10.11 BS 5228 Part 2 guidance on potential cosmetic damage to buildings due to construction
activity and significance of effect
Table 10.12 BS 4142 assessment of operational noise and significance of effect         485
Table 10.13 Summary of Potential Impacts Relating to Onshore Noise and Vibration. Topics proposed to
be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR
Table 10.14: Summary of Proposed Key Technical Stakeholders Noise and Vibration.         490
Table 10.15 Data Sources used to inform the Land, Soils and Hydrogeology chapter of this EIAR Scoping
Report and that will be considered further within the EIAR
Table 10.16 Scope for identification of baseline Land, Soils and Hydrogeology receptors         496
Table 10.17 Criteria for the determination of the Importance of Geological Attributes         497
Table 10.18 Criteria for the determination of the Importance of Hydrogeology Attributes         498



Table 10.19 Potential Construction Phase Impacts         506
Table 10.20 Potential Operation and Maintenance Phase Impacts         508
Table 10.21 Summary of Potential Impacts Relating to Land, Soils and Hydrogeology. Topics proposed to
be Scoped In (✓)and Out (x) of future EIAR
Table 10.22: Summary of Proposed Key Technical Stakeholders Land, Soils and Hydrogeology
Table 10.23 Data Sources used to inform the Surface Water, including Flood Risk chapter of this EIAR
Scoping Report and that will be considered further within the EIAR
Table 10.24 Definition of Flood Zones    520
Table 10.25 Criteria for Rating Site Attributes (National Roads Authority, 2009)
Table 10.26 Reference Values for Q Value/WFD Status (Riverine only)
Table 10.27 Criteria for Rating Magnitude    523
Table 10.28 Rating of Significant Environmental Impacts         524
Table 10.29 Summary of Potential Impacts Relating to Surface Water, including Flood Risk. Topics
proposed to be Scoped In ( $\checkmark$ )and Out (x) of future EIAR
Table 10.30: Summary of Proposed Key Technical Stakeholders Surface Water, including Flood Risk535
Table 10.31 Data Sources used to inform the Biodiversity chapter of this EIAR Scoping Report and that
will be considered further within the EIAR
Table 10.32 Proposed baseline surveys to inform the EIAR         541
Table 10.33: Nature Conservation Sites within the Potential Onshore Infrastructure Zone         556
Table 10.34 Summary of Potential Impacts Relating to Biodiversity. Topics Proposed to be Scoped In ( $\checkmark$ )
and Out (x) of future EIAR
Table 10.35: Summary of Proposed Key Technical Stakeholders Biodiversity.



Table 10.36: Dimensions of the Archaeology and Cultural Heritage Topic-specific Study Area         568
Table 10.37: Data Sources used to inform the Archaeology and Cultural Heritage chapter of this EIAR
Scoping Report and that will be considered further within the EIAR
Table 10.38 Baseline values of sites
Table 10.39 Types of Impact
Table 10.40: Criteria used for rating magnitude of impacts       579
Table 10.41 Factors to be considered when assessing impacts upon setting (after English Heritage 2005)
Table 10.42 Criteria for assessing significance level of impacts
Table 10.43: Summary of Potential Impacts Relating to Archaeology and Cultural Heritage. Topics
Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR (x)
Table 10.44: Summary of Proposed Key Technical Stakeholders Archaeology and Cultural Heritage 593
Table 10.45: Data Sources used to inform the Roads and Traffic chapter of this EIAR Scoping Report and
that will be considered further within the EIAR598
Table 10.46: Effect Significance Matrix600
Table 10.47: Driver Delay Effect Significance Matrix       600
Table 10.48 Receptor Sensitivity
Table 10.49: Magnitude Criteria    603
Table 10.50 Significance Assessment Matrix    603
Table 10.51 Summary of Potential Impacts Relating to Roads and Traffic. Topics Proposed to be Scoped
In ( $\checkmark$ ) and Out (x) of future EIAR609
Table 10.52: Summary of Proposed Key Technical Stakeholders Roads and Traffic.



Table 10.53: Data Sources used to inform the Material Assets chapter of this EIAR Scoping Report and
that will be considered further within the EIAR614
Table 10.54 Summary of Potential Impacts Relating to Material Assets. Topics Proposed to be Scoped In
( $\checkmark$ ) and Out (x) of future EIAR619
Table 10.55: Summary of Proposed Key Technical Stakeholders Material Assets.         621
TableA.1 Inis Ealga Marine Energy Park: EIAR Scoping Report - Consultees         625



## LIST OF FIGURES

Figure 1.1 Inis Ealga Marine Energy Park Potential Infrastructure Zones4
Figure 6.1 Potential Offshore Infrastructure Zone comprising Potential Turbine Array Infrastructure Zone
and Potential Export Cable Corridor Infrastructure Zone52
Figure 6.2 Potential Onshore Infrastructure Zone
Figure 8.1 Settlements within the Potential Onshore Infrastructure Zone
Figure 8.2 Land Use within the Potential Onshore Infrastructure Zone104
Figure 9.1 Offshore bathymetry166
Figure 9.2 Offshore geology170
Figure 9.3 Tidal currents
Figure 9.4 Mean annual wave heights178
Figure 9.5 Seabed sediments
Figure 9.6 Suspended sediment186
Figure 9.7 Water Framework Directive (WFD) Coastal Waterbodies198
Figure 9.8 WFD protected areas
Figure 9.9 Seabed habitats228
Figure 9.10 Marine SACs
Figure 9.11 Fish and Shellfish Ecology Topic-specific Study Area
Figure 9.12 Fish spawning grounds in relation to The Proposed Development based on Coull et al. (1998)
and Ellis et al. (2012)
Figure 9.13a Fish nursery grounds in relation to The Proposed Development based on Coull et al. (1998)
and Ellis et al. (2012)



Figure 9.14a Fish spawning grounds in relation to The Proposed Development based on Marine Institute
(2022) data
Figure 9.15a Fish nursery grounds in relation to The Proposed Development based on Marine Institute
(2022) data
Figure 9.16 Commercial Fisheries Topic-specific Study Are352
Figure 9.17 Commercial fisheries trawling effort (beam trawl, pelagic trawl, pelagic trawl, otter trawl and
dredge trawl)
Figure 9.18 Commercial fisheries trawling effort (long line, pot, gill netting and seines fishing)
Figure 9.19 Navigational Feature
Figure 9.20 Vessels by Type (28 Days AIS)
Figure 9.21 Known Locations of Wrecks from the National Monuments Service and Infomar
Figure 9.22 Aviation features in the vicinity of The Proposed Development
Figure 9.23 Offshore Renewable Energy Projects
Figure 9.24 Coastal and Marine Infrastructure and Other Users
Figure 10.1Land Soils and Hydrogeology within the Potential Onshore Infrastructure Zone
Figure 10.2 River Network and Lakes within the Potential Onshore Infrastructure Zone
Figure 10.3 European Site and Ramsar Sites in the Vicinity of the Potential Onshore Infrastructure Zone
Figure 10.4 National Conservation Sites in the Vicinity of the Potential Onshore Infrastructure Zone554
Figure 10.5 Cultural Heritage within the Potential Onshore Infrastructure Zone



### LIST OF PLATES

Plate 1.1 Typical infrastructure associated with a floating offshore wind farm	2
Plate 2.1 High-level programme of key milestones for IEMEP	13
Plate 4.1 Key Energy and Renewable Energy Infrastructure in County Cork	
Plate 6.1 Example Floating Wind Turbine Generator	55
Plate 6.2 Potential Floating Substructure Types	56
Plate 6.3 Potential Anchoring System Options	58
Plate 6.4 Potential components of an Inter-Array Cable System	61
Plate 6.5 Typical Gas Insulated Switchgear substation	71
Plate 6.6 Typical Air Insulated Switchgear substation	71
Plate 6.7 Typical Gas Insulated Switchgear substation layout	71
Plate 6.8 Typical Battery Energy Storage System	72
Plate 6.9 A typical in-road cable duct installation (Source North-Connacht-Brochure-Autumn-Up	odate-
2021.pdf (eirgridgroup.com)	73
Plate 6.10 A typical Joint Bay. Source: North-Connacht-Brochure-Autumn-Update-2021.pdf	
(eirgridgroup.com)	74
Plate 7.1 Impact Assessment Methodology	
Plate 8.1 SCA10 - Atlantic Celtic Bays and Estuaries	
Plate 8.2 SCA11 - Cork Harbour and Estuary	
Plate 8.3 Scoping Decision Process Flow	
Plate 10.1Waste Heirarchy	617



### **GLOSSARY OF TERMINOLOGY**

Term	Definition
The Applicant	Inis Ealga Marine Energy Park Ltd.
Battery Energy Storage System (BESS)	These are devices that enable energy from renewables, like offshore wind, to be stored and then released when needed most.
Cable Landfall(s)	Where the Offshore Export Cables come ashore and are joined with Underground Cables in Transition Joint Bays at the coast
Circuit	A route through which an electric current can pass, the circuit can be either an Overhead Line (OHL) or an Underground Cable (UGC).
Communication Chamber	Communication Chambers for fibre optics communications are to be installed at joint bays along the cable route to meet the requirements of standard telecommunication cable drum lengths or as required to limit fibre cable pulling forces.
Community Liaison Officer (CLO)	The CLO actively engages with community groups and individuals with an interest in Inis Ealga Marine Energy Park. Engagement focuses on communities in the vicinity of the Potential Onshore Infrastructure Zone and the Potential Offshore Infrastructure Zone. This engagement is primarily focused on those groups and individuals that are not involved in the fishing industry.
Community and Stakeholder Liaison Manager	The role of the Community and Stakeholder Liaison Manager is to coordinate and lead the extensive stakeholder and community consultation processes for all aspects of Inis Ealga Marine Energy Park, both onshore and offshore, throughout its life-cycle.
Competent Authority	The authority charged with examining an Environmental Impact Assessment Report (EIAR) with a view to issuing a consent and includes the Minister, public or statutory body or public authority to which the EIAR is required to be submitted in support of a Development Permission application.
Construction Compound	A temporary facility to be used during the Construction Phase for the storage and marshalling of bulk materials and equipment as well as welfare facilities for construction personnel.
Point of Connection	Offtake point to which The Proposed Development will connect to the electricity gird or other.
Construction Phase	This Phase includes the physical building of The Proposed Development including site preparation and access works, establishment of construction compounds as well as installing infrastructure for The Proposed Development. Some commissioning activities may be undertaken during this Phase including testing and certification.
Consultation Report	A report which will be submitted as part of the Development Permission application which details consultation undertaken for The Proposed Development
Decommissioning Phase	This is the final closing and putting The Proposed Development into a state of safety when it comes to the end of its operational life.



Term	Definition
Development Permission Application	Documents submitted (including EIAR) when submitting a Development Permission application for Inis Ealga Marine Energy Park.
EirGrid	EirGrid is the state-owned independent Transmission System Operator (TSO). EirGrid develops and operates Ireland's national high voltage electricity grid (also called the "Transmission System"). This brings power from where it is generated to where it is needed, throughout Ireland. EirGrid is also expected to be the new offshore Transmission Asset Owner (TAO)
Electricity Supply Board Networks (ESBN)	ESBN is the onshore Transmission Asset Owner (TAO), including assets associated with the existing potential connection points.
Environmental Impact Assessment Report (EIAR)	A report prepared by The Applicant to describe the likely significant effects of a project and submitted to the Competent Authority with a Development Permission application.
European Sites	Sites both onshore and offshore which are designated for conservation and protection under the EU Habitats Directive.
Fisheries Liaison Officer (FLO)	FLOs are employed by an Applicant, such as Inis Ealga Marine Energy Park Ltd., to liaise between the fishing community, fishing representative bodies and an applicant. FLOs sometimes use local knowledge and fisheries experience to encourage co- operation and help ensure operations run smoothly and efficiently. FLOs are essential in areas of intensive fishing activity, aiming to minimise disturbance to both the fishing industry and the applicant's survey vessels.
Foreshore Licences	Licences granted by the Foreshore Unit of the Department of Housing, Local Government and Heritage for works not requiring exclusive possessions, e.g. laying of submarine pipelines and cables and the carrying out offshore Site Investigations
High Water Mark	The level reached by the sea at high tide, or by a lake or river in time of flood.
Inter-Array Cables	Cables which link the Wind Turbine Generators to each other and/or to the Offshore Substation Platform(s).
Joint Bays	Joint Bays are required to be installed along an Onshore Cable Route to join consecutive lengths of cable and to facilitate cable pulling. These are underground chambers which are used as the location to pull the various lengths of Onshore Cable through pre-installed ducts, and to connect ("Joint") together those lengths of Onshore Cable into a single overall circuit.
Link Boxes	Underground chambers or above ground cabinets next to the Onshore Cable trench/ Joint Bays housing electrical earthing links.
Lowest Astronomical Tide (LAT)	The lowest tide level which can be predicted to occur under average meteorological conditions and any combination of astronomical conditions.
Mean High Water Springs (MHWS)	The highest-level which spring tides reach on average over a period of time above chart datum.
Mean Low Water Springs (MLWS)	The lowest level which spring tides reach on average over a period of time above chart datum.



Term	Definition
Moonpool	An opening within the base of a hull structure allowing access to the sea from within the hull.
Natura Impact Statement (NIS)	This is a report prepared to inform an Appropriate Assessment (AA) of Natura 2000 sites as required under the EU Habitats Directive which presents information on the assessment and the process of collating data on a project and its potential significant impacts on European site(s).
Offshore Export Cable Corridors	The areas of seabed within which the Offshore Export Cable Route will be located.
Offshore Export Cable Route	This is the construction swathe within the Offshore Export Cable Corridors which would contain Offshore Export Cables as well as temporary working areas required for construction vessels
Offshore Export Cables	The cables which would bring electricity from the Offshore Substation Platform(s) to the Cable Landfall(s).
Offshore Substation Platform(s)	A fixed or floating structure located within the Potential Turbine Array Infrastructure Zone, containing electrical equipment to aggregate the power from the Wind Turbine Generators and convert it into a more suitable form for export to shore including transforming to a high voltage. This may also include provision of accommodation for offshore personnel.
Onshore Cables	The underground cables which would bring electricity from Cable Landfall(s) to the Onshore Project Substation(s).
Onshore Project Substation	A compound containing electrical equipment to ensure the wind farm export power operates within safety and performance parameters to enable connection to the grid or other. If needed, the Onshore Project Substation will transform voltage from low to high, or the reverse by means of the electrical transformers before it is connected onto the grid or other.
Operations and Maintenance Phase	Operation of The Proposed Development will include energy generation from the Wind Turbine Generators (WTGs) and export of electricity. Maintenance activities include inspections, upkeep, repairs, adjustments, alterations, removals, reconstruction and replacement and can be categorised as either preventive or corrective maintenance: - Preventive maintenance will be undertaken in accordance with scheduled services; and - Corrective maintenance covers unexpected repairs, component replacements, retrofit campaigns and breakdowns
Overhead Line (OHL)	An Overhead Line is an electrical circuit that is used to transmit electricity and is typically suspended on either wooden pole-sets or steel lattice structures (towers).
Permanent private access tracks	Permanent private access tracks to off-road Joint Bays may be required, subject to the length of off-road Underground Cables. The intensity of use of these tracks will be minimal as they are required for maintenance access only during the operational phase
Planning Permission	Permission obtained by The Applicant from An Bord Pleanála in order to construct, operate, maintain and decommission The Proposed Development



Term	Definition
Potential Anchoring System Options	In order to maintain their position, each WTG will be attached to the seabed using a mooring system. As part of the overall mooring system a number of different anchoring types are under consideration including, drag embedment, dynamically embedded plate, suction caisson, shallow piled, deep piled and catenary leg anchors.
Potential Export Cable Corridor Infrastructure Zone	The area that is being considered for the installation of the Offshore Export Cable Corridor the Potential Export Cable Corridor Infrastructure Zone is larger than required for cable installation and will be refined prior to submission of the Development Permission application.
Potential Offshore Infrastructure Zone	The Potential Turbine Array Infrastructure Zone and Potential Export Cable Corridor Infrastructure Zone, seaward of High Water Mark.
Potential Onshore Infrastructure Zone	The preliminary area which includes potential onshore working areas associated with the Onshore Cables between the Transition Joint Bay and the connection point. The Potential Onshore Infrastructure Zone is larger than required and will be refined prior to submission of the Development Permission application.
Potential Turbine Array Infrastructure Zone	The offshore area within which Wind Turbine Generators, floating platform, mooring systems, anchors, Offshore Substation Platform(s), Inter-Array Cables and other ancillary infrastructure will be located.
Pre-Application Phase	The phase in advance of submission of a Development Permission application to the relevant planning authority. During the Pre-Application Phase, The Proposed Development is undergoing design refinement, optioneering and environmental assessment.
Scour Protection	Protective materials to avoid sediment being eroded away from the base of foundations as a result of the flow of water
Special Purpose Vehicle (SPV)	A special purpose vehicle (SPV) is a subsidiary company that is formed to undertake a specific business purpose or activity.
	Inis Ealga Marine Energy Park consists of the following principal elements:
	(A) an Offshore up to 1GW floating turbine array comprising Wind Turbine Generators on floating substructures with a station keeping system, monitoring and navigation buoys, lighting, scour protection works, cable protection, seabed preparation, Inter- Array Cables, Offshore Substation Platform(s) and Offshore Export Cables;
The Project	(B) Transition Joint Bay(s) where the Offshore Export Cables will connect with the Onshore Cables at Cable Landfall(s).
	(C) Onshore underground cabling and associated infrastructure (including joint bays, communication chambers and link boxes), temporary passing bays and water and utility crossings using either open cut or HDD techniques which connect to the Onshore Project Substation(s) where further underground cabling may connect to the point of connection. Permanent tracks may also be required to provide access to offroad infrastructure.



Term	Definition
	(D) Onshore Project Substation(s) with associated parking, drainage and miscellaneous infrastructure and a BESS near the point of connection where possible. The point of connection may be to an existing ESBN substation, or via a loop-in connection substation to an existing overhead or underground circuit.
	(E) Associated temporary onshore construction compounds and laydown areas including works areas, temporary storage areas, temporary parking areas, welfare facilities, lighting, security features, landscaping works.
	(F) Onshore grid infrastructure upgrades which may comprise potential new bays at existing ESBN substation(s), potential network reinforcements such as new circuits/ uprates from the ESBN connection point to a meshed transmission node (if required), potential new towers in the proximity of existing overhead lines, potential up-voltage of existing infrastructure (with potential new infrastructure/ towers, and load transfer from existing 110kV station).
	(G) Associated temporary offshore 'wet storage' area(s) and associated temporary moorings.
	(H) An existing or proposed O&M facility.
The Proposed Development	Offshore and onshore elements of The Project for which a Development Permission application will be submitted to the relevant authority in the future, supported by an EIAR and NIS, excluding temporary offshore 'wet storage' area(s), and associated temporary moorings, and an Operations and Maintenance facility.
Topic-specific Study Area	This is an area which is defined for each EIAR topic which includes the relevant Potential Offshore or Onshore Infrastructure Zone as well as spatial and temporal considerations of potential impacts of The Proposed Development on relevant receptors. The Topic-specific Study Area for each EIAR topic is intended to cover the area within which an effect can be reasonably expected.
Trackout	The transport of dust and dirt from the construction/demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy duty vehicles (HDVs) leave the construction/ demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site
Transition Joint Bay	Underground structures at the Cable Landfall(s) that house the joints between the Offshore Export Cables and the Onshore Cables.
Trenchless Crossing	A method of cable installation, such as Horizontal Directional Drilling (HDD) for example, where a cable is drilled beneath a feature without the need for trenching.
Wind Turbine Generators	Wind Turbine Generators (WTG) or "WTGs" are Generation Unit(s) generating electricity from wind. These electricity generating machines typically comprise a tower, rotor with three blades connected at the hub, nacelle and ancillary electrical and other equipment which may include J-tube(s), transition piece, access and rest platforms, access ladders, boat access systems, corrosion protection systems, fenders



Term	Definition
	and maintenance equipment, and other associated equipment, fixed to a substructure and mooring system.
Underground Cable (UGC)	The underground cables which bring electricity from Cable Landfall(s) to the Onshore Project Substation(s).



## **GLOSSARY OF ACRONYMS**

Acronym	Definition
AADT	Annual Average Daily Traffic
AAP	Areas of archaeological potential
AC	Alternating Current
ACAs	Architectural Conservation Areas
AD	Anno Domini
AEP	Annual Exceedance Probability
AEZ	Archaeological Exclusion Zone
AIP	Aeronautical Information Publication
AIS	Automatic Identification System
ALM	Aerodrome Licensing Memorandum
AMSL	Above Mean Sea Level
ANSI	American National Standards Institute
AQS	Air Quality Standards
ASAM	Aeronautical Services Advisory Memorandum
ASCOBANS	Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas
ATC	Air Traffic Control
ATS	Air Traffic Service
ВАР	Biodiversity Action Plan
BBS	Biological Sampling Survey
вс	Before Christ
ВСТ	Bat Conservation Trust
BEIS	Department for Business, Energy & Industrial Strategy
BEP	Best Environmental Practice
BERR	Department for Business Enterprise and Regulatory Reform
BESS	Battery Energy Storage System
BIM	Bord Iascaigh Mhara
BP	Before Present
BS	British Standard
BSA	Biologically Sensitive Area
САА	Civil Aviation Authority
CaCO <sub>3</sub>	Calcium Carbonate



Acronym	Definition
cal.	Calibrated date
САР	Climate Action Plan
C&D	Construction and Demolition
CD	Chart Datum
CDP	Cork County Development Plan
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CEMP	Construction Environmental Management Plan
CEO	Chief Executive Officer
CFS	Climate Forecast System
CGNS	Celtic and Greater North Sea
CI	Confidence Interval
CIA	Cumulative Impact Assessment
CIEEM	Chartered Institute for Ecology and Environmental Management
CIfA	Chartered Institute of Archaeologists
CIL	Commissioners of Irish Lights
CIRIA	Construction Industry Research and Information Association
CLC	CORINE Land cover
CLO	Community Liaison Officer
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	Carbon Dioxide Equivalents
Cobh	County Cork and in particular Cork Harbour
COLREG	International Regulations for Preventing Collisions at Sea
СОМАН	Control of Major Accident Hazards
СРА	Coast Protection Act
СРТ	Cone Penetration Test
CPUE	Catch Per Unit Effort
CRWMP	Construction Resource Waste Management Plan
cSAC	candidate Special Area of Conservation
CSEMP	Clean Seas Environmental Monitoring Programme
CSHAS	Celtic Sea and Herring Acoustic Survey
CSO	Central Statistics Office
CSPZ	Celtic Sea Protection Zone
СТА	Class C Shannon Control Area
CTR	Control Zones



Acronym	Definition
CV	Coefficient of Variation
DA	Military Danger Area
DAFM	Department of Agriculture, Food and the Marine
DAHG	Department of Arts, Heritage and the Gaeltacht
DAS	Digital Aerial Surveys
dB	Decibel
DC	Direct current
DCCAE	Department of Communications, Climate Action & Environment
DCF	Data Collection Framework
DECC	Department of Environment, Climate and Communications
DEFRA	Department of Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges
DoD	Department of Defence
DoHLGH	Department of Housing, Local Government and Heritage, formerly Department of Housing, Planning and Local Government (DHPLG)
DTI	Department of Trade and Industry
EC	European Commission
EEC	European Economic Community
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIS	Environmental Impact Statement
EMF	Electromagnetic Field
EMODnet	European Marine Observation and Data Network
END	Environmental Noise Directive
ENR	Environmental Noise Regulations
EPA	Environmental Protection Agency
EPS	European Protected Species
EPUK	Environmental Protection UK
EQS	Environmental Quality Standards
ES	Environmental Statement
ESAS	European Sea Birds at Seas
ESBN	ESB Networks
ESCA	European Subsea Cables Association



Acronym	Definition
EU	European Union
EUMOFA	European Market Observatory for Fisheries and Aquaculture
EUNIS	European Nature Information System
EUPHA	European Public Health Association
EWEA	European Wind Energy Association
EWG	Environmental Working Group
FCS	Favourable Conservation Status
FIR	Flight Information Region
FL	Flight Level
FLO	Fisheries Liaison Officer
FLOWW	Fisheries Liaison with Offshore Wind and Wet Renewables Group
FPSO	Floating Production Storage and Offloading
FSA	Formal Safety Assessment
FU	Functional Units
GDSDS	Greater Dublin Strategic Drainage Study
GHG	Greenhouse gas
GLVIA	Guidelines for Landscape and Visual Impact Assessment
GNI	Gas Networks Ireland
GSD	Group Sampling Distance
GSI	Geological Survey Ireland
GW	Gigawatt
GWTDE	Groundwater dependent ecosystems
HDD	Horizontal Directional Drilling
HDV	Heavy Duty Vehicles
HGV	Heavy Goods Vehicles
H <sub>max</sub>	Maximum Wave Height
HVDC	High Voltage Direct Current
HVL	High Value Landscape
IAA	Irish Aviation Authority
IAIA	International Association for Impact Assessment
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IAMMWG	Inter-Agency Marine Mammal Working Group
IAQM	Institute of Air Quality Management



Acronym	Definition
ibid	Ibīdem / in the same place
IBSG	Irish Basking Shark Group
IBTS	International Beam Trawl Survey
ICAO	International Civil Aviation Organisation
ICC	Irish Cruising Club
ICES	International Council of the Exploration of the Sea
ICNIRP	International Commission for Non-Ionizing Radiation Protection
ICOMOS	International Council on Monuments and Sites
IEEZ	Irish Exclusive Economic Zone
IEMA	Institute of Environmental Management and Assessment
IEMEP	Inis Ealga Marine Energy Park
IEN	Irish Environmental Network
IFI	Inland Fisheries Ireland
IFP	Instrument Flight Procedure
IFPO	Irish Fish Producers Organisation
IFR	Instrument Flight Rules
IGFS	International Groundfish Survey
IHBC	Institute of Historical Building Conservation
IMO	International Maritime Organisation
INFOMAR	Integrated Mapping for the Sustainable Development of Ireland's Marine Resource
INNS	Invasive Non-Native Species
IOWAGA	Integrated Ocean Waves for Geophysical and other Applications
IPPC	Intergovernmental Panel on Climate Change
ISEFPO	Irish South & East Fish Producer's Organisation
ISWFPO	Irish South & West Fish Producer's Organisation
IUCN	International Union for Conservation of Nature
iVMS	Inshore Vessel Monitoring Systems
IWDG	Irish Whale and Dolphin Group
IWT	Irish Wildlife Trust
JNCC	Joint Nature Conservation Committee
KFO	Killybegs Fishermen's Organisation
KISORCA	Kingfisher Information Service – Offshore Renewable and Cable Awareness project
km	Kilometre



Acronym	Definition
kph	Kilometre per hour
kV	Kilovolt
Lа90,т	The A-weighted sound pressure level in dB exceeded for 90% of the time period T
L <sub>Aeq,T</sub>	The A-weighted Leq, measured over a specified period of time (T)
LAP	Local Area Plans
LAQM.TG	Local Air Quality Management – Technical Guidance
LAT	Lowest Astronomical Tide
LCA	Landscape Character Area
LDV	Light Duty Vehicles
Lg	Locally Important Aquifer– Sand and gravel
LGV	Light Goods Vehicles
LHQI	Lamprey Habitat Quality Index
U	Locally Important Aquifer– Bedrock which is Moderately Productive only in Local Zones
Lk	Locally Important Aquifer – Karstified to a limited degree or area
Lm	Bedrock which is Generally Moderately Productive
m	metre
m/s	Metres per Second
mm/s	Millimetres per second
MAC	Maritime Area Consent
MARA	Maritime Area Regulatory Authority
MarESA	Marine Evidence-based Sensitivity Assessment
MarLIN	Marine Life Information Network
MARPOL	International Convention for the Prevention of Pollution from Ships
MASP	Metropolitan Area Strategic Plans
MCA	Maritime Coastguard Agency
MCEU	Marine Consents and Environment Unit
MCIB	Marine Casualty Investigation Board
MDA	Minimum Descent Altitude
mg/l	Milligram per Litre
MGN	Marine Guidance Note
ММО	Marine Management Organisation
MPA	Marine Protected Areas
MSA	Minimum Sector Altitudes



Acronym	Definition
MSO	Marine Survey Office
Mt	Metric ton
MU	Management Unit
MW	Mega Watts
NAMMCO	North Atlantic Marine Mammal Commission
NAS	Noise Abatement Systems
NASH	Shipping and Navigation Consultant
NASS	North Atlantic Sightings Survey
NBDC	National Biodiversity Data Centre
NCEI	National Centers for Environmental Information
NDC	Nationally Determined Contributions
NE	Natural England
NECP	National Energy and Climate Plan
NHA	Natural Heritage Area
NIAH	National Inventory of Architectural Heritage
NIEA	Northern Ireland Environment Agency
NIFA	National Inshore Fishermen's Association
NIS	Natura Impact Statement
NISA	North Irish Sea Array
nm	Nautical Mile
NMFS	National Marine Fisheries Service
NMPF	National Marine Planning Framework
NO <sub>2</sub>	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NOx	Nitrous Oxide
NPS	National Policy Objective
NPWS	National Parks and Wildlife Service
NRA	Navigational Risk Assessment
NRA Guidelines	National Roads Authority (2009)
NRW	Natural Resources Wales
NTS	Non-Technical Summary
0&M	Operation & Maintenance
OCWS	Offshore Channel, Celtic Sea and South West England
OHL	Overhead Line



Acronym	Definition
OPW	The Office of Public Works
ORCA	Ocean Research & Conservation Association
ORE	Offshore Renewable Energy
OREDP	The Offshore Renewable Energy Development Plan
OREDPII	The Offshore Renewable Energy Development Plan Two
OREI	Offshore Renewable Energy Installations
OSI	Ordnance Survey Ireland
OSP	Offshore Substation Platform
OSPAR	Oslo and Paris Convention
OWF	Offshore Wind Farm
PEMMP	Project Environmental Management and Monitoring Plan
PM	Particulate Matter
pNHAs	proposed Natural Heritage Areas
рру	Peak Particle Velocity
pSAC	Potential Special Area of Conservation
pSPA	Potential Special Protection Area
PSR	Primary Surveillance Radar
PSU	Practical Salinity Units
PTS	Permanent Threshold Shift
QIs	Qualifying Interests
RBSP	River Basin Specific Pollutants
RICS	Royal Institution of Chartered Surveyors
Rkd	Regionally Important Aquifer–Karstified (diffuse)
RMP	Record of Monuments and Places
RNLI	Royal National Lifeboat Institute
Ro-Ro	Roll On-Roll Off
RPO	Regional Policy Objectives
RPS	Record of Protected Structures
RSES	Regional Spatial and Economic Strategy
QI	Qualifying Interest
SAC	Special Area of Conservation
SAR	Search and Rescue
SCA	Seascape Character Assessment
SCANS	Small Cetaceans in the European Atlantic and North Seas



Acronym	Definition
SCI	Special Conservation Interest
SCI	Sites of Community Importance
SCOS	Special Committee on Seals
SEAI	Sustainable Energy Authority of Ireland
SEPA	Scottish Environment Protection Agency
SER	Sensitive Ecological Receptor
SF <sub>6</sub>	Sulphur hexafluoride
SFPA	Sea Fisheries Protection Authority
SHE	Shannon Estuary
SIS	Soil Information System
SLIA	Seascape / Landscape Impact Assessment
SMR	Sites and Monuments Records
SMRU	Sea Mammal Research Unit
SNCB	Statutory Nature Conservation Body
SNH	Scottish National Heritage
SO <sub>2</sub>	Sulphur Dioxide
SOLAS	International Convention for the Safety of Life at Sea
SOx	Sulphur Oxides
SPA	Special Protection Area
S-P-R	Source-Pathway-Receptor
SSR	Secondary Surveillance Radar
SuDS	Sustainable Drainage System
SWISS	South-West Irish Sea Survey
ТІІ	Transport Infrastructure Ireland
ТЈВ	Transition Joint Bay
TLP	Tension Leg Platform
ТМР	Traffic Management Plan
TSO	Transmission System Operator
TSS	Traffic Separation Scheme
TTS	Temporary Threshold Shift
UCC	University College Cork
UGC	Underground Cable
UK	United Kingdom
UKCP18	United Kingdom Climate Projections 2018



Acronym	Definition
UKFEN	United Kingdom Fisheries Economic Network
ИКНО	United Kingdom Hydrographic Office
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
UV	Ultraviolet
UXO	Unexploded Ordnance
VFR	Visual Flight Rules
VIA	Visual Impact Assessment
VMS	Vessel Monitoring Systems
VP	Vantage point
vph	vehicles per hour
WCC	Waterford County Council
WFD	Water Framework Directive
WS	Witness Statement
WTGs	Wind Turbine Generators
WWT	Wildfowl and Wetlands Trust
Zol	Zone of Influence
ZTV	Zone of Theoretical Visibility
μg/m <sup>3</sup>	Microgram per cubic meter



#### **1** VOLUME A CHAPTER **1** INTRODUCTION

#### **1.1 PROJECT BACKGROUND**

- 1 Inis Ealga Marine Energy Park (IEMEP), also referred to in this EIAR Scoping Report as 'The Proposed Development', is a floating offshore wind farm project under development off the coast of counties Cork and Waterford (see **Figure 1.1**). IEMEP is in the Pre-Application Phase. Once operational, it has the potential to produce up to 1,000 megawatts (MW) of renewable energy. This represents a significant proportion of Ireland's national targets for renewable energy generation by 2030 and beyond.
- 2 **Figure 1.1** identifies the Potential Infrastructure Zones of IEMEP for this Environmental Impact Assessment Report (EIAR) Scoping Report (the 'EIAR Scoping Report') which include the following:
  - Potential Turbine Array Infrastructure Zone;
  - Potential Export Cable Corridor Infrastructure Zone; and
  - Potential Onshore Infrastructure Zone.
- 3 More detail on potential locations of key infrastructure within the Potential Infrastructure Zones will be developed as part of the ongoing design process. The location of potential ports and wet storage facilities for the Construction, Operation and Maintenance and Decommissioning Phases of IEMEP are not currently defined and may be located outside the Potential Infrastructure Zones but once identified, will be assessed in the future EIAR.
- 4 The proposed Wind Turbine Generators (WTGs) will be located within an area of approximately 883 kilometres squared (km<sup>2</sup>), in water depths ranging from approximately 74 metres (m) to 92 m at Lowest Astronomical Tide (LAT). The Proposed Development has the potential to produce 1,000 MW of renewable energy; however, this figure (and the area within which the WTGs will be located) will be refined during the design development and environmental assessment processes.
- 5 The Proposed Development will consist of WTGs mounted on floating substructures secured to the seabed by moorings. The WTGs will be connected to one another and to an Offshore Substation Platform(s) using subsea Inter-Array Cables. The Offshore Substation Platform(s) will deliver clean renewable energy via cables that will connect to a new Onshore Project Substation(s). The Onshore Project Substation(s) will transform the electricity to a format suitable for electricity transmission. A more detailed description of The Proposed Development is provided in **Volume A**, **Chapter 6** (The Proposed Development) of this EIAR Scoping Report. **Plate 1.1** provides an indicative overview of The Proposed Development.




Plate 1.1 Typical infrastructure associated with a floating offshore wind farm



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#### **1.2** BENEFITS OF THE PROPOSED DEVELOPMENT

- 6 Ireland's Climate Action Plan 2021 seeks to reduce the effects of climate change by transitioning from carbon intense forms of electricity generation to renewable electricity. This plan commits Ireland to achieving a target of 80% renewable electricity by the year 2030. This 80% renewable electricity target is achieved, in part, through a commitment to target the installation of at least 5 GW of offshore wind energy by 2030.
- 7 IEMEP has the potential to generate approximately 3,950,000 MWh, of electricity per year. Based on high-level modelling, it is estimated that IEMEP could produce enough clean renewable energy to supply up to 1 million homes annually. IEMEP also has the potential to reduce Carbon Dioxide (CO<sub>2</sub>) emissions by up to an estimated 1,280,000 tonnes every year, through displacement of fossil fuels<sup>1</sup>.
- 8 IEMEP, while delivering clean renewable wind energy and helping to reduce Ireland's CO<sub>2</sub> emissions, also has the potential to assist Ireland in in meeting its 80% renewable electricity target by the year 2030 and its commitment to target the installation of at least 5 GW of offshore wind energy by 2030. **Volume A, Chapter 2** of this EIAR Scoping Report, (Policy Planning and Legislation) sets out more information on the benefits of and the need for IEMEP.
- 9 IEMEP has the potential to produce clean renewable energy for Ireland, thus reducing the need to import fossil fuels. This both improves Ireland's CO<sub>2</sub> footprint and reduces its vulnerability to fluctuations in fuel pricing or import risk. In addition, IEMEP has the potential to provide employment in a wide range of industry activities throughout its life cycle.

### 1.3 CURRENT STATUS AND CONSENT PROCESS FOR THE PROPOSED DEVELOPMENT

In May 2020, the Department of Housing, Planning and Local Government (now Department of Housing, Local Government and Heritage) announced the designation of several offshore wind projects as 'Relevant Projects' (now referred to as Phase One projects). This related to proposed offshore wind projects which had either applied for, or were granted, a lease under the Foreshore Act 1933, as amended, before 31<sup>st</sup> December 2019, or were granted a grid connection offer before that date. This designation secured special status for those Phase One projects. Phase One projects must apply for a Maritime Area Consent (MAC) (i.e. the right to occupy the maritime area), which will be assessed by the Minister (Department of Environment, Climate and Communications (DECC)), on an interim basis, pending the establishment of the Maritime Area Regulatory Authority (MARA), in early 2023.

<sup>&</sup>lt;sup>1</sup> Average household electricity usage in 2017, 2018 (<u>https://www.cru.ie/wp-content/uploads/2017/07/CER17042-Review-of-Typical-Consumption-Figures-Decision-Pap</u>) 4,200 kWh/year (4.2 MWh/year)

Average carbon intensity of electricity in 2019 (<u>https://www.seai.ie/publications/Energy-Emissions-Report-2020.pdf</u>, <u>https://www.epa.ie/ghg/energyindustries/</u>) 325 g CO2/kWh

Capacity factor for offshore wind (www.eirgridgroup.com/site-files/library/EirGrid/EirGrid-TES-2019-Report.pdf) 45%



- 11 IEMEP is being developed as a Phase Two project. Phase Two projects are expected to deliver the remainder of the 5 GW offshore wind target identified in the Climate Action Plan 2021 (Department of the Environment, Climate and Communications (DECC), 2021) which is not fulfilled by Phase One projects. The MAC criteria for Phase Two projects are currently being determined and the consultation process on the development of that criteria is ongoing. As such, IEMEP is currently at an early stage of development, in terms of both the design and environmental assessments of the offshore and onshore infrastructure required for its eventual Operation Phase. Surveys, studies and stakeholder engagement are currently underway to help inform the development of the design and the associated environmental assessments and statutory consent applications to follow.
- 12 The Maritime Area Planning (MAP) Act was enacted in December 2021. It provides for new consenting processes for licences, leases and planning permissions for various marine development proposals, including offshore renewable energy infrastructure.
- 13 Prior to submitting a Development Permission application, The Applicant must first successfully secure a MAC from MARA, with the second step being to obtain Development Permission from An Bord Pleanála. The consenting regime is closely modelled on the existing consenting regime for onshore Strategic Infrastructure Development (SID), where national strategically important applications are also made directly to An Bord Pleanála, who then carry out public consultation and environmental assessment.
- 14 The National Marine Planning Framework (NMPF) is the overarching framework for all decisions and will be a key consideration for decision makers under the MAP Act 2021. Consistency and compliance of IEMEP with the objectives of the NMPF will therefore need to be ensured. Any Foreshore Licence and/ or MAC application for IEMEP will therefore need to be accompanied by a 'Statement of Consistency', which will outline how the proposed development complies with and is consistent with the provisions and policy objectives of the NMPF. The regulator for development in the maritime area will be the MARA.
- 15 The Proposed Development is the subject of two existing Foreshore Licence applications (FS006859 and FS007404) which were submitted to the Department of Housing, Local Government and Heritage (DoHLGH) in 2019 and 2021 respectively.
- 16 A Foreshore Licence is required to carry out surveys within the 12 nautical mile (nm) limit (i.e. within the state foreshore). For IEMEP, proposed surveys within the 12nm limit are those relating to a proportion of the Potential Offshore Export Cable Infrastructure Zone. The Foreshore Unit of the Department of Housing, Local Government and Heritage has yet to make its determination on these applications for Foreshore Licence. In the event that the Foreshore Licence applications are awarded, it is anticipated that surveys will commence as soon as possible thereafter.
- 17 Monthly offshore aerial bird, marine mammal and other marine megafauna surveys and Cable Landfall ecology surveys were commenced in April 2021 and March 2021 respectively. These are scheduled for a minimum 24-month duration.



- 18 In summary, the key agreements and consents required for The Proposed Development include:
  - A MAC, which must be awarded by the MARA, under the MAP Act 2021, before a Development Permission application can be submitted to An Bord Pleanála (the Competent Authority for offshore wind farm applications).
  - Similar to the current SID process, the MAP Act 2021 provides that a Development Permission application must be subsequently submitted to An Bord Pleanála. Preapplication consultation is also required with An Bord Pleanála. Information on the policies and legislative framework applicable to IEMEP is provide in Volume A, Chapter 4 of this EIAR Scoping Report.
  - It is the intention of The Applicant to submit an application for a MAC, as soon as practicable after the MAC application process opens up for Phase 2 projects.

#### 1.4 AIM OF THE EIAR SCOPING REPORT

- 19 This EIAR Scoping Report sets out the proposed scope of the future EIAR for IEMEP and in doing so, sets out the proposed approach to identify, assess and address the likely significant environmental effects associated with the physical, human and biological environments arising from the Construction, Operation and Maintenance and Decommissioning Phases of The Proposed Development. This EIAR Scoping Report also sets out the proposed approach to addressing those likely significant environmental effects through the EIAR process. An overview of all topics proposed for inclusion in the EIAR is set out in this EIAR Scoping Report and an explanation is provided as to which impacts are considered to have the potential to result in likely significant effects and as a result are proposed to be the focus of the EIAR. This EIAR Scoping Report also identifies those impacts which are increasingly shown (from repeated assessment in offshore wind, available data and professional judgement) to result in non-significant effects and as result are proposed to be scoped out and not included in the future EIAR, a rationale is provided for each impact which is proposed to be scoped out.
- 20 Whilst conforming to Irish regulatory and policy guidance, the EIAR will take due account of the lessons learnt and good practice on offshore wind farm projects that have already been through the Development, Construction, Operation and Maintenance and Decommissioning Phases in and outside of Irish waters. In line with this approach, this EIAR Scoping Report makes recommendations, supported by evidence, regarding the topics which are proposed to be excluded (i.e. scoped out) from consideration in the future EIAR. **Volumes A, B, and C** of this EIAR Scoping Report set out potential impacts on environmental receptors and state whether these will be considered further as part of the EIAR process (i.e. scoped in for consideration in the future EIAR).
- 21 This EIAR Scoping Report will be used to gather informed responses to The Proposed Development from stakeholders, including the general public, and to assist in determining the approach to and methodology to be used to identify, assess and address likely significant environmental effects in the EIAR.



- 22 Throughout the preparation of the future EIAR, the design of The Proposed Development will be revised and refined to take account of the findings of studies and surveys, as well to take account of feedback from consultation with Competent Authorities, other Prescribed Bodies, wider stakeholders, communities and the public. Feedback on The Proposed Development from such consultation will be considered within the design development and refinement process resulting in a final design which will be subject to assessment in the future EIAR for submission in support of the eventual Development Permission application. Further information on consultation to-date and the plan for future consultation is set out in this EIAR Scoping Report, **Volume A, Chapter 3** (Stakeholder Engagement and Consultation).
- 23 A list of the consultees issued with this EIAR Scoping Report is included in **Appendix 1.** The Applicant intends on consulting with An Bord Pleanála in accordance with the Pre-Application requirements as provided for under the Planning and Development Act (2000) and as such An Bord Pleanála are not named as a consultee to this EIAR Scoping Report.

## 1.5 THE APPLICANT

- 24 IEMEP is being developed by Inis Ealga Marine Energy Park Ltd. (The Applicant). Inis Ealga Marine Energy Park Ltd. is a Special Purpose Vehicle (SPV) created by DP Energy and partner Iberdrola for the delivery of IEMEP.
- DP Energy is an Ireland based renewable energy developer, headquartered in Buttevant, County Cork. DP Energy is developing wind and solar projects across Australia, North America and the UK, as well as here in Ireland. It has played a leading role in the Irish wind industry since the 1990s. DP Energy's first renewable energy projects in Ireland were the onshore wind farms Bessy Bell in County Tyrone commissioned in 1995, and Corrie Mountain in County Leitrim commissioned in 1998.
- For the development of offshore wind projects in Ireland, including IEMEP, DP Energy has partnered with the global energy leader Iberdrola. Iberdrola is one of the world's largest energy companies and a leader in renewables, spearheading the energy transition to a low carbon economy. The group supplies energy to almost 100 million people in dozens of countries, has a workforce of nearly 40,000 and assets in excess of €140 billion. Across the world, Iberdrola helps to support 400,000 jobs across its supply chain, with annual procurement in excess of €12 billion.
- 27 Having previously worked together on the Port Augusta Renewable Energy Project, a 320 MW hybrid wind and solar project in South Australia which is currently under construction, DP Energy and Iberdrola are now investigating a number of offshore wind opportunities around the Irish Coast east, south and west. IEMEP is one such project.
- 28 Both DP Energy and Iberdrola are focused on developing sustainable projects, which form part of the goal of achieving a green economy. Inis Ealga Marine Energy Park Ltd. aims to be part of the transformation of the energy industry in Ireland from fossil fuel to a low carbon system, as advocated by the Government's publication 'The White Paper: Ireland's Transition to a Low Carbon



Energy Future 2015 – 2030' ('The White Paper') (DECC, 2020) which sets out a framework for energy policy to 2030 and outlines a transition to a low carbon energy system for Ireland by 2050.

### **1.6 CONTRIBUTION TO THE EIAR SCOPING REPORT**

- 29 Experienced EIAR consultants have been appointed to undertake the environmental assessment work for IEMEP. Royal HaskoningDHV has been appointed as the lead EIAR consultant, alongside Mott MacDonald as a partner consultant. Royal HaskoningDHV is one of the leading EIAR consultancies working in the offshore wind sector, successfully providing environmental, development and consenting support on 14 GW of renewable energy projects across 26 United Kingdom (UK) offshore wind farms.
- 30 Mott MacDonald is a multidisciplinary consultancy with over 30 years' experience of undertaking complex and challenging EIARs in accordance with the requirements of the EIA Directive and of writing EIARs for a wide range of projects. These include some of the world's largest infrastructure, engineering and development projects.
- 31 With offices in Belfast, Dublin and Cork, Mott MacDonald has prepared more successful Strategic Infrastructure Development (SID) development applications for energy projects (generation and transmission) than any other company in Ireland. Mott MacDonald has had a large local office in Cork since 1954 and have delivered some of the most significant infrastructure projects in the region since then. Mott MacDonald have a strong local knowledge of delivering infrastructure in the Cork region through our role in the delivery of projects such as the Celtic Interconnector, Cork County Council Bridge Rehabilitation Project (2018), Castlemartyr Resort, Midleton Northern Relief Road, South Western CFRAMS Flood Study and various road and bridge refurbishment projects along the N25 national road and local road network in East Cork.
- 32 Both Royal HaskoningDHV and Mott MacDonald are corporate members of the Institute of Environmental Management and Assessment (IEMA) and hold its EIA Quality Mark. The EIA Quality Mark scheme allows organisations that lead the co-ordination of statutory EIARs in the UK and Ireland to make a commitment to excellence in their work and have this commitment independently reviewed. The EIA Quality Mark is a voluntary scheme, with organisations free to choose whether they are ready to operate to its seven EIA Commitments.
- 33 Both Royal HaskoningDHV and Mott MacDonald have a range of experienced EIAR technical expert teams who will provide specialist input into the EIAR process. In addition, a small number of the technical assessments and associated EIAR chapters will be undertaken by other specialist consultancies, which have also contributed to this EIAR Scoping Report including:
  - Macroworks (Volume B, Chapter 2 Seascape, Landscape and Visual Impacts ;
  - Subacoustech Environmental, (Volume C, Chapter 3 Underwater Noise and Vibration);
  - Anatec Limited (Volume C, Chapter 10 Shipping and Navigation);
  - Cyrrus Limited (Volume C, Chapter 12 Aviation and Radar); and
  - Rubicon Heritage (Volume C, Chapter 6 Archaeology and Cultural Heritage).



## **1.7 EIAR SCOPING REPORT STRUCTURE**

## 34 The structure of this EIAR Scoping Report is outlined in **Table 1.1**.

Table 1.1 Structure of this EIAR Scoping Report

Volume	Description of Content of this EIAR Scoping Report	Cross - Reference to applicable Chapter of this EIAR Scoping Report
Volume A Introduction	Introduction	Volume A, Chapter 1
	Chapter introduces the EIAR Scoping Report and The Proposed Development.	
	Proposed Programme	Volume A, Chapter 2
	Overview of The Proposed Development programme from Pre-Application to indicative construction dates.	
	Stakeholder Engagement and Consultation	Volume A, Chapter 3
	Summary of the consultation undertaken to- date and proposed approach to consultation going forward.	
	Policy and Legislative Context	Volume A, Chapter 4
	High-level overview of the policy and legislative context relating to The Proposed Development and how the Applicant aims to fulfil policy needs and meet all environmental requirements in the future EIAR.	
	Site Selection and Assessment of Alternatives	Volume A, Chapter 5
	Outline of the site selection process to date, and the further assessment that will be undertaken in order to define the final description of The Proposed Development in the future EIAR. The approach to be taken in the future EIAR regarding the Assessment of Alternatives is also outlined.	
	The Proposed Development	Volume A, Chapter 6
	High-level description of the key elements of The Proposed Development, and a description of the associated Construction, Operation and Maintenance, and Decommissioning Phases.	
	EIAR Methodology	Volume A, Chapter 7
	Description of how the EIAR will be undertaken, the approach behind the assessment to be undertaken and key aspects for consideration.	
Volume B EIAR Wider-	Environmental Baseline and Potential Impacts	Volume B, Chapters 1-4
Scheme Aspects Chapters	Discussion of the baseline, potential impacts, approach to the future EIAR and data sourcing for each wider scheme EIAR topic, covering the physical, biological and human environment	



Volume	Description of Content of this EIAR Scoping Report	Cross - Reference to applicable Chapter of this EIAR Scoping Report
	which will be developed further in the future EIAR.	
	Summary of relevant designated sites and species designated under national and international legislation, where relevant.	
Volume C EIAR Offshore	Environmental Baseline and Potential Impacts	Volume C, Chapters 1- 14
Topic-specific Chapters	Discussion of the baseline, potential impacts, approach to the future EIAR and data sourcing for each offshore EIAR topic, covering the physical, biological and human environment which will be developed further in the future EIAR.	
	Summary of relevant designated sites and species designated under national and international legislation, where relevant.	
Volume D EIAR Onshore Topic-specific Chapters	Environmental Baseline and Potential Impacts Discussion of the baseline, potential impacts, approach to the future EIAR and data sourcing for each onshore EIAR topic, covering the physical, biological and human environment which will be developed further in the future EIAR. Summary of relevant designated sites and species designated under national and international legislation, where relevant.	Volume D, Chapters 1- 8
Volume E Interaction of Effects and summary of Cumulative and Transboundary Effects and Monitoring and Mitigation Measures.	Summarises the approach to be taken in the future EIAR with regards to interaction of effects, cumulative and transboundary effects and monitoring and mitigation measures.	Volume E, Chapters 1 - 3

# **1.8 REFERENCES**

Department of the Environment, Climate and Communications (2021) The White Paper: Ireland's Transition to a Low Carbon Energy Future 2015-2030

Department of the Environment, Climate and Communications (2021) Climate Action Plan 2021 Securing Our Future available from <u>gov.ie - Climate Action Plan 2021 (www.gov.ie)</u>



## 2 VOLUME A CHAPTER 2 PROPOSED PROGRAMME

#### 35 An indicative high-level programme of key milestones for IEMEP are provided in **Plate 2.1**.



Plate 2.1 High-level programme of key milestones for IEMEP

36 It is expected that the Construction Phase of The Proposed Development would last approximately three to four years in total, with onshore construction lasting an estimated two years and offshore construction lasting an estimated three years (to potentially avoid the winter seasons and associated weather). The programme shown in **Plate 2.1** is indicative at this stage and may be subject to refinement and change.



# **3** VOLUME A CHAPTER **3** STAKEHOLDER ENGAGEMENT AND CONSULTATION

### 3.1 APPROACH TO CONSULTATION

- 37 The Applicant is committed to proactive, open and transparent dialogue and engagement with all stakeholders, regulators, and communities which may be affected by or indeed may affect IEMEP. The Applicant recognises that the involvement of local communities, local authorities and statutory consultees at an early stage can bring about significant benefits for all parties.
- 38 The Applicant has undertaken and will continue to undertake consultation with stakeholders, local authorities, local and wider communities (including the fishing industry) and those with an interest in any aspect of IEMEP and its related infrastructure.

#### 3.2 PRE-SCOPING CONSULTATION

39 The Applicant practices direct upstream engagement which entails proactive engagement with stakeholders, communities and interested parties during the earliest stages of the development of IEMEP and throughout the Project's lifetime. This proactive engagement has allowed input from stakeholders which has fed into many key design decisions to date.

## 3.2.1 Technical Consultation

40 **Table 3.1** provides an overview of technical stakeholder consultation meetings undertaken to date. The Applicant will build on these initial consultations to ensure that all stakeholders are effectively engaged as the project design and EIAR process progress.



Table 3.1 Early Initial Consultation undertaken for IEMEP

Organisation	Date of First Consultation
Ballycotton Fisherman's Association	February 2020
Bantry Bay Port	July 2021
Bord Iascaigh Mhara (BIM)	January 2020
BIM Aquaculture	January 2020
Bord Gais Energy	March 2022
Coastwatch	February 2021
Cobh and Harbour Chamber	May 2021
Commissioners of Irish Lights	September 2021
Construction Industry Federation Cork	August 2021
Cork County Council	January 2021
Cork Nature Network	November 2021
Doyle Shipping Group	October 2021
EirGrid	October 2019
Foreshore Unit	2019
Gas Networks Ireland	January 2022
Harland & Wolff	March 2022
Industrial Development Agency	June 2021
Inland Fisheries Ireland (IFI)	February 2022
Irish Environmental Network (IEN)	November 2021
Irish Federation of Sea Anglers	June 2022
Irish Fish Producers Organisation (IFPO)	August 2021
Irish Maritime Development Office (IMDO)	April 2022



Organisation	Date of First Consultation
Irish Marine Federation	May 2022
Irish Naval Service	December 2019
Irish Sailing Association	June 2022
Irish Seal Sanctuary	June 2021
Irish Seed Mussel Company	June 2022
Irish South and East Fish Producers Organisation	January 2020
Irish South and West Fish Producers Organisation	February 2020
Irish Whale and Dolphin Group (IWDG)	January 2021
Killybegs Fisherman's Organisation	September 2021
Marine Institute	January 2020
Marine Renewables Research Centre	October 2021
Marine Survey Office	October 2021
National Inshore Fisherman's Association/Organisation (NIFA/O)	January 2020
National Inshore Fisherman's Forum (NIFF)	December 2019
National Maritime College of Ireland	October 2020
National Parks and Wildlife Service (NPWS)	January 2021
Ocean Research & Conservation Association (ORCA) Ireland	January 2021
Port of Cork	March 2020
Rosslare Europort	September 2021
Royal National Lifeboat Institution (RNLI)	April 2022
Sea Angling Ireland	June 2022
Sea Fisheries Protection Agency	December 2019
South East Razor Association	June 2022
South East Regional Fisheries Forum	May 2020



Organisation	Date of First Consultation
Shannon Foynes Port Authority	Mar 2021
Sustainable Energy Authority of Ireland (SEAI)	2018
Sustainable Water Network of Ireland (SWAN)	May 2022
Voice of Concern for the Environment (VOICE) Ireland	May 2022
Waterford County Council	January 2022



#### 3.2.2 Community and Public Consultation

- In addition to the specific meetings outlined in **Table 3.1**, the Applicant held a virtual Public Information Evening to provide information on IEMEP in an online forum on 27<sup>th</sup> January 2022. Over 130 members of the public attended the event at which an overview of all aspects of IEMEP was set out via presentations delivered by DP Energy's Chief Executive Officer, DP Energy's Head of Offshore, DP Energy's Environment and Consenting Manager, DP Energy's Grid Manager and DP Energy's Community and Stakeholder Liaison Manager. At the end of the presentations there was a question-and-answer session which yielded over 40 questions. Not all questions were fielded during the event due to time constraints and so a document containing all questions with answers was prepared and distributed to all invitees along with a recording of the event. A video recording of the Public Information Evening is available on the IEMEP website, together with the Questionand-Answer document.
- 42 A virtual exhibition room for IEMEP was available on the IEMEP website<sup>2</sup> from 27<sup>th</sup> January 2022 until the 29<sup>th</sup> April 2022, after which all exhibition information was made available as a PDF document which is currently available on the IEMEP website.
- 43 Project information sheets were made available at an early stage to introduce relevant stakeholders to IEMEP and to provide information on the applications for Foreshore Licence, as discussed in EIAR Scoping Report, **Volume A, Chapter 1, Section 1.1**. These information sheets are available on the IEMEP website and are also available to be issued in hard copy or as email attachment to any interested party.
- 44 A project brochure which contains wider information about IEMEP is updated quarterly with new information as The Proposed Development progresses. To-date, approximately 650 brochures have been distributed to members of the public during information events, local events, community leaflet drops and as email attachments. The brochure is also available on the IEMEP website.
- 45 The applicant has engaged STEAM Education Ltd. to undertake a series of Green Energy and Climate Action Education Programs to 4th to 6th class student in approximately 10 schools along the south coast of Ireland in proximity to IEMEP. Through a range of participatory activities and creative and scientific projects, the children are supported to understand the key issues around the climate crisis and are encouraged to engage in positive climate action in their schools, homes and wider communities.
- A Community Liaison Officer (CLO) has been appointed to the project to pro-actively engage with community groups and individuals in the communities that may be affected by IEMEP. The CLO proactively seeks out community groups and individuals by visiting townlands and actively engaging by taking part in local farmers markets and other community events. The CLO role extends to ensuring that any member of the community (landowner, stakeholder or otherwise-interested

<sup>&</sup>lt;sup>2</sup> https://inisealgamarineenergypark.com/



party) has the opportunity to make contact with the Applicant, opening up an avenue for further dialogue if required.

- 47 The Applicant has engaged with the fishing industry at both individual fisher level and with the fishing industry representative groups and forums throughout Ireland. A Fisheries Liaison Officer (FLO) was appointed at the earliest stage of the development of IEMEP to provide information and gather feedback from local fishers and fisheries organisations who may be affected by IEMEP. Between June and December 2021, ten meetings were held with both inshore and offshore fishers at piers local to the application area for IEMEP's applications for Foreshore Licence. DP Energy's Community and Stakeholder Liaison Manager and DP Energy's Fisheries Liaison Officer (FLO) were present at all meetings. DP Energy's CEO and DP Energy's Head of Offshore attended a number of the meetings. Two-way consultation was held to ensure that all individual fishers who could potentially be affected by any stage of IEMEP's development could voice concerns and have their queries answered (as far as possible at this early stage of IEMEP).
- 48 Fishing representative bodies attended a survey design meeting at DP Energy's Headquarters where the Applicant's plans for surveys were discussed and feedback was received from the representative bodies. This feedback was relayed to the Applicant to input into the survey design and the EIAR process. Consultation with relevant fisheries organisations and individuals involved in the fishing industry and the FLO and Community and Stakeholder Liaison Manager will be ongoing throughout the development of IEMEP.

### 3.3 PLANNED SCOPING CONSULTATION

- 49 This EIAR Scoping Report sets out the proposed content (scope) of the EIAR which will be prepared to support the Development Permission application for The Proposed Development. This EIAR Scoping Report will support consultation with a range of stakeholders to inform the scoping of the EIAR.
- 50 This EIAR Scoping Report aims to both further update those stakeholders who have been previously engaged with and to introduce The Proposed Development to those stakeholders who may not have engaged with IEMP before. The EIAR Scoping Report will also be used to request comments and feedback on the proposed scope of the EIAR from all stakeholders. **Appendix 1** sets out a list of stakeholders who will be consulted on this EIAR Scoping Report.
- 51 The consultation on this EIAR Scoping Report forms part of a wider, more expansive, commitment to and programme of public consultation around IEMEP.
- 52 Consultation will continue throughout the EIAR process and beyond.
- 53 The content of the EIAR Scoping Report will be presented to the public and their feedback sought. The Applicant will continue communications with the public throughout the EIAR process. The consultation and engagement Phase for this EIAR Scoping Report will last for ten weeks with a



closing date of 21<sup>st</sup> September 2022. This consultation is being undertaken and advertised using various mediums including:

- Media and advertising
  - Advertisements will be placed in the following local and national newspapers, including both fisheries newspapers, to alert communities and stakeholders to the publication of the EIAR Scoping Report and to request feedback from all stakeholders.
    - The Irish Independent
    - The Examiner
    - The Evening Echo
    - The Skipper
    - The Marine Times
  - Press releases will be sent to all local and national newspapers to further explain the EIAR Scoping Report, to alert readers to where it can be accessed and to request feedback.
  - Radio announcements: DP Energy's Community and Stakeholder Liaison Manager will take part in radio shows to discuss the EIAR Scoping Report.
  - Posters advertising the publication of the EIAR Scoping Report will be located in local libraries, shopping centres and doctors surgeries.
- Online
  - Press releases on the IEMEP website<sup>3</sup> and social media channels.
  - Dedicated webpage on the IEMEP website containing a link to the EIAR Scoping Report, contact details for DP Energy's Community and Stakeholder Liaison Manager and DP Energy's CLO, a dedicated contact e-mail address, a feedback form to capture opinions, and details of alternative ways to engage with and give feedback on the EIAR Scoping Report.
- In-person
  - Hard copies of the EIAR Scoping Report will be made available in the following locations for ten weeks after publication (i.e. up to 21<sup>st</sup> September 2022):
    - Carrigaline Library, Carrigaline Middle, Carrigaline.
    - Cork City Council, City Hall, Anglesea Street, Cork City.
    - Cork City Library, 61 Grand Parade, Cork City.
    - Cork County Offices, Boycetown Carrigaline.
    - Knockraha Community Hall, Gogganstown, Knockraha, Co. Cork.
    - Midleton County Council offices, Youghal Rd, Park South, Midleton.
    - Midleton Garda Station, Midleton, Co. Cork.
    - Youghal County Council, Mall House, Youghal-Lands, Youghal.
    - Youghal Library, North Main St, Youghal-Lands, Youghal.

<sup>&</sup>lt;sup>3</sup> https://inisealgamarineenergypark.com/



- The above locations will be published in the newspaper adverts and posters and on the IEMEP website, along with a request for feedback on the EIAR Scoping Report.
- The Community and Stakeholder Liaison Manager, the CLO, and the FLO will be available to take phone calls to provide further information or to arrange meetings as required. Their contact information is available on the IEMEP website.
- Pier meetings for the fishing industry will be held once the EIAR Scoping Report is published, in order to notify the fishing industry of the EIAR Scoping Report and in particular, to ask for their feedback on the Commercial Fisheries chapter of the EIAR Scoping Report (Volume A, Chapter 9 Commercial Fisheries) to ensure the Applicant has a firm understanding of the fishing areas and effort in the marine space around The Proposed Development.
- E-mail
  - The Applicant holds a database of individuals, community groups and stakeholders that have expressed an interest in being updated on all aspects of IEMEP. An email will be sent to all email addresses to inform them that the EIAR Scoping Report has been published and directing them to the IEMEP website to read the EIAR Scoping Report and give feedback via the dedicated contact email address.

### 3.4 TECHNICAL CONSULTATION

- 54 Technical consultation with stakeholders and regulatory bodies is a key element of the EIAR process and such consultation will be crucial to the development of the environmental assessments to be presented in the EIAR. This consultation will initially include discussions on the methodologies for data collection and the impact assessment methodologies for use in the EIAR.
- 55 As the design process for IEMEP develops, further discussions will take place with stakeholders, and it may be appropriate to scope potential impacts back in or out for consideration in the EIAR at a later stage. The initial assessment of potential impacts, and development of mitigation measures will be discussed with technical stakeholders and documented through agreement with stakeholders. This is a sequential approach to targeting consultation as IEMEP's design and EIAR develops. All of this information will be collated within a Consultation Report which will be submitted in support of the eventual Development Permission application for IEMEP.

### 3.5 COMMUNITY AND PUBLIC CONSULTATION

56 Consultation on this EIAR Scoping Report, as well as further Pre-Application consultation, will ensure opportunity for the public to review the plans, provide comments, submit feedback and to have an influence on the development process, and shape The Proposed Development, where possible, prior to submission of the Development Permission application. All members of the public and local communities will have be consulted as described below.



- 57 The Applicant has already engaged extensively with community groups and individuals that may be affected by or may affect The Proposed Development, as discussed in **Section 3.2.2** of this chapter. Building upon consultation which has been undertaken to date, the Applicant will continue to:
  - Ensure that the local community is kept fully informed, in timely fashion, of plans and developments relating to IEMEP and to provide a channel by which these stakeholders can have a say in how the development of IEMEP proceeds, both through the statutory process and through consultation; and
  - Keep the wider community informed of developments relating to IEMEP.
- 58 All of this information, and details of further consultation events held will be collated within a Consultation Report which will be submitted in support of the Development Permission application.
- 59 The Applicant will ensure that local communities, individuals and groups who have potential to be most affected by the proposals are engaged in the development of IEMEP from start to finish and have the opportunity to comment on the proposals at key decision-making points.
- 60 The Applicant has produced an EIAR Scoping Report Synopsis Brochure which summarises the main points of the EIAR Scoping Report. The brochure will be delivered to approximately 5,500 addresses in the Cork area. This brochure will be a means to introduce residents of those communities to the EIAR Scoping Report, to discuss The Proposed Development and to request feedback. The Applicant will engage with communities and their representatives, as well as interested parties, finding the best mechanisms to consult with the those potentially affected by The Proposed Development. A number of options are being explored for community consultation and it is expected that these will include the following throughout the EIAR process:
  - Community consultations both in person and online;
  - Meetings with local representatives of communities of interest; and
  - Information cascade through adverts and articles in the print press, radio, social media, project specific website, newsletters and direct mail.
- 61 The Applicant will offer a range of ways for the public to contact The Applicant, and share their views based on the most appropriate mechanisms for engaging with the local community. This approach to consultation, using various consultation methodologies, reflects the Applicant's commitment to meaningful engagement and to capture the views of local communities including individuals, community groups and those harder to reach groups including non-IT literate members of the community.



## 4 VOLUME A CHAPTER 4 POLICY, PLANNING AND LEGISLATIVE CONTEXT

#### 4.1 INTRODUCTION

- 62 This chapter of the EIAR Scoping Report sets out an overview of the strategic need for The Proposed Development with respect to climate change, international, national, regional, local and sectoral policies relevant to IEMEP. This chapter of the EIAR Scoping Report also sets out the energy and planning policy context which is applicable to The Proposed Development.
- 63 Coordination within and between policy hierarchies is essential to achieve common objectives, particularly with regard to sustainable growth, climate change and adaptation.
- 64 As many marine activities have a dependency on land-based facilities, terrestrial plans can impact directly or indirectly on the quality of the marine environment. Interrelations are particularly relevant for offshore renewable energy developments in relation to land and port facilities to support the Construction as well as Operation and Maintenance Phases.
- 65 Relevant local planning and sectoral policy, planning history and land use zoning will be reviewed and considered as part of the future EIAR that will support the Development permission application for IEMEP. A planning report will be included as part of the future EIAR and will consider how The Proposed Development complies with international, national, regional and local policy provisions.

#### 4.2 NEED FOR THE PROPOSED DEVELOPMENT

- 66 The Proposed Development is necessary as it will make a significant contribution to the reduction in Greenhouse Gas (GHG) emissions and will play a significant role in helping Ireland meet its targets for renewable energy generation and to the efforts to transition Ireland to a low carbon economy. The Proposed Development could have a maximum export capacity of up to 1 GW of clean renewable wind energy. The exact export capacity will be dependent on the final design of IEMEP and the WTGs selected for use.
- 67 At a strategic level, the need for The Proposed Development is supported by international, European, and national environmental and renewable energy commitments and policies. An overview of these commitments and policies is provided in **Section 4.3**. The Irish Government first published the Climate Action Plan (CAP) in June 2019 (DoCCAE, 2019) which sets actions to ensure Ireland's 2030 renewable energy targets can be achieved.
- 68 Whilst Ireland has made considerable improvements in achieving its Climate Act targets (under CAP 2019), it continues to fail to meet targets on the reduction of GHG emissions and renewable energy generation. These targets have been updated in the Climate Action Plan 2021 which has increased the target for renewable electricity from 70 % by 2030 as included in the 2019 CAP to 80 % by 2030This target is to be achieved partly by the delivery of at least 5 GW of offshore wind energy by 2030. The Plan will be updated annually, to ensure alignment with Ireland's binding economy-wide carbon budgets and sectoral ceilings.



- 69 At this early EIAR Scoping stage, it is estimated that the capacity of up to 1 GW of clean renewable energy from The Proposed Development will result in the net displacement of up to an estimated 1,280,000 million tonnes of CO<sub>2</sub> per annum<sup>4</sup>.
- 70 IEMEP will provide renewable energy, offsetting the need for burning of fossil fuels to produce electricity. IEMEP will make a significant (20%) contribution to meeting the Climate Act targets and Ireland's commitment to achieving Net Zero (ie climate neutral economy) by 2050.
- 71 Ireland's wind resource, in particular off the South and West Coast is one of the best in the world, with consistent, reliable and strong winds. Ireland's Offshore Renewable Energy Development Plan (OREDP) reflects this view and sets out key policy actions and enablers to support the establishment and growth of a significant and successful offshore wind and other renewables sector in Ireland, supporting innovation, jobs and investment.
- 72 A planned approach to Ireland's offshore wind development is further supported through the National Marine Planning Framework. Additional information in respect of the importance and role of the NMPF is provided within **Table 4.2**.

## 4.3 POLICY AND LEGISLATIVE FRAMEWORK

73 The following sections provide information on European Directives, national, regional and local level policies of relevance to The Proposed Development.

### 4.3.1 European Directives and Policy Context

74 **Table 4.1** presents a brief overview of key relevant European Directives of relevance to The Proposed Development.

(<u>https://www.seai.ie/publications/Energy-Emissions</u> Report-2020.pdf, https://www.epa.ie/ghg/energyindustries/) = 325 g CO2/kWh. Capacity factor for offshore wind (www.eirgridgroup.com/site-files/library/EirGrid/EirGrid-TES-2019-Report.pdf) = 45%

<sup>&</sup>lt;sup>4</sup> Calculations based on: Average household electricity usage in 2017, and 2018

<sup>(</sup>https://www.cru.ie/wpcontent/uploads/2017/07/CER17042-Review-of-Typical-Consumption-Figures-Decision-Pap) = 4,200 kWh/year (4.2 MWh/year). Average carbon intensity of electricity in 2019



#### Table 4.1 European Directives and Policy Context

European Directives and Policy Context	Detail
EU Maritime Spatial Planning (MSP) Directive (2014/89/EU)	The EU's Maritime Spatial Planning Directive was adopted in 2014. It provides a framework for marine spatial planning and requires a coordinated, integrated and transboundary approach to promote the sustainable development and growth of the maritime and coastal economies. The MSP Directive obliges all coastal Member States to establish marine spatial plans by 2021 at the latest.
Water Framework Directive (WFD) (2000/60/EC)	The WFD requires all Member States to protect and improve water quality in all surface and groundwaters so that Good Status is achieved by 2027, at the latest. It applies to rivers, lakes, groundwater, transitional and coastal waters (out to one nautical mile).
Marine Strategy Framework Directive (MSFD) (2008/56/EC)	The MSFD is the environmental pillar of the EU's Integrated Maritime Policy and requires EU Member States to reach Good Environmental Status in the marine environment by the year 2020 at the latest. The directive is similar to the WFD, but with a focus on the marine Water Framework Directive (WFD) (2000/60/EC).
European Green Deal, 2019	In December 2019, the European Commission (EC) published a Communication on a European Green Deal (EGD), setting out its increased ambition on climate action. It presents a roadmap of key policies and measures needed to achieve the ambition of becoming the first climate-neutral bloc in the world by 2050. This requires a transformation of the EU's economy, with sectors such as transport, buildings, agriculture, and energy production all having key roles to play. As well as setting out the policy and legislative programme for all key economic sectors to deliver on the EU's climate ambition, the EGD also addresses the EU's overall ambition on climate targets. It proposes increasing the EU's emissions reduction targets for 2030 from 40% to at least 50% and towards 55% compared with 1990 levels. In December 2020, EU leaders agreed to reduce GHG emissions by at least 55% by 2030 compared to 1990 levels.
The Paris Agreement, 2015	Superseding the 2005 Kyoto Protocol, the 2015 Paris Agreement within the United Nations Framework Convention on Climate Change (UNFCCC), addresses greenhouse gas emissions mitigation, adaptation and finance starting in the year 2020, which aims to keep the global average temperature rise this century to below two degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. One of the key achievements of COP26 in Glasgow in 2021, was the adoption of the Glasgow Climate Pact which aims to turn the 2020s into a decade of climate action and support. The Pact includes a package of decisions which consist of a range of agreed items, including strengthened efforts to build climate change resilience, curb greenhouse gas emissions and provide the finance for both of these. For the first time, nations were also called on to Phase down unabated coal power and subsidies for fossil fuels. The package of decisions in the Pact also included the finalisation of the 'Paris Agreement rulebook'. This set of rules lays



European Directives and Policy Context	Detail
	out how countries are held accountable for delivering on their climate action promises and self-targets under their Nationally Determined Contributions (NDCs).
	The first EU Renewable Energy Directive (2001/77/EC) on the 'Promotion of electricity produced from renewable energy sources in the internal electricity market' was adopted in 2001. This was replaced with the Renewables Directive (2009/28/EC) which has the following two key targets:
	<ul> <li>A reduction of 20% in greenhouse gases by 2020 (below 1990 levels); and</li> </ul>
	<ul> <li>20% of the total EU energy (electricity, heat and fuel) consumption to come from renewable sources by 2020.</li> </ul>
Recast Renewable Energy Directive (RED II) 2018/2001	In 2014, the EC's 'A policy framework for climate and energy in the period from 2020 to 2030', established a framework for future EU energy and climate policies and promoted a common understanding of how to develop those policies after 2020. The Commission proposed that the EU 2030 target for the share of renewable energy consumed in its Member States should be at least 27%.
	The proposal was endorsed by the European Council which also advised that Member States should be able to set their own, more ambitious, national targets to deliver their planned contributions to the Union 2030 target and exceed them. Also, in 2014, the European Parliaments publication 'A 2030 framework for climate and energy policies' and 2016 publication 'The renewable energy progress report', went further than 'A policy framework for climate and energy in the period from 2020 to 2030', stressing that, in light of the Paris Agreement and the recent renewable technology cost reductions, it was desirable to be significantly more ambitious. The ambition set out in the Paris Agreement, as well as technological developments including cost reductions for investments in renewable energy, led to new objectives being set in the recast Renewable Energy Directive 2018/2001 (known as RED II). RED II established a binding target of at least 32% of renewable energy for the EU by 2030. This target will be reviewed upwards in light of:
	<ul> <li>substantial cost reductions in the production of renewable energy; and</li> </ul>
	<ul> <li>the EU's international commitments for decarbonisation, or where a significant decrease in energy consumption in the EU justifies such an increase.</li> </ul>
	Member States are required to establish their contribution to the achievement of that target as part of their integrated national energy and climate plans. Also, in RED II, the Commission encouraged investments in new, flexible and clean technologies. EC published the REPowerEU Package in May 2022, it seeks targeted amendments of the RED II including to speed up permitting procedures while minimising potential risks to the environment.



European Directives and Policy Context	Detail
REPowerEU Plan	In March 2022, in response to the invasion of Ukraine, the EU published a communication (COM/2022/108) which called on member states to treat the planning, construction and operation of renewable energy projects, and their connection to the grid and the related grid itself to be <i>"in the overriding public interest and in the interest of public safety"</i> and to qualify for the most favourable procedure available in the planning system. The Communication further calls on member states to <i>"swiftly</i> map, assess and ensure suitable land and sea areas that are available for renewable energy projects, commensurate with their national energy and climate plans, the contributions towards the revised 2030 renewable energy target and other factors such as the availability of resources, grid infrastructure and the targets of the EU Biodiversity Strategy. In May 2022, the EC published its REPowerEU Plan (COM/2022/230) that sets its objectives as <i>"ending the EU's dependence on Russian fossil fuels"</i> , <i>"tackling the climate crisis"</i> and <i>"securing the long-term sustainability, cost effectiveness, and energy supply to the EU"</i> . The key goals in the REPowerEU Plan include: Diversifying energy imports; Accelerating a transition from fossil fuels to clean energy; Saving energy through higher efficiency; Saving energy through higher efficiency; Smart investment; and Reinforcing preparedness. The Commission remarked that considerable challenges are ahead with such ambitions. One of which is associated with permitting and planning issues. The Commission places emphasis on streamlining permitting processes and recognises the need to <i>"tackle slow and complex permitting for major renewable projects"</i> . The Commission is amending its proposals to the Renewable Energy Directive <sup>5</sup> to recognise renewable energy as <i>"an overriding public interest"</i> with <i>"Dedicated 'go-to' areas for renewables"</i> should be put in place by Member States with <i>"shortened and simplified permitting processes"</i> in areas with lower
Europe 2030 Climate and Energy Framework	EU leaders agreed in October 2014 on new climate and energy objectives for 2030 following a proposal put forward by the EC. The 2030 framework aims to make the EU's economy and energy system more competitive, secure and sustainable. A centrepiece of the 2030 framework is the binding domestic target to reduce greenhouse gas emissions by 40% below 1990 levels by 2030. This will put the EU on the

<sup>&</sup>lt;sup>5</sup> Commission Recommendation on speeding up permit-granting procedures for renewable energy projects and facilitate Power Purchase Agreements, C(2022) 3219, SWD(2022) 149,



European Directives and Policy Context	Detail
	most cost-effective path towards its agreed objective of an 80-95% reduction by 2050. EU leaders also agreed on raising the share of renewable energy to at least 27%. The proposed framework will bring multiple benefits: reduced dependency on imported energy, a lower bill for imported energy, greater
	innovation, economic growth and job creation, increased competitiveness and better health through reduced air pollution.
Energy Roadmap 2050	The Energy Roadmap 2050 was published by the European Commission in 2011 and explores the transition of the energy system in ways that would be compatible with the greenhouse gas reductions targets set out in the Renewable Energy Directive while also increasing competitiveness and security of supply. To achieve these goals, the Roadmap states that significant investments need to be made in new low-carbon technologies, renewable energy, energy efficiency, and grid infrastructure. Renewable energy is one of four main routes identified to achieve a more sustainable, competitive and secure energy system by 2050
	The 2013 Trans-European Networks for Energy (TEN-E) Regulation sets out EU guidelines for cross-border energy infrastructure and outlines the process for selecting projects of common interest (PCI). PCIs are infrastructure projects considered essential for delivering on EU objectives in the energy field, including improved interconnection between national markets, greater competitiveness, security of supply, and promotion of renewable energy sources.
TEN-E Regulation	The (2021) revised TEN-E Regulation introduce key provisions to upscale offshore renewable energy in Europe. Offshore priority corridors around Europe's sea basins have been identified and rules set out for a coordinated long-term integrated offshore and onshore grid planning.
	The proposal introduces integrated offshore development plans, which will be included in the Ten-Year Network Development Plans (TYNDP).
	Member States, with the support of the EC, will now jointly define and agree on the amount of offshore renewable generation to be deployed within each sea basin by 2050, with intermediate steps in 2030 and 2040.



#### 4.3.2 National Policy Context

- 75 Renewable energy is a national priority and is emphasised as such in government policy such as their White Paper on Energy (Department of the Communications, Energy and Natural Resources, 2015). This being said, renewable energy is dependent on the ability of networks and grids to allow its safe and stable use. Renewable energy, whilst a principal driver of energy infrastructure development, must be viewed side by side with grid and network system services which facilitate and support them.
- 76 **Table 4.2** presents a brief overview of key national policies relevant to The Proposed Development.



#### Table 4.2 National Policies

National Policy Context	Detail
	Ireland 2040 - National Planning Framework (NPF), is a 20-year planning framework designed to guide public and private investment, to create and promote opportunities for Irish citizens, and to protect and enhance Ireland's built and natural environment.
	The main aim of the NPF is to provide a strategy for the growing population and support future growth and success of Ireland's leading global city of scale and its regional cities and towns, while improving citizen's quality of life. The National Strategic Outcomes (NSO) relating to supporting and strengthening the economy and a transition to a low carbon, climate resilient society (NSO 3, 6 and 8), providing access to quality public services (NSO 4, 7 and 10) and achieving sustainable growth of settlements and management of environmental resources (NSO 1 and 9), are not achievable in the absence of a secure and reliable electricity supply.
National Planning Framework 2018	The NPF states that Ireland's National Energy Policy is focused on three pillars:
(Project Ireland 2040)	Sustainability
	Security of Supply
	Competitiveness
	In line with these principles, the National Strategic Outcome 8 (Transition to Sustainable Energy), notes that in creating Ireland's future energy landscape, new energy systems and transmission grids will be necessary to enable a more distributed energy generation system which connects established and emerging energy sources, i.e. renewables, to the major sources of demand. To facilitate this, NPF acknowledges the need to:
	"Reinforce the distribution and transmission network to facilitate planned growth and distribution of a more renewables focused source of energy across the major demand centres."
	National Policy Objective 55 (NPO 55) seeks to "Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a low carbon economy by 2050."
National Development Plan 2021- 2030	The NPF is accompanied by the National Development Plan (NDP) which sets out the investment priorities that will underpin the implementation of the NPF, highlighting that "Extensive efforts have been made to ensure that the NDP will support the Government's climate ambitions", and in the context of the energy sector, the NDP also highlights that " <i>The long-term objective is to transition to a net-zero carbon, reliable, secure, flexible and resource-efficient energy services at the least possible cost for society by mid-century.</i> "



National Policy Context	Detail
	The NDP reiterates the NPF central commitment of delivering on NSO 8 (Transition to a Climate-Neutral and Climate-Resilient Society) to all elements of spatial policy and reducing fossil fuel use and commits to increasing the share of renewable electricity up to 80% by 2030, as well as investment in the electricity transmission and distribution grid to strengthen the reliability of electricity supplies. The NDP identifies €9.5 billion being invested in additional carbon tax receipts, with approximately €5 billion of this being invested in energy efficiency, which is a strategic investment priority together with renewable energy, energy research and decarbonising energy. The NDP highlights the fact that <i>"energy supply is vital for the proper functioning of society and the economy"</i> , and that a national level priority is thus to ensure its continued supply within the overarching EU energy policy framework.
National Marine Planning Framework (Project Ireland 2040)	The NMPF is Ireland's first plan for more sustainable, effective management of marine activities, as required under the EU's Maritime Spatial Planning Directive (2014/89/EU) and was launched in July 2021. It is a parallel document to the National Planning Framework which guides terrestrial planning and development.
	The NMPF sets out a number of 'Overarching Marine Planning Policies' (OMPPs), which apply to particular classes of activities and arranges these into 16 general sectors, including (inter alia) energy and ports. The objectives and policies include:
	• Support for offshore renewable energy proposals that assist the State in meeting the government's offshore renewable energy targets, including the target to achieve 5GW of capacity in offshore wind by 2030.
	• Support for electricity transmission proposals that maintain or improve the security and diversity of Ireland's energy supply (including interconnectors and EU Projects of Common Interest), subject to environmental assessments.
	• Managing the potentially significant adverse effects of proposals on access for existing fisheries interests and current and future port activity.
	Ensuring that proposals for offshore renewable energy and infrastructure support safety at sea imperatives
	The NMPF includes interactive reference maps for various activities and interests in Ireland's offshore area, which can be found at https://www.marineplan.ie/.
	The NMPF is the "key decision-making tool for Government departments, State agencies, regulatory authorities and policy makers for decisions on marine activities up to 2040. Decisions will include planning applications as well as policies, projects and strategies."
	The Minister for Housing, Local Government and Heritage is the Competent Authority for the purposes of the Directive and, by extension, for purposes of preparing Ireland's first marine spatial plan.



National Policy Context	Detail
	The NMPF brings together all marine-based human activities for the first time, outlining the Government's vision, objectives and marine planning policies for each marine activity.
National Policy Position on Climate Action and Low Carbon Development 2013 (Updated 2021)	The National Policy Position (NPP) on Climate Action and Low Carbon Development establishes the national objective of achieving a transition to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050. The NPP stresses the importance of harnessing energy potential and delivery of demand from Ireland's natural energy sources such as wind, wave and solar, new energy systems and transmission grid. Ireland's national policy position is to reduce GHG emissions in 2050 by 80% across energy generation, the built environment and transport with a goal of climate neutrality in agriculture and land-use sector.
Programme for Government – Our Shared Future, (Government of Ireland, 2020)	The Programme for Government sets out a new vision for Ireland, incorporating a strategy for recovery and rebuilding in the period during and after the COVID-19 emergency. This includes many elements which relate to marine activities including an increased emphasis on offshore wind energy, as well as commitments to additional protection of biodiversity at sea through the designation of Marine Protection Areas (MPAs). The programme commits to a 7% average yearly reduction in overall greenhouse gas emissions over the next decade (equating to a total reduction of 51% emissions over the period to 2030), and to achieving net zero emissions by 2050. It also sets out key actions to be taken by the government as well as a 5GW target for offshore wind energy deployment and generation by 2030. It will drive policy development and investment/ funding allocations for the lifetime of the coalition.
Climate Action Plan 2021 – Securing Our Future	<ul> <li>Published in November 2021, the Climate Action Plan (CAP) 2021 follows the Climate Action and Low Carbon Development (Amendment) Act 2021, which commits Ireland to a legally binding target of net-zero greenhouse gas emissions no later than 2050, and a reduction of 51% by 2030. These targets are a key pillar of the Programme for Government.</li> <li>The CAP 2021 seeks a cut in electricity emissions of between 62-81% and a complementary target power sector emissions to between 2 and 4 million tonnes of CO<sub>2</sub> per year. Among the most critical measures to achieve this, the plan calls for a phasing out of coal and peat-fired electricity generation with wind and solar energy generation to account for 80% of Ireland's energy supply by 2030. This will require doubling Ireland's production of electricity from renewable sources, which stood at 39.1% in 2020 (SEAI, 2021). The CAP sets out a number of targets for the decarbonisation of Ireland's energy requirements to 2030, including:</li> <li>Increase electricity generated from renewable sources to 70%.</li> </ul>
	<ul> <li>Facilitate the development of offshore wind, including the connection of at least 5GW of offshore wind.</li> </ul>
	It is estimated that the capacity of up to 1 GW of energy from IEMEP will result in the net displacement of up to an estimated 1,281,150 tonnes of CO <sub>2</sub> per annum through the displacement of fossil fuel. The CAP seeks a total installation of at least 5 GW of



National Policy Context	Detail
	offshore wind capacity by 2030. IEMEPhas the potential to contribute up to 20 % of the capacity required to achieve this 2030 national target.
National Energy and Climate Plan (NECP) 2021-2030	The NECP is a ten-year plan mandated by the EU to each of its member states, in order for the EU to meet its overall greenhouse gas emissions targets. The plan establishes key measures to address the five dimensions of the EU Energy Union: decarbonisation, energy efficiency, energy security, internal energy markets and research, innovation and competitiveness. The NECP takes into account energy and climate policies developed to date, the levels of demographic and economic growth identified in the NPF and includes all of the climate and energy measures set out in the National Development Plan 2018-2027. The Proposed Development is therefore in line with the NECP.
The Offshore Renewable Energy Development Plan (OREDPI)	The OREDP published by the Department of Communications, Climate Action and Environment in 2014, is the policy framework for offshore renewables in Ireland, and has identified 70GW of offshore wind potential. This plan is currently being reviewed and OREDPII is due to be published in 2022.
Policy Statement on the Framework for Ireland's Offshore Electricity Transmission System	In March 2021, DECC published the framework for Ireland's future offshore electricity transmission system. This aims to facilitate the expansion of offshore wind energy to help the country meet its greenhouse gas emissions targets and provides for the development, operation and ownership of Ireland's offshore electricity transmission system.
	In respect of the above, the new offshore transmission system policy includes the following key policies::
	• "A Phased transition from the current decentralised offshore transmission system model to a centralised model, with transmission system assets to be planned, developed, owned and operated by EirGrid
	• It envisages that the successful First Phase offshore renewable projects, will develop the associated offshore transmission system requirement
	• The development of the offshore transmission system in the Second Phase may be carried out by either renewable energy projects, and/ or EirGrid
	• Third Phase offshore transmission system development will be developed exclusively by EirGrid, with maritime areas in which renewables development may take place, to be provided for by the second Offshore Renewable Energy Development Plan (OREDPII)"
	The Policy Statement notes that "The designation of EirGrid as the system operator and asset owner of Ireland's offshore electricity transmission system, with ownership resting with EirGrid at all stages of the Phased transition, regardless of whether the grid has been developed by the individual renewable energy projects or by EirGrid. Transmission system assets to be owned by EirGrid will



National Policy Context	Detail
	include the high voltage transmission circuits and associated onshore and offshore transmission infrastructure connecting offshore generation sites to the existing onshore transmission system, as well as any necessary offshore reinforcements to accommodate electricity flows."
Policy Statement on Security of Electricity Supply	Security of electricity supply is essential for the continued functioning of society and the economy. Energy import dependency is a significant indicator of the country's energy security. Sustainable Energy Authority of Ireland (SEAI, 2021) reports that in 2020 Ireland's import dependency has increased to 72% in 2020 <sup>6</sup> . Ireland is one of the most energy import-dependent countries in the European Union. Oil is reported to make up the largest share of energy imports at 67%. The ongoing price volatility and vulnerability of fossil fuels are likely to escalate in future.
	In November 2021, the DECC published the Policy Statement on Security of Electricity Supply. This statement sets out a number of updates to national policy in the context of the Programme for Government commitments relevant to the electricity sector, planning authorities and developers. The Statement also reiterates <i>"Ensuring continued security of electricity supply is considered a priority at national level within the overarching EU policy framework in which the electricity market operates".</i>
	The Policy Statement notes that the key challenges to security of electricity supply include:
	• ensuring adequate electricity generation capacity, storage, grid infrastructure, interconnection and system services are put in place to meet demand – including at periods of peak demand;
	• developing appropriate market rules to incentivise investment and the behaviours of electricity suppliers and consumers in order to deliver greater complementarity between demand and generation;
	<ul> <li>developing grid infrastructure and operating the electricity system in a safe and reliable manner;</li> </ul>
	ensuring a diversity of fuel supply sources; and
	ensuring resilience from cyber security threats.
	The Policy Statement notes that security of electricity supply must also be maintained throughout the transition to up to 80% of electricity consumption coming from renewable sources by 2030 on a pathway to net zero emissions.
	Whilst there will be a continuing need for conventional generation beyond 2030, the majority of renewable energy generated by 2030 is expected to be from wind or solar. In order to facilitate this generation, it is recognised that there is a need for a very

<sup>&</sup>lt;sup>6</sup> This report was substantially completed in early 2020, before the World Health Organisation's declaration of a pandemic and before COVID-19 had a significant impact beyond China. Almost all the statistical data in the report is for the period up to 2018, as this is the most up-to-date data available at the time of writing



National Policy Context	Detail
	significant investment in additional flexible conventional electricity generation, electricity grid infrastructure, interconnection and storage in order to ensure security of electricity supply on the island of Ireland.
	In December 2021, the Department of Housing, Local Government and Heritage published a communication Circular Letter PL 12/2021, which advises planning authorities of the adoption and publication of the Statement. It reiterated "the need in the current circumstances for a continued mixture of electricity generation and supporting infrastructure to maintain security of electricity supply. In this connection, planning authorities are advised that where planning applications are submitted for electricity infrastructure or infrastructure that may impact on electricity supply, including for existing conventional electricity generation, that they should, until further notice, be considered having regard to the Policy Statement".
National Ports Policy (2013)	The aim of the National Ports Policy is to allow a competitive and effective market for maritime transport services. The document notes that "there are other emerging capacity requirements and opportunities in other areas, includingthe offshore energy market."
Policy Statement on the facilitation of Offshore Renewable Energy by Commercial Ports in Ireland	In December 2021, the Department of Transport published a Port Policy Statement. This sets out a strategy for Ireland's commercial ports to facilitate offshore renewable energy activity and is also intended to assist TEN-T ports in applying for EU funding to develop new infrastructure.
	The strategy is based on an assessment of options for Irish commercial State Ports to facilitate the ORE sector and assist in Ireland achieving its emission reduction targets.
	The key recommendation arising out of the assessment is that a number of port facilities will be required for deployment activity and a multiple of ports will be needed for Operation and Maintenance operations. The Policy Statement signals a multiport approach and is in line with existing National Ports Policy which already recognises the potential role for commercial state ports in servicing the ORE sector. The Policy Statement sets out:
	The background to EU and National targets with regard to ORE.
	• That around the Irish coast, ORE projects will develop in several Phases and that a multiport approach is the most optimal Policy facilitating a strong response from the ports sector and private entities within ports.
	• That the Department of Transport will establish a Ports Co-ordination Group to coordinate port responses and maintain policy alignment.



#### 4.3.3 Regional Policy Context

77 This section provides an overview of the regional policies relevant to The Proposed Development.

#### 4.3.3.1 Regional Spatial and Economic Strategy (RSES) for the Southern Region

- 78 The RSES acknowledges the support of the NPF towards the progressive development of Ireland's offshore renewable energy potential, and notes that wind energy is currently the largest contributor of renewable energy, with the *"potential to achieve 30GW of offshore wind by 2050."*
- 79 The RSES Policy Objectives (RPO) considered to be of relevance with respect to The Proposed Development, include:
  - RPO 85: Renewable offshore energy To promote regional cooperation in terms of offshore renewable energy development, environmental monitoring and awareness of the benefits of realising offshore energy potential. Initiatives arising from this objective shall be subject to robust feasibility and site selection, which includes explicit consideration of likely significant effects on European Sites and potential for adverse effects on the integrity of European sites in advance of any development.
  - RPO 95: Sustainable Renewable Energy Generation To support implementation of the National Renewable Energy Action Plan (NREAP), and the (sic)Offshore Renewable Energy Plan and the implementation of mitigation measures outlined in their respective SEA and AA and leverage the region as a leader and innovator in sustainable renewable energy generation.
  - RPO 96: Integrating Renewable Energy Sources To support the sustainable development, maintenance and upgrading of electricity and gas network infrastructure to integrate renewable energy sources and ensure that national and regional energy system remains safe, secure and ready to meet increased demand as the regional economy grows.
  - RPO 97: Power Stations and Renewable Energy To support the sustainable technology upgrading and conversion of power stations to increase capacity for use of energy efficient and renewable energy sources.
  - RPO 147: Economic Opportunities of Ports To Protect the marine related functions of ports in the region including landside accessibility to ensure the future role of ports as strategic marine related assets is protected from inappropriate uses. Harness sustainable economic opportunities from the ocean economy and the role of Ports in the region in realising the full potential of the ocean economy. Particular regard should be had to the Government's integrated plan for the marine industry Harnessing Our Ocean Wealth (2012), the National Marine Research and Innovation Strategy 2017-2021 (Marine Institute Ireland, 2017), and Ireland's Ocean Economy (NUIG, 2017), as well as the Marine Strategy Framework Directive and Ireland's Programme of Measures; and Ireland's forthcoming National Marine Planning Framework subject to the implementation of mitigation measures outlined in the Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA) undertaken where necessary;



- Support the role of ports, where appropriate, in facilitating the sustainable development and operation of offshore renewable energy development;
- Support sustainable and appropriate enabling infrastructure development to harness our ocean wealth at regional and local levels including grid, pier and port facilities to support renewable energy and export potential;
- Undertake feasibility studies to determine the carrying capacity of ports in relation to potential for likely significant effects on associated European sites;
- Adhere to the European Commission guidelines on the Implementation of the Birds and Habitats Directives in Estuaries and Coastal Zones in order to protect the European Sites around them; and
- Any economic activity which utilises the marine resource shall also have regard to Ireland's obligations under the Marine Strategy Framework Directive (MSFD) which requires achieving and maintaining Good Environmental Status (GES) of coastal and marine waters (comprising both the water column and the seabed beneath it).
- 80 The Cork Metropolitan Area Strategic Plan (MASP) comprises part of RSES for the Southern Region, and gives expression to the MASP as a primary driver of economic and population growth in the region. The MASP highlights Cork Harbour as Europe's largest natural harbour, noting that it is a *"special character area and strategic asset"*. It also highlights that *"it is a location sharing port activities, strategic employment uses, marine research, energy generation, tourism, heritage and residential communities in an environment with sensitive ecosystems and natural amenities (Cork Harbour SPA).*

## 4.3.3.2 Regional Seascape Character Assessment for Ireland 2022

81 The Regional Seascape Character Assessment presents the Regional Seascape Character Areas along the Irish Coast. The Potential Turbine Array Infrastructure Zone and the Potential Export Cable Corridor Infrastructure Zone are located within the Regional Seascape Character Areas, SCA10- Atlantic Celtic Bays and Estuaries and SCA11 – Cork Harbour and Estuary. Further information on these Regional Seascape Character Areas is included in **Volume B, Chapter 2** Seascape, Landscape and Visual Impacts of this EIAR Scoping Report. Further consideration of these Regional Seascape Character Areas in relation to The Proposed Development will be provided in the future EIAR once the Potential Infrastructure Zones are further refined.

### 4.3.4 Local Level Policy Context

- A high-level overview of both the Cork County and Waterford City and County Development Plans is presented in the following sections. As shown in **Figure 6.2** The Potential Onshore Infrastructure Zone for The Proposed Development is within County Cork.
- 83 The Potential Turbine Array Infrastructure Zone and Potential Export Cable Corridor Infrastructure Zone are located off the coast of County Cork. The Potential Turbine Array Infrastructure may also be visible from the coast of County Waterford.


84 The Potential Onshore Infrastructure Zone includes the districts of East Cork, Cobh and Carrigaline, as well as the Cork Harbour area. The planning and development strategy and policy objectives relating to these areas, are encompassed within Volume 4 (South Cork) of the Cork CDP, including land use zoning for the towns and villages of the municipal districts. Further consideration of the applicability of policy and associated development plan provisions, in relation to The Proposed Development, will be provided in the future EIAR once the proposed development design and routing has been further refined.

# 4.3.4.1 Cork County Development Plan 2022-2028

Adopted in April 2022, the Cork County Development Plan 2022-2028 (Cork CDP) came into effect on 6<sup>th</sup> June 2022. The Cork CDP sets the overall strategy for planning and sustainable development within the administrative boundaries of County Cork. The Cork CDP through the policies and objectives contained therein, provides the direction for the future development of County Cork. Chapter 13 of the Cork CDP relates specifically to Energy and Telecommunications. Objectives included within this chapter considered to be of relevance to The Proposed Development, include:

# "ET13-1 Energy

Ensure that County Cork fulfils its potential in contributing to the sustainable delivery of a diverse and secure energy supply and to harness the potential of the county to assist in meeting renewable energy targets and managing overall energy demand.

# ET13-2 Renewable Energy

- a) Support Ireland's renewable energy commitments as outlined in Government Energy and Climate Change policies by facilitating the development of renewable energy sources such as wind, solar, geothermal, hydro and bio-energy and energy storage at suitable locations within the county where such development has satisfactorily demonstrated that it will not have adverse impacts on the surrounding environment (including water quality), landscape, biodiversity or amenities.
- b) Support and facilitate renewable energy proposals that bring about a direct socio-economic benefit to the local community. The Council will engage with local communities and stakeholders in energy and encourage developers to consult with local communities to identify how they can invest in/gain from significant renewable energy development.

# ET13-16 Ocean and Off-Shore Wind Energy:

Support the appropriate development of ocean and offshore wind energy production off the Cork Coast by ensuring adequate provision of land-based infrastructure in line with national policy, and in a way that avoids significant adverse impacts on-sites of ecological value and protects the wider environmental, heritage, landscape and marine resources of the area. The need for land-based infrastructure to support the assembly, deployment, and maintenance of the off-shore energy structures is recognised, as is the need for an integrated approach to the use and management of the coastal zone and coastal resources.



# ET13-21: Electricity Network

- a) Support and facilitate the sustainable development, upgrade and expansion of the electricity transmission grid, storage, and distribution network infrastructure.
- *b)* Support the sustainable development of the grid including strategic energy corridors and distribution networks in the region to international standards.
- c) Facilitate where practical and feasible, infrastructure connections to wind farms, solar farms, and other renewable energy sources subject to normal proper planning considerations.
- d) Proposals for development which would be likely to have a significant effect on nature conservation-sites and/or habitats or species of high conservation value will only be approved if it can be ascertained, by means of an Appropriate Assessment or other ecological assessment, that the integrity of these sites will not be adversely affected.

# ET13-22: Transmission Network

- a) To co-operate and liaise with statutory and other energy providers in relation to power generation in order to ensure adequate power capacity for the existing and future needs of the County including business and residential demands.
- b) Proposals for new electricity transmission networks will need to consider the feasibility of undergrounding or the use of alternative routes especially in landscape character areas that have been evaluated as being of high landscape sensitivity. This is to ensure that the provision of new transmission networks can be managed in terms of their physical and visual impact on both the natural and built environment and the conservation value of European sites.
- c) Proposals for development which would be likely to have a significant effect on nature conservation-sites and/or habitats or species of high conservation value will only be approved if it can be ascertained, by means of an Appropriate Assessment or other ecological assessment, that the integrity of these sites will not be adversely affected."
- 86 In addition to the above, and whilst included within a sub-section of the Chapter dealing with onshore wind farm development, the following objective is also considered to be of likely relevance:

# "ET13-11: Public Consultation and Community Support

- a) Require wind energy developers to carry out active public consultation with the local community in advance of and in addition to the statutory public consultation required as part of the planning application process.
- b) Applications for large scale wind energy development require a 'Community Report' with the planning application documents detailing the full extent of community and wider public engagement."



Figure 13.1 of the Cork CDP, copied hereunder as **Plate 4.1**, is included in the Cork CDP and highlights existing Key Energy and Renewable Energy Infrastructure in County Cork.



Plate 4.1 Key Energy and Renewable Energy Infrastructure in County Cork

Source: Cork County Development Plan 2022 - 2028, Volume 1 – main Policy Material

88 In addition to ET13-16 identified above, further objectives considered of relevance to The Proposed Development include:

CS2-3: County Metropolitan Cork Strategic Planning Area, and similarly for CS2-4: Greater Cork Ring Strategic Planning Area

(i) Facilitate the development of renewable energy projects in support of national climate change objectives.

# MCI 7-2: Development in Coastal Areas

- (a) Sustainably manage development within the coastal zone taking account of its environmental, ecological, heritage and landscape values.
- (b) Encourage development generally to be located in accordance with the settlement policies of this Plan and in particular to recognise the limited capacity of many coastal areas for accommodating development on a large scale.



(c) Reserve sufficient land in the various settlements to accommodate the particular requirements of coastal ports, harbour development, boat storage and other coastal industry and to improve access to and support the continued development of the ports in County Cork as marine related assets in accordance with the RSES. Also support the provision of infrastructure for the renewable energy sector. The identification of any such lands will need to be subject to environmental, nature conservation and other heritage considerations".

# 4.3.4.2 Waterford City and County Development Plan 2022-2028 (Interim Version)

89 The Waterford City and County Development Plan 2022–2028 was made at a special plenary meeting of Waterford City and County Council on the 7<sup>th</sup> June 2022 and comes into effect on the 19<sup>th</sup> July 2022. Whilst the Potential Infrastructure Zones for The Proposed Development do not occur within the administrative boundary of County Waterford, the Potential Turbine Array Infrastructure Zone may be visible from the coast of County Waterford; noting that the entire coastal area of County Waterford is designated as being 'Most Sensitive' with "*low capacity to absorb new development without significant alterations of existing character over an extended area*". Guidelines are provided with regards to development in the environs of such areas and are set out in Section 4.1(a) of the Waterford City and County Development Plan 2022–2028:

"Landscape Character Areas and features designated as Most Sensitive, represent the principal features which create and sustain the character and distinctiveness of the surrounding landscape. To be considered for permission, development in, or in the environs of these areas, must be shown not to impinge in any significant way upon its character, integrity or uniformity when viewed from the surroundings. Particular attention should be given to the preservation of the character and distinctiveness of these areas as viewed from scenic routes and the environs of archaeological and historic sites."

90 Policy Objective UTL 13 states:

"It is the policy of Waterford City and County Council to promote and facilitate a culture of adopting energy efficiency/renewable energy technologies and energy conservation and seek to reduce dependency on fossil fuels thereby enhancing the environmental, social and economic benefits to Waterford City and County".

91 Objective UTL 19: Undergrounding Cables states:

"Where undergrounding of cables is being pursued, proposals should demonstrate that environmental impacts including the following are minimised:

- Habitat loss as a result of removal of field boundaries and hedgerows (right of way preparation) followed by topsoil stripping (to ensure machinery does not destroy soil structure and drainage properties);
- Short to medium term impacts on the landscape where, for example, hedgerows are encountered;
- Impacts on underground archaeology;



- Impacts on soil structure and drainage; and
- Impacts on surface waters as a result of sedimentation."

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# 5 VOLUME A CHAPTER 5 SITE SELECTION AND ASSESSMENT OF ALTERNATIVES

92 The EIA Directive (Directive 2014/52/EU) states that an EIAR to be submitted by an applicant in support of a Development Permission application should include:

"a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment"

93 Article 5(1)(f) of the EIA Directive requires that an EIAR contains:

"any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected."

94 Annex IV of the EIA Directive states that the information provided in an EIAR should include a:

"description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."

- 95 This Site Selection and Assessment of Alternatives chapter of the future EIAR will have particular regard to the environmental considerations which influenced the selection of Potential Onshore Infrastructure Zone and Potential Offshore Infrastructure Zone and detail the evolution of The Proposed Development through alternatives considered, indicating the main reasons for selecting the chosen option taking into account the effects of The Proposed Development on the receiving environment and considering the comparison of environmental effects of each alternative.
- 96 The alternatives considered will be described in line with the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022). The Guidelines state that:

"It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option. A detailed assessment (or 'mini-EIA') of each alternative is not required."

97 Furthermore, the guidelines note the following with regard to high level plans and strategies which may influence or pre-determine decisions in the development process:

"Higher level alternatives may already have been addressed during the strategic environmental assessment of relevant strategies or plans. Assessment at that tier is likely to have taken account of environmental considerations associated... Thus, these prior assessments of strategic alternatives may be taken into account and referred to in the EIAR."

98 The Site Selection and Assessment of Alternatives chapter of the future EIAR will also detail nonenvironmental elements of the development process where they are relevant to the evolution of The Proposed Development.



- 99 The Site Selection and Assessment of Alternatives chapter of the future EIAR will present a summary of the alternatives assessment process followed for The Proposed Development. The EIAR will provide further detail on the alternatives assessment including how the design, sites, routes and locations have evolved over time including any refinements that take place prior to the submission of the Development Permission application.
- 100 It should be noted that a number of strategic alternatives have been and will continue to be considered as part of the ongoing site selection, project design and EIAR processes. The information on The Proposed Development presented in **Volume A Chapter 6** The Proposed Development of this EIAR Scoping Report represent the early stage identification and assessment of potential onshore and offshore design options and alternatives. There is a significant programme of work yet to be undertaken by The Applicant to develop and consider the options and refine them into an overall design suitable for assessment in the future EIAR. This includes a programme of surveys, technical studies, consultation and design optioneering.
- 101 Site selection and design is an ongoing process that will continue to see refinement of the Potential Infrastructure Zone for The Proposed Development through further data gathering, site surveys, consultation with stakeholders and regulators and seeking the views of communities and the wider public. The future EIAR will set out a detailed consideration of the site selection and assessment of alternatives for The Proposed Development.



# 6 VOLUME A CHAPTER 6 THE PROPOSED DEVELOPMENT

## 6.1 INTRODUCTION

- 102 This chapter of the EIAR Scoping Report sets out an overview of The Proposed Development, including its main component infrastructure. This chapter also sets out a general description of the activities typically involved in the Construction, Operation and Maintenance and Decommissioning Phases of an offshore wind farm such as IEMEP. These project Phases are defined as:
  - **Construction:** This Phase includes the physical building of The Proposed Development including site preparation and access works, establishment of construction compounds as well as installing infrastructure for The Proposed Development. Some commissioning activities may be undertaken during this Phase including testing and certification.
  - **Operation and Maintenance:** Operation of The Proposed Development includes energy generation from the WTGs and export of electricity. Maintenance activities include inspections, upkeep, repairs, adjustments, alterations, removals, reconstruction and replacement and can be categorised as either preventive or corrective maintenance:
    - $\circ$   $\;$  Preventive maintenance will be undertaken in accordance with scheduled services;
    - Corrective maintenance covers unexpected repairs, component replacements, retrofit campaigns and breakdowns.
  - **Decommissioning:** This is the final closing and putting The Proposed Development into a state of safety when it comes to the end of its operational life.

# 6.2 **DESIGN EVOLUTION**

- 103 The design of The Proposed Development will be progressed in parallel with the EIAR process, resulting in a final design which will allow for preparation of an EIAR and NIS to support a Development Permission application.
- 104 The design of The Proposed Development will be influenced by:
  - Commercial and supply chain factors;
  - Consultation with a wide range of stakeholders and communities, as described in EIAR Scoping Report Volume A Chapter 3 Stakeholder Engagement and Consultation); and
  - Technical, engineering and environmental assessment.
- 105 The description of The Proposed Development provided in this EIAR Scoping Report is indicative and intended to provide context to the reader, allowing an informed response based on likely details and processes available at this Pre-Application Phase of The Proposed Development.
- 106 Recognising the complex nature of floating offshore wind projects which are subject to rapidly developing technology and techniques, some flexibility may be included in some of the design parameters at the point of submission of the Development Permission application. The future EIAR and NIS to be submitted in support of the Development Permission application will be compliant



with relevant legislation, policy and statutory guidance on such matters at the time of submission. The design approach will be determined in such a way that it ensures a design that is sufficiently defined to allow such that members of the public will know what The Proposed Development entails as well as allowing the Competent Authority to identify the likely significant effects of The Proposed Development on the environment in the context of an EIA and/or the likely significant effects or the adverse effects on the integrity of a European Site in the context of Appropriate Assessment (AA).

# 6.3 INFRASTRUCTURE OVERVIEW

107 The Applicant intends on using WTGs mounted on floating platforms secured to the seabed by moorings to generate electricity. The WTGs will be interconnected to each other and to Offshore Substation Platform(s) using subsea Inter-Array Cables. The Offshore Substation Platform(s) will deliver clean renewable energy via Offshore Export Cables and Onshore Cables that will connect to a Onshore Project Substation(s) which will transform the electricity to a format suitable for connection. **Plate 1.1** provides an indicative overview of The Proposed Development.

## 6.4 POTENTIAL OFFSHORE INFRASTRUCTURE ZONE

- 108 The Potential Offshore Infrastructure Zone for IEMEP is divided into two zones as set out below and as shown in Figure 6.1:
  - Potential Turbine Array Infrastructure Zone:
    - This zone will contain the WTGs, floating platforms, mooring systems and anchors, the associated Inter-Array Cables, Offshore Substation Platform(s) and Offshore Accommodation Platform. The current area of the Potential Turbine Array Infrastructure Zone is 883 km<sup>2</sup>, with the closest part of this zone to shore being approximately 22 km. Water depths in this zone are expected to range from approximately 74 m to 92 m below Lowest Astronomical Tide (LAT).
    - Ongoing refinement of The Proposed Development means that not all of the Potential Turbine Array Infrastructure Zone will be utilised for IEMEP. Following an iterative design process, refinement of the Potential Turbine Array Infrastructure Zone will result in a significantly smaller final Turbine Array Infrastructure Zone than that identified at the time of writing of this EIAR Scoping Report. The design process considers any likely environmental impacts identified through the EIAR process as well as feedback from stakeholders, both of which will influence the final design.
  - Potential Export Cable Corridor Infrastructure Zone:
    - This zone is located between the Potential Turbine Array Infrastructure Zone and the coast where the Cable Landfall for the Offshore Export Cable will be located. The current area of the Potential Export Cable Corridor Infrastructure Zone is 474 km<sup>2</sup>. This area will be refined and reduced significantly as a preferred Offshore Export Cable corridor(s) and as siting of the offshore and onshore infrastructure are determined.



109 The following sections outline the infrastructure proposed to be located within the Potential Turbine Array Infrastructure Zone.



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#### 6.4.1 Wind Turbine Generators

- 110 The choice of a preferred WTG technology will be made once site surveys have been undertaken and following a thorough review of the WTG technology and market availability of models. Consequently, the final number, dimensions and generating capacity of the WTGs is not available at the time of writing of this EIAR Scoping Report. The exact number of WTGs to be installed will depend on a number of factors that will be fully considered, including:
  - The area within the Potential Turbine Array Infrastructure Zone that is considered most suitable, in terms of seabed conditions for development, following completion of site surveys;
  - Key environmental constraints and considerations identified through the EIAR Process including for example, marine mammal receptors, visual receptors, seabed habitats, shipping traffic etc.;
  - Discussions with and views of stakeholders, including, but not limited to the public, fisheries stakeholders, and other consultees including those set out in Appendix 1 of this EIAR Scoping Report; and
  - The final WTG size/capacity selected.
- 111 Based on the WTGs that are expected to be available to the market at the time The Proposed Development would be entering its Construction Phase, it has been assumed for the purpose of developing this EIAR Scoping Report that WTGs in the range of 15 MW to 20 MW would be under consideration for deployment.
- 112 Due to the water depths in the Potential Turbine Array Infrastructure Zone, the WTGs will be floating (as opposed to using fixed foundations). The WTG tower will rest upon a transition piece, which will then connect to a floating substructure. The floating substructure will be kept in position using a Mooring System (also known as a Station Keeping System (SKS)). The Mooring System will comprise a catenary or taut mooring line connected to an anchoring system on the seabed.
- 113 The WTGs may be fitted with appropriate aviation and navigation markings and lighting in accordance with relevant guidance and legislation and in consultation with the relevant stakeholders. **Table 6.1** sets out indicative WTG parameters for WTG components which are illustrated in **Plate 6.1**.

Table 6.1 Indicative Wind Turbine Generator Parameters

Parameter	15 MW WTG	18 MW WTG	20 MW WTG
Estimated number of WTGs	74	62	55
Estimated Rotor Diameter	236 m	265.4 m	285 m



Parameter	15 MW WTG	18 MW WTG	20 MW WTG
Estimated Individual Rotor Swept Area	43,744 m <sup>2</sup>	55,321 m <sup>2</sup>	63,794 m²
Estimated Minimum Blade Tip Height ('Air Gap') above the waterline	22 m	22 m	22 m



Plate 6.1 Example Floating Wind Turbine Generator

### 6.4.2 Floating Substructures

114 There are a number of different WTG floating substructure systems under consideration for The Proposed Development with the most common types illustrated in **Plate 6.2**, and with brief descriptions provided below. It should be noted that the selection of final floating substructure(s) will be reflected in the design to be assessed in the future EIAR and NIS to be submitted in support of a Development Permission application for The Proposed Development.





Plate 6.2 Potential Floating Substructure Types

# 6.4.2.1 Barge Substructure

115 There are several different types of barge substructure technology currently under consideration for The Proposed Development such as a steel or concrete barge or a moonpool type solution. Floating barge substructures require considerable quantities of construction material, as the stability of the substructure is created by the large footprint of the barge.

### 6.4.2.2 Semi-Submersible Substructure

116 A semi-submersible substructure is a buoyancy-stabilised platform which floats, semi-submerged, on the surface of the ocean whilst anchored to the seabed via mooring lines. These structures normally comprise three ballasted tanks (buoys) connected together. The platform can be deployed at a port unballasted, then filled with seawater on site to submerge a portion of the structure.



### 6.4.2.3 Tension Leg Platform (TLP) Substructure

117 TLPs utilise a semi-submerged buoyant substructure moored to anchors at the seabed with tensioned vertical tethers providing stability. The overturning stability of the structure is provided by the tension anchors which reduces the overall dimensions of the substructure.

#### 6.4.2.4 Spar Buoy Substructure

118 In this arrangement, the WTG is fixed to a large, submerged ballasted buoy which is constructed in steel or concrete. The ballast in the buoy is provided by either water or concrete. The purpose of the ballast is to provide a very low centre of mass to the structure which stabilises the structure. To provide the very low centre of mass, a significant draft (depth of structure below water) is required.

### 6.4.3 Mooring Systems (or Station Keeping Systems)

119 In order to maintain their position, each WTG will be attached to the seabed using a mooring system. A number of different mooring systems are currently under consideration for The Proposed Development, as described below. The final selection of the mooring system will depend on the floating substructure to be used, its key parameters (affecting loads), environmental and geotechnical considerations as well as stakeholder feedback. It should be noted that the selection of final mooring system will be reflected in the EIAR and NIS to be submitted in support of the Development Permission application.

### 6.4.3.1 Anchoring Systems

As part of the overall mooring system, a number of different potential anchoring system options are currently under consideration for The Proposed Development, as shown in **Plate 6.3** and **Table 6.2**. The selection of the final anchoring system, along with numbers/dimensions/mass of the anchors, has not yet been determined at the time of writing of this EIAR Scoping Report. Further, refined detail will be included in the design assessed in the EIAR and NIS to be submitted in support of a Development Permission application for The Proposed Development. It should be noted that new, state of the art anchoring systems are currently being developed and if selected, will be assessed in the EIAR and NIS as appropriate.





Plate 6.3 Potential Anchoring System Options

#### Table 6.2 Potential Anchoring System Options

Anchoring Type	Description		
Drag Embedment	A drag embedment anchor is designed to penetrate the seabed, either partially or fully. The holding capacity of the anchor is generated by the resistance of the substrate in front of the anchor.		
	The holding capacity of a drag embedment anchor depends on the anchor type, opening angle of the flukes, anchor size, embedded depth, stability of the anchor during dragging, soil strength characteristics, type and size of chain or rope, and installation procedure.		
Plate Anchors	Plate anchors can be divided into two categories:		
	<ul> <li>The drag-in plate anchor is installed by dragging the anchor through the soil similarly to a conventional drag embedded anchor; and</li> <li>The push-in plate anchor can be installed by gravity, hydraulic, propellant, impact hammer or suction. The suction embedded plate anchor, dynamically embedded</li> </ul>		



Anchoring Type	Description
	plate anchor, impact / vibratory driven anchor and jetted-in anchor are types of push-in plate anchors. Once the plate anchor has reached the required penetration depth, it rotates to be perpendicular to the direction of load application.
Suction-Caissons	Suction-caissons are cylindrical structures usually made of steel with a large diameter opening at the base and closed at the top. This anchoring system can be utilised in softer sediments but are not appropriate for hard seabed conditions.
	If self-weight penetration into the seabed is insufficient, Suction-caissons are installed using a pump attached to the top of a lid that creates a differential pressure within the cylindrical foundation compartment ensuring the required adhesion to the seabed.
Piled Anchors	Driven piles are a well-established anchoring technology for offshore renewable energy projects with the piles embedded into the seabed, with the top of the pile located at seabed level.
	Piles are extremely versatile because they can be installed in soil profiles ranging from soft clay to soft rock. Piles can also resist any load orientation, making them suitable for a wide range of mooring systems. Installation requires a working platform. Drilled and grouted piles may be required in rocky conditions whereas hydraulic hammers are used to install pile anchors in softer seabed conditions. Pumps would be required to install suction piles.
Deadweight	Deadweight anchors are made from steel or reinforced concrete. The design can be a simple concrete block or caisson, or more complex including skirts and shear keys to enhance sliding resistance. Deadweight anchors usually have sufficient weight to self-penetrate into the seabed.
	Deadweight anchors can be fabricated on a barge or floating dock, towed to their deployment location, and installed by ballasting and/or by infilling the solid ballast in the cells of the caisson. This solution requires minimal on-site seabed preparation and the installation process is simplified because there is no need for anchoring of handling vessels and no driving into the seabed is required.

# 6.4.3.2 Mooring Lines

- 121 The anchors will most likely be connected to the floating substructure via heavy duty marinegrade chain. However, the lines may potentially comprise wire rope, fibre rope, tensioners and connectors. The mooring line option will depend on a number of factors including the forces generated in the selected configuration, as well as environmental considerations such as the potential for interaction with the seabed.
- 122 The number of mooring lines will be dependent on a number of factors, including the selection of the floating substructure with an estimated nine lines potentially required. The length, radius of



the mooring lines and any seabed swept area will be determined following further refinement, including their potential environmental effects.

### 6.4.4 Wind Measurements

123 An estimated two floating LiDAR buoy(s) will be used to collect wind data for The Proposed Development (as opposed to a meteorological mast fixed to the seabed). The buoys will most likely be anchored to the seabed during the Construction Phase and have the potential to remain *in situ* during Operation and Maintenance. The final selected floating LiDAR will be considered within the EIAR and NIS to be submitted in support of the Development Permission application for The Proposed Development.

### 6.4.5 Inter-Array Cables

- 124 Inter-Array Cables connect the WTGs to each other and to the Offshore Substation Platform(s). An estimated 185 km of Inter-Array Cables may be required for The Proposed Development, with the final length dependant on the layout of the WTGs and on the location of the Offshore Substation Platform(s). Wherever practicable, the Inter-Array Cables may be buried into the seabed for protection, generally, a minimum of 0.5 m to a maximum of around 3 m into the sediment where possible. A Cable Burial Risk Assessment (CBRA) will be undertaken to determine the approach to Inter-Array Cable burial. An indicative burial trench and spoil width of 20 m may result in up to 3.7 km<sup>2</sup> of seabed disturbance. **Plate 6.4** identifies the indicative components of the Inter-Array Cables.
- 125 The Inter-Array Cables are connected to the WTGs by a dynamic cable connected to a static cable section at the subsea transition joint (**Plate 6.4**). A dynamic cable is a robust but flexible cable able to provide a flexible connection to the WTG via a tensioning subsurface buoyancy system.





Plate 6.4 Potential components of an Inter-Array Cable System

- 126 The Inter-Array Cables exit the WTG floating substructure via a dynamic cable section and eventually reach the seabed, where they will subsequently either lie on the seabed or are buried. Potential burial techniques in a trench include pre-lay plough, simultaneous lay and burial, use of a jetting tool or mechanical cutting. The selection of the final burial technique(s) will depend on the seabed conditions along the cable route and potential environmental impacts.
- 127 Where cable burial is not possible, seabed surface cable protection measures may be employed such as the placement of rock or concrete mattressing over the surface-laid cable for protection.

# 6.4.6 Offshore Platforms

128 The WTGs will be connected via the Inter-Array Cables to one or more Offshore Substation Platforms which provide a centralised connection point for the Inter-Array Cables and house the offshore transformers and associated electrical equipment. Here the power will be converted into a higher voltage for transmission to the Onshore Project Substation(s). Key dimensions and details of the Offshore Substation Platforms will be reflected in the design to be assessed in the future EIAR and NIS to be submitted in support of a Development Permission application for The



Proposed Development. The Offshore Substation Platform(s) will be designed to ensure adherence to EirGrid requirements.

- 129 The Offshore Substation Platform(s) may either utilise floating substructures or jacket foundations. Jacket foundations are structures that comprise three or four legs, cross linked in a lattice formation, typically made of steel. Each leg is secured to the seabed through either a pile, or a suction-caisson, depending on the ground conditions. The exact dimensions of a jacket foundation would depend on the size of the structure being supported and also on the site-specific ground conditions. Installation methods for jacket foundations depend on the seabed conditions and may include percussive piling and/or vibro piling. At certain locations, ground conditions may require drilling prior to piling or, a drill and drive combination of techniques. Any drill arisings produced by this activity would most likely be deposited *in situ* in close proximity to the pile location. Scour protection is also likely to be required at some foundation locations, dependent on the local wave/tidal regime. A range of possible options will be considered for scour protection including rock placement; frond mats; concrete mattressing; or the use of integrated skirts / aprons.
- 130 An Offshore Substation Platform may contain an offshore Emergency Overnight Accommodation module (as per EirGrid specifications, assuming that the Offshore Substation Platform is normally unmanned).

### 6.4.7 Offshore Export Cables

- Electricity from the Offshore Substation Platform(s) will be transmitted to shore by Offshore Export Cables located within the Potential Export Cable Corridor Infrastructure Zone (see Figure 6.1). The Proposed Development may require up to three export circuits installed in separate trenches, noting that fibre optic data cables are likely to be integrated within each of the cables.
- 132 The final Offshore Export Cable route(s) selection will depend on a number of factors including, but not limited to:
  - Cable Landfall location(s);
  - Technical constraints (including seabed conditions);
  - Environmental and other constraints;
  - Discussions with and views of stakeholders, including, but not limited fisheries stakeholders, and other relevant consultees; and
  - Final Turbine Array and Offshore Platform location(s) and layout.
- 133 The routing, sizing and configuration of the Offshore Export Cable(s) will be subject to detailed design studies. As discussed with respect to the Inter Array Cables, potential cable burial techniques include pre-lay plough, simultaneous lay and burial and the use of a jetting tool to



liquify sandy sediments and enable the cable to be directly installed without trenching or mechanical cutting. The selection of the final burial technique(s) will depend on the seabed conditions along the Offshore Export Cable route and potential environmental impacts.

134 Cable or pipeline crossings may be required by the Offshore Export Cable(s). Any crossings will be designed in order to protect the integrity of existing assets and the health/safety of other users of the sea, with deployment of rock, concrete mattressing or other techniques used at specific locations as required where cable burial is not possible. All methods will be pre-agreed with the asset owner and subject to the most appropriate industry and technical standards.

### 6.4.8 Cable Landfall(s)

- 135 The Offshore Export Cable(s) will come ashore and connect to the Onshore Cable(s) in underground Transition Joint Bays above Mean High Water at the Cable Landfall location(s). The final Cable Landfall location(s) will be selected once a point of connection has been confirmed and its configuration will be location specific. Technical, environmental, and social factors will be key considerations for the selection of the Cable Landfall location(s).
- 136 Installation methods for bringing the Offshore Export Cable(s) ashore at the Cable Landfall(s) will be selected based on a comparative assessment of impacts of construction techniques under consideration including open cut trench, horizontal directional drilling (HDD) or other trenchless cable installation techniques (for e.g. micro tunnelling).
- 137 A temporary onshore compound will be required during the Construction Phase. This compound will contain the required shore-based equipment to carry out the Cable Landfall works, including the storage and marshalling of bulk materials and equipment, as well as welfare facilities for construction personnel.

### 6.4.9 Construction

- 138 Fabrication of the main infrastructure components to be installed in the Potential Offshore Infrastructure Zone will be undertaken off-site. It is anticipated that the components will be marshalled and stored for assembly at a port before being assembled and loaded out for installation. For a development of this scale to utilise Irish Ports, investment in Irish Ports will be necessary to facilitate the marshalling, storage, assembly and load-out. A port selection process to identify suitable assembly and load-out facilities will be undertaken and will include an assessment with respect to local content, logistics, commercial agreement, existing/proposed infrastructure, and capacity.
- 139 In addition to the assembly and load-out port, it is possible that the floating substructures may need to be stored in a sheltered offshore location, referred to as a 'wet storage' location, prior to



being installed in the Potential Turbine Array Infrastructure Zone in batches. The potential location of a temporary 'wet storage' facility will be subject to a rigorous assessment process.

- 140 Following seabed preparation, the construction sequence for a typical floating WTG is as follows (noting that the last four items may be undertaken at the port):
  - Installation of the mooring system;
  - Installation of any required scour protection and Inter-Array Cables;
  - Installation of the floating substructure;
  - Installation of the WTG tower;
  - Installation of the nacelle; and
  - Installation of the blades.
- 141 The mooring system and WTG are likely to be installed by using jack-up vessels with the WTG components (tower, nacelle and blades) typically transported from the fabrication site or wet storage location to the Potential Turbine Array Infrastructure Zone by specialist vessel.
- 142 Specific seabed preparation in advance of WTG installation may be required to facilitate anchor installation (as well as the Inter-Array Cables). Such operations could include seabed levelling, ground reinforcement, and the removal of surface and subsurface debris (which may require excavation), such as boulders and fishing nets etc.
- 143 Geophysical survey data of suitable spatial resolution will allow for identification and quantification of Unexploded Ordnance (UXO) risk. Pre-construction surveys for The Proposed Development will further determine the presence of any UXO. In the event that UXO are identified, they will be either avoided, removed or cleared in situ.
- 144 For the installation of the Offshore Substation Platform(s), it is expected that a heavy lift offshore wind installation vessel or jack-up vessel will be required.
- 145 The Offshore Export Cable(s) will be installed by a specialist cable installation vessel. Similar to the Inter-Array Cables, installation of the Offshore Export Cable(s) is typically undertaken by ploughing, jetting, trenching, post-lay burial or mechanical cutting as required depending upon the seabed conditions present.
- 146 Offshore construction is expected to be a 24-hour operation and will be weather dependant.

### 6.4.10 Operation and Maintenance

147 To operate and maintain The Proposed Development, an Operation and Maintenance facility will be required from which the offshore wind farm can be remotely monitored and operated. The facility may include offices, welfare facilities, stores, berthing facilities for Crew Transfer Vessels



(CTVs) and a helipad may also be required. The Operation and Maintenance facility will ideally be located as close as practicable to the offshore infrastructure for The Proposed Development to minimise steaming time for the vessels and crew undertaking maintenance tasks. The selection of an Operation and Maintenance facility will be subject to a rigorous review of the potential options and commercial conditions. An Operation and Maintenance strategy will be developed once the Operations and Maintenance facility location and wind farm technical specifications are known. It is anticipated that the Operation and Maintenance strategy will rely primarily on CTVs, service operation vessels, potential offshore accommodation, supply vessels, and helicopters for any medical evacuation.

148 Maintenance will include both preventative and corrective measures with preventative measures undertaken according to schedule and with corrective measures such as repairs, replacements and retrofitting undertaken as and when an issue arises.

### 6.5 POTENTIAL ONSHORE INFRASTRUCTURE ZONE

- 149 The Potential Onshore Infrastructure Zone is currently located within the municipal districts of East Cork, Cobh and Carrigaline.
- 150 The Potential Onshore Infrastructure Zone comprises the area under consideration for the Onshore Cables between the Transition Joint Bay(s), Onshore Project Substation(s) and the potential Connection Point(s). The Potential Onshore Infrastructure Zone will be refined prior to submission of the Development Permission application for The Proposed Development.
- 151 The following sub-sections outline the potential infrastructure to be located within the Potential Onshore Infrastructure Zone presented in **Figure 6.2.**



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#### 6.5.1 **Potential Connection Point(s)**

- 152 The Potential Connection Point(s) is / are the point(s) at which The Proposed Development will connect to the grid and / or other power offtake. At this early stage in the development of IEMEP, whilst a grid connection is anticipated, other options for the use of the clean renewable energy generated by The Proposed Development are under consideration.
- 153 The Potential Connection Point(s) is / are the subject of ongoing studies, but may be at one or more of the following existing 220 kV ESB Networks (ESBN) substation(s) or a potential loop-in connection to an existing underground cable or overhead line. The Applicant is currently undertaking technical and connection feasibility studies, and preliminary design optioneering of the connection options (see **Section 6.5.2.1**). The Applicant is committed to an open discussion on the design of The Proposed Development and its progression as described in **Volume A**, **Chapter 3** (Stakeholder Engagement and Consultation).
- 154 These existing 220 kV ESBN substations are:
  - Raffeen 220 kV Substation (in the townland of Raffeen in Carrigaline, County Cork) located approximately 1.4 km (straight line distance) from the coast of County Cork.
  - Aghada 220 kV Substation (in the townland of Aghada in Whitegate, County Cork) located approximately 0.3 km (straight line distance) from the coast of County Cork.
  - Glanagow 220 kV Substation (in the townland of Glanagow in Whitegate, County Cork) located approximately 0.7 km (straight line distance) from the coast of County Cork.
  - Knockraha 220 kV Substation (in the townland of Ballynanelagh, Knockraha, County Cork) located approximately 11 km (straight line distance) from the coast of County Cork.
- 155 The existing substations are in the ownership of the onshore Transmission Asset Owner (TAO), ESBN.
- 156 The ESBN substations(s) may require additional infrastructure to facilitate the transmission of electricity from new renewable energy generation capacity (as determined by EirGrid studies and requirements).



- 157 In developing the connection options for The Proposed Development, the option of a potential loop-in connection is also currently under consideration for IEMEP. A loop-in connection would involve the creation of a new grid connection to an existing overhead line or to a buried 220 kV underground cable. Potential loop-in connection options are being considered by the Applicant along the existing 220 kV lines shown in **Figure 6.2**. A loop-in connection will require an Onshore Project Substation(s), as described in **Section 6.5.2**. It may also require transmission infrastructure to accept the electricity from The Proposed Development and feed it into the grid. Any loop in connection would be agreed with EirGrid and would conform to the relevant EirGrid Functional Specifications.
- 158 The extent of any potential works that may be required to existing overhead structures or underground cables to facilitate a loop-in of The Proposed Development will be the subject of technical studies. It is anticipated that, should a loop-in connection be pursued, a small number of new overhead line structures may be required to enable this connection option. It is also anticipated that some existing structures may be removed.
- 159 While The Proposed Development is focusing on 220 kV connection options, the option of upgrading existing 110 kV overhead lines in order to carry higher voltage is also currently under consideration. This potential option is subject to further studies.

### 6.5.2 Onshore Project Substation(s)

- 160 One or more Onshore Project Substation(s) will be required to facilitate The Proposed Development. New Offshore Functional Specifications are expected to be released by EirGrid during 2022. These will set out further requirements for the Onshore Project Substation(s).
- 161 The Onshore Project Substation(s) will be either of an Air Insulated Switchgear type or a Gas Insulated Switchgear type.
- 162 An Air Insulated Switchgear substation uses air as the main insulation for the exposed electrical conductors. In an Air Insulated Switchgear substation the busbars and switchgear equipment are located outdoors, and the live equipment is spaced at a sufficient distance from the ground and from other equipment to maintain safe electrical and maintenance clearances. A control building is required to house control and protection equipment as well as battery systems and welfare facilities. The Air Insulated components need to be separated from each other. These clearance requirements result in a relatively large substation footprint when compared to a Gas Insulated Switchgear substation.
- 163 Gas Insulated Switchgear substations are typically located indoors within a steel portal frame building. This allows for easier installation and maintenance and provides protection from the weather. It also provides better security and allows cable circuits to be installed in a more flexible



manner. The building is also used to house control and protection equipment, battery systems and welfare facilities. Gas Insulated Switchgear substations are more compact and occupy significantly less area than an Air Insulated Switchgear equivalent substation. The use of Gas Insulated Switchgear does however require relatively small amounts of insulating gases. Gas Insulated Switchgear systems are more costly than their Air Insulated alternatives.

- 164 **Plate 6.5** presents an image of a typical Gas Insulated Switchgear substation. **Plate 6.6** presents an image of a typical Air Insulated Switchgear substation. **Plate 6.7** presents an indicative layout drawing for a typical 220 kV Gas Insulated Switchgear substation. As part of the design process for IEMEP, a comparison between systems will be undertaken and a balanced selection of equipment made.
- 165 A connection will be required between the Onshore Project Substation(s) (see Section 6.5.2) and the existing ESBN substation(s). The nature and scale of the connection will be dependent on the location of the Onshore Project Substation(s) discussed in **Section 6.5.2** and on the number of preliminary design options under consideration (see **Section 6.5.2.1**).
- 166 The potential for a Battery Energy Storage System (BESS) to be included within The Proposed Development is undergoing technical assessment and consideration. A BESS could allow for storage of surplus energy generated by The Proposed Development during low demand periods, and release this when demand is greater. BESS units are typically of a modular type (see **Plate 6.8**).
- 167 Additional temporary Construction Compound areas are anticipated to be required during the Construction Phase of the Onshore Infrastructure to facilitate workforce welfare and safety facilities, and the storage and marshalling of materials and equipment.





Plate 6.5 Typical Gas Insulated Switchgear substation

#### Source: <u>May-update-brochure-FINAL.pdf (eirgridgroup.com)</u>



Plate 6.6 Typical Air Insulated Switchgear substation

Source: Cordal Windfarm | NeoDyne



Source: IEMEP / Mott MacDonald

Plate 6.7 Typical Gas Insulated Switchgear substation layout





 Plate 6.8 Typical Battery Energy Storage System

 Source:
 50MW battery celebrated as Northern Ireland's largest energised | Solar Power Portal

# 6.5.2.1 Onshore Project Substation Operation and Maintenance

168 Operation and Maintenance Phase activities at the Onshore Project Substation is expected to be low intensity and similar in nature to Operation and Maintenance activities at existing substations.

# 6.5.3 Proposed Onshore Cable Options

- 169 An Onshore Cable connection will be required between the Transition Joint Bay (TJB) (refer to **Section 6.5.4**) and the Onshore Project Substation(s). The connection will be determined by the findings of the ongoing technical and feasibility studies.
- 170 Should it be determined that more than one Connection Point is required, it may be possible that more than one Onshore Project Substation and more than one connection between the TJB and the Onshore Project Substation(s) may be required. On the basis that The Proposed Development will produce approximately 1 GW, three underground cable circuits will potentially be required.
- 171 Offshore HV cables are typically a three-core design, with three integrated phase conductors and optical fibre cable combined in a single armoured sheath arrangement. Onshore HV cables are



typically single core design with separately insulated power cables and optical fibre(s) running in individual ducts.

- 172 A suitable separation distance will be developed as part of the cable installation design for IEMEP to allow access for maintenance or repair, if necessary. The exact spacing will be agreed with EirGrid. New Offshore Functional Specifications are expected to be released by EirGrid during 2022 which will provide further guidance regarding onshore underground grid connection cabling requirements. This guidance will inform the design process for IEMEP.
- 173 Whilst both in-road and off-road options for underground cable routing are under consideration, there is a general preference for in-road cable installation where this is practicable.

## 6.5.3.1 In-road Option

- 174 Given the local road network within the Potential Onshore Infrastructure Zone, temporary road closures and traffic diversions to facilitate installation of the Onshore Cables are likely to be required.
- 175 Underground cabling works will involve the installation of ducting, Joint Bays and associated ancillary infrastructure. This will require movement of plant and construction materials, followed by excavation, laying of cables and subsequent reinstatement of trenches. It is expected that for in-road installations, full and partial road closures will be put in place to facilitate underground cabling works along with appropriate traffic management.
- 176 In-road options are under consideration whereby single or double circuit Onshore Cables would be installed along more than one in-road route, if necessary, minimising the amount of off-road sections required.



177 **Plate 6.9** presents an image of a typical in-road cable duct installation.

Plate 6.9 A typical in-road cable duct installation (Source <u>North-Connacht-Brochure-Autumn-Update-2021.pdf</u> (eirgridgroup.com)


#### 6.5.3.2 Off-road Option

- 178 Subject to the distance between the TJB and the Onshore Project Substation(s), the findings of ongoing studies, along with EirGrid and landowner agreement, an off-road option to install three Onshore Cable circuits may be feasible.
- 179 Subject to the length of the off-road option / sections, permanent tracks to provide access to Joint Bays for maintenance during the Operation and Maintenance Phase (refer to **Section 6.5.3.2.1**) may be required.

### 6.5.3.2.1 Joint Bays and Passing Bays

- 180 The Onshore Cable will be delivered to site on drums for installation within ducts. Joint Bays will be required to be installed along the Onshore Cable route to join consecutive lengths of cable and to facilitate cable pulling. These are underground chambers which are used as the location to pull the various lengths of Onshore Cable through pre-installed ducts, and to connect ("Joint") together those lengths of Onshore Cable into a single overall circuit. Provision will also be made for the installation of communications chambers and link box chambers at various Joint Bay locations.
- 181 Temporary Passing Bays may be required along in-road Onshore Cable routes to facilitate the installation of Joint Bays.
- 182 Suitable Joint Bay locations along the underground cable route will be identified and assessed as part of the EIAR. Joint Bays are anticipated to be installed at intervals along the Onshore Cable route.
- 183 **Plate 6.10** presents an image of a typical Joint Bay.



Plate 6.10 A typical Joint Bay. Source: North-Connacht-Brochure-Autumn-Update-2021.pdf (eirgridgroup.com)



#### 6.5.3.2.2 Water and Utility Crossings

184 Detailed utilities / services location assessments, engagement with utility providers, site walkovers, field studies and reviews of publicly available datasets will be required to identify specific locations of crossings to inform design. A number of crossings are anticipated to be required along the Onshore Cable routes. It is anticipated that these crossings will be facilitated by either open cut trenching or by a trenchless crossing technique such as Horizontal Directional Drilling (HDD), as appropriate.

### 6.5.3.3 Proposed Onshore Cable Operation and Maintenance

- 185 For offshore generation connecting to the grid, it is understood that EirGrid, the Transmission System Operator (TSO), will ultimately be the asset owner for all cable and substation assets between the Offshore Substation Platform and the Onshore Project Substation(s).
- 186 It is anticipated therefore that Operation and Maintenance of the proposed Onshore Cable route will be undertaken by EirGrid.
- 187 Routine Operation and Maintenance of the Onshore Cable are generally confined to remote monitoring of cable performance and occasional access and inspection of Joint Bays and link boxes.

#### 6.5.4 Proposed Transition Joint Bay

- 188 The Offshore Export Cable from the Offshore Substation Platform will be brought ashore at potential Cable Landfall location(s).
- 189 The Onshore Cables and the Offshore Export Cables will join at a TJB.
- 190 All permanent infrastructure at the TJB will be underground and will consist of:
  - Underground concrete chambers which will house the joints between the Offshore Export Cables and the Onshore Cables;
  - Communications chamber(s), which will house the joint between the offshore communications / fibre optic link and the land communications / fibre optic link and access to the fibre optic power supply cable; and
  - Link box chamber, which will provide an earthing point for the cable sheaths.
- 191 The underground chambers will consist of reinforced concrete base slab and walls. The chambers will be backfilled with a suitable material (such as cement bound sand) following installation of the cable joints. The top layer will then be backfilled. The TJB will be provided with removable lids to facilitate access for maintenance.



#### 6.5.5 Proposed Onshore Construction Phase Activities

192 Subject to the grant of statutory approvals, it is anticipated that the onshore Construction Phase will commence in 2027, with the onshore elements of The Proposed Development becoming fully operational by 2030.

## 6.5.5.1 Temporary Construction Compounds

- 193 During the Construction Phase, it will be necessary to provide temporary facilities for the storage and marshalling of bulk materials and equipment as well as welfare facilities for construction personnel. Temporary Construction Compounds will be constructed at selected locations within the Potential Onshore Infrastructure Zone to meet these requirements. The location of the temporary Construction Compounds will be selected during the course of the design process.
- 194 Facilities to be provided in temporary Construction Compounds will include the following:
  - Site offices and welfare units in the form of modular temporary units;
  - Employee parking;
  - Tanks for water supply;
  - Storage containers;
  - Surface and wastewater drainage infrastructure;
  - Diesel generators;
  - Waste management areas;
  - Bunded fuel storage areas;
  - Signage;
  - Temporary access roads;
  - Lighting;
  - CCTV and other security measures as necessary; and
  - Material/non-fuel storage areas.
- 195 All temporary Construction Compound facilities will be removed, and the lands reinstated on completion of the Construction Phase of The Proposed Development.

#### 6.6 DECOMMISSIONING

196 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and shall reflect the available guidance, best practice, technology, techniques and statutory requirements at the time, as well as any conditions of the Development Permission specific to Decommissioning.



- 197 The Decommissioning/Rehabilitation Plan will provide details for:
  - The Decommissioning of infrastructure;
  - The removal of infrastructure;
  - The partial removal of infrastructure;
  - The re-use of infrastructure for the same or another purpose;
  - The burying or encasing of infrastructure;
  - The removal of any deposited or waste material; and / or
  - The retention of infrastructure in-situ where appropriate.
- 198 The Decommissioning/Rehabilitation Plan will also identify:
  - The proposed programme of Decommissioning/rehabilitation works;
  - The proposed date on which the programme will start to be implemented;
  - The proposed date on which the programme will have been fully implemented;
  - The estimated costs of the programme; and
  - The expected timelines for applying for and obtaining any other authorisations required to enable discharge of the plan.

# 6.7 **REFERENCES**

Environmental Protection Agency (2015) Design out waste - a design team guide to waste reduction in construction and demolition projects. Research Review

Environmental Protection Agency (2021) Best practice guidelines for the preparation of resource & waste management plans for construction & demolition projects [Online] Available at: < <u>https://www.epa.ie/publications/circular-economy/resources/best-practice-guidelines-for-thepreparation-of-resource--waste-management-plans-for-construction--demolition-projects.php</u>> Accessed 08/06/2022



# 7 VOLUME A CHAPTER 7 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

### 7.1 INTRODUCTION

- 199 This section sets out the proposed approach to the EIAR to be prepared to support the Development Permission application for The Proposed Development as discussed in **Volume A**, **Chapter 6** (The Proposed Development) of this EIAR Scoping Report.
- 200 The technical chapters in Volumes B, C, D and E of this EIAR Scoping Report provide further topic specific details of the proposed methodologies that will be applied in the preparation of the EIAR. For each assessment, a precautionary approach<sup>7</sup> will be applied.

### 7.2 ENVIRONMENTAL IMPACT ASSESSMENT REPORT PROCESS

- 201 Environmental Impact Assessment (EIA) Directive 2011/92/EU on the assessment of the effects of certain public and private projects as amended by Directive 2014/52/EU (hereafter termed 'the amended EIA Directive') defines EIA as a process consisting of:
  - The preparation of an Environmental Impact Assessment Report (EIAR) by The Applicant;
  - The carrying out of consultations;
  - The examination by the Competent Authority of the EIAR, any supplementary information provided by The Applicant (where necessary) and relevant information received through consultations with the public, prescribed bodies and any affected Member States;
  - The reasoned conclusion of the Competent Authority on the significant effects of the project on the environment; and,
  - The integration of the Competent Authority's reasoned conclusion into any development consent decision.
- 202 This definition provides for a clear distinction between the process of EIA to be carried out by the Competent Authority and the preparation by The Applicant of an EIAR.
- 203 The Guidelines on the information to be contained in Environmental Impact Assessment Reports (Environmental Protection Agency (EPA), 2022), hereafter referred to as the EPA 2022 Guidelines, describe the EIAR as follows:

<sup>&</sup>lt;sup>7</sup> Principle adopted by the United Nations (UN) Conference on the Environment and Development (1992) which states that in order to protect the environment, a precautionary approach should be widely applied, meaning that where there are threats of serious or irreversible damage to the environment, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation. (European Commission, 1992).



- 204 "The EIAR presents the results of a systematic analysis and assessment of the significant effects of a proposed project on the receiving environment. The amended EIA Directive prescribes a range of environmental factors which are used to organise descriptions of the environment and these factors must be addressed in the EIAR....The EIAR should be prepared at a stage in the design process when changes can still be made to avoid significant adverse effects. This often results in the modification of the project to avoid or reduce effects through redesign."
- 205 The amended EIA Directive requires that the EIAR provides:

"A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge".

206 Article 3(1) of the EIA Directive states that the EIAR shall:

*"Identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of the project on the following factors:* 

- Population and human health;
- Biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;
- Land, soil, water and climate;
- Material assets, cultural heritage and landscape; and
- The interaction between the factors referred to in points (a) to (d)".
- 207 Article 5 of the EIA Directive states that an EIAR shall include at least:
  - "A description of the project comprising information of the site, design, size and other relevant features of the project;
  - A description of the likely significant effects of the project on the environment;
  - A description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce, and if possible, offset likely significant adverse effects on the environment;
  - A description of the reasonable alternatives studied by the developer which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;
  - A non-technical summary of the information referred to in (a) to (d); and
  - Any additional information specified in annex iv relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected".



#### 208 Annex IV of the EIA Directive requires that;

"The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short term, medium term and long term permanent and temporary, positive and negative effects of the project. The description should take into account the environmental protection objectives established at Union or member State level which are relevant to the project".

### 209 In addition, Annex IV of the EIA Directive requires that:

"A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved".

### 7.3 EIA SCREENING

- 210 Screening is the term used to describe the process for determining whether a development requires an EIA by reference to mandatory legislative threshold requirements or by reference to the type and scale of the development and the significance or the environmental sensitivity of the receiving baseline environment.
- 211 Annex I to the amended EIA Directive 2014/52/EU requires as mandatory the preparation of an EIA for all projects listed therein. Projects listed in Annex II to the Directive are not automatically subjected to EIA. Member States can decide to subject them to an assessment on a case-by-case basis or according to thresholds and/or criteria (for example size), location (sensitive ecological areas in particular) and potential impact (surface affected, duration).
- 212 The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296/2018) amended the Planning and Development Act 2000 and the Planning and Development Regulations 2001 in order to transpose into Irish Law the provisions of Directive 2014/52/EU.
- 213 In Ireland, Schedule 5 (Part 1 and Part 2) of the Planning and Development Regulations 2001, as amended, transposes Annex I and Annex II to amended EIA Directive 2014/52/EU. The Proposed Development is an offshore wind farm project under Schedule 5 Part II Class 3(i) i.e. Installations for the harnessing of wind power for energy production (wind farms) with more than 5 turbines or having a total output greater than 5 megawatts. It is therefore anticipated that an EIAR will be required to support the Development Permission application. The determination as to whether or not an EIA is required must however be made by the Competent Authority



### 7.4 EIA SCOPING

214 Scoping is defined in the European Commission guidance (European Commission, 2017) as:

"The process of identifying the content and extent of the information to be submitted to the Competent Authority under the EIA process."

- EIA Scoping is the process of identifying the significant issues which should be addressed by a particular impact assessment as well as the means or methods of carrying out the assessment.
- 216 EIA Scoping can be an informal process and, as outlined in the EPA (2022) Guidelines:

"The potential for likely significant effects throughout different Phases of the proposed project are considered as far as possible at scoping stage – whether they would individually require consent or not. These include, as relevant, site investigations, construction, commissioning and operation to eventual decommissioning. Scoping also considers the range of alternatives to be considered in an EIAR."

- 217 This EIAR Scoping Report has been produced by a team of environmental specialists (see **Section Volume A, Chapter 1, Section 1.6**) working in close collaboration with design engineers and the wider Applicant team. An iterative design and consultation process will be followed to incrementally evolve the design of The Proposed Development with appropriate consideration given to the potential for alternative approaches and techniques.
- 218 Scoping will continue throughout the environmental assessment process and the overall design of The Proposed Development and scope of the EIAR will be amended appropriately in light of any key issues identified or new information gathered from consultation and engagement. The aim of the EIAR Scoping Exercise for The Proposed Development is set out in **Volume A Chapter 1**, **Section 1.4**.

### 7.5 EIAR METHODOLOGY

### 7.5.1 Regulations and Guidelines

- 219 The EIAR will be prepared having regard to the following guidelines.
  - The EPA (2022) Guidelines;
  - Environmental Protection Agency (EPA) Advice Notes for Preparing Environmental Impact Statements (Draft 2015);
  - Department of Housing, Planning and Local Government (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment; a



- European Commission Environmental Impact Assessment of Projects, Guidance on the preparation of the Environmental Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU), 2017.
- Department of Communications, Climate Action and Environment (now DECC) (2017). Guidance on EIS and NIS Preparation for Offshore Renewable Energy Projects;
- Chartered Institute of Ecology and Environmental Management, CIEEM (2018). Guidelines for Ecological Impact Assessment in Britain and Ireland, Marine and Coastal;
- Department of Housing, Local Government and Heritage (2021). National Marine Planning Framework; and
- Department of Communications, Climate Action and Environment (now DECC) (2018). Guidance on Marine Baseline Ecological Assessments and Monitoring Activities for Offshore Renewable Energy Projects Parts 1 and 2.
- Further topic specific reference documents are cited within the technical chapters in Volumes B,C, D and E of this EIAR Scoping Report, as appropriate.

## 7.5.2 Receiving Environment

- 221 The receiving environment will describe the current state of environmental characteristics, detailing the condition, sensitivity and significance of relevant environmental factors which may to be affected by The Proposed Development.
- 222 The amended EIA Directive also requires consideration of the likely future receiving environment in the absence of the project, refer to **Section 7.5.9**.

"A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge".

- 223 The receiving environment presented within the future EIAR will describe the current state of environmental characteristics, detailing the condition, sensitivity and significance of relevant environmental factors which are likely to be significantly affected by The Proposed Development.
- Emerging trends (the likely future receiving environment) will be considered in the context of the baseline environment. As outlined in the EPA (2022) Guidelines:

"The environment will change over time, even without the introduction of the proposed project. Therefore the EIAR must include a description of the likely evolution of the environmental factor in the absence of the project. This predicted changing baseline may be referred to as the likely future receiving environment."



#### 7.5.3 Temporal and Spatial Scope

- The duration of effects will be described for each technical chapter of the EIAR.
- 226 Spatial (or geographical) scope refers to the area over which the EIAR considers effects. The environmental sensitivity of the surrounding geographical areas and the establishment of source-pathway-receptor linkages will determine the extent of the area to be assessed as part of the EIAR. The Source Pathway Receptor Model is commonly used in EIAR assessments and is most recently defined in the EPA (2022) Guidelines:
  - Source is the activity or place from which an effect originates (for example a construction activity).
  - Pathway is the route by which an effect is conveyed between a source and a receptor (for example air, water or soil).
  - Receptor is any element in the environment which is subject to impacts (for example humans or ecosystems).
- 227 This will be defined as a Topic-specific Study Area (i.e. the zones of influence) in each of the technical chapters of the EIAR.

### 7.5.4 Identification of Potential Receptors

- As detailed in **Section 7.5.3**, receptor is defined in the EPA (2022) Guidelines as "any element in the environment which is subject to impacts".
- 229 The environmental effect on a receptor will depend on the spatial relationship between the source and the receptor with some receptors being more sensitive than others to particular environmental effects. Topic specific receptors will be identified in each technical chapter of the future EIAR.

### 7.5.5 Identification of Likely Significant Impacts

- 230 Where appropriate and unless otherwise stated, the evaluation of impacts on the environment will be evaluated according to the criteria outlined in **Table 7.1** and as referenced in the EPA (2022) Guidelines.
- 231 It should be noted that the EPA (2022) Guidelines refer to 'effects' to describe the nature of the impact and additionally also refers to 'effects' to describe the impact on a receptor. For clarity, the EIAR will adopt the following definitions:



- Impact used to describe a change via The Proposed Development, i.e. increased suspended sediments / increased noise. Within the eventual EIAR, Impacts would be defined in terms of their magnitude/spatial extent/duration/frequency etc.
- Sensitivity of Receptor used to define the receptor being exposed to the Impact, i.e. a benthic habitat / a bird population / a species of marine mammal.
- Effect the consequence of an Impact combining with a Receptor, defined in terms of Significance (exact significance dependant on magnitude of impact by sensitivity of receptor)

Table 7.1 Description of Effects (EPA, 2022)

Category	Description of Effects		
	<b>Positive Effects</b> A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).		
Quality of Effects It is important to inform the non-specialist reader whether an effect is positive, negative or neutral	<b>Neutral Effects</b> No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error		
	<b>Negative/adverse Effects</b> A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).		
	Imperceptible An effect capable of measurement but without significant consequences.		
<b>Describing the Significance of Effects</b> 'Significance' is a concept that can have different meanings for different topics – in the absence of specific definitions for different topics the following definitions may be useful (also see Determining Significance below.).	<b>Not significant</b> An effect which causes noticeable changes in the character of the environment but without significant consequences		
	Slight Effects An effect which causes noticeable changes in the character of the environment without affecting its sensitivities		
	<b>Moderate Effects</b> An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.		



Category	Description of Effects		
	Significant Effects An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.		
	Very Significant An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.		
	Profound Effects An effect which obliterates sensitive characteristics		
Describing the Extent and Context of Effects	<b>Extent</b> Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.		
Context can affect the perception of significance. It is important to establish if the effect is unique or, perhaps, commonly or increasingly experienced.	<b>Context</b> Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)		
<b>Describing the Probability of Effects</b> Descriptions of effects should establish how likely it is that the predicted effects	<b>Likely Effects</b> The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.		
will occur – so that the CA can take a view of the balance of risk over advantage when making a decision.	Unlikely Effects The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.		
	Momentary Effects Effects lasting from seconds to minutes		
Describing the Duration and Frequency of	Brief Effects Effects lasting less than a day		
Effects 'Duration' is a concept that can have different meanings for different topics – in the absence of specific definitions for different topics the following definitions may be useful	<b>Temporary Effects</b> Effects lasting less than a year		
	Short-term Effects Effects lasting one to seven years.		
	Medium-term Effects Effects lasting seven to fifteen years		
	Long-term Effects		



Category	Description of Effects		
	Effects lasting fifteen to sixty years		
	Permanent Effects		
	Effects lasting over sixty years		
	Reversible Effects		
	Effects that can be undone, for example through remediation or restoration		
	Frequency of Effects		
	Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually)		
	Indirect Effects (a.k.a. Secondary Effects)		
	Impacts on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.		
	Cumulative Effects		
	The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects.		
	'Do-Nothing Effects'		
	The environment as it would be in the future should the subject project not be carried out.		
	`Worst case' Effects		
Describing the Types of Effects	The effects arising from a project in the case where mitigation measures substantially fail.		
	Indeterminable Effects		
	When the full consequences of a change in the environment cannot be described.		
	Irreversible Effects		
	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.		
	Residual Effects		
	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.		
	Synergistic Effects		



Category	Description of Effects
	Where the resultant effect is of greater significance than the sum of its constituents, (e.g. combination of SOx and NOx to produce smog).

232 The significance of a potential impact will be defined by the sensitivity of the receiving environment and the character of the predicted impact as shown in **Plate 7.1.** In some cases, magnitude or significance cannot be quantified with certainty, and in these cases professional judgement will be used to identify the significance of an impact.





There are seven generalised degrees of effect significance that are commonly used in EIA. Imperceptible, Not Significant, Slight, Moderate, Significant, Very Significant and Profound. Generalised definitions of each of these are provided in Table 3.4. When more specific definitions exist within a specialised factor or topic, e.g. biodiversity, these should be used in preference to these generalised definitions. (ref. Advice Notes<sup>68</sup>.)



Source: Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022)

### 7.5.6 Mitigation and Monitoring

233 In developing the future EIAR there are two main types of mitigation measures employed to avoid, prevent, reduce and offset predicted negative impacts; these are embedded mitigation and further mitigation.



- 234 Embedded mitigation refers to those measures that have been incorporated into the design of the development. Effective embedded mitigation often come through an iterative and consultative approach to project design development. Embedded mitigation ensures project objectives can be met whilst avoiding, preventing or minimising wider impacts
- 235 The second approach to mitigation is often described as 'additional' or 'further' mitigation. These are additional measures included within a project specifically to mitigate a residual environmental impact. There are established strategies for additional mitigation of effects based around avoidance, prevention, reduction and offsetting.
- As outlined in the EPA 2022 Guidelines, "offsetting<sup>8</sup> can be considered a type of 'Compensation Measure'." Offsetting will only be considered as a last resort likely significant effects cannot be avoided, prevented or reduced.
- 237 Potential additional mitigation measures may be included as committed practical measures included within the management plans which are expected to accompany the Development Permission application, for example:
  - Offshore Project Environmental Management and Monitoring Plan (including a Chemical Risk Assessment and Waste Management Plan)
  - Cable Burial Risk Assessment
  - Marine Mammal Mitigation Protocol
  - Offshore and Onshore Archaeological Written Schemes of Investigation
  - Decommissioning / Rehabilitation Plan
  - O&M Strategy
  - Onshore Construction Environmental Management Plan (this may include a Construction Resource Waste Management Plan and Traffic Management Plan)

### 7.5.7 Residual Impacts

238 Residual impacts that remain from the predicted impacts of the proposals once mitigation has been implemented will be set out in the technical chapters in the EIAR.

### 7.5.8 Decommissioning

239 The operational life of the equipment and apparatus of The Proposed Development and the activities associated with the Decommissioning Phase will be defined and assessed in each technical chapter of the EIAR.

<sup>&</sup>lt;sup>8</sup> It should be noted that different considerations apply in relation to the application of mitigation measures and compensatory measures in the context of the assessments required by Articles 6(3) and 6(4) of the Habitats Directive.



240 At this early stage of the development of the EIAR, it is anticipated that Decommissioning activities will be similar to those associated with the Construction Phase.

### 7.5.9 Do-Nothing Effects

- As outlined in the EPA 2022 Guidelines the description of Do-Nothing effects relates to 'the environment as it would be in the future should the subject project not be carried out'.
- 242 The Do-nothing scenario will be considered for each technical chapter of the EIAR.

### 7.5.10 Cumulative Effects

- 243 Cumulative effects take account of the addition of many minor or significant effects to create larger, more significant effects.
- As outlined in the EPA 2022 Guidelines, while a single activity may itself result in a minor impact, it may, when combined with other impacts (minor or significant), result in a cumulative impact that is collectively significant. A single effect which may, on its own, have a significant effect, may also have a reduced and insignificant impact when combined with other effects.
- 245 Having regard to relevant guidance in other jurisdictions (The Planning Inspectorate for England and Wales, 2019), a tiered approach will be taken to the identification of other projects, where the level of information likely to be available decreases from Tier 1 to Tier 3, as detailed below.
  - Tier 1:
    - Developments that are under construction.
    - Permitted applications, not yet implemented.
    - Submitted applications, not yet determined.
  - Tier 2
    - Development identified in the Cork County Development Plan 2022 2028, Draft Waterford County Development Plan 2022 -2028 and associated Local Area Plans (LAP's), or National Marine Planning Framework.
  - Tier 3
    - Development identified in other framework plans and programmes for future development consents / approvals, where such development is likely to occur.
- For each technical topic in the EIAR, the nature and scale of the other development will be evaluated and the potential for temporal overlap within the topic-specific Zone of Influence (ZoI) will be assessed, having regard to the potential for significant cumulative effects.



## 7.5.10.1 Intra-Project Effects

- 247 Intra-Project effects will refer to the combined impacts of The Proposed Development and other elements of IEMEP (as a whole) within the shared ZoI. This assessment also brings together the offshore and onshore elements of The Proposed Development.
- 248 All activities associated with the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development will be assessed for the likely significant cumulative effects within the topic specific Zol. Where likely significant cumulative effects are identified, discussion will be provided on the contribution of IEMEP (as a whole) to that cumulative effect.
- 249 Information on the cumulative impacts of The Proposed Development with other elements of IEMEP will be provided in the cumulative effects sections of the future EIAR.

# 7.5.10.2 Other Developments

- 250 Information on the cumulative impacts of The Proposed Development with other approved development and other known planned development will be provided in the cumulative effects sections of the EIAR.
- 251 Other existing operational developments will be assessed as part of the baseline evaluation in the EIAR.

### 7.5.11 Transboundary Effects

- 252 Certain environmental effects of a development have the potential to cross state boundaries and have a 'transboundary effect'.
- 253 The need to consider transboundary impacts has been enshrined in the United Nations Economic Commission for Europe (UNECE) Convention on Environmental Impact Assessment in a Transboundary Context, adopted in 1991 (the Espoo Convention). The Espoo Convention has been ratified by the European Union, Ireland and the United Kingdom of Great Britain and Northern Ireland. Under the amended EIA Directive, the likely significant transboundary effects of a development must be described.
- All activities associated with the Construction, Operation and Maintenance and Decommissioning Phases of The Proposed Development will be assessed for likely significant transboundary effects.
- 255 Where significant transboundary effects are identified, and if the An Bord Pleanála as the Competent Authority deems it appropriate, it will notify EEA States, including non-EU Member State such as the UK, and consult with them at the time of the consent application or during the Pre-Application Phase (PINS, 2017; EPA, 2022). Potential Transboundary effects will also be considered in the Natura Impact Statement (NIS), particularly for mobile species, i.e. marine



mammals, birds, migratory fish, where their foraging/migratory ranges overlap with European sites within another EEA State (or National Sites which form part of the National Site Network in the UK) for which these species are qualifying features.

256 In addition to the potential consultation by the Competent Authority detailed above, if the transboundary screening exercise identifies potentially significant effects, The Applicant may undertake its own targeted consultation with affected transboundary stakeholders to discuss and hopefully resolve specific issues to the satisfaction of relevant Irish consenting authorities.

## 7.5.12 Interactions between Environmental Factors

257 Interactions between effects may arise from the reaction between effects of The Proposed Development on different aspects of the environment which may exacerbate the magnitude of those effects. These will be presented in the EIAR.

## 7.6 STRUCTURE AND CONTENT OF THE EIAR

- 258 The environmental impact assessments to be contained within the EIAR is proposed to be set out in a number of volumes. Given the nature of The Proposed Development, it is anticipated that a Natura Impact Statement (NIS)will also be submitted in support of the eventual Development Permission application. The NIS considers the potential impacts resulting from the project alone and cumulatively upon European Protected Sites (SACs and SPAs).
- 259 The multi-volume approach anticipated is set out in **Table 7.2**.

Table 7.2 Proposed	Structure of Multi-V	'olume Development	Permission application	and Supporting	Documentation
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Volume	No.	Details	
Volume 1		Statutory Particulars and Drawings	
	2A	Planning Report	
Volume 2	2B	Public and Landowner Consultation Report	
Volume 3	3A	Non-Technical Summary (NTS) Wider Scheme Aspects	
	3B	NTS Offshore	
	3C	NTS Onshore	
	4A	EIAR: Introductory Chapters	
Volume 4	4B	EIAR: Wider Scheme Aspects chapters	



Volume	No.	Details
	4C	EIAR: Offshore Topic-specific Chapters
	4D	EIAR: Onshore Topic-specific chapters
	4E	EIAR: Interaction of Effects and Summary of Cumulative and Transboundary Effects and Monitoring and Mitigation Measures
Volume 5	•	Natura Impact Statement (NIS)

260 The proposed structure of Volume 4 in the future EIAR is presented in **Table 7.3**.



## Table 7.3 Proposed Structure of the EIAR

Volume	Chapter	Title	
	1	Introduction	
	2	Project Need	
Volume 4A EIAR: Introductory chapters	3	Site Selection and Assessment of Alternatives	
	4	Description of Development	
	5	EIAR Methodology	
	1	Population and Human Health	
Volume /B EIAP: Wider Scheme Aspects chapters	2	Seascape, Landscape and Visual Impacts	
Volume 4b LIAN. White Scheme Aspects chapters	3	Climate	
	4	Major Accidents and / or Disasters	
	1	Marine Geology, Oceanography and Physical Processes	
	2	Marine Water Quality	
	3	Underwater Noise	
	4	Benthic, Epibenthic and Intertidal Ecology	
	5	Marine Mammals and Marine Turtles	
	6	Offshore Ornithology	
	7	Offshore Bats	
Volume 4C EIAR: Offshore Topic-specific Chapters	8	Fish and Shellfish Ecology	
	9	Commercial Fisheries	
	10	Shipping and Navigation	
	11	Marine Archaeology and Cultural Heritage	
	12	Aviation and Radar	
	13	Coastal and Marine Infrastructure and Other Users	
	14	Summary of Monitoring and Mitigation Measures	
	15	References	



Volume	Chapter	Title
	1	Air Quality
Volume 4D EIAR: Onshore Topic-specific chapters	2	Noise and Vibration
	3	Land, Soils and Hydrogeology
	4	Surface Water, including Flood Risk
	5	Biodiversity
	6	Archaeology and Cultural Heritage
	7	Roads and Traffic
	8	Material Assets
	9	References
	1	Interaction of Effects
Volume 4E EIAR: Interaction of Effects and Summary of Cumulative and Transboundary Effects and Monitoring and Mitigation Measures	2	Summary of Cumulative Effects
	3	Summary of Transboundary Effects
	4	Summary of Monitoring and Mitigation Measures

# 7.7 **REFERENCES**

Environmental Protection Agency (2022) Guidelines on the information to be contained in Environmental Impact Assessment Reports [Online] Available at: <u>https://www.epa.ie/publications/monitoring-assessment/assessment/guidelines-on-the-information-to-be-contained-in-environmental-impact-assessment.php</u> Accessed 6<sup>th</sup> July 2022.

European Commission (1992) Nature Protection and Environmental Impact Assessment. Glossary. [Online] Available at <<u>https://ec.europa.eu/environment/legal/law/2/library\_glossary.htm</u>>

European Commission (2017) Environmental Impact Assessment of Projects, Guidance on the preparation of the Environmental Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU)

Planning Inspectorate for England and Wales (2019) Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects [Online] Available at:< Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects | National Infrastructure Planning (planninginspectorate.gov.uk) >



# 8 VOLUME B EIAR WIDER SCHEME ASPECT CHAPTERS

- 261 These chapters, contained within **Volume B** of this EIAR Scoping Report, consider the potential impacts of the Construction, Operation and Maintenance and Decommissioning Phases of The Proposed Development on the wider receiving environment (including both relevant onshore and offshore aspects). Each chapter of this **Volume B** of this EIAR Scoping Report sets out preliminary information on the receiving environment, the proposed approach to data collection to inform the future EIAR and the methodologies proposed for use in the future EIAR to assess potential impacts of The Proposed Development on its receiving environment
- 262 It should be noted that Study Areas for each topic are defined in each chapter based on the potential spatial and temporal considerations of the potential impacts on relevant receptors and are intended to cover the area within which an effect can reasonably be expected.



#### 8.1 CHAPTER 1 POPULATION AND HUMAN HEALTH

### 8.1.1 Introduction

- 263 This chapter of the EIAR Scoping Report considers the potential impacts of the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on Population and Human Health (including socio-economic, tourism and recreation) and sets out the methodology and approach to be taken to assessing these potential impacts within the future EIAR.
- 264 The receiving environment is described under the following headings considering both the Potential Onshore Infrastructure Zone and the Potential Offshore Infrastructure Zone. These together comprise the Population and Human Health Topic-specific Study Area:
  - Employment and Economic Activity;
  - Population (Demographics and Settlement Patterns and Housing);
  - Land use;
  - Marine Use;
  - Tourism and recreation,
  - Community and amenities; and
  - Human Health.
- 265 It should be noted that as the design of The Proposed Development is refined, the Population and Human Health Topic-specific Study Area will be revised accordingly and presented within the future EIAR to more accurately reflect the receiving environment with potential to be affected by The Proposed Development.
- 266 The Population and Human Health Topic-specific Study Area will be refined as The Proposed Development develops having regard to the potential impacts associated with relevant environmental disciplines addressed elsewhere in this EIAR Scoping Report including:
  - Volume B Chapter 2 Seascape, Landscape and Visual Impacts;
  - Volume B Chapter 3 Climate;
  - Volume B Chapter 4 Major Accidents and/or Disasters;
  - Volume C Chapter 2 Marine Water Quality;
  - Volume C Chapter 9 Commercial Fisheries;
  - Volume C Chapter 13 Coastal and Marine Infrastructure and Other Users;
  - Volume D Chapter 1 Air Quality;
  - Volume D Chapter 2 Noise and Vibration;
  - Volume D Chapter 3 Land, Soils and Hydrogeology;



- Volume D Chapter 4 Surface Water, including Flood Risk;
- Volume D Chapter 5 Biodiversity;
- Volume D Chapter 6 Archaeology and Cultural Heritage;
- Volume D Chapter 7 Roads and Traffic; and
- Volume D Chapter 8 Material Assets.

## 8.1.2 Policy and Guidance

- 267 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context applicable to The Proposed Development. Policies and guidance documents of potential relevance to the Population and Human Health topic are set out in this section.
- 268 These policy and guidance documents will be used to inform the Population and Human Health chapter of the future EIAR. Where certain guidance documents have been produced in relation to offshore wind farms in other countries, these will be reviewed as part of the future EIAR process and considered in relation to The Proposed Development.

### Polices

- Regional Spatial and Economic Strategy for the Southern Region;
- Cork Metropolitan Strategic Area Plan;
- Cork County Development Plan 2022-2028;
- Draft Waterford County Development Plan 2022 -2028;
- Local Area Plans for the municipal districts of East Cork, Cobh and Carrigaline, as appropriate; and
- Tourism Development & Innovation a Strategy for Investment 2016-2022 (Fáilte Ireland, 2016).

## Guidelines

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017);
- EIAR Guidelines for the Consideration of Tourism and Tourism Related Projects (Fáilte Ireland. 2011);
- EirGrid Evidence Based Environmental Study 9 Settlement and Landuse (EirGrid 2016);
- EirGrid-Evidence-Based-Environmental-Study-1-EMF (EirGrid, 2014);
- Best Practice Principles in Community Engagement and Community Commitment (Irish Wind Energy Association, 2013);



- The Institute of Public Health (IPH), Health Impact Assessment Guidance, Standalone HIA and health in environmental assessment (2021) (Pyper et al., 2021);
- International Association for Impact Assessment (IAIA) and European Public Health Association (EUPHA), Human health: Ensuring a high level of protection. A reference paper on addressing Human Health in Environmental Impact Assessment (2020) (Cave et al., 2020). This reference paper informed the IPH guidance; and
- IEMA, Health in Environmental Impact Assessment: A Primer for a Proportionate Approach outlined in Cave et al., 2017). This sets broad principles that have been developed in more detail by the IPH guidance.

## 8.1.3 Methodology

## 8.1.3.1 Approach to Data Collection

269 The following information and data sources (**Table 8.1**) have been considered during the production of this EIAR Scoping Report and will be considered further within the future EIAR where relevant matters are scoped into the EIAR process.

Table 8.1 Data Sources used to inform the Population and Human Health chapter of this EIAR Scoping Report and that will be considered further within the EIAR

Data source	Date	Data contents
Central Statistics Office (CSO) <u>www.cso.ie</u>	Census 2016 (Census 2022, not yet available) Labour Force Data (Monthly)	Demographics Settlements Labour Force Survey
European Wind Energy Association (EWEA) (2009), Wind at Work, - Wind Energy and Job Creation in the EU	2009	Information regarding potential employment opportunities
International Commission for Non-Ionizing Radiation Protection (ICNIRP) Guidelines	2010	Electric and magnetic fields, often referred to as EMFs
EirGrid Evidence Based Environmental Study 9 Settlement and Landuse (EirGrid)	2016	Settlements Land use
EirGrid-Evidence-Based-Environmental-Study-1-EMF (EirGrid)	2014	EMF
EirGrid The Electricity Grid and Your Health, Answering Your Questions	2019	EMF



Data source	Date	Data contents
EMF and You: Information about Electric and Magnetic Fields and the electricity network in Ireland (ESB)	2017	EMF
Geodirectory Data	Various	Settlements Land use
Ordnance Survey Ireland (OSI) Mapping and aerial photography (www.osi.ie)	Various	Settlements Land use
Regional Seascape Character Assessment for Ireland as they relate to SCA10 (Atlantic Celtic Bays and Estuaries) and SCA11 (Cork Harbour and Estuary)	2020	Marine use
National Marine Planning Framework Baseline Report	2018	Marine sectoral use activities
Department of Agriculture, Food and the Marine (DAFM) Aquaculture Licence Applications	Ongoing	Aquaculture licences
Cork County Council Planning Enquiry System (https://www.corkcoco.ie/en/planning)	Various	Settlements Land use
Corine land cover data (www.epa.ie)	2018	Land use
Open Street Mapping (www.openstreetmap.org)	Various	Land use
All-Island Research Observatory (AIRO) Primary and Post Primary Schools	Various	Land use
Google Street Mapping	Various	Land use
Health Services Executive (www.hse.ie)	Various	Human Health
Fáilte Ireland (www.failteireland.ie.)	Various	Tourism and amenity

# 8.1.3.2 Potential Additional Data

- 270 The data sources listed above are those identified to-date which have been used to inform this EIAR Scoping Report and which will potentially be used to inform the wider assessment process in the future EIAR.
- 271 It should be noted that the list of data sources is not exhaustive and will be added to as the EIAR process progress. The Population and Human Health assessment will be informed by further acquisition of spatial data as well as through further consultations with industry groups, governing bodies, interest groups and local communities.



#### 8.1.3.3 Approach to Impact Assessment in the Future EIAR

272 The impact assessment methodology will be based on that described in EIAR Scoping Report, Volume A Chapter 7 Environmental Impact Assessment Methodology adapted to make it applicable to assessment of Population and Human Health receptors. Given the close relationship to other technical assessments which will be undertaken as part of the EIAR process reliance will also be placed on specific, technical approaches set out in those chapters identified in **Section 8.1.1** of this chapter.

#### 8.1.4 Receiving Environment

- 273 The following sections present an overview of County Cork in terms of employment and economic activity, population (demographics and settlement patterns), housing, land use, marine use, tourism and recreation, community and amenities; and human health.
- 274 Figure 8.1 presents settlements (based on OSI data) within the Potential Onshore Infrastructure Zone (refer to Figure 6.2). Figure 8.2 presents land use in terms for the Prominent and Strategic Metropolitan Green Belt (Cork County Development Plan 2022), EPA licensed facilities and, sites licensed under the Control of Major Accident Hazards (COMAH) Regulations 2015 (indicative of industrial facilities).



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# 8.1.4.1 Employment and Economic Activity

- 275 The Potential Onshore Infrastructure Zone includes the municipal districts of East Cork, Cobh and Carrigaline (as identified in **Figure 6.2**).
- 276 The ZoI for the Potential Offshore Infrastructure Zone includes SCA10 (Atlantic Celtic Bays and Estuaries) and SCA11 (Cork Harbour and Estubary) identified in the Regional Seascape Character Assessment (SCA) for Ireland (The Marine Institute,2020).
- 277 The Potential Onshore Infrastructure Zone is an important commuter area for employment activity within Cork City and its environs. These include Cork City as a primary centre of employment, as well as a number of suburban retail and commercial locations. It is recognised that Cork Harbour, Little Island, and Ringaskiddy are important areas for pharmaceutical industries, manufacturing and services industries as well as for port services and associated marine industries.
- 278 Public transport services to these locations include the Midleton to Cork rail line and numerous bus routes serviced by Bus Éireann.
- 279 Settlements such as Carrigtwohill and Midleton are centres of mixed-use employment. Carrigtwohill is one of the fastest growing Metropolitan towns in suburban Cork. Ringaskiddy and Carrigtwohill are hubs for pharmaceutical and biotechnology companies. Agriculture and food production are also critical sectors for the sustainable rural economy of County Cork.
- 280 Approximately 2.5 million people are employed in Ireland according to the Central Statistics Office Labour Force Survey from Q1 2022, which compares with approximately 2.3 million for the same period in Q1 2021. According to Census 2016, the number of people employed in County Cork was 179,890 in 2016.
- 281 The unemployment rates in recent years have been significantly influenced by the Covid-19, however, the CSO maintained Live Register is the most up to date information available and is indicative of the current unemployment situation in Ireland. According to The Live Register there were approximately 171,903 people registered as seeking work in Ireland in May 2022, an increase of 204 from May 2021.
- 282 The employment and economic activity of the receiving environment for The Proposed Development, within the future EIAR, will be established through a review of the sources included in **Section 8.1.3** of this Chapter, including Census 2022 data (when available) and the live register.
- 283 The detail provided will be refined and updated as appropriate as further details of The Proposed Development become available, including anticipated employment figures associated with The Proposed Development.

# 8.1.4.2 Population (Demographics and Settlement Patterns)

According to Census 2016 (the most recent official Census), population growth in Ireland increased from 4,588,252 in 2011 to 4,757,976 in 2016 (3.7%).



- 285 The Proposed Development will be located within the administrative boundary of Cork County Council. The total population of County Cork in 2016 was 417,211, of which 206,953 were male and 210,258 were female. This compares to a total population of 399,802 in 2011 indicating an increase of 4.35%, lower than the national county average growth at 5.3%.
- 286 The population, demographics and settlement patterns of the receiving environment for The Proposed Development, within the future EIAR, will be established through a review of the sources included in Section 8.2.3 of this EIAR Scoping Report, including Census 2022 data (when available) and Geodirectory data.
- 287 The detail provided will be refined and updated as appropriate as further details of The Proposed Development become available, including a review of valid planning applications within the Population and Human Health Topic-specific Study Area.

# 8.1.4.3 Housing

- 288 The Regional Spatial and Economic Strategy for the Southern Region (RSES), which came into effect in 2020, includes Metropolitan Area Strategic Plans (MASPs) which guide the future development of the Region's three main cities and metropolitan areas, Cork, Limerick-Shannon and Waterford area. According to the Cork MASP, an objective is to progress the sustainable development of new areas for housing expansion such as the rail corridor between Carrigtwohill and Midleton. As well as residential development, the urban expansion of the areas include cycling / pedestrian routes, a new school campus and road upgrades.
- 289 Housing considerations within the receiving environment for The Proposed Development, within the future EIAR, will be established through stakeholder engagement and a review of the sources included in Section 8.2.3 of this EIAR Scoping Report, including the Cork County Development Plan 2022-2028, Local Area Plans for the municipal districts of East Cork, Cobh and Carrigaline, as appropriate; the Draft Waterford City and County Draft Development Plan 2022 – 2028, and a review of valid planning applications within the ZoI of The Proposed Development.

# 8.1.4.4 Land Use

- 290 According to Corine 2018 data, the most prominent land uses within the Potential Onshore Infrastructure Zone are non-irrigated arable land and pastures.
- 291 The Potential Onshore Infrastructure Zone includes urban environments, areas of settlements and industry as detailed in **Section 8.1.4.1**.
- 292 Land use considerations within the receiving environment for The Proposed Development, within the future EIAR, will be established through stakeholder engagement and a review of the sources included in **Section 8.1.3** of this Chapter including Corine data available at the time of writing the future EIAR.
- 293 The detail provided will be refined and updated as appropriate as further details of The Proposed Development become available.



## 8.1.4.5 Marine Use

- 294 The reader is directed to EIAR Scoping Report, **Volume C, Chapter 13** Coastal and Marine Infrastructure and Other Users for a full description of use of the current and projected marine use potentially affected by The Proposed Development.
- 295 Across the Potential Export Cable Corridor Infrastructure Zone there are a number of locations used for coastal tourism and recreational purposes. The coastal waters are used for recreational boating activities and hosts a number of popular beaches and Designated Bathing Waters. Key recreational locations include marina/harbours, beaches/Designated Bathing Waters, sailing clubs and sailing routes, designated aquaculture sites, angling (including shore locations, private/commercial boats angling) and tourist attractions such as Spike Island and Ballycotton Lighthouse.
- 296 There are currently no operational renewable energy schemes off the coast of counties of Cork or Waterford but five potential future offshore renewable energy projects are in the development pipeline, with applications for Foreshore Licences having been submitted to the DoHLGH. It should be noted that the construction and operation of these projects is subject to receipt of Maritime Area Consent (MAC) and Development Permission.
- 297 No oil or gas licenced blocks overlap with the Offshore Infrastructure Zone but three exploration licences and one operational licence block are located further south (offshore).
- 298 There are no aquaculture sites located within The Proposed Development's footprint, however there is one large blue mussel aquaculture site located at the eastern side of Cork harbour.

# 8.1.4.6 Tourism and Recreation

- 299 Tourism is one of Ireland's most important economic sectors. In 2019, revenue gained from tourism was worth approximately €1.8 billion to the economy (Failte Ireland, 2021). At a national policy level, Cork is recognised as a potential growth platform for inbound traffic. 'A National Aviation Policy for Ireland', specifically identifies the unique position of Cork Airport as a 'gateway' to each of the two main tourism policy propositions Ireland's Ancient East and the Wild Atlantic Way and recognises that Cork Airport offers a significant advantage to the region and as a potential hub for visitors coming to Ireland. (Visit Cork 2016)
- 300 According to the Cork County Development Plan 2022-2028, the Southwest Region has consistently been the most popular region in Ireland outside Dublin, with Cork the second most visited county after Dublin. Fáilte Ireland has estimated 1,605,000 overseas tourists visited County Cork in 2017 (an increase on the estimate of 1,081,000 in 2011). Data on domestic tourists shows that almost 1.1 million stayed in Cork City and County in 2017 resulting in a total of 2.7 million tourists visiting Cork that year. Tourism generated an estimated 833 million euro for the economy in Cork in 2017.
- 301 As detailed in the Cork County Development Plan 2022-2028, County Cork has a number of key tourist attractions of national importance which should be protected from inappropriate



development. The CDP states that the physical setting of tourist attractions is often a major component in their attractiveness. The surrounding landscape or particular features of the built environment often contribute to the setting of an attraction. However, appropriate development complimentary to their tourist function will generally be considered.

- 302 East Cork Tourism Limited, Ireland's Ancient East and Ring of Cork are tourism groups which operate throughout County Cork. The key tourist attractions and destinations and significant visitor numbers include; Fota Wildlife Park and Midleton Distillery Jameson Experience.
- 303 The redevelopment of Spike Island and Fort Camden Meagher as tourist attractions have continued to build on the existing tourist and heritage infrastructure of Cork Harbour and the county in general. Both attractions which are rich in military history also greatly add to the creation of a WW1 Cork Harbour Trail produced by Cork County Council in 2018, which begins at Fort Templebreedy, Crosshaven and ends at Roches Point Lighthouse.
- 304 County Cork and in particular Cork Harbour (Cobh) is a popular stop off destination for cruise liners. The Cobh Cruise liner terminal has increased from 53 cruise liners in 2014 to 100 liners in 2019.
- 305 The Marine Leisure sector is the fastest growing sector within the tourism industry.
- 306 Tourism and recreation considerations within the receiving environment for The Proposed Development, within the future EIAR, will be established through stakeholder engagement and a review of the sources included in **Section 8.8.1.3** of this Chapter and **Volume C, Chapter 13** Coastal and Marine Infrastructure and Other Users of this EIAR Scoping Report, with additional review of valid planning applications and aquaculture licences within the ZoI of The Proposed Development.
- 307 The detail provided will be refined and updated as appropriate as further details of The Proposed Development become available.

# 8.1.4.7 Community and Amenities

- 308 According to the Cork County Development Plan 2022-2028, recreation and amenity facilities contribute to the quality of life of the communities they serve. The provision of facilities that cater for the demands of an increasing population and which are accessible to all sectors and age groups is a key component in the creation of successful sustainable communities.
- 309 In general, community facilities are located within the towns and villages within the Potential Onshore Infrastructure Zone. Coastal community facilities include Ballycotton Harbour and Youghal Harbour.
- 310 Community and amenity considerations within the receiving environment for The Proposed Development, within the future EIAR, will be established through stakeholder engagement and a review of the sources included in in **Section 8.8.1.3** of this Chapter and **Volume C, Chapter 13** Coastal and Marine Infrastructure and Other Users of this EIAR Scoping Report, with additional review of valid planning applications within the ZoI of The Proposed Development.


311 The detail provided will be refined and updated as appropriate as further details of The Proposed Development become available.

# 8.1.4.8 Human Health

- 312 Human Health considerations for the future EIAR within the receiving environment for The Proposed Development, will be established through stakeholder engagement and will have regard to the potential impacts associated with relevant environmental disciplines addressed elsewhere in this EIAR Scoping Report as detailed in **Section 8.1.1**of this Chapter.
- 313 Electric and magnetic fields, often referred to as EMFs, are produced both naturally and as a result of human activity. Natural EMFs include the static geomagnetic fields of the earth and static electric fields from storm clouds. Man-made EMFs include alternating current (AC) EMFs from domestic wiring, as well as from distribution and transmission lines from our power system. Technology such as most digital devices produce direct current (DC) EMFs, as does technology involved in DC transmission lines.
- 314 At very high levels, far above those encountered in daily environments or even directly beneath overhead transmission lines, exposure to EMFs can result in acute or short-term effects involving stimulation of nerves and tissues. For this reason, independent and authoritative national and international panels of scientific experts have reviewed studies on possible health effects from EMFs for decades. These panels have concluded, based on the weight of the evidence available, that the power frequency electric and magnetic fields at levels typically encountered in daily life have not been shown to cause or contribute to adverse health effects in humans.
- 315 EMF considerations in relation to Human Health within the receiving environment for The Proposed Development, within the future EIAR, will be established through a review of the sources included in **Section 8.1.1**of this Chapter, including independent and authoritative national and international reference documents. Potential EMF effects in relation to Marine Mammals and Marine Turtles is discussed in **Volume C, Chapter 5** Marine Mammals and Marine Turtles of this EIAR Scoping Report.

# 8.1.5 Potential Impacts

316 A range of potential impacts on Population and Human Health have been identified which may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development. These potential impacts include those issues identified as requiring consideration in accordance with the guidance documents listed in **Section 8.1.3** of this Chapter.

# 8.1.5.1 Potential Impacts during Construction

# 8.1.5.1.1 Population

317 The potential for impacts on Population and Human Health due to the construction of the Proposed Development are associated with:



- Employment opportunities and economic spend in the local communities;
- Changes in land use or seabed use (e.g. affecting recreation, land use and amenity);
- Temporary to short-term increase in traffic;
- Temporary to short-term disruption and disturbance impacts associated with Noise and Vibration, Air Quality, Marine Water Quality (potentially affecting Designated aquaculture areas) and traffic.

# 8.1.5.1.2 Health and Wellbeing

318 The requirements of the Safety, Health and Welfare at Work (Construction) regulations 2006, (as amended) will be implemented and complied with in full during the Construction Phase of the development. However, as with any construction project, there is still potential for potential adverse impacts associated with the natural environment, nuisance (such as noise and dust emissions) and disturbance. As such, this will be considered further in the future EIAR.

# 8.1.5.2 Potential Impacts during Operation and Maintenance

# 8.1.5.2.1 Population

- 319 Potential impacts on Population and Human Health associated with Operation and Maintenance activities include:
  - Temporary to short-term increase in traffic;
  - Temporary to short-term disruption and disturbance impacts; and
  - Economic benefits from employment and investment throughout this phase.

# 8.1.5.2.2 Health and Wellbeing

- 320 In addition to the potential impacts associated with relevant environmental disciplines addressed elsewhere in this EIAR Scoping Report, the introduction of new infrastructure (notably onshore), of the scale proposed, also has potential to impact on a sense of place and wellbeing. As such, this will be considered further in the future EIAR.
- 321 As detailed in **Section 8.1.4.8**, independent and authoritative international panels of scientific experts have reviewed studies on possible health effects from EMFs. These panels have concluded that, based on the weight of the evidence, the power frequency of electric and magnetic fields encountered in normal living and working conditions have not been shown to cause adverse health effects in humans. These reviews form the basis for guidelines published by the International Commission for Non-Ionizing Radiation Protection (ICNIRP) with regard to EMF.
- 322 Findings from EirGrid's evidence-based Environmental Study on EMF (2016) established that;

The maximum magnetic field strength measured at all overhead lines, underground cables and substation perimeters surveyed was well below the ICNIRP public exposure reference level, set to protect public health. Based on the measured data, magnetic field strengths estimated for



overhead power lines and underground cables using records of annual load are also well below the ICNIRP reference level to protect public health under typical (mean or median load) and high-power load (95th percentile) conditions. The maximum electric field strength measured at all overhead lines and substation perimeters surveyed was below the ICNIRP reference level to protect public health. Underground cables produce no electric field above ground.

323 The Proposed Development will be designed to ensure that the strength of the electric and magnetic fields during operation of The Proposed Development will comply with the ICNIRP and EU guidelines on exposure of the general public to EMF. The future EIAR will include an assessment of EMF on human health.

# 8.1.5.3 Potential Impacts during Decommissioning

- 324 A detailed Decommissioning / Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 325 The scope of the Decommissioning works cannot be defined at this early stage.
- 326 Decommissioning activities have the potential to impact Population and Human Health i.e. by the removal of infrastructure. Any potential impacts arising from Decommissioning are likely to be comparable to, or less than, those identified for the Construction Phase and will be assessed as part of the future EIAR.

# 8.1.6 Potential Cumulative Effects

- 327 There may be potential for cumulative effects to occur in relation to Population and Human Health as a result of other activities.
- 328 The Cumulative Impacts Assessment (CIA) for Population and Human Health will be based on a ZoI identified during The Proposed Development-alone impact assessment, which will define the geographical extent to which effects of The Proposed Development are expected.
- 329 The potential impacts considered in the CIA as part of EIAR will be in line with those described for The Proposed Development-alone impact assessment, though it is possible that some will be screened out on The Proposed Development basis that the impacts are highly localised (i.e. the ZoI is anticipated to be limited) or where there are management measures in place to robustly reduce the risk of impacts occurring.
- 330 The CIA will consider cumulative impacts with any other projects and / or developments within the ZoI in line with the approach set out in EIAR Scoping Report, Volume A, Chapter 7 EIAR Methodology.



### 8.1.6.1 Intra-Project

- 331 In line with the most recent EPA guidance on EIARs (EPA, 2022), the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 332 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared Zone of Influence of The Proposed Development (for which Development Permission is sought).

#### 1.1.1.1 Other Developments

333 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative impacts are minimised.

#### 8.1.7 Potential Transboundary Effects

334 Given the location of potential effects that may arise as a result of The Proposed Development, and the distance to other jurisdictions, there is no pathway for transboundary effects to occur. It is not expected that transboundary effects will be identified with respect to Population and Human Health in the future EIAR.

#### 8.1.8 Summary of Potential Impacts

**Table 8.2** outlines the impacts for Population and Human Health which are proposed to be scoped into and/or out of the future EIAR. These may be refined through the EIAR Process based on consultation with stakeholders and as additional information and data become available.

Table 8.2 Summary of Potential Impacts Relating to Population and Human Health. Topics Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR.

Potential Impacts	Construction	Operation and Maintenance	Decommissioning
Economic spend in the local communities	$\checkmark$	$\checkmark$	~
Change in land or seabed use	$\checkmark$	~	√
Temporary to short-term increase in traffic	$\checkmark$	$\checkmark$	~
Temporary to short-term disruption and disturbance impacts (including noise, air quality and marine water quality)	✓	✓	✓
EMF	Х	$\checkmark$	x



Potential Impacts	Construction	Operation and Maintenance	Decommissioning	
Cumulative effects	$\checkmark$	$\checkmark$	$\checkmark$	
Transboundary effects	х	х	х	

# 8.1.9 EIAR Scoping Consultation Questions

- 336 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Population and Human Health chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Population and Human Health chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Population and Human Health Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?
  - What other data sources, if any, should The Applicant have regard to in the preparation of the Population and Human Health chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Population and Human Health chapter of the EIAR for The Proposed Development?
  - Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Population and Human Health chapter of the EIAR for The Proposed Development?

# 8.1.10 Technical Consultation

337 This chapter has considered the potential impacts of The Proposed Development on Population and Human Health. **Table 8.3** sets out a series of areas for discussion which The Applicant would appreciate targeted feedback on. Whilst welcoming input from all interested parties The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 8.3** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.

Proposed Key Technical Stakeholder	Objective of Engagement
Cork County Council and Waterford City and County Council	1. To discuss and agree approach to assessment.



Proposed Key Technical Stakeholder	Objective of Engagement	
	<ol> <li>To identify and confirm significant tourism, recreation, land use as well as economic and social considerations to incorporate into the future EIAR.</li> </ol>	

# 8.1.11 References

All-Island Research Observatory (AIRO) Primary and Post Primary Schools available at https://www.AIRO.ie.

Cave, B., Claßen, T., Fischer-Bonde, B., Humboldt-Dachroeden, S., Martín-Olmedo, P., Mekel, O., Pyper, R., Silva, F., Viliani, F., Xiao, Y. (2020) Human health: Ensuring a high level of protection. A reference paper on addressing Human Health in Environmental Impact Assessment. As per EU Directive 2011/92/EU amended by 2014/52/EU. International Association for Impact Assessment and European Public Health Association.

Cave, B., Fothergill, J., Pyper, R., Gibson, G., Saunders, P. (2017) Health in Environmental Impact Assessment: a primer for a proportionate approach. DOI 10.13140/RG.2.2.22254.20801

Central Statistics Office Census 2016 and Census 2022 Labour Force Survey and Live Register Data, where available at https://www.cso.ie.

Corine land cover data available at https://www.epa.ie.

Cork Metropolitan Area Transport Strategy 2040 available at <u>Cork metropolitan area transport strategy -</u> <u>National Transport</u> (National Transport Authority (NTA))

County Development Plan 2022-2028 available at <u>https://www.corkcoco.ie/en/planning</u> (Cork County Council, 2022).

Department of Health, 2021. Health in Ireland – Key Trends. Available at: https://www.gov.ie

DIRECTIVE 2014/52/EU. Official Journal of the European Union L 124/1 (European Union, 2014).

EMF and You: Information about Electric and Magnetic Fields and the electricity transmission system in Ireland (EirGrid, 2014).

EMF and You: Information about Electric and Magnetic Fields and the electricity network in Ireland, April 2017. Available at: https://esb.ie/docs/default-source/default-document-library/emf-public-information\_booklet\_v9.pdf?sfvrsn=0 (ESB, 2017).

Environmental Impact Assessment of Projects. Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU) (European Commission, 2017).

Fáilte Ireland Tourism Development & Innovation a Strategy for Investment 2016-2022 available at www.failteireland.ie

Fáilte Ireland Tourism Facts available at: Tourism Facts 2019 Final March 2021 (failteireland.ie)



Fáilte Ireland Tourism Product Development Strategy 2007-2013 available at www.failteireland.ie Fáilte Ireland

Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. Available at: https://www.epa.ie/pubs/advice/ea/EPA%20EIAR%20Guidelines.pdf (EPA, 2022).

International Commission for Non-Ionizing Radiation Protection (ICNIRP) 2020 Guidelines on limiting exposure to electromagnetic fields available from https://www.icnirp.org/en/activities/news/news-article/rf-guidelines-2020-published.html

Pyper, R., Cave, B., Purdy, J. and McAvoy, H. (2021) Health Impact Assessment Guidance: Technical Guidance. Standalone Health Impact Assessment and health in environmental assessment. Institute of Public Health. Dublin and Belfast.

Regional Spatial and Economic Strategy for the Southern Region (Southern Regional Assembly (SRA), 2020) available from <u>https://www.southernassembly.ie/regional-planning/regional-spatial-and-economic-</u><u>strategy</u>

Southern Regional Assembly (2020) Cork Metropolitan Strategic Area Plan available at Cork Southern Regional Assembly MASP Report Cork v3.pdf (southernassembly.ie)

The Electricity Grid and Your Health (EirGrid, 2019).



#### 8.2 CHAPTER 2 SEASCAPE, LANDSCAPE AND VISUAL IMPACTS

#### 8.2.1 Introduction

- 338 This chapter of the EIAR Scoping Report considers the potential impacts of the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on the receiving Seascape, Landscape and Visual receptors. This chapter also sets out the methodology and approach to be taken to assessing these potential impacts within the future EIAR.
- 339 Although closely linked, seascape/landscape impacts and visual impacts are assessed separately, in parallel under the umbrella term of Seascape, Landscape and Visual Impact Assessment.
- 340 Seascape, Landscape and Visual Impact Assessment (SLVIA) Is the suite of impact assessments, undertaken by landscape architects, following industry guidelines, to accurately and consistently assess the likely effect of a proposed infrastructure development upon the landscape and seascape character of the receiving environment. In parallel SLVIA also considers the effect of the development on the human receptor appreciation of the view or viewpoints. This is often referred to as visual amenity.
- 341 **Seascape / Landscape Impact Assessment (SLIA)** relates the impacts of a development on the seascape / landscape as a resource in its own right and is concerned with how The Proposed Development will affect the elements that make up the seascape / landscape, the aesthetic and perceptual aspects of the seascape / landscape and its distinctive character.
- 342 **Visual Impact Assessment (VIA)** relates to the impacts of a development on specific views and on the general visual amenity experienced by people. This deals with how the surroundings of individuals or groups of people may be specifically affected by changes in the content and character of views as a result of the change or loss of existing elements of the landscape and / or introduction of new elements. Visual impacts may occur from; Visual Obstruction (blocking of a view, be it full, partial or intermittent) or; Visual Intrusion (interruption of a view, without blocking).
- 343 The receiving environment described in this chapter of the EIAR Scoping Report considers both the Potential Onshore Infrastructure Zone and the Potential Offshore Infrastructure Zone in terms of SLVIA.
- 344 The Seascape, Landscape and Visual Impacts Topic-specific Study Area will be developed as the design of The Proposed Development is refined. However, it is anticipated that the following broad approach will be adopted and subsequently refined.
- 345 For the Potential Turbine Array, a 60 km radius Seascape, Landscape and Visual Impacts Topicspecific Study Area will be generated from the Potential Offshore Infrastructure Zone, but it is important to note that the peripheral extents from 40 km to 60 km will be considered a 'cumulative search area' for the purposes of determining if relevant cumulative projects occur within the broader setting. The principal Seascape, Landscape and Visual Impacts Topic-specific Study Area will be a 40 km radius within which it is reasonable to depict turbines on photomontages without



the need to overemphasise them just to be discernible. This approach to determining the Seascape, Landscape and Visual Impacts Topic-specific Study Area accords with relevant SNH guidance for such assessments.

- 346 For the Potential Onshore Infrastructure, it is likely that the Seascape, Landscape and Visual Impacts Topic-specific Study Area for the cable route will be relatively narrow buffer of 500 m either side of the final agreed alignment of the onshore cable route(s). For the Onshore Project Substation(s) and connection points, circular Seascape, Landscape and Visual Impacts Topicspecific Study Area of up to 3 km radius are most likely depending on the scale and likely visibility of the particular aspect of electrical infrastructure.
- 347 It is anticipated that once turbine heights are known and the Potential Offshore Infrastructure Zone has been refined, a simple Zone of Theoretical Visibility (ZTV) model will be used to established the extent of the visual footprint of offshore elements of The Proposed Development. Similarly, once likely locations and sizing of the Onshore Project Substation and associated connection infrastructure is available, a ZVT approach will be taken to determining the visual footprint of the onshore elements of The Proposed Development.
- 348 Once the Potential Offshore Infrastructure Zone, Offshore Export Cable Route and Potential Onshore Infrastructure Zone have been refined further, a suite of viewpoint locations from which the visual impacts of The Potential Development can be assessed will be proposed as part of a revised Seascape, Landscape and Visual Impacts Topic-specific Study Area.
- 349 Consequently the Seascape, Landscape and Visual Impacts Topic-specific Study Area will be revised through the initial design process and will be presented within the future EIAR to more accurately reflect the receiving environment with potential to be affected by The Proposed Development.

# 8.2.2 Policy and Guidance

- 350 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context applicable to The Proposed Development. Policies and guidance documents of potential relevance to the Seascape, Landscape and Visual Impacts topic are set out in this section.
- 351 These policy and guidance documents will be used to inform the Seascape, Landscape and Visual Impacts chapter of the future EIAR. Where certain guidance documents have been produced in relation to offshore wind farms in other countries, these will be reviewed as part of the future EIAR process and considered in relation to The Proposed Development.

# Policies

- Cork County Development Plan 2022-2028;
- Local Area Plans for the municipal districts of East Cork, Cobh and Carrigaline, as appropriate; and
- Draft Waterford City and County Development Plan 2022 2028.
- National Landscape Strategy for Ireland 2015-2025, (DAHG 2015)



#### .

A Regional Seascape Character Assessment for Ireland, (The Marine Institute 2020)

# Guidance

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017);
- Guidelines for Landscape and Visual Impact Assessment (Landscape Institute and IEMA, 2013), hereafter referred to as GLVIA-2013;
- Advice note 01/11 Photography and photomontage in landscape and visual assessment (Landscape Institute);
- Offshore Renewables Guidance on Assessment the Impact on Coastal Landscape & Seascape (Scottish Natural Heritage, 2012);
- Guidance on Landscape/Seascape Capacity for Aquaculture (SNH 2008); and
- Visual representation of wind farms: Best Practice Guidelines (SNH version 2.2 2017)

# 8.2.3 Methodology

# 8.2.3.1 Approach to Data Collection

352 The following information and data sources (**Table 8.4**) have been considered during the production of this EIAR Scoping Report and will be considered further within the future EIAR where relevant matters are scoped into the EIAR process.

Table 8.4 Data Sources used to inform the Seascape, Landscape and Visual Impacts chapter of this EIAR Scoping Report and that will be considered further within the EIAR

Data source	Date	Data contents
Regional Seascape Character Assessment for Ireland as it relates to SCA10 (Atlantic Celtic Bays and Estuaries) and SCA11 (Cork Harbour and Estuary)	2020	Seascape
Geodirectory Data	Various	Visual
Topographical data / Digital Terrain Mapping	Various	Visual
Ordnance Survey Ireland (OSI) Mapping and aerial photography (www.osi.ie)	Various	Visual
An Bord Pleanála (2020), Case Search (online);	2020	Landscape, Seascape
Cork County Council Planning Enquiry System (https://www.corkcoco.ie/en/planning)	Various	Landscape, Seascape
Waterford City and County Council Planning Enquiry System (Waterford City & County Council Online Planning Enquiries (waterfordcouncil.ie))	Various	Landscape, Seascape
Corine land cover data (www.epa.ie)	2018	Landscape



Data source	Date	Data contents
Open Street Mapping (www.openstreetmap.org)	Various	Landscape / Visual
Google Street Mapping	Various	Landscape / Visual

# 8.2.3.2 Potential Additional Data and Proposed Surveys

- 353 The data sources listed above are those identified to-date which have been used to inform this EIAR Scoping Report and which will potentially be used to inform the wider assessment process in the future EIAR.
- 354 It should be noted that the list of data sources is not exhaustive and will be added to as the EIAR process progresses.
- 355 In addition to this, -specific surveys will be undertaken to further provide data to inform the assessment. With respect to Seascape, Landscape and Visual Impact, it is anticipated that surveys will be undertaken to establish the landscape / seascape character of the receiving environment and to confirm and refine the set of viewpoint locations to be used for the visual assessment stage. Viewpoints will be agreed in advance with stakeholders where possible.

# 8.2.3.3 Approach to Impact Assessment in the Future EIAR

- 356 The impact assessment methodology for the EIAR will be based on that described in EIAR Scoping Report, Volume A Chapter 7 Environmental Impact Assessment Methodology adapted to make it applicable to assessment of Seascape, Landscape and Visual Impact receptors as set out in Section 8.2.4 of this EIAR Scoping Report. The Seascape, Landscape and Visual Impact Assessment (SLVIA) to be presented within the future EIAR will be undertaken in accordance with the Guidelines for Landscape and Visual Impact Assessment (2013) produced by IEMA and the Landscape Institute, which are the overriding industry standard in Ireland. More specific good practice guidance for offshore SLVIA is considered to be the Scottish Natural Heritage – Offshore Renewables Guidance on Assessment the Impact on Coastal Landscape & Seascape (2012).
- 357 The SLVIA will involve a desktop study to ensure that the Seascape, Landscape and Visual Impacts Topic-specific Study Area takes cognisance of the relevant landscape and visual designations in the Cork County Development Plan 2022 - 2028, the Draft Waterford City and County Development Plan 2022 – 2028 (CDPs), the relevant Seascape Character Areas from the Regional Seascape Character Assessment for Ireland, as well as other sensitive visual receptors. ZTV mapping will be overlaid onto OSI discovery series mapping to aid viewpoint selection relative to sensitive receptors. This stage will culminate in an agreed and refined selection of potential viewpoint locations from which to assess the potential impacts of The Proposed Development on visual amenity as part of the SLVIA within the EIAR. Baseline photographs will be captured at each of the selected viewpoints.



- 358 As detailed in **Section 8.2.3.2.**, surveys will be undertaken as part of the future EIAR to establish the landscape / seascape character of the receiving environment and to confirm and refine the selection of viewpoint locations to be used for the visual assessment stage.
- 359 Assessment of the significance of the potential landscape / seascape impact of The Proposed Development as a function of landscape sensitivity, weighed against the magnitude of the landscape impact, will subsequently be undertaken as part of the future EIAR.
- 360 Assessment of the significance of the visual impact of The Proposed Development as a function of visual receptor sensitivity weighed against the magnitude of the visual impact, will also be determined as part of the future EIAR. This aspect of the assessment will be supported by photomontages prepared in respect of the selected viewpoint locations.
- 361 The desktop study to be carried out for the future EIAR will involve the collation and review of relevant planning documents within Seascape, Landscape and Visual Impacts Topic-specific Study Area, up-to-date baseline site information as well as relevant landscape strategies and policy documents. Of particular relevance will be the Regional Seascape Character Assessment for Ireland (2020), as well as landscape or Seascape Character Assessment (SCA) for County Waterford and County Cork (Marine Institute 2020).
- 362 Also of relevance will be designated scenic views (as described in the Cork County Development Plan 2022 -2028 and the Draft Waterford City and County Development Plan 2022 – 2028) within and along the coastline of counties Cork and Waterford and within the Seascape, Landscape and Visual Impacts Topic-specific Study Area.
- 363 Research to establish key tourist and amenity features that have the potential to be affected by The Proposed Development will also be undertaken in order to determine pertinent viewpoint locations for the visual impact assessment of the offshore turbine array. The desk study will be aided by the preparation of ZTV maps, which will identify from where the offshore turbine array may be visible.
- 364 Surveys will involve a comprehensive review of the Seascape, Landscape and Visual Impacts Topicspecific Study Area, including the recording of detailed landscape/seascape descriptions. The viewpoint location selection set from the desk study will be refined and recorded for agreement with stakeholders including Cork County Council and Waterford City and County Council. Baseline photography will be captured during clear viewing conditions for later use in preparing the photomontages that are necessary for the VIA and may also include night-time photography.
- 365 The future EIAR will be supported by photomontages prepared in accordance with the Landscape Institute Advice note 01/11 - Photography and photomontage in landscape and visual assessment as well as Scottish Natural Heritage Guidance on the Visual Representation of Wind Farms (2017), as recognised best practice. Descriptions of the seascape / landscape setting will be provided, and consideration of relevant landscape/ seascape policy and baseline descriptions of the views will be used for the final VIA.



366 Calibrated panoramic montages (headland to headland) will be compiled and presented in accordance with the latest guidance on visualisations from the SNH (now referred to as NatureScot) and the Landscape Institute UK, as recognised good practice. These montages demonstrate consistent depth of visibility resulting from viewpoint locations at varying distances as well as front-to-back through The Proposed Development. This is especially important for offshore wind projects that often cover large sea areas which have a broad range of viewing distances.

# 8.2.3.3.1 Seascape / Landscape Impact Assessment Criteria

- 367 When assessing the potential impacts on the landscape/seascape resulting from The Proposed Development, the following criteria will be considered:
  - Seascape / landscape character, value and sensitivity;
  - Magnitude of likely impacts; and
  - Significance of landscape effects.
- 368 The sensitivity of the seascape / landscape to change is the degree to which a particular landscape receptor, Seascape Character Area (SCA), Landscape Character Area (LCA) or landscape feature can accommodate changes or new elements, without unacceptable detrimental effects to its essential characteristics. Landscape Value and Sensitivity will be classified using the criteria set out in **Table 8.5**.

Table 8.5 Seascape / Landscape Value and Sensitivity

Value & Sensitivity	Description
Very High	Areas where the seascape / landscape character exhibits a very low capacity for change in the form of development. Examples of which are high value landscapes protected at an international or national level (for e.g. World Heritage Site / National Park), where the principal management objectives are likely to be protection of the existing character.
High	Areas where the seascape / landscape character exhibits a low capacity for change in the form of development. Examples of which are high value landscapes, protected at a national or regional level, where the principal management objectives are likely to be considered conservation of the existing character.
Medium	Areas where the seascape / landscape character exhibits some capacity and scope for development. Examples of which are landscapes, which have a designation of protection at a county level or at non-designated local level where there is evidence of local value and use.
Low	Areas where the seascape / landscape character exhibits a higher capacity for change from development. Typically, this would include lower value, non-designated landscapes that may also have some elements or features of recognisable quality, where landscape management objectives include, enhancement, repair and restoration.
Negligible	Areas of seascape / landscape character that include derelict, mining, industrial land or are part of the urban fringe where there would be a reasonable capacity to embrace change or the capacity to include the development proposals. Management objectives in such areas could be



Value & Sensitivity	Description
	focused on change, creation of landscape improvements and / or restoration to realise a higher landscape value.

369 The magnitude of a predicted seascape/landscape impact is a product of the scale, extent or degree of change that is likely to be experienced as a result of The Proposed Development. The magnitude takes into account whether there is a direct physical impact resulting from the loss of seascape or landscape components and / or a change that extends beyond the physical works that may have an effect on the seascape or landscape character of the area and outlined in **Table 8.6.** 

Table 8.6 Magnitude of Seascape or Landscape Impacts

Magnitude of Impact	Description
Very High	Change that would be large in extent and scale with the loss of critically important seascape / landscape elements and features, that may also involve the introduction of new uncharacteristic elements or features that contribute to an overall change of the seascape / landscape in terms of character, value and quality.
High	Change that would be more limited in extent and scale with the loss of important seascape / landscape elements and features, that may also involve the introduction of new uncharacteristic elements or features that contribute to an overall change of the seascape / landscape in terms of character, value and quality.
Medium	Changes that are modest in extent and scale involving the loss of landscape characteristics or elements that may also involve the introduction of new uncharacteristic elements or features that would lead to changes in seascape / landscape character, and quality.
Low	Changes affecting small areas of seascape / landscape character and quality, together with the loss of some less characteristic seascape / landscape elements or the addition of new features or elements.
Negligible	Changes affecting small or very restricted areas of seascape / landscape character. This may include the limited loss of some elements or the addition of some new features or elements that are characteristic of the existing landscape or are hardly perceivable.

370 The significance of a seascape/landscape impact will be based on a balance between the sensitivity of the landscape receptor and the magnitude of the impact. The significance of landscape impacts is arrived at using the matrix set out in **Table 8.7.** 



#### Table 8.7 Impact Significance Matrix

Scale/ Magnitude	Sensitivity of Receptor				
	Very High	High	Medium	Low	Negligible
Very High	Profound	Profound- substantial	Substantial	Moderate	Slight
High	Profound- substantial	Substantial	Substantial- moderate	Moderate-slight	Slight- imperceptible
Medium	Substantial	Substantial- moderate	Moderate	Slight	Imperceptible
Low	Moderate	Moderate-slight	Slight	Slight- imperceptible	Imperceptible
Negligible	Slight	Slight- imperceptible	Imperceptible	Imperceptible	Imperceptible

Note: The significance matrix provides an indicative framework from which the significance of impact is derived. The significance judgement will ultimately be determined by the assessor using professional judgement. Due to nuances within the constituent sensitivity and magnitude judgements, this may be up to one category higher or lower than indicated by the matrix. For the purpose of the SLVIA and in accordance with GLVIA-2013, judgements of 'Substantial' and above are considered to be 'significant impacts' in EIA terms.

# 8.2.3.3.2 Visual Impact Assessment Criteria

371 As with the seascape/landscape impact, the visual impact of The Proposed Development will be assessed as a function of sensitivity versus magnitude. In this instance, the sensitivity of the visual receptor weighed against the magnitude of the visual effect.

# 8.2.3.3.3 Sensitivity of Visual Receptors

- 372 Unlike seascape / landscape sensitivity, the sensitivity of visual receptors has an anthropocentric basis. It considers factors such as the perceived quality and values associated with the view, the seascape/landscape context of the viewer, the likely activity they are engaged in and whether this heightens their awareness of the surrounding landscape. A list of the factors to be considered by the assessor in estimating the level of sensitivity for a particular visual receptor is outlined below to establish visual receptor sensitivity:
  - Susceptibility of Receptors In accordance with the IEMA Guidelines for Landscape and Visual Assessment (3rd edition 2013), visual receptors most susceptible to changes in views and visual amenity are:
    - *"Residents at home;*



- People, whether residents or visitors, who are engaged in outdoor recreation, including use of public rights of way, whose attention or interest is likely to be focused on the landscape and on particular views;
- Visitors to heritage assets, or to other attractions, where views of the surroundings are an important contributor to the experience;
- Communities where views contribute to the landscape setting enjoyed by residents in the area; and,
- Travellers on road rail or other transport routes where such travel involves recognised scenic routes and awareness of views is likely to be heightened".
- Visual receptors that are less susceptible to changes in views and visual amenity include:
  - "People engaged in outdoor sport or recreation, which does not involve or depend upon appreciation of views of the landscape; and
  - People at their place of work whose attention may be focussed on their work or activity, not their surroundings and where the setting is not important to the quality of working life".
- Values associated with views:
  - Recognised scenic value of the view (County Development Plan designations, guidebooks, touring maps, postcards, etc.). These represent a consensus in terms of which scenic views and routes within an area are strongly valued by the population because in the case of County Developments Plans, for example, public consultation process is an intrinsic part of the preparation process;
  - Views from within highly sensitive landscape areas. Again, highly sensitive landscape designations are usually part of a county's Landscape Character Assessment, which is then incorporated within the County Development Plan and is therefore subject to the public consultation process. Viewers within such areas are likely to be highly attuned to the landscape around them;
  - Primary views from dwellings. A proposed development might be seen from anywhere within a particular residential property with varying degrees of sensitivity. Therefore, this category is reserved for those instances in which the design of dwellings or housing estates, has been influenced by the desire to take in a particular view. This might involve the use of a slope or the specific orientation of a house and/or its internal social rooms and exterior spaces;
  - Intensity of use, popularity. This relates to the number of viewers likely to experience a view on a regular basis and whether this is significant at county or regional scale;
  - Connection with the landscape. This considers whether or not receptors are likely to be highly attuned to views of the landscape i.e. commuters hurriedly driving on busy national route versus hill walkers directly engaged with the landscape enjoying changing sequential views over it;
  - Provision of elevated panoramic views. This relates to the extent of the view on offer and the tendency for receptors to become more attuned to the surrounding landscape at locations that afford broad vistas;



- Sense of remoteness and/or tranquillity. Receptors taking in a remote and tranquil scene, which is likely to be fairly static, are likely to be more receptive to changes in the view than those taking in the view of a busy street scene, for example;
- Degree of perceived naturalness. Where a view is valued for the sense of naturalness of the surrounding landscape it is likely to be highly sensitive to visual intrusion by distinctly manmade features;
- Presence of striking or noteworthy features. A view might be strongly valued because it contains a distinctive and memorable landscape feature such as a promontory headland, lough or castle;
- Historical, cultural and/or spiritual significance. Such attributes may be evident or sensed by receptors at certain viewing locations, which may attract visitors for the purposes of contemplation or reflection heightening the sense of their surroundings;
- Rarity or uniqueness of the view. This might include the noteworthy representativeness of a certain landscape type and considers whether the receptor could take in similar views anywhere in the broader region or the country;
- Integrity of the landscape character. This looks at the condition and intactness of the landscape in view and whether the landscape pattern is a regular one of few strongly related components or an irregular one containing a variety of disparate components;
- Sense of place. This considers whether there is special sense of wholeness and harmony at the viewing location; and
- Sense of awe. This considers whether the view inspires an overwhelming sense of scale or the power of nature.
- 373 Those locations which are deemed to satisfy many of the above criteria, are likely to be of higher sensitivity. Overall sensitivity may be a result of a number of these factors or, alternatively, a strong association with one or two in particular.

# 8.2.3.3.4 Visual Impact Magnitude

374 The magnitude of visual impacts is determined on the basis of two factors; the visual presence (relative visual dominance) of a development and its effect on visual amenity. The magnitude of visual impacts is classified in **Table 8.8.** 

Magnitude	Description
Very High	The proposal intrudes into a large proportion or critical part of the available vista and is without question the most noticeable element. An extensive degree of visual change will occur within the scene completely altering its character, composition and associated visual amenity.

Table 8.8 Magnitude of Visual Impact



Magnitude	Description
High	The proposal intrudes into a significant proportion or important part of the available vista and is one of the most noticeable elements. A considerable degree of visual change will occur within the scene substantially altering its character, composition and associated visual amenity.
Medium	The proposal represents a moderate intrusion into the available vista and is a readily noticeable element. A noticeable degree of visual change will occur within the scene perceptibly altering its character, composition and associated visual amenity.
Low	The proposal intrudes to a minor extent into the available vista and may not be noticed by a casual observer and/or the proposal would not have a marked effect on the visual amenity of the scene.
Negligible	The proposal would be barely discernible within the available vista and/or it would not influence the visual amenity of the scene.

# 8.2.3.3.5 Visual Impact Significance

375 As stated above, the significance of visual impacts is a function of visual receptor sensitivity and visual impact magnitude. This relationship will be expressed in the same significance matrix and applies the same EPA definitions of significance as used in respect of landscape impacts.

# 8.2.3.3.6 Quality and Timescale of Effects

- 376 In considering Seascape, Landscape and Visual effects it is important to consider the potential impacts arising from the different phases of the development. Construction Phase and Decommissioning Phase impacts can last for months or years whilst impacts and effects arising from the Operational Phase can last for decades. The EPA Guidance on EIARs (EPA, 2022) requires that the quality of the effects is also determined. This could be negative/adverse, neutral, or positive/beneficial.
- 377 Seascape, Landscape and Visual effects are also categorised according to their duration:
  - Temporary Lasting for one year or less;
  - Short Term Lasting one to seven years;
  - Medium Term Lasting seven to fifteen years;
  - Long Term Lasting fifteen years to sixty years; and
  - Permanent Lasting over sixty years.

# 8.2.4 Receiving Environment

- 378 The following sections provide an overview of the seascape, landscape and visual amenity features of the receiving environment within the municipal districts of East Cork, Cobh and Carrigaline.
- 379 The SCAs undertaken as part of the 2020 Regional Seascape Character Assessments for Ireland, as they relate to SCA10 Atlantic Celtic Bays and Estuaries and SCA11 Cork Harbour and Estuary presented in **Plate 8.1** and **Plate 8.2**, provide a helpful starting point for understanding the baseline environment. The following sections **8.2.4.1** to **8.2.4.3** provide a summary of the known



receiving environment within the Potential Offshore Infrastructure Zone (**Figure 6.1**) and within the Potential Onshore Infrastructure Zone (**Figure 6.2**).

380 The detail of the receiving environment will be augmented and refined during the EIAR process as further details of The Proposed Development become available.



Plate 8.1 SCA10 - Atlantic Celtic Bays and Estuaries

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Source: 2020 Regional SCA for Ireland
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Plate 8.2 SCA11 - Cork Harbour and Estuary

Source: 2020 Regional SCA for Ireland

# 8.2.4.1 Municipal districts of East Cork, Cobh and Carrigaline

- 381 The Landscape Character Assessment from the Cork County Development Plan 2022-2028 identifies that Raffeen Substation is located within Indented Estuarine Coast Landscape Character Type, which is designated as a 'High Value Landscape' (HVL). The scenic route S54 Road between Passage West and Ringaskiddy is located approximately 600 m to the north of Raffeen Substation. Scenic Route S58 Road from Carrigaline to Crosshaven is located approximately 970 m to the south of the substation.
- 382 The Landscape Character Assessment from the Cork County Development Plan 2022-2028 identifies that Knockraha Substation is contained within the Fissured Fertile Middleground Landscape Character Type, and is not within a designated landscape. There are no designated scenic routes in the vicinity of Knockraha Substation.
- 383 The Landscape Character Assessment from the Cork County Development Plan 2022-2028 identifies that Glanagow Substation and Aghada Substation are contained within the City Harbour and Estuary Landscape Character Type, which is designated as a 'High Value Landscape'(HVL). Scenic route S51 Road from Ballynacorra via East Ferry to Whitegate and Roche's Point is approximately 160 m from the Aghada Substation and runs either side of the Glanagow Substation, at distances of approximately 200 m and approximately 430 m respectively.

# 8.2.4.2 SCA10 - Atlantic Celtic Bays and Estuaries

384 SCA10 - Atlantic Celtic Bays and Estuaries, as defined in the Regional Seascape Character Assessment for Ireland (2020), comprises a stretch of Cork and Waterford coastline and bays from Cape Clear to Helvick Head, Co. Waterford.



- 385 Beaches east of Cork Harbour are noted as having long been popular for local visitors from Cork and Waterford.
- 386 In terms of views, the 2020 Regional SCA states that:

"The views to and from headlands due to the vertical scale of the cliffs, (although not very high) do generate long views; the eye tends to be drawn across the bays which may be sweeping, as at Youghal Bay, with low headlands in the distance and the yellow of the large strand.

This contrasts with smaller bays and accompanying headlands, views from some of these such as at Ballycotton and at Knockadoon are influenced strongly by the nearby island; at Ballycotton this is a distinctive view seen from some distance along the coast. Broad expansive sea views are possible from these headlands, (weather dependant) and depending on visibility some headlands allow for considerable intervisibility. For example. Ballycotton to Ardmore and Mine Head, a distance of over 17 nautical miles (c.33 km).

Boat trips for both recreational (sailing, wildlife trips) and fishing purposes allow for views along the coastline."

- 387 In terms of sense of place, the Regional Seascape Character Assessment for Ireland (2020) highlights:
  - This SCA is characterised by more intimate and sheltered bays with a strong coastal character informed by the influence of numerous settlers; the influence of the later medieval period and Norman influence can still be experience in the older towns and islands such as Oilean na Caplaigh (Capel Island, named after a Norman Family De Capelle).
  - A strong maritime character is present within this SCA due to its coastline facing southwards onto the Celtic Sea; whilst the estuaries offer a sense of shelter and haven; the presence of the Celtic Sea and Atlantic is constant.
  - Exposed areas and headlands provide for a more bracing experience with less shelter, more exposure to the elements, and the combination of vast sky and the broad Celtic Sea.
  - This is an active SCA, the numerous small piers, quays, fishing ports, history of settlement and links to continental Europe.
  - Where the headlands include signal towers, promontory forts or lighthouses, combined with the cliffs, a romantic and iconic view is presented. Galley Head Lighthouse, Ballycotton Island Lighthouse, both classified as Great Lighthouse of Ireland and Mine Head Lighthouse. There are numerous promontory forts and signal towers along this coastline; reflecting this SCA significance and importance for military defence.

# 8.2.4.3 SCA11 - Cork Harbour and Estuary

388 SCA11 - Cork Harbour and Estuary extends from Robert's Head on the western part of the estuary, northwards to Cork City and docks and southwards to include Roches Point. Islands include Great



Island, Haulbowline Island, Rocky Island, Spike Island, Fota Island and Little Island (now filled in and so no longer an island).

- 389 In terms of views, the Regional Seascape Character Assessment for Ireland (2020) highlights:
  - Views from the elevated rolling hills are drawn across the estuary and harbour, the typical estuarine habitats of mudflats and rocky shoreline with seaweed add diversity to the view.
  - In sheltered areas strands of woodland extend to shoreline.
  - Views are possible from the range of boats that use the harbour and the more elevated area around Roches Point with its lighthouse provide a local landmark.
  - Telecommunication masts and water storage towers punctuate the skyline in parts as well as towers associated with industrial, pharmaceutical and energy production.
  - Lighting: Industrial scale in places. Roches Point Lighthouse on eastern boundary of this SCA has a range of white 20 nm, red 16 nm.
- 390 In terms of sense of place, the Regional Seascape Character Assessment for Ireland (2020) highlights:
  - Strong links between the city and harbour.
  - This expands further with a key element of the sense of place associated with an outward looking, maritime role.
  - *Reflected in associations in food, drink, sailing, navigation and art and events such as Cork Harbour Festival.*

# 8.2.5 Potential Impacts

391 A range of potential impacts on Seascape, Landscape and Visual Impacts have been identified which may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development. These potential impacts will be appraised in the future EIAR and include those identified as requiring consideration in accordance with the guidance documents listed in **Section 8.2.2**.

# 8.2.5.1 Potential Impacts during Construction

392 The potential for seascape, landscape and visual impacts during the Construction Phase of the Proposed Development are associated with the following elements of onshore infrastructure.



#### 8.2.5.1.1 Connection Point(s) (including Loop- in connection), Onshore Project Substation(s) and Battery

#### Energy Storage System

- 393 Irrespective of the Connection Point(s) that are currently under consideration, the creation of an Onshore Project Substation(s), and potential works to enable the Onshore Project Substation(s) to receive the electricity generated by The Proposed Development, localised physical impacts to landform and land cover due to the construction of each of the infrastructure sites is predicted.
- 394 During construction, the need for temporary compounds, welfare facilities, as well as the storage and marshalling of materials and equipment will contribute to the construction footprint and dispersed levels of activity within the Potential Onshore Infrastructure Zone.
- 395 In addition, vegetation clearance, access routing, temporary storage of excavated material and laydown areas for construction materials is anticipated to be required for The Proposed Development. The progress of the works will be transient and so the effects are expected to be dispersed.

#### 8.2.5.1.2 Construction works associated with the Onshore Cable

396 The construction method for the Onshore Cable may involve trenching of existing road and crosscountry surfaces to lay the ducting system for the cables and construction of periodic concrete joint bays. As a second stage, the cables are likely to be installed into the ducting system using pulling equipment. There will be associated machinery and worker activity at each section of the cable installation, as well as site fencing, temporary storage of excavated material and laydown areas for construction materials. The progress of the works will be transient and so the effects are expected to be dispersed.

#### 8.2.5.1.3 Transition Joint Bay

- 397 The Proposed Development will include the excavation of an underground Transition Joint Bay. The Construction Phase may generate localised negative impacts on landscape character and visual amenity. However, the duration of impacts is expected to be temporary.
- 398 Once the Construction Phase is complete, and the prevailing ground cover reinstated at the Cable Landfall, the only above-ground infrastructure is expected to be a small hatch to the Transition Joint Bay.

#### 8.2.5.1.4 Construction Compounds and Passing Bays and Compounds

399 The Construction Phase will require construction compounds and passing bays where hard stands and tracks are not already in existence. Construction works are likely to require the clearance and temporary storage of topsoil coupled with the introduction of hardcore fill in its place. Vegetation clearance may also be required.



#### 8.2.5.1.5 Construction of the Offshore Export Cable

- 400 The Offshore Export Cable construction will include pre-lay activities (e.g. potential Unexploded Ordnance clearance, boulder removal etc.), cable laying itself and potentially the provision of cable protection. All activities will involve the temporary use of vessels within the Potential Export Cable Corridor Infrastructure Zone. Increased activity due to vessels involved in cable laying will be a noticeable temporary feature of some coastal viewpoints
- 401 Cable installation will approach the coastline at the Cable Landfall location(s). In making Cable Landfall, the cable laying activities may affect the visual amenity of the Cable Landfall area and may result in a range of temporary changes to views and effects on seascape.

#### 8.2.5.1.6 Construction within the Potential Turbine Array Infrastructure Zone

- 402 Fabrication of the Wind Turbine Generators (WTGs) will be undertaken off-site and this will not be considered within the future EIAR. The turbines will likely be floated out into location by specialist vessels, and jack-up vessels will likely be required for installation once the WTGs reach their final position. The laying of Inter-Array Cables will also take place. Construction of the Offshore Substation Platforms(s) which may utilise fixed foundations, will also take place. A number of seabed preparation and scour/cable protection activities may also be required.
- 403 A range of vessel movements (including potentially jack-up vessels) will be required for these operations which will result in temporary impacts to seascape and distant view changes from landbased viewpoint locations. Night time safety and construction lighting offshore may be visible from coastal viewpoint locations. This will all be given consideration in the future EIAR.

# 8.2.5.2 Potential Impacts during Operation and Maintenance

404 The potential for Seascape, Landscape and Visual Impacts during the Operational and Maintenance phase of the Proposed Development are associated with the following elements of onshore infrastructure.

#### 8.2.5.2.1 Connection Point(s) and Onshore Project Substation(s) and Potential Battery Energy Storage

System

- 405 There will be some form of permanent physical impacts to landform and land cover once the Onshore Project Substation(s) and potential BESS are operational. The Onshore Project Substation(s) and potential BESS will introduce new electrical infrastructure and structures within the landscape.
- 406 Impacts on visual amenity are anticipated and will be a key element of the SLVIA.

# 8.2.5.2.2 Onshore Cable

407 Whilst the Onshore Cables will be installed underground and so have a small landscape and visual amenity impact, there is the possibility that Permanent access tracks may be required to provide



access to off-road joint bays. The potential landscape and/ or visual amenity impacts of any proposed new access tracks will be considered as part of the SLVIA.

# 8.2.5.2.3 Overhead Line Structures associated with Loop-in Connection Option

408 To facilitate any loop-in connection, a small number of new Overhead Line structures and/or an increase in height of existing Overhead Line structures may be required at the location of the loopin connection and associated Onshore Project Substation. It is anticipated that any such structures would be located in proximity to existing Overhead Line structures and would be viewed in that context.

# 8.2.5.2.4 Above Sea Infrastructure within the Potential Turbine Array Infrastructure Zone

- 409 Parts of the WTGs, and Offshore Substation Platform(s) will be visible above the sea surface, noting that such infrastructure will be located distant from the coast. Potential impacts of these infrastructure on the seascape and visual receptors will be assessed within the future EIAR. It is not anticipated that the level of Operations and Maintenance vessel/helicopter activity will result in a likely significant effects to either seascape or to visual receptors, and these aspects are proposed to be scoped out of the future EIAR.
- 8.2.5.3 Potential Impacts during Decommissioning
- 410 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 411 The scope of the Decommissioning works cannot be defined at this early stage.
- 412 Decommissioning activities have the potential for Seascape, Landscape and Visual Impacts i.e. by the removal of infrastructure. Any potential impacts arising from Decommissioning works are likely to be comparable to, or less than, those identified for the Construction Phase and will be assessed as part of the future EIAR.

#### 8.2.6 Potential Cumulative Effects

- 413 There may be potential for cumulative effects to occur in relation to Seascape, Landscape and Visual Impacts as a result of other activities.
- 414 The Cumulative Impact Assessment (CIA) for Landscape and Visual Impacts will be based on a ZoI identified during The Proposed Development-alone impact assessment, which will define the geographical extent to which effects of The Proposed Development are expected.
- 415 The CIA for Seascape will be based on the potential interaction with other offshore wind projects which are known to be in development and can be reasonably expected to proceed to development. This is generally taken as those projects which are at least at EIAR Scoping stage



and are in the public domain prior to the submission of the Development Permission application for The Proposed Development.

- 416 The potential impacts considered in the CIA as part of EIAR will be in line with those described for The Proposed Development-alone impact assessment, though it is possible that some will be screened out on the basis that the impacts are highly localised (i.e. the ZoI is anticipated to be limited) or where there are management measures in place to robustly reduce the risk of impacts occurring.
- 417 The CIA will consider cumulative impacts with any other projects and/or developments within the ZoI in line with the approach set out in EIAR Scoping Report, **Volume A, Chapter 7** EIAR Methodology.

# 8.2.6.1 Intra-Project

- 418 In line with the most recent EPA guidance on EIARs (EPA, 2022), the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 419 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared Zone of Influence of The Proposed Development (for which Development Permission is sought).

# 8.2.6.2 Other Developments

- 420 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative impacts are minimised.
- 421 CIA considerations will form part of the discussion with other developments in order that a wellinformed CIA can be undertaken.

# 8.2.7 Potential Transboundary Effects

422 Given the location of The Proposed Development and the distance to other jurisdictions, there is no pathway for transboundary effects to occur for Seascape, Landscape and Visual Impacts. It is not expected that transboundary effects will be identified with respect to seascape or landscape in the future EIAR.

# 8.2.8 Summary of Potential Impacts

423 **Table 8.9** outlines the impacts for Seascape, Landscape and Visual Impacts which are proposed to be scoped into and/or out of the future EIAR. These may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.



# 424 It is not however intended to scope out any of the identified potential impacts of the future EIAR for Seascape, Landscape and Visual Impacts.

Table 8.9 Summary of Potential Impacts Relating to Seascape, Landscape and Visual Impacts. Topics Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR

Potential Impacts	Construction	Operation and Maintenance	Decommissioning
Increased level of activity from workers, machinery, associated traffic and vessels	~	<ul> <li>✓ (excludes additional offshore vessel/helicopter activity)</li> </ul>	~
Changes to seascape, landscape character and views	$\checkmark$	$\checkmark$	✓
Cumulative effects	$\checkmark$	✓	✓
Transboundary effects	х	x	х

# 8.2.9 EIAR Scoping Consultation Questions

- 425 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Seascape, Landscape and Visual Impacts chapter of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Seascape, Landscape and Visual Impacts chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Seascape, Landscape and Visual Impacts Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?
  - What other data sources, if any, should The Applicant have regard to in the preparation of the Seascape, Landscape and Visual Impacts chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Seascape, Landscape and Visual Impacts chapter of the EIAR for The Proposed Development?
  - Are you satisfied with the approach to impact assessment proposed for the Seascape, Landscape and Visual Impacts chapter of the EIAR for The Proposed Development?
  - Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Seascape, Landscape and Visual Impacts chapter of the EIAR for The Proposed Development?

# 8.2.10 Technical Consultation

426 This chapter of the EIAR Scoping Report has considered the potential impacts of The Proposed Development on Seascape, Landscape and Visual Impacts. **Table 8.10** sets out a series of areas for discussion which The Applicant would appreciate targeted feedback on.



427 Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and/or statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 8.10** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.

Proposed Key Technical Stakeholder	Objective of Engagement			
	<ol> <li>To discuss and agree Topic-specific Study Area for onshore and offshore elements of the SLVIA.</li> </ol>			
Cork County Council	<ol> <li>To discuss and agree a suitable suite of representative viewpoint locations and approach to photomontages</li> </ol>			
	3. To discuss Cork County Council views on relevant sensitive visual receptors			
	<ol> <li>To discuss and agree Topic-specific Study Area for onshore and offshore elements of the SLVIA.</li> </ol>			
Waterford City and County Council	<ol> <li>To discuss and agree a suitable suite of representative viewpoint locations and approach to photomontages.</li> </ol>			
	<ol> <li>To discuss Waterford City and County Council views on relevant sensitive visual receptors</li> </ol>			

Table 8.10: Summary of Proposed Key Technical Stakeholders Seascape, Landscape and Visual Impacts.

# 8.2.11 References

Cork County Council (2022) Cork County Development Plan 2022 -2028 available at www.corkcoco.ie;

Department of Agriculture Food and the Marine (2020) 'A Regional Seascape Character Assessment forIreland'.AvailableAt:<a href="https://emff.marine.ie/blue-growth/definition-and-classification-ireland%E2%80%99s-seascapes#outputs">https://emff.marine.ie/blue-growth/definition-and-classification-ireland%E2%80%99s-seascapes#outputs</a>

Department of Arts, Heritage and the Gaeltacht (2015), The National Landscape Strategy for Ireland 2015-2025. Available At: <u>www.gov.ie</u>

Department of the Environment, Heritage and Local Government (2006) Wind Energy Development Guidelines. Available At: <u>www.gov.ie</u>

Environmental Protection Agency (EPA) (2022) 'Guidelines on the Information to be contained in Environmental Impact Statements Available at: <u>https://www.epa.ie/publications/monitoring-assessment/assessment/guidelines-on-the-information-to-be-contained-in-environmental-impact-assessment.php</u>

Landscape Institute (2011) 'Advice note 01/11 - Photography and photomontage in landscape and visual assessment;'



Landscape Institute and the Institute of Environmental Management and Assessment (2013) 'Guidelines for Landscape and Visual Impact Assessment – Third Addition'.

The Marine Institute. (2020). Definition and Classification of Ireland's Seascapes. Minogue, R, Foley, K, Collins, T, Hennessy, R, Doherty, P, Vaughan, E and Black, D

Regional Seascape Character Assessment for Ireland (The Marine Institute, 2020)

Scottish Natural Heritage (2012) Offshore Renewables – guidance on assessing the impact on coastal landscape and seascape. Available At: <u>www.nature.scot</u>

Scottish Natural Heritage (2017) 'Visual representation of wind farms: Best Practice Guidelines (version 2.2' Available At. <u>www.nature.scot</u>

Scottish Natural Heritage (2018); 'Guidance on Landscape/Seascape Capacity for Aquaculture'. Available At: <u>www.nature.scot</u>

Scottish Natural Heritage (SNH) (2012) Guidance Note: Cumulative Effect of Wind Farms. Available At: <u>www.nature.scot</u>

Scottish Natural Heritage (SNH) (2017) Visual representation of wind farms: Best Practice Guidelines (version 2.2' Available At: <u>www.nature.scot</u>

The Marine Institute. 2020. Definition and Classification of Ireland's Seascapes. Minogue, R, Foley, K, Collins, T, Hennessy, R, Doherty, P, Vaughan, E and Black

Waterford County Council (2011) Waterford County Development Plan 2011-2017 available at <u>www.waterford.ie</u>;

Waterford County Council (2021), draft Waterford County Development Plan 2022 -2028 available at www.waterford.ie



#### 8.3 CHAPTER 3 CLIMATE

#### 8.3.1 Introduction

- 428 This chapter of the EIAR Scoping Report considers the potential impacts of the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on Climate and sets out the methodology and approach to be taken to assessing these potential impacts within the future EIAR.
- 429 The aim of this chapter within the future EIAR is to consider the contribution made by the Construction, Operation and Maintenance, and Decommissioning of The Proposed Development to Ireland's Greenhouse gas emissions. The future EIAR assessment will consider carbon dioxide (CO<sub>2</sub>) and the six other gasses referenced in the Kyoto Protocol. Consequently, for this chapter the Climate Topic-specific Study Area is the Republic of Ireland.
- 430 The future EIAR will also consider the contribution that can be made by The Proposed Development to reducing Ireland's GHG emissions by offsetting an estimated 1,280,000 tonnes of CO<sub>2</sub> per year that would otherwise be released from thermal power generation.
- 431 In terms of the assessment of the vulnerability of The Proposed Development to climate change, this will be established as the EIAR progresses and having regard to the potential impacts associated with relevant environmental disciplines addressed elsewhere in this EIAR Scoping Report including:
  - Volume B, Chapter 4 Major Accidents and/or Disasters;
  - Volume C, Chapter 1 Marine Geology, Oceanography and Physical Processes
  - Volume C, Chapter 4 Benthic, Epibenthic and Intertidal Ecology
  - Volume C, Chapter 5 Marine Mammals and Marine Turtles
  - Volume C, Chapter 6 Offshore Ornithology;
  - Volume C, Chapter 7 Offshore Bats;
  - Volume C, Chapter 8 Fish and Shellfish Ecology;
  - Volume D, Chapter 4 Surface Water, including Flood Risk; and
  - Volume D, Chapter 5 Biodiversity.

# 8.3.2 Policy and Guidance

- 432 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context applicable to The Proposed Development. Policies and guidance documents of potential relevance to the Climate topic are set out in this section.
- 433 These policy and guidance documents will be used to inform the Climate chapter of the future EIAR. Where certain guidance documents have been produced in relation to offshore wind farms in other countries, these will be reviewed as part of the future EIAR process and considered in relation to The Proposed Development.



#### Policies

- Cork County Development Plan 2022-2028;
- Local Area Plans for the municipal districts of East Cork, Cobh and Carrigaline, as appropriate; and
- Draft Waterford City and County Development Plan 2022 2028.

# Guidance

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017);
- Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance (IEMA, 2022)
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (European Union, 2013)
- Whole life carbon assessment for the built environment (Royal Institute of Chartered Surveyors, 2017)
- Land-Use Planning and Development Control: Planning for Air Quality (Environmental Protection UK and Institute of Air Quality Management, 2017)
- Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance (IEMA, 2022)
- 434 The Institute of Environmental Management and Assessment (IEMA) guidance on assessing GHG emissions advises that all GHG emissions contribute to climate change regardless of the scale of the emissions, and that it should be considered how a project aligns with a transition to net zero. Numerous governments have recognised the critical nature of climate change and the effect of GHG emissions by setting out the goal of net zero carbon, this includes the Irish Government which has committed to net zero by 2050.
- 435 The IEMA guidance recommends that significance be based on net impact over the lifetime of a project, with a goal to reduce emissions at all lifecycle stages. Given the nature of The Proposed Development, producing significant amounts of carbon free renewable energy to assist in achieving Net Zero and a climate neutral economy, overall benefits are considered to be highly likely to result in substantial savings of GHGs outweighing anticipated emissions resulting in a beneficial impact over the project lifetime.

# 8.3.2.1 International Climate Change Legislation and Policy

436 **Volume A, Chapter 4** of this EIAR Scoping Report presents an overview of policy and legislation of relevance to The Proposed Development. There is wide-ranging support internationally through legislation and policies for acting to mitigate climate change. International bodies such as the United Nations recognise climate change as "the defining issue of our time" which requires immediate action (United Nations, 2021).



- 437 The European Parliament declared a climate emergency in 2019 and the European Climate Law (2021) puts into law the European Green Deal goal to become climate-neutral (a net zero balance of greenhouse gas (GHG) emissions) by 2050. The law also includes an intermediate target of 55 % GHG emissions reduction by 2030 (against 1990 levels).
- 438 Ireland is a party to the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. Both provide a legal framework for addressing global climate change. Building on the UNFCCC process, the Paris Agreement is a global treaty established with the intention of developing a unified approach to combating climate change. Agreed in December 2015, the Paris Agreement aims to restrict global temperature rise to well below 2°C above pre-industrial levels, and to pursue efforts to limit the temperature increase to 1.5°C. For the period 2021 to 2030, under the EU Effort Sharing Regulation, Ireland has a target of reducing GHG emissions by 30% compared to 2005 levels (DECC, 2020).
- 439 One of the key achievements of COP26 in Glasgow in 2021 was the adoption of the Glasgow Climate Pact which aims to turn the 2020s into a decade of climate action and support.
- 440 The Glasgow Climate Pact includes a package of decisions including strengthened efforts to build climate change resilience, curbing greenhouse gas emissions and providing the finance for both of these. For the first time, nations were also called on to phase down unabated coal power and subsidies for fossil fuels. The package of decisions in the Pact also included the finalisation of the 'Paris Agreement rulebook'. This set of rules lays out how countries are held accountable for delivering on their climate action promises and targets under their Nationally Determined Contributions (NDCs).

# 8.3.2.2 Domestic Climate Change Legislation and Policy

- 441 In July 2021 the Climate Action and Low Carbon Development (Amendment) Act 2021 was enacted which set legally binding targets for net-zero emissions by 2050, with an interim target of 51% reduction on 2018 levels by 2030.
- 442 The Climate Action and Low Carbon Development (Amendment) Act 2021 provides the legal framework for the implementation of the aims outlined in the National Policy Position to support transition to Net Zero and a climate neutral economy by 2050. Under the act, a National Long Term Climate Action Strategy will be prepared every five years, and a Climate Action Plan will be updated annually.

# 8.3.3 Methodology

# 8.3.3.1 Approach to Data Collection

443 The following information and data sources (**Table 8.11**) have been considered during the production of this EIAR Scoping Report and will be considered further within the future EIAR where relevant matters are scoped into the EIAR process.



Table 8.11 Data Sources used to inform the Climate chapter of this EIAR Scoping Report and that will be considered further within the EIAR

Data source	Date	Data contents
Met Eireann Meteorological Database (available at https://www.met.ie)	Various	Meteorological Conditions
Royal Institute of Chartered Surveyors Whole life carbon assessment for the built environment	2017	Transport data
Mott MacDonald's in-house carbon management tool, the Moata Carbon Portal <sup>9</sup>	Version 2022	Carbon data

# 8.3.3.2 Potential Additional Data

- 444 The data sources listed above are those identified to-date which have been used to inform this EIAR Scoping Report and which are proposed to be used to inform the wider assessment process in the future EIAR.
- 445 It should be noted that the list of data sources is not exhaustive and will be added to as the works connected to the future EIAR progress. The Climate assessment in the future EIAR will be informed by further acquisition of spatial data as well as through further consultations with industry groups, governing bodies, interest groups and local communities.

# 8.3.3.3 Approach to Impact Assessment in the Future EIAR

- 446 The impact assessment methodology will be based on that described in EIAR Scoping Report, Volume A Chapter 7 Environmental Impact Assessment Methodology and adapted to make it applicable to assessment of Climate.
- 447 The Climate impact assessment methodology will be in accordance with Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance (IEMA, 2022).

# 8.3.3.3.1 Construction Phase

448 GHG emissions will be calculated in the future EIAR in units of carbon dioxide equivalents (CO<sub>2</sub>e) determined by the relative global warming potentials of the different gases. For the Construction Phase of the Proposed Development, the sources of GHG emissions will be considered as outlined in **Table 8.12** defined by this lifecycle stage.

<sup>&</sup>lt;sup>9</sup> <u>Moata Carbon Portal - Mott MacDonald</u>



Table 8.12 Construction GHG Assessment Scope

Lifecycle stage	Calculation method
A1-3 Products and materials	Estimated material quantities (e.g. cut and fill volumes) mapped to carbon emissions factors using Mott MacDonald's in-house carbon management tool, the Moata Carbon Portal.
A4 Transport to works site	Items processed for A1-3 assigned to material types. Transport distances assumed using Royal Institute of Chartered Surveyors (RICS) data assuming all materials are transported by road.
A5 Construction plant	The Moata Carbon Portal contains fuel use data for some construction elements (e.g. excavation).

Source: Lifecycle stages from PAS 2080: Carbon Management in Infrastructure, with project-specific method applied

- 449 The data used for the assessment will be taken from the engineering design of, and anticipated approach to, the construction of The Proposed Development, once the design has been sufficiently refined to enable the parameters in Table 8.12 to be defined with a reasonable degree of confidence.
- 450 The provided data will be inputted into the Moata Carbon Portal to calculate the associated emissions measured in tonnes of CO<sub>2</sub>e for lifecycle stages A1-3 and A5 (where included within the Moata Carbon Portal). Where necessary, assumptions will be made and the best matches within the Moata Carbon Portal libraries will be chosen.
- 451 To account for the transport of materials to site (the A4 lifecycle stage) a methodology adopting the Royal Institute of Chartered Surveyors (RICS) guidance will be used (RICS, 2017).
- 452 It is recognised that some of the major offshore components will arrive by ship possibly to a local marshalling and loadout port. Estimate of fuel consumption and emission factors for marine gas oil, will be obtained from the most appropriate sources (e.g. the UK's Department for Business, Energy and Industrial Strategy (BEIS) (BEIS 2021) and used to create an estimate of carbon equivalent emissions from offshore Construction, Operation and Maintenance and Decommissioning Phases.
- 453 Assets/items are not expected to have been designed to a level of detail that is possible to determine the associated carbon. The carbon assessment in the EIAR will therefore represent the known information at the time of assessment and focus on the likely greatest contributors to the carbon footprint.

# 8.3.3.3.2 Operation and Maintenance Phase GHG emissions

- 454 The main source of operational GHG for consideration within the future EIAR, with regard to Operation and Maintenance Phase, is expected to be potential for any leakages of SF<sub>6</sub> to the environment.
- 455 A potential source of SF<sub>6</sub> emissions from The Proposed Development is potential leakage from substation equipment located in both the Potential Onshore Infrastructure Zone and the Potential



Offshore Infrastructure Zone. To account for any potential leakage, the weight of any  $SF_6$  required will be estimated in combination with the International Electrotechnical Commissions standard 62271 estimate for leakage of new equipment (0.5% per annum) and the global warming potential of  $SF_6$ .

- 456 GHG emissions expected from the maintenance of assets, including annual checks for faulty equipment and replacement of such equipment as required will be considered. Given that the frequency of replacement is unknown, the worst case would be to assume a complete replacement of all equipment and so a repetition of the Construction Phase footprint.
- 457 As detailed in **Section 8.3.1**, the vulnerability of The Proposed Development to climate change will be established as the future EIAR develops and having regard to the potential impacts associated with relevant environmental disciplines addressed elsewhere in this EIAR Scoping Report.

# 8.3.4 Receiving Environment

- 458 It is important to establish the baseline for GHG emissions in order to be able to compare this to the level of emissions associated with The Proposed Development, however, the baseline will not materially impact the level of effect on climate.
- 459 GHG emissions for Ireland in 2019 totalled 59.9 MtCO<sub>2</sub>e, with energy industries accounting for 16 % (EPA, 2020) and energy consumption being the largest contributor of 59 % (SEAI, 2020).
- 460 Around 11 % of global emissions are estimated to be associated with embodied carbon emissions in new construction. Using this percentage as a guide, it is estimated that approximately 6.6 MtCO<sub>2</sub> are attributed to the embodied carbon of construction materials in Ireland as a whole (based on 2019 emissions).
- 461 The detail provided will be updated as appropriate as further details of The Proposed Development become available.

# 8.3.5 Potential Impacts

- 462 A range of potential impacts on Climate may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development. These potential impacts include those issues identified as requiring consideration in accordance with the guidance documents listed in **Section 8.3.2**.
- 463 As detailed in **Section 8.3.2**, IEMA (2022) guidance on assessing GHG emissions advises that all GHG emissions can be considered significant, regardless of the scale of the emissions, and that significance should be based on net impact over The Proposed Development's lifetime. Numerous governments have recognised the critical nature of climate change and the effect of GHG emissions by setting out the goal of net zero carbon, this includes the Irish Government which has committed to net zero by 2050.



# 8.3.5.1 Potential Impacts during Construction

- 464 As described in **Section 8.3.3**, a calculation of the likely contribution to Ireland's carbon emissions impact of the Construction Phase of the project will be undertaken. The calculation will consider both offshore construction works and onshore construction works and will separately include the whole lifecycle of the project.
- 465 While opportunities for carbon reduction (mitigation) will be identified, as they are not likely to be quantifiable at the preliminary design stage of The Proposed Development, the residual effects assessment will assume that no mitigation has been implemented thereby presenting a worst-case assessment. As the level of design information becomes more detailed, the potential carbon savings can then be quantified.
- 466 Given that Construction of The Proposed Development may take place within approximately 10 years, potential impacts arising from climate change on construction activities is considered to be unlikely and is proposed to be scoped out of the future EIAR.

# 8.3.5.2 Potential Impacts during Operation and Maintenance

- 467 The Proposed Development when operational will make a significant contribution to meeting the Irish Government commitment to net zero by improving access to renewable energy which helps to decarbonise energy usage.
- 468 Considering the overall benefit of The Proposed Development in terms of renewable energy sources, lifetime savings of GHG emissions are anticipated to very greatly outweigh GHG emissions during operation. As part of the future EIAR, as the design of The Proposed Development is refined, a more detailed calculation will be made of the amount of CO<sub>2</sub> emissions offset through the generation of renewable power from IEMEP and presented as part of the Climate chapter in the future EIAR.
- 469 At this early EIAR Scoping stage, it is estimated that the capacity of up to 1 GW of clean renewable energy from The Proposed Development will result in the net displacement of up to an estimated 1,280,000 million tonnes of CO<sub>2</sub> per annum. IEMEP has the potential to make a significant (20 %) contribution to meeting the Climate Act targets and Ireland's commitment to achieving Net Zero (i.e. a climate neutral economy) by 2050.
- 470 As described in **Section 8.3.3**, a calculation of the likely contribution to Ireland's carbon emissions impact of the operational phase of the project will be undertaken and presented within the EIAR. The calculation will consider both offshore construction works and onshore construction works and will separately include the lifecycle of The Proposed Development.
- 471 Infrastructure located in the Potential Onshore Infrastructure Zone (notably any required Onshore Project Substation(s)) may potentially be vulnerable to flooding and the increased risk associated with climate change. Design of infrastructure is key in the management of climate change risks. In terms of climate adaptation, energy infrastructure has a significant degree of resilience to change. Siting is also an important consideration particularly in relation to the management of



flood risk. Flood risk is addressed in **Volume D, Chapter 4** Surface Water, including Flood Risk of this EIAR Scoping Report and will be assessed as part of the future EIAR.

# 8.3.5.3 Potential Impacts during Decommissioning

- 472 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan, this will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 473 The scope of the Decommissioning works cannot be defined at this early stage.
- 474 Any potential Climate effects arising from Decommissioning are likely to be comparable to, or less than, those identified for the Construction Phase and will be assessed as part of the future EIAR.

#### 8.3.6 Potential Cumulative Effects

- 475 GHG emissions are by nature cumulative, as it is the combined cumulative effect of all GHG emissions that contribute to the changing climate.
- 476 IEMA guidance (2022) states that:

"Effects of GHG emissions from specific cumulative projects therefore in general should not be individually assessed, as there is no basis for selecting any particular (or more than one) cumulative project that has GHG emissions for assessment over any other."

477 The Climate assessment will not therefore consider cumulative effects as GHG emissions do not result in a regional effect on climate and the nature of the effect on climate would not differ when combined with other developments.

# 8.3.6.1 Intra-Project

- 478 In line with the most recent EPA guidance on EIARs (EPA, 2022), the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 479 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared Zone of Influence of The Proposed Development (for which Development Permission is sought).

# 8.3.6.2 Other Developments

480 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative impacts are minimised.


### 8.3.7 Potential Transboundary Effects

481 The GHG assessment in the future EIAR will not separately consider transboundary effects, because by their nature GHG emissions are transboundary and do not result in a regional effect on climate. The nature of the effect on climate would not differ when considered from a transboundary perspective. It can be said however that The Proposed Development is anticipated to result in an overall very substantial operational benefit in terms of carbon savings.

## 8.3.8 Summary of Potential Impacts

482 **Table 8.13** outlines the anticipated potential impacts for Climate due to the Proposed Development that are scoped-in for further consideration in the future EIAR (✓). These potential impacts may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.

Potential Impacts	Construction	Operation and Maintenance	Decommissioning
GHG emissions	$\checkmark$	$\checkmark$	~
Vulnerability of infrastructure to climate change	$\checkmark$	✓	~
Cumulative effects	х	х	х
Transboundary effects	х	х	x

Table 8.13 Summary of Potential Impacts Relating to Climate. Topics Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR.

## 8.3.9 EIAR Scoping Consultation Questions

- 483 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Climate chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Climate chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Climate Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?
  - What other data sources, if any, should The Applicant have regard to in the preparation of the Climate chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Climate chapter of the EIAR for The Proposed Development?
  - Are you satisfied with the approach to impact assessment proposed for the Climate chapter of the EIAR for The Proposed Development?
  - Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Climate chapter of the EIAR for The Proposed Development?



### 8.3.10 Technical Consultation

- This chapter has considered the potential impacts of The Proposed Development on Climate. Table
   8.14 sets out a series of areas for discussion which The Applicant would appreciate targeted feedback on.
- 485 Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 8.14** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.

Tahle 8 14·	Summary of	Pronosed Kev	Technical	Stakeholders	Climate
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Proposed Key Technical Stakeholder	Objective of Engagement	
	<ol> <li>To agree approach to Climate change and carbon emissions calculation.</li> </ol>	
	2. To agree approach to carbon offsetting calculation.	
Cork County Council and Waterford City and County Council	<ol> <li>To take account of any local carbon data within the baseline</li> </ol>	
	4. To ensure local flood data used in baseline is accurate	
	<ol><li>To ensure alignment with county level carbon reduction policy initiatives.</li></ol>	
	<ol> <li>To agree approach to Climate change and carbon emissions calculation.</li> </ol>	
	2. To agree approach to carbon offsetting calculation.	
EPA	3. To ensure use of appropriate data as baseline	
	<ol> <li>To ensure alignment with National emerging carbon reduction policy initiatives.</li> </ol>	
	5. To ensure flood data used in baseline is accurate	

#### 8.3.11 References

BEIS. (2021). UK Government GHG Conversion Factors for Company Reporting – Conversion Factors 2020. Using in lieu of Ireland-specific factors, these factors are assumed to be representative of the type of lorry operating on the roads in both the UK and Ireland the UK in 2020.

Commission (2022) Recommendation on speeding up permit-granting procedures for renewable energy projects and facilitate Power Purchase Agreements

Cork County Council (2022), Cork County Development Plan 2022-2028



Department of Communications, Climate Action and Environment (2017), Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects

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### 8.4 CHAPTER 4 MAJOR ACCIDENTS AND/OR DISASTERS

### 8.4.1 Introduction

- 486 This chapter of the EIAR Scoping Report considers the potential impacts on the environment deriving from the vulnerability of The Proposed Development to risks of relevant Major Accidents and/or Disasters having regard to the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development and sets out the methodology and approach to be taken to assessing these potential impacts within the future EIAR.
- 487 The receiving environment is described considering both the Potential Onshore Infrastructure Zone and the Potential Offshore Infrastructure Zone, these together comprise the Major Accidents and/or Disasters Topic-specific Study Area.
- 488 The Major Accidents and/or Disasters Topic-specific Study Area for the assessment in the future EIAR will have regard to the impacts identified in the relevant chapters of the future EIAR including:
  - Volume B, Chapter 3 Climate
  - Volume C, Chapter 10 Shipping and Navigation
  - Volume C, Chapter 12 Aviation and Radar
  - Volume C, Chapter 13 Coastal and Marine Infrastructure and Other Users
  - Volume D, Chapter 3 Land, Soils and Hydrogeology
  - Volume D, Chapter 4 Surface Water, including Flood Risk
  - Volume D, Chapter 7 Roads and Traffic
  - Volume D, Chapter 8 Material Assets
- 489 The future EIAR will include an assessment of the likelihood of the occurrence (risk) of major accidents and /or disasters and the vulnerability of the environment as a consequence of any such occurrence and will reference the appropriate chapter and section of the future EIAR where appropriate, for example where a flood risk assessment may be required. Consequently, this chapter does not follow the same approach as the other chapters in this EIAR Scoping Report.

## 8.4.2 Policy and Guidance

- 490 Volume A Chapter 4 Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context applicable to The Proposed Development. Policies and guidance documents of potential relevance to the Major Accidents and/or Disasters topic are set out in this section.
- 491 These policy and guidance documents will be used to inform the Major Accidents and/or Disasters chapter of the future EIAR. Where certain guidance documents have been produced in relation to offshore wind farms in other countries, these will be reviewed as part of the future EIAR process and considered in relation to The Proposed Development.



### Guidance

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017);
- Major Accidents and Disasters in EIA: A Primer (IEMA, September 2020)

## 8.4.2.1 Major Accidents and Disasters in EIA: A Primer (September 2020)

492 EIA Directive 2014/52/EC requires:

"A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters...

In order to avoid duplications, it should be possible to use any relevant information available and obtained through risk assessments carried out pursuant to Union legislation, such as Directive 2012/18/EU of the European Parliament and the Council (13) and Council Directive 2009/71/Euratom (14), or through relevant assessments carried out pursuant to national legislation provided that the requirements of this Directive are met".

## 8.4.3 Methodology

## 8.4.3.1 Approach to Data Collection

493 Information and parameters regarding the design, infrastructure, approach and methods for Construction, Operation and Maintenance and Decommissioning of The Proposed Development will be required to undertake an assessment of Major Accidents and/or Disasters. This will be developed as The Proposed Development is refined and the EIAR process progresses. Additionally, there will be a reliance of data collated for the chapters identified in **Section 8.4.1** in order to inform the assessment for this topic in the EIAR.

# 8.4.3.2 Potential Additional Data

494 The Major Accidents and/or Disasters assessment will be informed by further acquisition of spatial data as well as through further consultations with industry groups, governing bodies, interest groups and local communities.

## 8.4.3.3 Approach to Impact Assessment in the Future EIAR

- 495 The 2020 IEMA report, Major Accidents and Disasters in EIA: A Primer, provides definitions relating to major accidents and disasters in EIAR as presented below. These definitions have been used for the purposes of this EIAR Scoping Report and will be used in the future EIAR:
  - **Major Accidents:** Events that "threaten immediate or delayed serious environmental effects to human health, welfare and/or the environment and require the use of resources beyond those of the client or its appointed representatives to manage. Whilst malicious



intent is not accidental, the outcome (e.g. train derailment) may be the same and therefore many mitigation measures will apply to both deliberate and accidental events".

- **Disaster:** "May be a natural hazard (e.g. earthquake) or a man-made/external hazard (e.g. act of terrorism) with the potential to cause an event or situation that meets the definition of a major accident".
- **Risk:** "For a risk to arise there must be hazard that consists of a 'source' (e.g. high rainfall); a 'receptor' (e.g. people, property, environment); and a pathway between the source and the receptor (e.g. flood routes)".
- **Vulnerability:** "Describes the potential for harm as a result of an event, for example due to sensitivity or value of receptors. In the context of the EIA Directive, the term refers to the 'exposure and resilience' of the development to the risk of a major accident and/or disaster. Vulnerability is influenced by sensitivity, adaptive capacity and magnitude of impact".
- 496 The methodology will be based on the scoping decision process flow provided in **Plate 8.3**.
- 497 The approach to assessment will consider the sources of impact which could cause a Major Accident and/or Disaster. The assessment will then consider the potential receptor for that impact. Finally, the assessment must establish a credible pathway or linkage through which the effect of the impact will be delivered such that a Major Accident and/or Disaster is a possible result.
- 498 Where required, additional mitigation measures will be proposed to manage the identified risks to the environment.
- 499 The receiving environment for Major Accidents and/or Disasters varies depending on the type and scale of the event in question.





Plate 8.3 Scoping Decision Process Flow



- 500 The scope of the Major Accidents and/or Disasters chapter of the EIAR will be determined by the nature of the potential major accidents which could be associated with The Proposed Development, having regard to the potential impacts associated with relevant environmental disciplines addressed elsewhere in this EIAR Scoping Report including:
  - Volume B, Chapter 3 Climate
  - Volume C, Chapter 10 Shipping and Navigation
  - Volume C, Chapter 12 Aviation and Radar
  - Volume C, Chapter 13 Coastal and Marine Infrastructure and Other Users
  - Volume D, Chapter 3 Land, Soils and Hydrogeology
  - Volume D, Chapter 4 Surface Water, including Flood Risk
  - Volume D, Chapter 7 Roads and Traffic
  - Volume D, Chapter 8 Material Assets
- 501 The potential for significant adverse effects of The Proposed Development on the environment deriving from its vulnerability to risks of relevant Major Accidents and/or Disasters will be assessed in line with Annex IV of the EIA Directive.



- 502 Where a pathway or linkage is established, an assessment will be carried out as to whether or not embedded design measures or legal requirements, codes and standards adequately control the potential Major Accidents and/or Disasters. Reference will be made to other technical chapters of the future EIAR as appropriate where further studies have been carried out, for example in the case of flood risk.
- 503 Some of the risk types which will be considered include:
  - Flooding;
  - Fire;
  - Extreme temperature (heat wave, cold snap)/ high winds/storm;
  - Electromagnetic Fields (EMF);
  - Extreme weather events;
  - Electricity failure;
  - Ground collapse/instability /subsidence/landslide;
  - Exposure to High Voltage;
  - Major road traffic accident;
  - Industrial Accidents (such as Accidental spills of hazardous materials);
  - Natural disasters (such as earthquakes and landslides);
  - Building/structure collapse/design error;
  - Coastal erosion;
  - Vessel collision or allision;
  - Exposed cables leading to vessel snagging; and
  - Vessel snagging with floating substructures and mooring systems.

## 8.4.4 Receiving Environment

- 504 The receiving environment for Major Accidents and/or Disasters will vary depending on the type and scale of the event in question. The scope of the Major Accidents and/or Disasters chapter is determined by the nature of the potential Major Accidents and/or Disasters which could be associated with The Proposed Development.
- 505 The receiving environment of The Proposed Development will be as described elsewhere in this EIAR Scoping Report in:
  - Volume B, Chapter 3 Climate (for example, the vulnerability of The Proposed Development to flood risk);
  - Volume C, Chapter 10 Shipping and Navigation (for example vessel allision risk);
  - Volume C, Chapter 12 Aviation and Radar (for example impacts on radars);
  - Volume C, Chapter 13 Coastal and Marine Infrastructure and Other Users (for example impacts on other marine users in proximity to The Proposed Development);
  - Volume D, Chapter 3 Land, Soils and Hydrogeology (for example, impacts associated with ground stability and potentially polluting substances);



- Volume D, Chapter 4 Surface Water, including Flood Risk(for example, impacts associated with potentially polluting substances and flood risk);
- Volume D, Chapter 7 Roads and Traffic (for example road collision risk); and
- Volume D, Chapter 8 Material Assets (for example service outages).
- 506 It is not considered that there is any additional baseline information required to inform the assessment of Major Accidents and/or Disasters.

## 8.4.5 Potential Impacts

- 507 For the offshore elements of The Proposed Development the EIAR chapter will include assessment of:
  - Vessel collision and allision: This will be based heavily on the work undertaken to inform **Volume C, Chapter 10** Shipping and Navigation; and
  - Aircraft accidents: This will be based heavily on the work undertaken to inform **Volume C, Chapter 12** Aviation and Radar.
- 508 It should be noted that effects from accidental releases of pollution are proposed to be scoped out of the future EIAR (see **Volume C, Chapter 2** Marine Water Quality) due to lack of potential likely significant effects.
- 509 For the proposed Onshore Infrastructure associated with The Proposed Development, the majority of the onshore risks of Major Accidents and/or Disasters referred to in **Section 8.4.3** are anticipated to be low/unlikely where existing design measures (for example ground and finished floor levels) or legal requirements, codes and standards adequately control the potential for Major Accidents and/or Disasters. Potential impacts associated with relevant environmental disciplines addressed elsewhere in this EIAR Scoping Report include:
  - Volume B, Chapter 3 Climate (for example, the vulnerability of The Proposed Development to flood risk);
  - Volume D, Chapter 3 Land, Soils and Hydrogeology (for example, impacts associated with ground stability and potentially polluting substances);
  - Volume D, Chapter 4 Surface Water, including Flood Risk(for example, impacts associated with potentially polluting substances and flood risk);
  - Volume D, Chapter 7 Roads and Traffic (for example road collision risk); and
  - Volume D, Chapter 8 Material Assets (for example service outages).
- 510 It is not considered that there is any additional baseline information required to inform the assessment of Major Accidents and/or Disasters.



### 8.4.6 EIAR Scoping Consultation Questions

- 511 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Major Accidents and/or Disasters chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Major Accidents and/or Disasters chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Major Accidents and/or Disasters chapter of the EIAR for The Proposed Development?
  - Are there any other potential risk or impacts you believe could result in significant effects which you wish to see assessed in the Major Accidents and/or Disasters chapter of the EIAR for The Proposed Development?

### 8.4.7 Technical Consultation

- 512 This chapter has considered the potential impacts of The Proposed Development on Major Accidents and/or Disasters. **Table 8.15** sets out a series of areas for discussion which The Applicant would appreciate targeted feedback on.
- 513 Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 8.15** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.

Proposed Key Technical Stakeholder	Objective of Engagement
Cork County Council and Waterford City and County Council	1. To discuss the approach taken to the assessment of Major Accidents and/or Disasters and potential mitigation measures in the future EIAR.

 Table 8.15: Summary of Proposed Key Technical Stakeholders Major Accidents and/or Disasters.

#### 8.4.8 References

Department of Communications, Climate Action and Environment (2017), Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects

Environmental Protection Agency (2022), Guidelines on the Information to be Contained in EnvironmentalImpactAssessmentReports.Availableat:https://www.epa.ie/pubs/advice/ea/EPA%20EIAR%20Guidelines.pdf



EU (2014), Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment

IEMA (2020), Major Accidents and Disasters in EIA: A Primer



# 9 VOLUME C EIAR OFFSHORE TOPIC-SPECIFIC CHAPTERS

- 514 These chapters, contained within Volume C of this EIAR Scoping Report, consider the potential impacts of the Construction, Operation and Maintenance and Decommissioning Phases of The Proposed Development on its receiving environment. Each chapter of this **Volume C** of this EIAR Scoping Report sets out preliminary information on the receiving offshore environment, the proposed approach to data collection to inform the future EIAR and the methodologies proposed for use in the future EIAR to assess potential impacts of The Proposed Development on its receiving environment. Where certain guidance or data is available in relation to offshore wind farms in other countries, such as the United Kingdom, these have been used in this EIAR Scoping Report in lieu of Irish specific guidance being available.
- 515 It should be noted that Study Areas for each topic are defined in each chapter based on the potential spatial and temporal considerations of the potential impacts on relevant receptors and are intended to cover the area within which an effect can reasonably be expected.



### 9.1 CHAPTER 1 MARINE GEOLOGY, OCEANOGRAPHY AND PHYSICAL PROCESSES

### 9.1.1 Introduction

- 516 This chapter of the EIAR Scoping Report considers the potential impacts of the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on Marine Geology, Oceanography and Physical Processes and sets out the methodology and approach to be taken to assessing these potential impacts within the future EIAR. Marine Geology, Oceanography and Physical Processes covers tidal currents, waves, bedload sediment transport, suspended sediments and physical and sedimentary processes at the coast.
- 517 The receiving environment is described considering both the near-field (within the Potential Offshore Infrastructure Zone and far-field (beyond the Potential Offshore Infrastructure Zone and across the wider regional seabed and coastline) environment, these together comprise the Marine Geology, Oceanography and Physical Processes Topic-specific Study Area. This accounts for a buffer comprising one tidal excursion (approximately 25 km) around the Potential Offshore Infrastructure Zone. The Marine Geology, Oceanography and Physical Processes Topic-specific Study Area represents the anticipated Zone of Influence (ZoI) that will be relevant to other EIAR topics such as Benthic Ecology and Intertidal Ecology (EIAR Scoping Report, **Volume C, Chapter 4** Benthic, Epibenthic and Intertidal Ecology) Marine Water Quality (EIAR Scoping Report, **Volume C, Chapter 8** Fish and Shellfish Ecology).

## 9.1.2 Policy and Guidance

518 Volume A Chapter 4 Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context applicable to The Proposed Development. Policies and guidance documents of particular relevance to the Marine Geology, Oceanography and Physical Processes topic are set out in this section. These policy and guidance documents will be used to inform the Marine Geology, Oceanography and Physical Processes chapter of the future EIAR. Where certain guidance documents have been produced in relation to offshore wind farms in other countries, these will be reviewed as part of the future EIAR process and considered in relation to The Proposed Development.

#### Policies

- The Offshore Renewable Energy Development Plan (OREDP) (DCCAE, 2014)<sup>10</sup>;
- Marine Planning Policy Statement (DHLGH, 2019); and
- National Marine Planning Framework (NMPF) (DHLGH, 2021a).

## Guidance

• Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);

<sup>10</sup> It should be noted that OREDP II is currently being developed by the Department of the Environment, Climate and Communications and is expected to be available for consultation during 2022.



- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. Version 1.2 (CIEEM, 2022);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017);
- Guidance on Marine Baseline Ecological Assessments and Monitoring Activities for Offshore Renewable Energy Projects Parts 1 and 2 April 2018 (DCCAE, 2018);
- Assessment of Impact of Offshore Wind Energy Structures on the Marine Environment (Marine Institute, 2000);
- Assessment of the Environmental Impacts of Cables (OSPAR, 2009);
- Review of Cabling Techniques and Environmental Effects applicable to the Offshore Windfarm Industry (BERR, 2008);
- Guidance on Best Practice for Marine and Coastal Physical Processes Baseline Survey and Monitoring Requirements to inform EIA of Major Development Projects (Brooks *et al.*, 2018);
- Coastal Process Modelling for Offshore Wind Farm Environmental Impact Assessment: Best Practice Guide. COWRIE Coast-07-08 (COWRIE, 2009);
- Marine Physical Processes Guidance to inform Environmental Impact Assessment (EIA). GN041. (NRW, 2020); and
- Advice to Inform Development of Guidance on Marine, Coastal and Estuarine Physical Processes Numerical Modelling Assessments. Report No 208. (Pye et al., 2017).
- Coughlan, et al., (2021) A new seabed mobility index for the Irish Sea: Modelling seabed shear stress and classifying sediment mobilisation to help predict erosion, deposition, and sediment distribution.

# 9.1.3 Methodology

# 9.1.3.1 Approach to Data Collection

519 The following information and data sources (**Table 9.1**) have been considered during the production of this EIAR Scoping Report and will be considered further within the future EIAR where relevant matters are scoped into the EIAR process.

Table 9.1. Data Sources used to inform the Marine Geology, Oceanography and Physical Processes chapter of this EIAR Scoping Report and that will be considered further within the EIAR

Data source	Date	Data contents
Integrated Mapping for the sustainable development of Ireland's marine resource (INFOMAR)	Various	Bathymetry
European Marine Observation and Data Network (EMODnet)	Various	Bathymetry
Ireland's Marine Atlas	Various	Bathymetry, seabed sediments
Sustainable Energy Authority Ireland	2005	Tidal currents



Data source	Date	Data contents
Office of Public Works	Various	Tidal levels
Foras na Mara (Marine institute)	Various	Bathymetry, Tidal level, Metocean data
Environmental Protection Agency	Various	Water quality data, coastal marine sediment quality data
Climate Forecast System (CFS) developed by National Centers for Environmental Information (NCEI)	1999-2011	Metocean
UK Hydrographic office (UKHO)	Various	Bathymetry data
University College Cork, Coastal and Marine Research Centre	Various	Geosciences, Seabed sediments
HOMERE database by Integrated Ocean Waves for Geophysical and other Applications (IOWAGA)	2016	Metocean
Geological Survey Ireland (GSI)	2022	Seabed sediments
British Geological Survey	1988	Seabed sediments
Cefas	2016	Suspended sediments

## 9.1.3.2 Potential Additional Data and Proposed Surveys

- 520 The data sources listed in **Table 9.1** are those identified to date which have been used to inform this EIAR Scoping Report and which will potentially be used to inform the wider assessment process in the future EIAR.
- 521 It should be noted that the list of data sources is not exhaustive and will be added to as the works connected to the future EIAR progress.
- 522 In addition to this, project-specific surveys may be undertaken to further provide data to inform the assessment. With respect to Marine Geology, Oceanography and Physical Processes, the following surveys will be undertaken to inform the EIAR (**Table 9.2**). Survey methodologies will be agreed in advance with stakeholders where possible.

Table 9.2. Proposed Baseline Surveys to inform the EIAR

Dataset	Purpose	Spatial coverage	Estimated Survey timings
Multibeam Echo Sounder and Side-scan Sonar survey	Bathymetry, seabed texture and feature identification	Potential Turbine Array Infrastructure Zone and Potential Offshore Export Cable Infrastructure Zone	2023



Dataset	Purpose	Spatial coverage	Estimated Survey timings
Sub-bottom Profiler survey	Subsurface geological characterisation	Potential Turbine Array Infrastructure Zone and Potential Offshore Export Cable Infrastructure Zone	2023
Benthic survey	Seabed sediment characterisation	Potential Turbine Array Infrastructure Zone and Potential Offshore Export Cable Infrastructure Zone	2023
Intertidal Walkover	Intertidal seabed characterisation	Cable Landfall	2023

523 Other data and information available to inform the future EIAR includes:

- United Kingdom Hydrographic Office (UKHO) tidal diamonds and historical charts;
- Ireland's Marine Atlas;
- Irish Marine Data Buoy Observation Network;
- Irish National Tide Gauge Network;
- United Kingdom Climate Projections 2018 (UKCP18); and
- Geological Survey of Ireland quaternary geology and bedrock geology maps.

## 9.1.3.3 Approach to Impact Assessment

- 524 The impact assessment methodology will be based on that described in EIAR Scoping Report, **Volume A Chapter 7** Environmental Impact Assessment Methodology and adapted to make it applicable to the assessment of Marine Geology, Oceanography and Physical Processes.
- 525 As part of the EIAR process, the receiving environment with respect to Marine Geology, Oceanography and Physical Processes will be described, including, but not limited to the following potential receptors:
  - Bathymetry;
  - Geology;
  - Water levels;
  - Tidal currents;
  - Waves;
  - Climate change;
  - Seabed sediment distribution;
  - Bedload sediment transport;
  - Suspended sediment transport;
  - Morphological change;
  - Coastal processes at Cable Landfall(s); and
  - Anticipated trends in baseline conditions.



526 To understand potential effects on Marine Geology, Oceanography and Physical Processes due to The Proposed Development, the assessment in the future EIAR will follow two approaches. The first type of assessment relates to impacts directly affecting receptors which possess their own intrinsic morphological value. The Potential Turbine Array Infrastructure Zone and Potential Export Cable Infrastructure Zone are not located within any designated sites, but potential Cable Landfall location(s) could be close to various coastal designations (**Table 9.3**). The impact assessment in the future EIAR will incorporate a combination of the sensitivity of the receptor, its value (if applicable) and the magnitude of the impact to the receptor to determine a significance of effect.

Table 9.3. Marine Geology, C	Oceanography and I	Physical Processes	Receptors
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Receptor group	Receptor	Closest distance from The Proposed Development
	Cork Harbour Special Protection Area (SPA)	
Cork Harbour	Cork Harbour Special Protection Area (SPA) Various proposed Natural Heritage Areas (pNHAs): Balackwater River And Estuary Ballycotton, Ballynamona And Shanagarry Ballymacoda (Clonpriest And Pillmore) Ballyvergan Marsh Capel Island And Knockadoon Head Ballynaclashy House, North Of Midleton Templebreedy National School, Crosshaven Fountainstown Swamp Loughs Aderry And Ballybutler Carrigshane Hill Douglas River Estuary Glanmire Wood Great Island Channel Leamlara Wood Lough Beg (Cork) Rockfarm Quarry, Little Island Rostellan Lough, Aghada Shore And Poulnabibe Inlet Dunkettle Shore Whitegate Bay Clasharinka Pond	Potential Cable Landfall(s) may be close to the SPA and pNHAs
	<ul> <li>Clasharinka Pond</li> <li>Ballyquirk Pond</li> </ul>	



Receptor group	Receptor	Closest distance from The Proposed Development
	<ul> <li>Carrigacrump Caves</li> <li>Ballyeelinan Wood</li> <li>Glenanna Wood</li> <li>Ballycotton Islands</li> <li>Monkstown Creek</li> <li>Cuskinny Marsh</li> <li>Owenboy River</li> </ul>	
Ballycotton to Youghal	Ballymacoda (Clonpriest and Pillmore) Special Area of Conservation (SAC)	
	Blackwater River (Cork/Waterford) SAC	
	Ballycotton Bay SPA	Potential Cable Landfall(s) may be
	Ballymacoda Bay SPA	close to the SACS, SPAS and pinnas
	Blackwater Estuary SPA	
	Various proposed Natural Heritage sites	

- 527 In addition to identifiable receptors, the second type of assessment would cover changes to Marine Geology, Oceanography and Physical Processes which in themselves are not necessarily impacts to which significance of effect can be ascribed (such as an increase in suspended sediment concentrations). However, such changes may indirectly impact other receptors such as Benthic, Epibenthic and Intertidal Ecology (for example). In this case, the magnitude of impact is determined in a similar manner to the first assessment method but the significance of effect on other receptors will be made within the relevant chapters of the EIAR pertaining to those receptors.
- 528 The assessment of effects on Marine Geology, Oceanography and Physical Processes will be predicated on a Source-Pathway-Receptor (S-P-R) conceptual model, whereby the Source is the initiator event, the Pathway is the link between the Source and the Receptor affected by the impact, and the Receptor is the receiving entity. An example of this type of conceptual model is provided by cable installation which disturbs sediment on the seabed (Source). This sediment is then transported by tidal currents until it settles back to the seabed (Pathway). The deposited sediment could change the composition and elevation of the seabed (Receptor). The use of numerical modelling is considered to be disproportionate to the potential effect that would occur. The S-P-R conceptual model is proportionate.



## 9.1.4 Receiving Environment

### 9.1.4.1 Bathymetry

529 The minimum and maximum depths across the Potential Turbine Array Infrastructure Zone are approximately 74m and 92m below Lowest Astronomical Tide (LAT), respectively (**Figure 9.1**). Across the Potential Export Cable Corridor Infrastructure Zone, water depths are variable from approximately 83 m below LAT in the deepest areas to less than 10 m below LAT (closer to the coast).





## 9.1.4.2 Bedrock, Quaternary Geology and Surficial or Holocene Sediments

- 530 Based on published geological mapping from INFOMAR the Potential Turbine Array Infrastructure Zone and much of the Potential Export Cable Corridor Infrastructure Zone are underlain by Upper Cretaceous Limestone. The bedrock of the Potential Export Cable Corridor Infrastructure Zone becomes predominantly Carboniferous (with some Devonian) nearer to the coast. Depth to bedrock varies, with large areas of outcropping bedrock at or near the seabed. In some, predominantly coastal areas, of the Potential Export Cable Corridor Infrastructure Zone the bedrock is overlain by a thin layer of coarse sand and gravel. The depth of sediment over bedrock potentially increases moving offshore into the Potential Turbine Array Infrastructure Zone where it is overlain by Quaternary Sediments.
- 531 A review of available information from INFOMAR surveys suggests the Potential Turbine Array Infrastructure Zone contains dispersed 'crescentic dunes' with large intervening areas of relatively featureless seabed (**Figure 9.2**). Comparison of the dune features observed in the Potential Turbine Array Infrastructure Zone (interpreted to be barchan dunes) across different years of bathymetric survey shows no evidence of movement over one to two year timescales. Typical barchan dune heights are approximately 1 m, with wavelengths of several hundred metres. These features are indicative of a current (in an offshore context) from a single predominant direction, where the convex side faces into the current and the concave side with two crescent tips face the direction the current is going. British Geological Survey (1988) also suggest the presence of crescent-shaped sand patches across the Potential Turbine Array Infrastructure Zone, described as 'barchan' form with the bowed shape transverse to the tidal stream.
- 532 A review of available information (Marine institute, 2018) also highlights the presence of paleochannels oriented perpendicular to the coast running across the Potential Export Cable Corridor Infrastructure Zone offshore towards the Potential Turbine Array Infrastructure Zone. The palaeochannels were formed during lower sea levels and infilled with glaciofluvial sediments (Gallagher *et al.*, 2004). Two or possibly three, Phases of channel infilling, with older Phases exhibiting an erosive base on top of bedrock are apparent within the paleochannels.







## 9.1.4.3 Tidal Currents

533 Spring tide current flows across the Marine Geology, Oceanography and Physical Processes Topicspecific Study Area are directed approximately north-east on a flood tide and south-west on an ebb tide. According to the Sustainable Energy Authority of Ireland (SEAI; 2005), depth-averaged peak spring tide current speeds are typically between 0.09 to 0 m/s across the Potential Turbine Array Infrastructure Zone and most of the Potential Export Cable Corridor Infrastructure Zone (Figure 9.3)







## 9.1.4.4 Waves

534 The Marine Geology Oceanography and Physical Processes Topic-specific Study Area is characterised by large waves approaching from The Atlantic Ocean, resulting in maximum significant wave heights of at least 5 m each month, with average significant wave heights of 3.5 m during the winter months (Marine Institute, 2005), as shown in **Figure 9.4**. The maximum wave height (H<sub>max</sub>) predicted for a 1 in 100 year period is about 22.5 m with an average significant wave height of 2.5 m for the Potential Turbine Array Infrastructure Zone. The predominant wave direction is from the south-west, with about 90 % of the peak waves from the 240 ° and 270 ° directional sectors •









## 9.1.4.5 Offshore Bedload Sediment and Transport

- 535 INFOMAR data indicates that the sediments across the featureless seabed of the Potential Turbine Array Infrastructure Zone comprise predominantly medium to coarse sand and gravel with areas of sand where the dunes are present (**Figure 9.5**). The seaward parts of the Potential Export Cable Corridor Infrastructure Zone are predominantly comprised of coarse sediment transitioning into bedrock at seabed closer to the coast. The transition occurs at a break-in slope around -60 m LAT.
- 536 EMODnet seabed substrate data describes the Marine Geology, Oceanography and Physical Processes Topic-specific Study Area as gravelly sand and sandy gravel across the Potential Turbine Array Infrastructure Zone (with occasional sand patches), with sand across the outer parts of the Potential Export Cable Corridor Infrastructure Zone and outcropping bedrock closer to the coast




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# 9.1.4.6 Suspended Sediments

537 Cefas (2016) mapped the spatial distribution of average annual suspended sediment concentrations across the UK continental shelf between 1998 and 2015 and this shows that the Marine Geology Oceanography and Physical Processes Topic-specific Study Area is characterised by values lower than 1 mg/l (**Figure 9.6**). Towards the coast, concentrations increase to less than 7 mg/l.



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## 9.1.4.7 Coastal Geomorphology

538 The Potential Export Cable Corridor Infrastructure Zone will be brought onshore along the County Cork coastline of Ireland. This coast is composed of a variety of environments including narrow sand/shingle beaches, intertidal rock and till outcrops, steep rock cliffs composed of interbedded mudstone and sandstone, and sand dunes.

## 9.1.4.8 Impact due to climate change

- 539 Over the operational lifetime of The Proposed Development, climate change has the potential to (slightly) modify the present baseline, although the exact type and scale of such modifications remains uncertain. The future EIAR will provide consideration to latest publications to establish potential regional changes in mean sea level and wave climate.
- 540 At present, OPW base their flood risk allowances for sea level rise on evidence from the Intergovernmental Panel on Climate Change (IPCC). Two projections are considered to offer a range of possible outcomes:
  - Mid-Range Future Scenario (MRFS) with sea levels increasing by 500 mm by 2100;
  - High-End Future Scenario (HEFS) with sea levels increasing by 1,000 mm by 2100.
- 541 In addition, glacial isostatic adjustments for land movement applicable for the southern half of Ireland are estimated to be -0.5 mm/year.
- 542 The likely consequences of an increasing mean sea level are for progressively higher surge events (and extreme water levels), a marginal landward movement of the high-water line, and for wave shoaling effects to commence slightly closer to the shore. Climate Ireland suggest surge levels for events with a 20-to-30-year return period are likely to increase by up to 0.09 m by 2100.
- 543 Climate Ireland also provide an overview for climate change effects on waves, suggesting projected changes in wave heights remain uncertain with latest research suggesting a (slight) decrease in average and extreme wave heights by 2100. The more notable variability of wave conditions within the lifetime of an offshore wind farm project is mainly due to interannual variability due to natural climatological variations rather than climate change.

## 9.1.5 Potential Impacts

544 A range of potential impacts on Marine Geology, Oceanography and Physical Processes have been identified which may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development. These potential impacts include those issues identified as requiring consideration in accordance with the guidance documents listed in **Section 9.1.2**. These potential impacts are discussed below and will be considered further in the future EIAR.



## 9.1.5.1 Potential Impacts during Construction

## 9.1.5.1.1 Impacts to Hydrodynamic Regime (Waves and Tidal Currents)

545 Whilst there is potential for the physical presence of Construction plant and offshore infrastructure to impact upon the hydrodynamic regime, this impact would increase incrementally as The Proposed Development is constructed with the greatest potential impacts resulting from the physical presence of the completed wind farm (i.e. anchors, chains, any cable protection above the seabed, and substructures). This impact is therefore considered under potential impacts during the Operation and Maintenance Phase in **Section 9.1.5.2** of this EIAR Scoping Report, and is proposed to be scoped out of further consideration in relation to the Construction Phase for the future EIAR.

## 9.1.5.1.2 Impacts on Bedload Sediment Transport and Seabed Morphological Change

546 Construction of The Proposed Development will not change the geology of the site other than in the case of localised impacts associated with anchor and cable installation, cable protection measures and potential temporary works at Cable Landfall(s). Due to the localised nature of these potential impacts, it is not anticipated that such changes would give rise to significant effects on seabed features, and neither would there be any changes in coastal morphology. Hence, these potential impacts are proposed to be scoped out of further consideration in relation to the Construction Phase for the future EIAR. However, further consideration will be given to the potential impacts on the form and function of the bedload sediment transport processes due to cable installation and cable protection measures.

#### 9.1.5.1.3 Impacts on Suspended Sediment Concentrations, Transport and Deposition

547 Potential impacts during construction include temporary disturbance of the seabed due to the installation activities for cables and anchors which release sediment into the water column resulting in increased suspended sediments and changes to seabed levels from deposition. Nearshore cable installation could result in changes to coastal processes and beach levels due to deposition or erosion. These effects are anticipated to be minimal but will be assessed as part of the EIAR. The effects will be considered separately for the Potential Turbine Array Infrastructure Zone and for the Potential Export Cable Corridor Infrastructure Zone, and potential interactions considered. The impact of construction activities on suspended sediment concentrations will be assessed using expert based assessment, predicated on a S-P-R conceptual model.

## 9.1.5.1.4 Indentations on the Seabed due to Installation Vessels

548 There is potential for certain vessels used during installation of the anchors and cable infrastructure to directly impact the seabed. This applies for those vessels that utilise jack-up legs or several anchors to hold station and to provide stability for a working platform. Where legs or anchors (and associated chains) have been inserted into the seabed and then removed, there is potential for an indentation to remain, proportional to the dimensions of the object, and depending on local conditions such as sediment transport. These effects from jack-up vessels are anticipated to be minimal but will be assessed as part of the EIAR. Methods that do not utilise vessels that have contact with the seabed (non-jack-up) are proposed to be scoped out of further consideration in relation to the Construction Phase for the future EIAR.



## 9.1.5.2 Potential Impacts during Operation and Maintenance

## 9.1.5.2.1 Impacts on Waves and Tidal Currents

- 549 Potential impacts during Operation and Maintenance Phase could occur due to the physical presence of infrastructure (i.e. anchors, chains and any cable protection above the seabed) and substructure, which may result in localised changes to waves and tidal currents due to physical blockage effects. These changes could potentially affect the sediment transport regime and/or seabed morphology. In addition, there is potential for the temporary presence of construction equipment (e.g. jack-up barges or anchored vessels) to have local impacts on the hydrodynamic and sediment regimes during maintenance activities. These effects are anticipated to be minimal but will be assessed as part of the EIAR.
- 9.1.5.2.2 Impacts on Bedload Sediment Transport and Seabed Morphological Change (including Coastal Erosion)
- 550 Potential impacts on sediment transport due to changes in waves and tidal currents are likely to be localised to the areas immediately surrounding the individual anchors in the form of seabed scour where the sediment is soft enough to be mobilised. Scour at each anchor will be assessed as part of the EIAR using well-established empirical methods applied to offshore wind farms elsewhere.
- 551 Where the Offshore Export Cables are buried, there would be no impact on bedload sediments and sediment transport. However, it is possible that cable protection would be required at locations where the seabed is characterised by hard geology, at cable and pipeline crossing locations and at Cable Landfall(s). The impacts that cable protection may have on marine geology, oceanography and physical processes primarily relate to the potential for interruption of sediment transport, both offshore and at the coast, and the footprint presented on the seabed. These effects are anticipated to be minimal but will be assessed as part of the EIAR.

## 9.1.5.2.3 Impacts on Suspended Sediment Concentrations and Transport

552 There is potential for sediments to be re-suspended by scouring impacts due to the sweeping of the seabed by the catenary action of the mooring lines for each WTG and around the floating substructures of the mooring anchors. Consideration will be given to likely changes in suspended sediment concentrations due to scour during the Operation and Maintenance Phase within the EIAR.

## 9.1.5.3 Potential Impacts during Decommissioning

- 553 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan, this will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 554 The scope of the Decommissioning works cannot be defined at this early stage. However, Decommissioning may include the removal of the accessible installed components. Offshore, this



is likely to include removal of all the WTG components, the anchors and chains (those above seabed level), removal of some or all of the cables.

- 555 Decommissioning has the potential to impact the wave and tidal current regimes, bedload sediment transport, and suspended sediment concentrations and transport. Any potential impacts arising from Decommissioning are likely to be comparable to or less than those identified for the Construction Phase and will be assessed as part of the EIAR, including:
  - Impacts on suspended sediment concentrations and transport;
  - Impacts on seabed morphology due to deposition of suspended sediment; and
  - Indentations on the seabed due to Decommissioning vessels.

#### 9.1.6 Potential Cumulative Effects

- 556 There may be potential for cumulative effects to occur in relation to Marine Geology, Oceanography and Physical Processes as a result of other projects or activities.
- 557 The Cumulative Impact Assessment (CIA) for Marine Geology, Oceanography and Physical Processes will be based on a ZoI identified during The Proposed Development-alone impact assessment, which will define the geographical extent to which effects of The Proposed Development are expected. The potential impacts considered in the CIA as part of the EIAR will be in line with those described for The Proposed Development-alone impact assessment, though it is possible that some will be screened out on the basis that the impacts are highly localised (i.e. they occur only within the Potential Offshore Infrastructure Zone) or where management measures in place to robustly reduce the risk of impacts occurring.
- 558 The CIA will consider cumulative impacts with any other projects and marine users within the ZoI (aggregate extraction and dredging, subsea cables, oil and gas activity, and other wind farms). The approach to CIA is set out in **Volume A Chapter 7** Environmental Impact Assessment Methodology, **Section 7.5.10.**

## 9.1.6.1 Intra-Project

- 559 In line with the most recent EPA guidance on EIARs (EPA, 2022) the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 560 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared ZoI of The Proposed Development (for which Development Permission is sought).

#### 9.1.6.2 Other Developments

561 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative impacts are minimised.



#### 9.1.7 Potential Transboundary Effects

562 The Proposed Development is approximately 97 km from any international territory boundary. Given that the likely Marine Geology, Oceanography and Physical Processes impacts will be restricted to near-field change, coupled with this distance from any international territory boundary, it is considered that there would be no pathway for transboundary impacts. It is therefore proposed to scope out transboundary effects on Marine Geology, Oceanography and Physical Processes from consideration in the future EIAR.

## 9.1.8 Summary of Potential Impacts

563 **Table 9.4** outlines the impacts which are proposed to be scoped into and/or out of the future EIAR for Marine Geology, Oceanography and Physical Processes. This may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.

Potential Impact	Construction	Operation and Maintenance	Decommissioning
Impacts on waves and tidal currents	x*	~	x*
Impacts on bedload sediment transport and changes to seabed morphology	x*	V	x*
Impacts on suspended sediment concentrations and transport	1	1	✓
Impacts on seabed morphology due to deposition of suspended sediment	4	1	1
Indentations on the seabed due to installation and Decommissioning vessels	4	X**	1
Cumulative effects	~	~	$\checkmark$
Transboundary effects	х	x	x

Table 9.4. Summary of Potential Impacts Relating to Marine Geology, Oceanography and Physical Processes. Topics Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR.

\*The effect arises as a result of the presence of anchors and chains so is assessed in the Operation and Maintenance Phase.

\*\*The effect is related to Construction and Decommissioning activities.

#### 9.1.9 EIAR Scoping Consultation Questions

- 564 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Marine Geology, Oceanography and Physical Processes chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Marine Geology, Oceanography and Physical Processes chapter of the EIAR for The Proposed Development?



- Are you satisfied the proposed Marine Geology, Oceanography and Physical Processes Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?
- What other data sources or surveys, if any, should The Applicant have regard to in the preparation of the Marine Geology, Oceanography and Physical Processes chapter of the EIAR for The Proposed Development?
- What additional guidance and policy should The Applicant have regard to in the preparation of the Marine Geology, Oceanography and Physical Processes chapter of the EIAR for The Proposed Development?
- Are you satisfied with the approach to impact assessment proposed for the Marine Geology, Oceanography and Physical Processes chapter of the EIAR for The Proposed Development?
- Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Marine Geology, Oceanography and Physical Processes chapter of the EIAR for The Proposed Development?

# 9.1.10 Technical Consultation

565 This chapter has considered the potential impacts of The Proposed Development on Marine Geology, Oceanography and Physical Processes. **Table 9.5** sets out a series of areas for discussion which The Applicant would appreciate targeted feedback on. Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 9.5** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.

Table 9.5. Summary of Proposed Key Technical Stakeholders Marine Geology, Oceanography and Physical Processes.

Proposed Key Technical Stakeholder	Objective of Engagement
Marine Institute	1. To confirm available data holdings, including INFOMAR.
Geological Survey Ireland	1. To confirm available data holdings, including INFOMAR.
National Parks and Wildlife Service	1. To discuss and agree the approach to impact assessment and potential embedded mitigation measures.
	2. To discuss preliminary outcomes of assessment and potential mitigation measures with specific reference to designated features / sensitive benthic and/or fish receptors.



Proposed Key Technical Stakeholder	Objective of Engagement
Environment Protection Agency	<ol> <li>To discuss and agree approach to impact assessment and potential embedded mitigation measures.</li> <li>To discuss preliminary outcomes of assessment and potential mitigation measures with specific reference to marine dredging and dumping at sea.</li> </ol>
Office of Public Works	<ol> <li>To discuss and agree approach to impact assessment and potential embedded mitigation measures.</li> <li>To discuss preliminary outcomes of assessment and potential mitigation measures.</li> </ol>
Cork County Council	<ol> <li>To discuss and agree approach to impact assessment and potential embedded mitigation measures.</li> <li>To discuss preliminary outcomes of assessment and potential mitigation measures with specific reference to the Cork coastline.</li> </ol>
Waterford County Council	<ol> <li>To discuss and agree approach to impact assessment and potential embedded mitigation measures.</li> <li>To discuss preliminary outcomes of assessment and potential mitigation measures with specific reference to the Waterford coastline.</li> </ol>

## 9.1.11 References

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#### 9.2 CHAPTER 2 MARINE WATER QUALITY

#### 9.2.1 Introduction

- 566 This Chapter of the EIAR Scoping Report considers the potential impacts of the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on Marine Water Quality and sets out the methodology and approach to be taken to assessing these potential impacts within the future EIAR.
- 567 The Marine Water Quality Topic-specific Study Area comprises the Potential Offshore Infrastructure Zone and a buffer zone comprising one tidal excursion (approximately 25 km) around the Potential Offshore Infrastructure Zone to consider far field effects which may arise on Marine Water Quality.
- 568 The features of the receiving environment mentioned in this Chapter are identified in **Figure 9.7**.

#### 9.2.2 Policy and Guidance

569 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context applicable to The Proposed Development. Policies and guidance documents of particular relevance to Marine Water Quality are set out in this section. Where certain guidance documents have been produced in relation to offshore wind farms in other countries, these will be reviewed as part of the EIAR process and considered in relation to The Proposed Development.

#### Policies

- The Offshore Renewable Energy Development Plan (OREDP) (DCCAE, 2014)<sup>11</sup>;
- Marine Planning Policy Statement (DHLGH, 2019); and
- National Marine Planning Framework (NMPF) (DHLGH, 2021a).

#### Guidance

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022a);
- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2022);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017);
- Guidance on Marine Baseline Ecological Assessments and Monitoring Activities for Offshore Renewable Energy Projects Parts 1 and 2 April 2018 (DCCAE, 2018);

<sup>&</sup>lt;sup>11</sup> It should be noted that OREDP II is currently being developed by the Department of the Environment, Climate and Communications and is expected to be available for consultation during 2022.



- Guidance on Best Practice for Marine and Coastal Physical Processes Baseline Survey and Monitoring Requirements to inform EIA of Major Development Projects (Brooks, AJ., Whitehead, PA. and Lambkin, DO., 2018)
- Assessment of Impact of Offshore Wind Energy Structures on the Marine Environment (Marine Institute, 2000);
- Assessment of the Environmental Impacts of Cables (OSPAR, 2009);
- Review of Cabling Techniques and Environmental Effects applicable to the Offshore Windfarm Industry (BERR, 2008);
- Bathing Water Quality in Ireland: A Report for the Year 2021 (EPA, 2022b);
- Guidelines for the assessment of dredge material for disposal in Irish waters (Cronin *et al.*, 2006);
- Guidance for Pollution Prevention (Northern Ireland Environment Agency (NIEA), Scottish Environment Protection Agency (SEPA) and Natural Resources Wales (NRW), 2018); and
- Shellfish Stocks and Fisheries Review 2021: an assessment of selected stocks. (Marine Institute and Bord Iascaigh Mhara, 2022).





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#### 9.2.3 Methodology

#### 9.2.3.1 Approach to Data Collection

- 570 The following information and data sources (**Table 9.6**) have been considered during the production of this EIAR Scoping Report and will be considered further within the future EIAR where relevant matters are scoped into the EIAR process.
- 571 The Marine Water Quality topic is closely linked to the Marine Geology, Oceanography and Physical Processes topic, therefore relevant information in **Volume C, Chapter 1** Marine Geology, Oceanography and Physical Processes will also be used to inform the assessment in the future EIAR of potential impacts on Marine Water Quality.

Table 9.6. Data Sources used to inform the Marine Water Quality chapter of this EIAR Scoping Report and that will be considered further within the EIAR

Data source	Date	Data contents
INFOMAR	Various	Bathymetry, seabed sediments
EMODnet	Various	Bathymetry, seabed sediments
Marine Institute	Various	Physio-chemical data
Ireland's Marine Atlas	Various	Sources of contamination and pollution in marine environment
EPA	2015 to 2021	Bathing Water Quality Reports
EPA	2013 to 2021	Water Quality Reports
EPA	2021	WFD Catchments Database
Sea-Fisheries Protection Authority	2020/2021	List of Classified Bivalve Mollusc Production Areas in Ireland
Marine Institute	2022	Shellfish Water Status
Government of Ireland	2020/2021	Shellfish water characterisation reports
Cefas	2016	Suspended sediments

#### 9.2.3.2 Potential Additional Data and Proposed Surveys

- 572 The data sources listed above are those identified to date which have been used to inform this EIAR Scoping Report and which will potentially be used to inform the wider assessment process in the future EIAR.
- 573 It should be noted that the list of data sources is not exhaustive and will be added to as the works connected to the future EIAR progress. In addition, project-specific surveys may be undertaken to further provide data to inform the assessment. With respect to Marine Water Quality, the



following survey will be undertaken to inform the EIAR (**Table 9.7**). The survey methodology will be agreed in advance with the EPA and the Marine Institute where possible.

Table 9.7. Proposed Baseline Surveys to inform the EIAR

Dataset	Purpose	Spatial Coverage	Estimated Survey Timing
Contaminant survey	Seabed sediment characterisation – grab sampling and contaminant analysis	Potential Turbine Array Infrastructure Zone and Potential Export Cable Corridor Infrastructure Zone	2023

- 574 Sediment sampling will be undertaken in accordance with relevant stakeholder requirements and best practice guidance. All samples will undergo laboratory analysis for a suite of parameters which will be confirmed following further appraisal of risk but is likely to include metals, organotins, hydrocarbons, and polychlorinated biphenyls. Detection limits for all contaminants will be provided to understand the relevance to the Environmental Quality Standards (EQS) limits available to allow for meaningful comparison to the relevant EQS.
- 575 Other data and information which will be collated and used to inform the EIAR includes:
  - Clean Seas Environmental Monitoring Programme (CSEMP) (Marine Scotland, 2018);
  - Bathing Water Quality (updated by the Environmental Protection Agency annually);
  - Shellfish water quality (updated by the Marine Institute monthly); and
  - WFD waterbody quality (managed by the EPA).

## 9.2.3.3 Approach to Impact Assessment

- 576 The impact assessment methodology will be based on that described in EIAR Scoping Report, Volume A Chapter 7 Environmental Impact Assessment Methodology and adapted to make it applicable to assessment of Marine Water Quality.
- 577 The assessment of sediment quality and any potential risk to water quality associated with the release of sediment contamination will be informed by the assessment described in **Volume C**, **Chapter 1** Marine Geology, Oceanography and Physical Processes of this EIAR Scoping Report i.e. based on a S-P-R conceptual model in relation to sediment disturbance. The risk associated with the release of sediment contamination will be based on the site specific survey data and use of recognised sediment quality guidelines (such as Cronin *et al.* 2006).
- 578 The determination in the future EIAR of effect significance on Marine Water Quality will be assessed based on the magnitude of impact and the receptor sensitivity. In addition, the magnitude of impact on Marine Water Quality will be considered for other receptors such as benthic and intertidal ecology, where changes to the physio-chemical properties of water may indirectly affect such receptors.



579 The findings of the impact assessment for Marine Water Quality will be used to assist in undertaking a WFD Compliance Assessment which will be a supporting document to the EIAR.

## 9.2.4 Receiving Environment

## 9.2.4.1 Water Quality

- 580 Waters off southern Ireland and in the Marine Water Quality Topic-specific Study Area are well mixed during spring, with frontal systems developing in the summer and autumn months which breakdown in winter (Sir Alistair Hardy Foundation for Ocean Science, 2015). In the spring and summer these frontal systems result in the release of nutrients from deeper waters into surface waters where they promote growth of phytoplankton (spring blooms) and subsequently zooplankton. Nutrient levels and plankton species across the Marine Water Quality Topic-specific Study Area are typical of the wider Celtic Sea area (Sir Alistair Hardy Foundation for Ocean Science, 2015). Continental shelf waters range in salinity between 34 and 35 Practical Salinity Units (PSU), while coastal waters range between 30 and 34 PSU.
- 581 The EU WFD is an important piece of environmental legislation which aims to improve water quality across the EU. It was given legal effect in Ireland by the European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003) and applies to rivers, lakes, groundwater, and transitional and coastal waters. The WFD requires the monitoring of various water quality parameters in water bodies out to one nautical mile (nm) offshore.
- 582 The Marine Water Quality Topic-specific Study Area encompasses a number of coastal water bodies as set out in **Table 9.8**, along with their current WFD classification, and shown in **Figure 9.7**.

WFD water body	Water body type	Overall Ecological Status	Biological Status	Supporting Chemistry Conditions
Western Celtic Sea (Has 18;19;20) (IE_SW_010_0000)	Coastal	High	Not available	Not available
Outer Cork Harbour (IE_SW_050_0000)	Coastal	High	Good	Good
Cork Harbour (IE_SW_060_0000)	Coastal	Moderate	Good	Moderate (dissolved oxygen % saturation)
Youghal Bay (IE_SW_020_0000)	Coastal	Moderate	Good	Moderate (dissolved oxygen % saturation)

Table 9.8. WFD Water Bodies and Classifications (2013-2018) (Environmental Protection Agency, 2022b)

- 583 Protected areas, also designated under the WFD, which require monitoring for water quality are Identified Bathing Waters and Designated Shellfish Waters. The following Identified Bathing Waters are located on the coast within or adjacent to the Marine Water Quality Topic-specific Study Area (and shown in **Figure 9.8**).
  - Fountainstown;
  - Garryvoe;



- Redbarn;
- Youghal Claycastle; and
- Youghal Front Strand Beach.
- 584 All of the above Identified Bathing Waters were classified as 'Excellent' during the 2021 season (Environmental Protection Agency, 2022c).
- 585 There are four Designated Shellfish Waters within Cork Harbour (as shown in **Figure 9.8**):
  - Cork Great Island North Channel;
  - Rostellan West;
  - Rostellan South; and
  - Rostellan North.
- 586 There is also one Designated Shellfish Water within Youghal Bay (as shown in **Figure 9.8**) called Ballymacoda Bay.
- 587 All of the above Designated Shellfish Waters are classified for Class B oyster (*Crassostrea gigas*) production and the most recent water quality monitoring available for these shellfish waters indicates that there are no current water quality issues in any of these designations (Marine Institute, 2022). These Designated Shellfish Waters are shown in **Figure 9.8**.





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#### 9.2.4.2 Sediment Quality

- 588 The Marine Water Quality Topic-specific Study Area encompasses Cork Harbour which may contain higher levels of anthropogenically sourced contaminants within the sediment due to relatively high levels of industrialisation compared to coastal environments. Sediments present along the coastline from Cork to Youghal however, would not be expected to contain contamination due to the lack of significant sources of contamination.
- 589 A site-specific survey will be undertaken to determine the sediment quality within the Potential Offshore Infrastructure Zone and inform the assessment of potential impacts to water quality in the future EIAR (see **Table 9.7**).

#### 9.2.5 Potential Impacts

590 A range of potential impacts on Marine Water Quality have been identified which may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development. These potential impacts include those issues identified as requiring consideration in accordance with the guidance documents listed in **Section 9.2.2**. These potential impacts are discussed below and will be considered further in the future EIAR.

## 9.2.5.1 Potential Impacts during Construction

- 591 Potential impacts during construction will result from disturbance of the seabed due to the presence and movements of plant on the seabed as well as installation activities for cables and anchors (including any required seabed preparation). Several Offshore Substation Platforms may be required as part of The Proposed Development and the decision on whether these would be fixed or floating structures has not been made. Additionally, no selection of anchor configurations has been made to date for the floating Wind Turbine Generators (WTGs). Potential impacts on water or sediment quality from construction activity for fixed foundations for Offshore Substation Platform(s), will be assessed in the EIAR if such fixed foundations are selected. These have potential to cause:
  - Localised temporary increases in suspended sediments; and
  - Remobilisation of existing contaminated sediments.
- 592 Both of these potential impacts will be scoped in to the future EIAR and a risk based S-P-R assessment undertaken.
- 593 Impacts could also occur if there is accidental release of pollutants into the water column from construction vessels. All vessels involved will be required to comply with the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78). As such, significant effects from accidental releases from vessels are unlikely. It is proposed that accidental release of pollutants into the water column from construction vessels is proposed to be scoped out of consideration for the Marine Water Quality chapter of the future EIAR.



594 It should be noted that a Project Environmental Management and Monitoring Plan (PEMMP) (or similar) will be put in place for The Proposed Development to ensure all Construction works are undertaken in line with best practice for working in the marine environment.

# 9.2.5.2 Potential Impacts during Operation and Maintenance

- 595 There is the potential for impacts to arise during routine Operation and Maintenance activities from the use of vessels and other equipment. Potential effects during this Phase are anticipated to be similar to those during the Construction Phase and may include localised increases in sediment concentration and the remobilisation of existing contaminated sediments, although these will be much lower in magnitude than during the Construction Phase. There is the potential for scour to give rise to sediment plumes which would temporarily increase levels of suspended sediments which could affect water quality. As such, during the Operation and Maintenance Phase, the following potential effects are scoped-in for further assessment in the EIAR:
  - Localised temporary increases in suspended sediments; and
  - Remobilisation of existing contaminated sediments.
- 596 As per the approach to potential impacts during the Construction Phase, effects from the accidental release of pollutants from vessels during the Operation and Maintenance Phase are proposed to be scoped out of consideration for the Marine Water Quality chapter of the future EIAR.

## 9.2.5.3 Potential Impacts during Decommissioning

- 597 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan, this will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 598 The scope of the Decommissioning works cannot be defined at this early stage. However, Decommissioning may include the removal of the accessible installed components. Offshore, this is likely to include removal of all the WTG components, the anchors and chains (those above seabed level), and removal of some or all of the cables.
- 599 Decommissioning activities have the potential to impact Marine Water Quality. Any potential impacts arising from Decommissioning are likely to be comparable to, or less than, those identified for the Construction Phase and will be assessed as part of the future EIAR. As such, the following potential impacts during Decommissioning are scoped in for further assessment in the EIAR:
  - Localised temporary increases in suspended sediments; and
  - Remobilisation of existing contaminated sediments.



#### 9.2.6 Potential Cumulative Effects

- 600 There may be potential for cumulative effects to occur in relation to Marine Water Quality as a result of other projects and activities.
- 601 The CIA for Marine Water Quality will be based on a ZoI identified during The Proposed Development-alone impact assessment (in line with the approach set out in EIAR Scoping Report, **Volume A Chapter 7** Environmental Impact Assessment Methodology), which will define the geographical extent to which effects of The Proposed Development are expected. The potential impacts considered in the CIA as part of the EIAR will be in line with those described for The Proposed Development-alone impact assessment, though it is possible that some will be screened out on the basis that the impacts are highly localised (i.e. they occur only within the Potential Offshore Infrastructure Zone) or where management measures in place to robustly reduce the risk of impacts occurring.
- 602 The CIA will consider cumulative impacts with any other projects and marine users within the ZoI (aggregate extraction and dredging, subsea cables, oil and gas activity, and other wind farms). The approach to cumulative assessment is set out in Section 7.5.10 of Volume A Chapter 7 Environmental Impact Assessment Methodology of this EIAR Scoping Report

#### 9.2.6.1 Intra-Project

- 603 In line with the most recent EPA guidance on EIARs (EPA, 2022) the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 604 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared ZoI of The Proposed Development (for which Development Permission is sought).

#### 9.2.6.2 Other Developments

605 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative impacts are minimised.

#### 9.2.7 Potential Transboundary Effects

606 Given that the likely water quality impacts would be restricted to near-field effects only, transboundary effects are unlikely to occur, or are unlikely to be significant, and therefore it is proposed that transboundary impacts will not be considered further during the EIAR for the Marine Water Quality topic.



#### 9.2.8 Summary of Potential Impacts

607 **Table 9.9** outlines the impacts which are proposed to be scoped into and/or out of the EIAR for Marine Water Quality. This may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.

Table 9.9. Summary of Potential Impacts Relating to Marine Water Quality. Topics Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR.

Potential Impact	Construction	Operation and Maintenance	Decommissioning
Localised temporary increases in suspended sediments	~	$\checkmark$	✓
Remobilisation of existing contaminated sediments	х	х	Х
Accidental releases of pollutants from construction vessels	х	х	х
Cumulative effects	$\checkmark$	$\checkmark$	$\checkmark$
Transboundary effects	х	х	х

## 9.2.9 EIAR Scoping Consultation Questions

- 608 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Marine Water Quality chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Marine Water Quality chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Marine Water Quality Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?
  - What other data sources or surveys, if any, should The Applicant have regard to in the preparation of the Marine Water Quality chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Marine Water Quality chapter of the EIAR for The Proposed Development?
  - Are you satisfied with the approach to impact assessment proposed for the Marine Water Quality chapter of the EIAR for The Proposed Development?
  - Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Marine Water Quality chapter of the EIAR for The Proposed Development?

## 9.2.10 Technical Consultation

609 This chapter has considered the potential impacts of The Proposed Development on Marine Water Quality. **Table 9.10** sets out a series of areas for discussion which The Applicant would appreciate



targeted feedback on. Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 9.10** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.

Proposed Key Technical Stakeholder	Objective of Engagement
Marine Institute	1. To discuss status of/access to relevant Marine Water Quality data.
	2. To discuss the approach to the assessment of effects.
	3. To discuss preliminary findings of the assessment and potential mitigation measures.
EPA	1. To discuss status of/access to relevant Marine Water Quality data.
	2. To discuss the approach to the assessment of effects.
	<ol> <li>To discuss preliminary findings of the assessment and potential mitigation measures with specific reference to any marine dredging and dumping at sea activities that may be required.</li> </ol>
Office of Public	1. To discuss status of/access to relevant Marine Water Quality data.
Works	2. To discuss the approach to the assessment of effects.
	3. To discuss preliminary findings of the assessment and potential mitigation measures.
Cork County Council and Waterford County Council	1. To discuss status of/access to relevant Marine Water Quality data.
	2. To discuss the approach to the assessment of effects.
	3. To discuss preliminary findings of the assessment and potential mitigation measures specific to Marine Water Quality receptors on the County Cork and Waterford coastlines (respectively).

Table 9.10. Summary of Proposed Key Technical Stakeholders Marine Water Quality.

#### 9.2.11 References

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#### 9.3 CHAPTER 3 UNDERWATER NOISE AND VIBRATION

#### 9.3.1 Introduction

- 610 This chapter considers the potential impacts of Construction, Operation and Maintenance and Decommissioning Phases of The Proposed Development on underwater noise.
- 611 It should be noted that seabed vibration and any effects from offshore wind projects are not generally considered in offshore wind farm EIARs. Relevant key guidance to Irish waters (e.g. DAHG, 2014, see **Section 9.3.2**) and, internationally, Faulkner *et al.* (2018) make reference to noise but do not make any reference to nor have equivalents for vibration. No quantitative thresholds exist for its calculation or assessment and vibration is therefore not proposed to be considered further, and is proposed to be scoped out of the future EIAR.
- 612 There is no Topic-specific Study Area for Underwater Noise. Rather, the relevant Study Area(s) are those defined for marine mammals and fish as these are the receptors that will be potentially affected by Underwater Noise.

#### 9.3.2 Policy and Guidance

613 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context for The Proposed Development. Policies and guidance documents of particular relevance to Underwater Noise are detailed below. Where certain guidance documents have been produced in relation to offshore wind farms in other countries, these will be reviewed as part of the EIAR process and considered in relation to The Proposed Development.

#### Policies

- The Offshore Renewable Energy Development Plan (OREDP) (DCCAE, 2014)<sup>12</sup>;
- Marine Planning Policy Statement (DHLGH, 2019); and
- National Marine Planning Framework (NMPF) (DHLGH, 2021a).

## Guidance

- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017);
- Guidance on Marine Baseline Ecological Assessments and Monitoring Activities for Offshore Renewable Energy Projects Parts 1 and 2 April 2018 (DCCAE, 2018);
- Assessment of Impact of Offshore Wind Energy Structures on the Marine Environment (Marine Institute, 2000);
- Assessment and Monitoring of Ocean Noise in Irish Waters (EPA, 2011)
- Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters (DAHG, 2014);

<sup>&</sup>lt;sup>12</sup> It should be noted that OREDP II is currently being developed by the Department of the Environment, Climate and Communications and is expected to be available for consultation during 2022.



- Marine mammal noise exposure criteria: Initial scientific recommendations. (Southall *et* al, 2007);
- Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects. (Southall *et al*, 2019<sup>13</sup>); and
- Sound exposure guidelines for Fishes and Sea Turtles. Springer Briefs in Oceanography, (Popper et al, 2014).
- Peak sound pressure and sound exposure level from underwater explosions in shallow water (Solway A G and Dahl P H, 2014)

# 9.3.3 Methodology

# 9.3.3.1 Approach to Data Collection

- 614 No specific surveys to obtain underwater noise measurements are proposed to characterise the site and/or undertake the impact assessments, although as noted in **Section 9.3.4** in reference to the underwater noise assessment this is not technically required as noise impact thresholds are based on absolute values, not relative to a baseline noise level. A description of typical underwater noise baseline data for the eastern Irish Sea and North Sea will be included as a reference for ambient noise present around Ireland and comparable shipping lanes around the British Isles.
- 615 Additional data sources may be identified as part of this EIAR Scoping Exercise and over the duration of the EIAR process.

## 9.3.3.2 Approach to Impact Assessment

- 616 Over the lifetime of The Proposed Development, a number of underwater noise sources are likely to occur:
  - Construction noise:
    - Foundation installation. The use of floating WTGs as part of The Proposed Development has the potential to reduce the underwater noise produced during the Construction Phase compared to that generated from the use of fixed foundations, if anchoring systems are selected that avoid piling. However, piling is under consideration as a possible anchoring technique for the floating WTGs (see Section 6.4 of Volume A Chapter 6 The Proposed Development of this EIAR Scoping Report) at this stage, as well as the potential for use at any required Offshore Substation Platform(s).
    - UXO clearance may lead to one of the greatest single sources of underwater noise created during the Construction Phase, and will be assessed accordingly in the event they are found to be present.
    - Other Construction Phase noise generating activities could include: the selected anchoring system (including suction bucket foundations and drag embedment

<sup>&</sup>lt;sup>13</sup> As Southall *et al.* (2019) is published in an international peer reviewed journal it is used as a preference to NMFS (2018).



anchors, rock cutting, installation of cabling and any associated dredging; installation of scour protection; works at Cable Landfall(s); and additional vessel movements.

- Operational noise: including the ongoing Operation of the WTGs. The underwater noise
  produced relates to the size of the WTGs and speed of blade rotation, as well as Operation
  and Maintenance. The potential for noise generated by anchoring cables is low but will
  be considered.
- Decommissioning noise: with noise generated by the technology used to remove foundations and floating substructures and associated vessel movements.
- 617 The assessment of underwater noise, that will inform the subsequent impact assessments for marine mammals and fish, will be undertaken using modelling software that enables the prediction of noise levels with range around the noise source. Modelling of piling, which, if applicable, typically causes the most significant effect from underwater noise during the Construction and Operation and Maintenance Phases of offshore wind farms, will be undertaken using Subacoustech's INSPIRE underwater noise model. This has been used for the accurate prediction of noise impacts at most of the offshore wind farm developments in England, Scotland and Wales over the last ten years, as well as at the Dublin Array, Codling Wind Park and North Irish Sea Array (NISA) Offshore Wind Farms.
- 618 The Proposed Development is currently considering a variety of potential floating substructures installation methods, including suction buckets and drag embedment anchors. These options are considered low-noise and low-risk techniques with relation to underwater noise and will be considered using commensurately simple modelling techniques such as Subacoustech's SPEAR model.
- 619 Other noise sources will be dealt with using other modelling techniques. A dedicated model will be used to calculate the noise from UXO, if required, and operational noise is considered based on the paper by Tougaard *et al.* 2020. Subacoustech's SPEAR model will be used for the prediction of noise from other continuous-type noise sources such as dredging and vessel movements.
- 620 Critically, any assessment will take into account the sensitivities of key species of fish (e.g. herring, sprat and mackerel) and marine mammal (e.g. harbour porpoise, minke whale and harbour seal) present at and in the Celtic Sea surrounding The Proposed Development, based on the weightings and criteria from the Southall *et al.* (2019) guidelines for marine mammals, and Popper *et al.* (2014) guidelines for fish. This document also references turtles and elasmobranchs, species of which have been identified in the region and will be scoped in. Instantaneous noise levels and cumulative noise exposures will be identified, and the ranges at which onset effects on hearing (Permanent Threshold Shift (PTS) and Temporary Threshold Shift (TTS)) for affected individuals are expected based on the guidelines. Disturbance as a consequence of any underwater noise produced will also be fully considered.
- 621 At the time of writing, no accepted noise thresholds or quantitative criteria exist for the assessment of noise impacts on non-fish benthos or cephalopods, or shellfish. These will be referenced in the EIAR to the extent that data on underwater noise effects is available.



- 622 The locations where modelling will be undertaken will be identified in relation to zones of receptor sensitivity in line with the information set out in **Volume C Chapter 5** Marine Mammals and Marine Turtles and **Volume C Chapter 8** Fish and Shellfish Ecology of this EIAR Scoping Report, noting that water depth is a key parameter, as deeper water tends to lead to greater sound propagation and, therefore, an increased spatial extent of potential noise exposure. As modelling will not be undertaken at every single floating substructure/foundation location, consultation will be undertaken with key stakeholders to agree the most appropriate representative locations that ensure a robust assessment.
- 623 For lower-level noise sources such as dredging, additional shipping, or WTG operational noise, a simpler modelling methodology (the SPEAR model) will be utilised, which will provide sufficient detail to predict effects on marine mammals and fish. The SPEAR modelling approach does not take bathymetry or other environmental conditions into account, and as such can be applied to any location in or around the Potential Turbine Array Infrastructure Zone or the Potential Export Cable Corridor Infrastructure Zone.
- 624 It is proposed that the assessment of potential underwater noise produced by UXO detonation is based upon a variety of charge weights that could be present, unless detailed data on the UXOs detected on site is available.
- For this aspect of the assessment, the attenuation of the noise from UXO detonation will be accounted for in calculations using geometric spreading and a sound absorption coefficient, primarily using the methodologies cited in Soloway and Dahl (2014), which establishes a trend based on measured data in open water. These equations give a relatively simple calculation which can be used to give an indication of the range of effect. The equation does not consider variable bathymetry or seabed type, and thus calculation results will be the same regardless of where it is used.
- 626 The outputs of the modelling will feed into the marine mammal and fish impact assessments in the EIAR. Results of the underwater noise modelling will be reported in a Technical Appendix to the future EIAR rather than a dedicated chapter and referenced in specialist topics that rely on the data.

## 9.3.4 Receiving Environment

- 627 The Potential Turbine Array Infrastructure Zone is located greater than 22 km south of counties Cork and Waterford in the Celtic Sea. Any underwater noise generated via the Construction, Operation and Maintenance and Decommissioning Phase of The Proposed Development will contribute to the existing background noise environment. The greater the level of existing underwater noise, then the less overall relative influence any introduced underwater noise will have. However, some potential underwater noise sources, especially during construction, are expected to be significantly louder than the ambient noise.
- 628 The Celtic Sea is a region of significant marine traffic, making it a relatively noisy environment. A major shipping lane passes close to the south and west of the Potential Turbine Array



Infrastructure Zone, running to and from Cork. Underwater noise from cargo vessels, tankers and recreational vessels active in this area will, therefore, lead to relatively high pre-existing background underwater noise in this region. A more comprehensive outline of the shipping traffic in the vicinity of The Proposed Development is provided in **Volume C, Chapter 10** Shipping and Navigation of this EIAR Scoping Report.

- 629 No specific baseline underwater noise data exists for the Potential Turbine Array Infrastructure Zone or the nearby Celtic Sea region. Background underwater noise data exists for the west coast of Wales, although the oceanographic conditions are suitably different such that these levels would not be considered representative of the Potential Turbine Array Infrastructure Zone. However, the proposed assessment methodologies for marine mammals and fish are based on absolute underwater noise level criteria, which do not require a baseline noise level for comparison (see **Volume C, Chapter 8** Fish and Shellfish Ecology and **Chapter 5** Marine Mammals and Marine Turtles) of this EIAR Scoping Report). Therefore, this will not impede the impact assessment. Disturbance or other behavioural changes will also be considered with respect to available thresholds, or qualitatively where these are not available.
- 630 The key species of marine wildlife that will be included in the underwater noise assessment will be determined from a thorough review of desk and survey data. At this stage it is anticipated that the following species will be included in the assessment: cetaceans (e.g. minke whale *Balaenoptera acutorostrata*, bottlenose dolphin *Tursiops truncatus*, common dolphin *Delphinus delphis* and harbour porpoise *Phocoena phocoena*), pinnipeds (e.g. harbour seal *Phoca vitulina* and grey seal *Halichoerus grypus*), herring *Clupea harengus*, sprat *Sprattus*, mackerel *Scomber scombrus* and a variety of other species of fish.

## 9.3.5 Potential Impacts

- 631 The potential impacts from increased underwater noise will affect receptors including marine mammals and fish. These potential impacts will be considered in these specific topic chapters (see **Volume C, Chapter 5** Marine Mammals and Marine Turtles and **Volume C, Chapter 8** Fish and Shellfish Ecology respectively), however a summary of potential underwater noise impacts is set out below for completeness.
- 632 Impacts to consider will focus on permanent or temporary auditory injury to key receptors, although underwater noise modelling will also assess the potential for disturbance or behavioural reactions.

## 9.3.5.1 Potential impacts during Construction

633 The most significant potential underwater noise effect would be as a result of impact piling for the installation of foundation piles (if required) for the Offshore Substation Platform(s), as well as potentially the deployment of anchoring cables for the floating WTGs. The assessment would consider various sizes of WTG and hammer energies. Other potential noise sources during the Construction Phase include groundwork such as dredging and rock cutting, trenching and associated vessel movements. In the event that UXO are identified in the Potential Offshore


Infrastructure Zone that must be removed or made safe, this clearance work can also generate noise.

634 A detailed UXO survey would be undertaken post-consent ahead of Construction Phase activities commencing. This detailed UXO survey would involve the deployment of Unmanned Autonomous Vehicles (UAVs) to investigate magnetic anomalies located adjacent to planned construction locations. The detailed UXO survey will not therefore have been completed at the time of submission of the Development Permission application. Some data on potential UXO will be obtained via the geophysical and magnetometer survey planned to commence in 2023. Therefore, it is proposed that the assessment of potential underwater noise produced by UXO detonation is based upon a single, nominal event and that activity (UXO detonation) be part of the project activities included in the eventual consent application

## 9.3.5.2 Potential impacts during Operation and Maintenance

635 During the Operation and Maintenance Phase WTGs would create underwater noise while operating, and although this is not typically significant, it is proposed this will be scoped into the future EIAR. Floating WTG anchor cables can occasionally be a low source of underwater noise, and this will be considered in the EIAR. Maintenance will require additional vessel traffic with associated noise from such movements scoped in to the future EIAR.

## 9.3.5.3 Potential impacts during Decommissioning

- 636 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 637 The scope of the Decommissioning works cannot be defined at this early stage. However, Decommissioning may include the removal of the accessible installed components. Offshore, this is likely to include removal of all the WTG components, the anchors and chains (those above seabed level), and removal of some or all of the cables.
- 638 If required, Decommissioning has the potential to cause Underwater Noise impacts. Any potential impacts arising from Decommissioning are likely to be comparable to, or of lower magnitude than, those identified for the Construction Phase and will be assessed as part of the future EIAR.

## 9.3.6 Potential Cumulative Effects

639 Cumulative effects from Underwater Noise may occur where multiple noise sources are active and the greatest risk of this is in the event of multiple piling rigs operating simultaneously either in the Potential Turbine Array Infrastructure Zone or on other, adjacent wind farm sites. This will be assessed where the potential for this is identified. Other sources of noise are generally much lower in level and are not likely to lead to any significant effects, and therefore will not be included in the CIA in the future EIAR. Cumulative impacts from piling are considered to be the only activities which could give rise to cumulative effects.



### 9.3.6.1 Intra-Project

- 640 In line with the most recent EPA guidance on EIARs (EPA, 2022) the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 641 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared ZoI of The Proposed Development (for which Development Permission is sought).

### 9.3.6.2 Other Developments

642 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative effects are minimised.

### 9.3.7 Potential Transboundary Effects

643 Due to the distances involved, transboundary effects from underwater noise are not expected. However, specific consideration of underwater noise will be made in relation to potential transboundary effects on marine mammals as set out in **Volume C, Chapter 5** Marine Mammals and Marine Turtles and **Volume C, Chapter 8** Fish and Shellfish Ecology.

#### 9.3.8 Summary of Potential Impacts

**Table 9.11** outlines the impacts which are proposed to be scoped into and/or out of the EIAR for Underwater Noise. This may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.

Table 9.11. Summary of Potential Impacts relating to Underwater Noise. Topics Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR

Potential Impact	Construction	Operation and Maintenance	Decommissioning
<b>Piling</b> Impulsive noise during construction of foundations with the potential to cause auditory injury or disturbance.	~	~	x
UXO Should UXO be present in the region, controlled detonation may be required. This has the potential to cause direct injury, and injury via associated underwater noise.	~	x	x
Other continuous construction noise sources	$\checkmark$	$\checkmark$	x



Potential Impact	Construction	Operation and Maintenance	Decommissioning
These include dredging, vessel movement and rock cutting			
<b>Operational WTG noise</b> During full Operation of the wind farm, noise from the WTGs, variable depending on the wind speed, as well as anchor cables and vessels have the potential to cause disturbance to species in the vicinity.	х	~	х
Cumulative effects	$\checkmark$	$\checkmark$	✓
Transboundary effects	Х	Х	х

## 9.3.9 EIAR Scoping Consultation Questions

- 645 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Underwater Noise and Vibration chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Underwater Noise and Vibration chapter of the EIAR for The Proposed Development?
  - What other data sources or surveys, if any, should The Applicant have regard to in the preparation of the Underwater Noise and Vibration chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Underwater Noise and Vibration chapter of the EIAR for The Proposed Development?
  - Are you satisfied with the approach to impact assessment proposed for the Underwater Noise and Vibration chapter of the EIAR for The Proposed Development?
  - Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Underwater Noise and Vibration chapter of the EIAR for The Proposed Development?

## 9.3.10 Technical Consultation

646 This chapter has considered the potential impacts of The Proposed Development on Underwater Noise and Vibration. **Table 9.12** sets out a series of areas for discussion which The Applicant would appreciate targeted feedback on. Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 9.12** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be



progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.

Table 9.12: Summary of Proposed Key Technical Stakeholders Underwater Noise and Vibration.

Proposed Key Technical Stakeholder	Objective of Engagement
BIM	1. To discuss and agree approach to underwater noise modelling and subsequent impact assessment on fish.
	<ol><li>To discuss outputs of underwater noise modelling and potential impacts on sensitive fish species and potential mitigation measures.</li></ol>
Marine Institute	1. To discuss and agree approach to underwater noise modelling and subsequent impact assessment on fish and marine mammals.
	2. To discuss outputs of underwater noise modelling and potential impacts on sensitive fish and marine mammals and potential mitigation measures.
IWDG	1. To discuss and agree approach to underwater noise modelling and subsequent impact assessment on marine mammals.
	2. To discuss outputs of underwater noise modelling and potential impacts on marine mammals and potential mitigation measures.
ORCA Ireland	1. To discuss and agree approach to underwater noise modelling and subsequent impact assessment on marine mammals.
	2. To discuss outputs of underwater noise modelling and potential impacts on marine mammals and potential mitigation measures.

## 9.3.11 References

Department of Arts, Heritage and the Gaeltacht (2014). Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters.

Department of Communications, Climate Action and Environment (2014) The Offshore Renewable Energy Development Plan

Department of Communications, Climate Action and Environment (2017) Guidance on EIS and NIS Preparation for Offshore Renewable Energy Projects.

Department of Communications, Climate Action and Environment (2018) Guidance on Marine Baseline Ecological Assessments & Monitoring Activities for Offshore Renewable Energy Projects.

Department of Housing, Planning and Local Government (2019) Draft Revised Wind Energy Development Guidelines

Department of Housing, Planning and Local Government (2021a) National Marine Planning Framework

Faulkner R C, Farcas A, Merchant N D (2018) Guiding principles for assessing the impact of underwater noise. J Appl Ecol. 2018;1–6. DOI: 10.1111/1365-2664.13161

Marine Institute (2000) Assessment of Impact of Offshore Wind Energy Structures on the Marine Environment

National Marine Fisheries Service (NMFS) (2018). Revisions to: Technical guidance for assessing the effects of anthropogenic sound on marine mammal hearing (version 2.0): Underwater thresholds for onset of



permanent and temporary threshold shifts. U.S. Dept. of Commer., NOAA. NOAA Technical Memorandum NMFS-OPR-59

O'Brien, J. (2011). Assessment and Monitoring of Ocean Noise in Irish Waters. Associated datasets and digital information objects connected to this resource are available at: Secure Archive for Environmental Research Data (SAFER) managed by Environmental Protection Agency Ireland http://erc.epa.ie/safer/resource?id=44aa4dad-8f1a-11e3-b233-005056ae0019 (Accessed: May, 2021).

Popper A N, Hawkins A D, Fay R R, Mann D A, Bartol S, Carlson T J, Coombs S, Ellison W T, Gentry R L, Halvorsen M B, Løkkeborg S, Rogers P H, Southall B L, Zeddies D G, Tavolga W N (2014). Sound exposure guidelines for Fishes and Sea Turtles. Springer Briefs in Oceanography, DOI 10.1007/978-3-319-06659-2.

Solway A G and Dahl P H (2014). Peak sound pressure and sound exposure level from underwater explosions in shallow water. The Journal of the Acoustical Society of America 136, EL218 (2014); doi: 10.1121/1.4892668

Southall B L, Bowles A E, Ellison W T, Finneran J J, Gentry R L, Green Jr. C R, Kastak D, Ketten D R, Miller J H, Nachtigall P E, Richardson W J, Thomas J A, Tyack P L (2007). Marine mammal noise exposure criteria: Initial scientific recommendations. Aquatic Mammals, 33 (4), pp 411-509.

Southall B L, Finneran J J, Reichmuth C, Nachtigall P E, Ketten D R, Bowles A E, Ellison W T, Nowacek D P, Tyack P L (2019). Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects. Aquatic Mammals 2019, 45(2), 125-232, DOI 10.1578/AM.45.2.2019.125.

Tougaard, J., Hermannsen, L., and Madsen, P.T. (2020) How loud is the underwater noise from operating offshore wind turbines? J. Acoust. Soc. Am. 148 (5).



### 9.4 CHAPTER 4 BENTHIC, EPIBENTHIC AND INTERTIDAL ECOLOGY

### 9.4.1 Introduction

- 647 This Chapter of the EIAR Scoping Report considers the potential impacts of the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on Benthic, Epibenthic and Intertidal Ecology and sets out the methodology and approach to be taken to assessing these effects within the EIAR.
- 648 The Benthic, Epibenthic and Intertidal Ecology Topic-specific Study Area comprises the Potential Offshore Infrastructure Zone and a buffer (of approximately 25 km) comprising of one tidal excursion around the Potential Offshore Infrastructure Zone to consider far field effects which may arise on Benthic, Epibenthic and Intertidal receptors.

## 9.4.2 Policy and Guidance

649 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context applicable to The Proposed Development. Policies and guidance documents of particular relevance to Benthic, Epibenthic and Intertidal Ecology are set out in this section. Where certain guidance documents have been produced in relation to offshore wind farms in other countries, these will be reviewed as part of the EIAR process and considered in relation to The Proposed Development.

#### Policies

- The Offshore Renewable Energy Development Plan (OREDP) (DCCAE, 2014)<sup>14</sup>;
- Marine Planning Policy Statement (DHLGH, 2019); and
- National Marine Planning Framework (NMPF) (DHLGH, 2021a).

# Guidance

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2022);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017)
- Guidance on Marine Baseline Ecological Assessments and Monitoring Activities for Offshore Renewable Energy Projects Parts 1 and 2 April 2018 (DCCAE, 2018);
- Assessment of Impact of Offshore Wind Energy Structures on the Marine Environment (Marine Institute, 2000);
- Assessment of the environmental impacts of cables (OSPAR, 2009);
- Review of Cabling Techniques and Environmental Effects applicable to the Offshore Windfarm Industry (BERR, 2008);

<sup>&</sup>lt;sup>14</sup> It should be noted that OREDP II is currently being developed by the Department of the Environment, Climate and Communications and is expected to be available for consultation during 2022.



- Guidelines for the assessment of dredge material for disposal in Irish waters (Cronin *et al.*, 2006);
- Guidance for Pollution Prevention (Northern Ireland Environment Agency (NIEA), Scottish Environment Protection Agency (SEPA) and Natural Resources Wales (NRW), 2018);
- Scottish National Heritage (SNH) Guidance on Survey and Monitoring in Relation to Marine Renewables Deployments in Scotland Volume 5: Benthic Habitats. (SNH, 2011); and
- JNCC (2010) Marine Conservation Zone Project, Ecological Network Guidance.

# 9.4.3 Methodology

# 9.4.3.1 Approach to Data Collection

- 650 The following information and data sources (**Table 9.13**) have been considered during the production of this EIAR Scoping Report and will be considered further within the EIAR where relevant matters are scoped into the EIAR process.
- 651 The Benthic, Epibenthic and Intertidal Ecology assessment is closely linked to Marine Geology, Oceanography and Physical Processes (Volume C, Chapter 1 Marine Geology, Oceanography and Physical Processes), Marine Water Quality (Volume C, Chapter 2 Marine Water Quality), and Fish and Shellfish Ecology (Volume C, Chapter 8 Fish and Shellfish Ecology ), therefore relevant information in these chapters will also be used to inform the assessment of impacts on benthic, epibenthic and intertidal receptors.

Table 9.13. Data sources used to inform the Benthic, Epibenthic and Intertidal Ecology chapter of this EIAR Scoping I	Report and
that will be considered further within the EIAR	

Data source	Date	Data contents
INFOMAR	Various	Benthic Ecology
EMODnet	Various	Bathymetry
Marine Institute	Various	Benthic Ecology
Ireland's Marine Atlas	Various	Benthic Ecology
National Parks and Wildlife Service (NPWS)	Various	Designated site data and Designations Viewers
Habitat Mapping (HABMAP)	2005	Benthic surveys of the southern Irish Sea
The South-West Irish Sea Survey (SWISS)	1996	Benthic biodiversity
SeaRover (Sensitive Ecosystem Assessment and ROV Exploration of Reef)	2017-2019	Celtic Sea benthic observations
MarLIN (Marine Life Information Network)	Various	Marine species information database



Data source	Date	Data contents
Celtic Interconnector Project. Volume 4C - Combined Celtic Interconnector Habitat Assessment Survey and Environmental Baseline Report	2016	Benthic habitats
Celtic Interconnector Project. Benthic Survey Report	2018	Benthic habitats

## 9.4.3.2 Potential Additional Data and Proposed Surveys

- 652 The data sources listed above are those identified to date which have been used to inform this EIAR Scoping Report and which will potentially be used to inform the wider assessment process in the future EIAR.
- 653 It should be noted that the list of data sources is not exhaustive and will be added to as the works connected to the future EIAR progress. In addition, project-specific surveys may be undertaken to further provide data to inform the assessment. With respect to Benthic, Epibenthic and Intertidal Ecology, the following surveys will be undertaken to inform the EIAR (**Table 9.14**). Survey methodologies will be agreed in advance with stakeholders (notably NPWS) where possible.

Table 9.14. Proposed Baseline Surveys to inform the EIAR

Dataset	Purpose	Spatial Coverage	Estimated Survey Timings
Geophysical survey (Multibeam and Side-Scan Sonar survey and Sub Bottom Profiler Survey)	Bathymetry, seabed texture and feature identification as well as identification of shallow geology.	Potential Turbine Array Infrastructure Zone and Potential Export Cable Corridor Infrastructure Zone	2023
Benthic survey (grab sampling and drop-down video)	Seabed sediment characterisation and identification of the extent and distribution of key benthic habitats and features, including species or habitats of conservation importance.	Potential Turbine Array Infrastructure Zone and Potential Export Cable Corridor Infrastructure Zone	2023
Intertidal Phase 1 walkover survey	identification of the extent and distribution of key intertidal habitats and features, including species or habitats of conservation importance.	At and around the selected Cable Landfall location(s)	2023

## 9.4.3.3 Approach to Impact Assessment

654 The impact assessment methodology will be based on that described in EIAR Scoping Report, Volume A Chapter 7 Environmental Impact Assessment Methodology and adapted to make it applicable to the assessment of Benthic, Epibenthic and Intertidal Ecology.



- The receiving environment will be described in detail with respect to the presence of different habitats and species. The baseline characterisation surveys that are to be conducted, alongside existing data, will allow the production of habitat maps alongside the baseline description. As part of developing the benthic ecology baseline the Applicant will work closely with stakeholders to ensure that all available data relevant to The Proposed Development is considered.
- To assess impacts on benthic and intertidal receptors the assessment will consider the following:
  - Magnitude/extent: the size or amount of impact;
  - Duration: time for recovery (may vary with receptor sensitivity) and duration of activity causing an impact;
  - Reversibility of the impact;
  - Timing and frequency; and
  - The sensitivity of features based upon the Marine Evidence-based Sensitivity Assessment (MarESA) framework, where possible (MarLIN, 2021).
- 657 The assessment as far as possible will use a quantitative assessment based on parameters for The Proposed Development, for example, the area of habitat permanently impacted by the installation of foundations. Design assumptions used to inform such assessments will be clearly identified in the design envelope used, considering the parameters used specifically for benthic and intertidal receptors.

#### 9.4.4 Receiving Environment

- 658 The Potential Turbine Array Infrastructure Zone is dominated by a mixture of hard rocky ground, mixed sediment and muddy sand (see **Volume C, Chapter 1** Marine Geology, Oceanography and Physical Processes for a description of seabed composition). The Admiralty chart data shows that the muddy sand is a mixture of muddy gravel, mud and mud with stone and shell.
- 659 INFOMAR data (as presented in **Figure 9.9**) reveals a predominantly flat featureless seafloor throughout the Potential Turbine Array Infrastructure Zone. A number of deeper channels can be seen towards the southern boundary of the Potential Turbine Array Infrastructure Zone. Evidence of the rocky seabed can be seen in the north-western section of the Potential Turbine Array Infrastructure Zone which extends into an almost continuous rocky seafloor throughout the southern area of the Potential Export Cable Corridor Infrastructure Zone with some sedimentary channels interspersed. The northern area of the Potential Export Cable Corridor Infrastructure Zone is characterised by a rocky seabed within approximately 10 km of the shore.
- 660 The Proposed Development is not located within any European Site (as shown in Figure 9.10). Table 9.15 lists the Special Areas of Conservation (SAC) with designated marine features within 15 km of The Proposed Development. Due to the nature and scale of The Proposed Development, an NIS will be prepared which will fully assess the potential impacts on European Sites. The NIS will be submitted in support of a Development Permission application for The Proposed Development.



Table 9.15 European Sites Designated for Marine Habitats or Species within 15 km of The Proposed Development

European Site	Designated features	
	Estuaries	
	Mudflats and sandflats not covered by seawater at low tide	
	Perennial vegetation of stony banks	
	Salicornia and other annuals colonising mud and sand	
	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	
	Mediterranean salt meadows (Juncetalia maritimi)	
	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation	
	Old sessile oak woods with <i>llex</i> and <i>Blechnum</i> in the British Isles	
Blackwater River (Cork/Waterford) SAC (IE002170)	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno- Padion, Alnion incanae, Salicion albae)	
	Margaritifera margaritifera (freshwater pearl mussel)	
	Austropotamobius pallipes (white-clawed crayfish)	
	Petromyzon marinus (sea lamprey)	
	Lampetra planeri (brook lamprey)	
	Lampetra fluviatilis (river lamprey)	
	Alosa fallax (twaite shad)	
	Salmo salar (Atlantic salmon)	
	Lutra lutra (otter)	
	Trichomanes speciosum (Killarney fern)	
	Estuaries	
Dellamente de (Clemaniest en d'Dillamente)	Mudflats and sandflats not covered by seawater at low tide	
SAC (IF000077)	Salicornia and other annuals colonising mud and sand	
5,10 (12000077)	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	
	Mediterranean salt meadows (Juncetalia maritimi)	
Great Island Channel SAC (IE0010E9)	Mudflats and sandflats not covered by seawater at low tide	
	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	



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### 9.4.5 Potential Impacts

661 A range of potential impacts on Benthic, Epibenthic and Intertidal Ecology have been identified which may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development. These potential impacts include those issues identified as requiring consideration in accordance with the guidance documents listed in **Section 9.4.2.** These potential impacts are discussed below and will be considered further in the future EIAR.

## 9.4.5.1 Potential Impacts during Construction

- 662 Potential impacts arising during the construction of The Proposed Development could arise during the following activities:
  - Seabed preparation and WTG and Offshore Platform(s) floating substructure/foundation installation
  - Cable laying and any associated seabed preparation and cable protection measures
  - Connection to the Onshore Cable at the Cable Landfall(s).
- 663 The activities listed above could cause the following potential effects on epibenthic, benthic and intertidal receptors:
  - Loss of and/or temporary physical disturbance to habitats and species There is
    potential for direct physical disturbance of the seabed Construction Phase activities such
    as foundation for the Offshore Substation Platform(s), mooring system and cable
    installation and any required seabed preparation. Areas affected by installation activities
    would be relatively small scale in relation to the wider environment, they will be local in
    nature limited to the footprint of the activity, and seabed recovery is expected quickly
    following cessation of installation activities, given the likely tolerance and recoverability
    of the habitats present.
  - **Disturbance from noise or vibration** Research into the effects of underwater noise in relation to epibenthic benthic and intertidal ecology is ongoing. There may be reactions from some benthic species to episodic noise such as that from pile driving (Lovell et al, 2005, Heinisch and Weise, 1987). Any effect is likely to be localised and temporary. The latest research will be considered and presented within the EIAR.
  - **Remobilisation of contaminated sediments** Sediment disturbance could lead to the mobilisation of contaminants (if present) that could be harmful to benthic habitats and species. This will be assessed in the EIAR based on the results of sediment sampling which will be collected within the Potential Turbine Array Infrastructure Zone and Potential Export Cable Corridor Infrastructure Zone, and the results will be reported within the Marine Water Quality Chapter of the EIAR. If the sediment sample results show no contaminated sediment, or if contamination levels are below relevant thresholds then it is proposed this impact is scoped out of consideration of the future EIAR.
  - **Deterioration in water quality** The installation of foundations for the Offshore Substation Platform(s), mooring systems, and cables may cause an increase of suspended



sediment concentrations in the water column. Such concentrations have the potential to affect benthos through blockage of filter feeders and/or smothering sessile species once the sediment settles out of the water column and is deposited on the seabed.

- Introduction of alien species There is a risk of spreading Invasive Non-Native Species (INNS) through use of construction vessels.
- It should be noted that this will be unlikely to occur as biosecurity measures will be employed in accordance with the following relevant regulations and guidance:
  - International Convention for the Prevention of Pollution from Ships (MARPOL). The MARPOL sets out appropriate vessel maintenance;
  - The European Communities (Environmental Liability) Regulations 2008 (SI 547 of 2008), which set out a polluter pays principle where the operators who cause a risk of significant damage or cause significant damage to land, water or biodiversity will have the responsibility to prevent damage occurring, or if the damage does occur will have the duty to reinstate the environment to the original condition; and
  - The International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention), which provide global regulations to control the transfer of potentially invasive species.
- 664 These commitments would be secured in the PEMMP which will be updated prior to the start of the Construction Phase.

# 9.4.5.2 Potential Impacts during Operation and Maintenance

- 665 Impacts during the Operation and Maintenance Phase largely arise from the physical presence of infrastructure (i.e. foundations, cables and any cable protection above the seabed). Potential impacts include:
  - Long term/permanent habitat loss The presence of foundations on the seabed (for the Offshore Substation Platform(s)) and cable protection would result in a relatively small footprint of lost habitat in the context of the habitat from the surrounding region. Depending on whether the infrastructure is removed or left in-situ at the Decommissioning Phase this impact is either long term or permanent habitat loss. As a worst case scenario, it is assumed it would be permanent habitat loss to show the potential effect of leaving the structures in situ. A Decommissioning Which would agree the removal of structures.
  - Habitat creation and colonisation The subsea structures (mooring systems, scour protection and cable protection) are expected to be colonised by a range of species leading to a localised increase in biodiversity. The presence of the structures would also provide habitat for mobile species and for example serve as a refuge for fish. This represents a change from the baseline ecology. Overall, the area available for colonisation would be low and to date there is no evidence of significant changes of the seabed beyond the vicinity of the foundation structures due to the installation of wind farms (Lindeboom et al, 2011).



- Electromagnetic Fields EMFs as a result of the presence of offshore cables may be detected by some benthic species. Effects are likely to be highly localised, as EMFs are strongly attenuated and decrease as an inverse square of distance from the cable (Gill and Barlett, 2010). There are a number of contradicting studies regarding the potential effects of EMF on benthic species (Bochert & Zettler, 2006 and Gill *et al.*, 2014). Due to the lack of evidence it is therefore proposed that this impact should be scoped into further consideration within the EIAR. EMF impacts to fish and shellfish will be considered in Volume C Chapter 8 Fish and Shellfish Ecology
- 666 Maintenance activities during the Operation and Maintenance Phase also have the potential for all the impacts outlined during the Construction Phase, although at a lower magnitude.

## 9.4.5.3 Potential Impacts during Decommissioning

- 667 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 668 The scope of the Decommissioning works cannot be defined at this early stage. However, Decommissioning may include the removal of the accessible installed components. Offshore, this is likely to include removal of all the WTG components, the anchors and chains (those above seabed level), and removal of some or all of the cables.
- 669 Decommissioning activities have the potential to impact Benthic, Epibenthic and Intertidal Ecology Any potential impacts arising from Decommissioning are likely to be comparable to, or less than, those identified for the Construction Phase and will be assessed as part of the future EIAR.

## 9.4.6 Potential Cumulative Effects

- 670 There may be potential for cumulative effects to occur in relation to Benthic, Epibenthic and Intertidal Ecology as a result of other activities.
- 671 The CIA for Benthic, Epibenthic And Intertidal Ecology will be based on a ZoI identified during The Proposed Development-alone impact assessment (in line with the approach set out **Volume A Chapter 7** Environmental Impact Assessment Methodology of this EIAR Scoping Report), which will define the geographical extent to which effects of The Proposed Development are expected. The potential effects considered in the CIA as part of the EIAR will be in line with those described for The Proposed Development-alone impact assessment, though it is possible that some will be screened out on the basis that the impacts are highly localised (i.e. they occur only within the Potential Offshore Infrastructure Zone) or where management measures in place to robustly reduce the risk of impacts occurring.
- The CIA will consider cumulative effects with any other projects and marine users within the ZoI (aggregate extraction and dredging, subsea cables, oil and gas activity, and other wind farms). The



approach to cumulative assessment is set out in **Section 7.5.10** of **Volume A Chapter 7** Environmental Impact Assessment Methodology of this EIAR Scoping Report.

### 9.4.6.1 Intra-Project

- 673 In line with the most recent EPA guidance on EIARs (EPA, 2022) the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 674 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared ZoI of The Proposed Development (for which Development Permission is sought).

### 9.4.6.2 Other Developments

675 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative impacts are minimised.

### 9.4.7 Potential Transboundary Effects

676 Given that the potential impacts on Benthic, Epibenthic And Intertidal Ecology are very likely to be restricted to near-field effects only, transboundary effects are unlikely to be significant, and therefore it is proposed that transboundary effects will not be considered further during the EIAR for this topic.

#### 9.4.8 Summary of Potential Impacts

677 **Table 9.16** outlines the impacts which are proposed to be scoped into and/or out of the EIAR for Benthic, Epibenthic and Intertidal Ecology. This may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.

Table 9.16 Summary of Potential Impacts Relating to Benthic, Epibenthic and Intertidal Ecology. Topics Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR

Potential Impact	Construction	Operation and Maintenance	Decommissioning
Loss of and/or temporary physical disturbance to habitats and species	¥	~	~
Disturbance from noise or vibration	$\checkmark$	х	*
Remobilisation of contaminated sediments	X*	х	х
Deterioration in water quality	$\checkmark$	✓	~
Introduction of alien species.	$\checkmark$	х	~
Long term habitat loss	x	✓	x



Potential Impact	Construction	Operation and Maintenance	Decommissioning
Habitat creation and colonisation	х	$\checkmark$	x
EMFs detection	х	✓	х
Cumulative effects	$\checkmark$	√	$\checkmark$
Transboundary effects	x	х	х

\* If the baseline sediment sample results identify contaminated sediment being present at levels in excess of relevant thresholds then this impact will be considered within the future EIAR.

### 9.4.9 EIAR Scoping Consultation Questions

- 678 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Benthic, Epibenthic and Intertidal Ecology chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Benthic, Epibenthic and Intertidal Ecology chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Benthic, Epibenthic and Intertidal Ecology Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?
  - What other data sources or surveys, if any, should The Applicant have regard to in the preparation of the Benthic, Epibenthic and Intertidal Ecology chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Benthic, Epibenthic and Intertidal Ecology chapter of the EIAR for The Proposed Development?
  - Are you satisfied with the approach to impact assessment proposed for the Benthic, Epibenthic and Intertidal Ecology chapter of the EIAR for The Proposed Development?
  - Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Benthic, Epibenthic and Intertidal Ecology chapter of the EIAR for The Proposed Development?

## 9.4.10 Technical Consultation

679 This chapter has considered the potential impacts of The Proposed Development on Benthic, Epibenthic and Intertidal Ecology. **Table 9.17** sets out a series of areas for discussion which The Applicant would appreciate targeted feedback on. Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 9.17** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.



Table 9.17: Summary of Proposed Key Technical Stakeholders Benthic, Epibenthic and Intertidal Ecology.

Proposed Key Technical Stakeholder	Objective of Engagement
Foreshore Unit	1. To discuss and agree the approach for intertidal and subtidal benthic surveys as detailed in the Foreshore Licence Application; with specific focus on technical aspects of data collection and analysis.
Marine Institute	1. To discuss and agree the approach for intertidal and subtidal benthic surveys as detailed in the Foreshore Licence Application; with specific focus on technical aspects of data collection and analysis.
	2. To discuss and agree data available to date and to discuss any additional data collection requirements to inform the EIAR Phase.
	3. To discuss and agree the approach to impact assessment for benthic ecological receptors and protected features, and potential embedded and additional mitigation measures.
National Parks and Wildlife Services	1. To discuss and agree the approach for intertidal and subtidal benthic surveys as detailed in the Foreshore Licence Application; with specific focus on technical aspects of data collection and analysis.
	2. To discuss and agree data available to date and to discuss any additional data collection requirements to inform the EIAR Phase.
	3. To discuss and agree the approach to impact assessment for benthic ecological receptors and protected features, and potential embedded and additional mitigation measures.
BIM	1. To discuss and agree data available to date and to discuss any additional data collection requirements to inform the EIAR Phase.
	2. To discuss and agree the approach to impact assessment for benthic ecological receptors and protected features, and potential embedded and additional mitigation measures.

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#### 9.5 CHAPTER 5 MARINE MAMMALS AND MARINE TURTLES

### 9.5.1 Introduction

- 680 This Chapter of the EIAR Scoping Report considers the potential impacts of Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on Marine Mammals and Marine Turtles, and sets out the methodology and approach to be taken to assessing these potential impacts within the EIAR.
- 681 This section should be read alongside **Volume C Chapter 3** Underwater Noise and Vibration of this EIAR Scoping Report which includes consideration of Marine Mammals and Marine Turtles.
- 682 The Marine Mammals and Marine Turtles Topic-specific Study Area is based on the Management Units (MU) for each Marine Mammal species. The receiving environment presented in the sections below considers the species present within the relevant MU, their abundance (including spatial and temporal variations) as well as the species use of the MU.

## 9.5.2 Policy and Guidance

683 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context applicable to The Proposed Development. Policies and guidance documents of particular relevance to the Marine Mammal and Marine Turtles topic are set out in this chapter. These policy and guidance documents will be used to inform the Marine Mammal and Marine Turtles chapter of the future EIAR. Where certain guidance documents have been produced in relation to offshore wind farms in other countries, these will be reviewed as part of the future EIAR process and considered in relation to The Proposed Development.

## Policies

- The Offshore Renewable Energy Development Plan (OREDP) (DCCAE, 2014)<sup>15</sup>;
- Marine Planning Policy Statement (DHLGH, 2019); and
- National Marine Planning Framework (NMPF) (DHLGH, 2021a).

## Guidance

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2022);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017)
- Guidance on Marine Baseline Ecological Assessments and Monitoring Activities for Offshore Renewable Energy Projects Parts 1 and 2 April 2018 (DCCAE, 2018);

<sup>&</sup>lt;sup>15</sup> It should be noted that OREDP II is currently being developed by the Department of the Environment, Climate and Communications and is expected to be available for consultation during 2022.



- Guidance on the Strict Protection of Certain Animal and Plant Species under the Habitats Directive in Ireland (DHLGH, 2021)
- Assessment of Impact of Offshore Wind Energy Structures on the Marine Environment (Marine Institute, 2000);
- Guidance on Environmental Considerations for Offshore Wind Farm Development (OSPAR, 2008);
- Assessment of the environmental impacts of cables (OSPAR, 2009);
- Review of Cabling Techniques and Environmental Effects applicable to the Offshore Windfarm Industry (BERR, 2008);
- Scottish National Heritage (SNH) Guidance on Survey and Monitoring in Relation to Marine Renewables Deployments in Scotland Volume 5: Benthic Habitats. (SNH, 2011);
- Assessment and Monitoring of Ocean Noise in Irish Waters (EPA, 2011);
- Decommissioning of Offshore Renewable Energy Installations: Guidance Notes for Industry (BEIS, 2019);
- Irish Whale and Dolphin Group (IWDG) Policy on Offshore Windfarm Development (2020);
- Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters (Department of Arts, Heritage and the Gaeltacht, 2014); and
- Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects (Southall *et al*, 2019).

# 9.5.3 Methodology

# 9.5.3.1 Approach to Data Collection

- 684 The baseline for Marine Mammals and Marine Turtles will be based on both desk-based data sources and site-specific Digital Aerial Survey (DAS) data. All species that are recorded within the DAS data will be assessed further, and species that have been detected regularly in the area, based on the desk-based assessment, will also be included, whether they are recorded within the 24month DAS programme or not. See **Section 9.5.4.1.1** for more information on the site-specific surveys to date.
- 685 It should also be noted that all Marine Mammal functional hearing groups<sup>16</sup> (and Marine Turtles) will be considered within the underwater noise modelling, and within any resultant mitigation plans. Therefore, all porpoise, dolphin, whale, seal, and marine turtle species will be mitigated for (where mitigation is required, e.g. due to underwater noise), whether they are specified in the assessments or not.
- 686 The majority of the data sources used within the desk-based assessment would be Marine Mammal surveys, and therefore would likely have been undertaken in hours of good visibility and good sea states. While the presence of some Marine Mammal species is known to fluctuate over a diurnal period (i.e. at different times of day), observer-based surveys by necessity are undertaken

<sup>&</sup>lt;sup>16</sup> Marine mammal functional hearing groups refer to the species groupings within the relevant thresholds; low frequency cetaceans (whales), high frequency cetaceans (dolphins), very high frequency cetaceans (porpoises) and pinniped species in water (seals)



during hours of daylight to ensure good visibility and the best opportunity to detect Marine Mammal species.

687 It is considered that the combined approach of undertaking a desk-based review and site-specific DAS programme facilitates a sufficient characterisation of the Topic-specific Study Area, and allows for an understanding of the presence and abundance of Marine Mammal and Marine Turtle species. A precautionary approach will be taken in all eventualities, and therefore species will be considered even if low numbers are recorded in the area, and the worst-case density and abundance estimates will be used in the assessments. In addition, as noted above, all mitigation (if required) will be designed to take into account all Marine Mammal and Marine Turtle species groups.

## 9.5.3.1.1 Defining List of Species for Inclusion

**Table 9.18** provides the data sources that will be utilised to inform the assessments for Marine Mammals and Marine Turtles. The species included below are indicative of those that will be included within the assessment, but this list will be reviewed following full baseline characterisation. It is expected that the below list of species represents those that will be considered further within the future EIAR, and that no further Marine Mammal or Marine Turtle species will be identified for inclusion in the future EIAR.

Table 9.18 Summary of Data Sources that have been used to inform the Marine Mammals and Marine Turtles chapter of this EIAR Scoping Report and that will be considered further within the EIAR

Species	Type / description of data	Source
Harbour porpoise <i>Phocoena phocoena</i> Common dolphin <i>Delphinus delphis</i> Bottlenose dolphin <i>Tursiops truncatus</i> Risso's dolphin <i>Grampus griseus</i>	Presence and seasonal changes	Site-specific DAS Key desk-based sources, including • Rogan <i>et al.</i> (2018) • Waggitt <i>et al.</i> (2019) • IWDG reporting
<ul> <li>White-beaked dolphin Lagenorhynchus albirostris</li> <li>Striped dolphin Stenella coeruleoalba</li> <li>Atlantic white-sided dolphin Lagenorhynchus acutus</li> <li>Killer whale (orca) Orcinus orca</li> <li>Long-finned pilot-whale Globicephala melas</li> <li>Minke whale Balaenoptera acutorostrata</li> <li>Fin whale Balaenoptera physalus</li> <li>Humpback whale Megaptera novaeangliae</li> </ul>	Density estimates (worst-case to be used)	Site-specific DAS Key desk-based sources, including • Rogan <i>et al.</i> (2018) • Waggitt <i>et al.</i> (2019)
	Reference populations	Site-specific DAS Key desk -based sources, including • Rogan <i>et al.</i> (2018) • IAMMWG (2021) • NAMMCO reporting • IWDG reporting
Grey seal <i>Halichoerus grypus</i> Harbour seal <i>Phoca vitulina</i>	Presence and seasonal changes	Site-specific DAS <ul> <li>Key desk-based sources, including</li> </ul>



Species	Type / description of data	Source
		SCOS reporting
	Density estimates (worst-case to be used)	<ul> <li>Site-specific DAS</li> <li>Key desk-based sources, including</li> <li>Carter <i>et al.</i> (2020)</li> </ul>
	Reference populations	Site-specific DAS Key desk-based sources, including • SCOS reporting • O'Cadhla <i>et al.</i> (2013)
	Haul-out sites	Site-specific Cable Landfall surveys (incidental sightings only) Key desk-based sources, including • SCOS reporting • Duck & Morris (2019)
Leatherback turtle Dermochelys coriacea	Distributions and presence	Site-specific DAS TURTLE database • Other desk-based sources including ObSERVE I - Rogan <i>et al.</i> (2018)

# 9.5.3.2 Potential Additional Data and Proposed Surveys

- 689 The data sources listed in **Table 9.18** are those identified to date which have been used to inform this EIAR Scoping Report and which will potentially be used to inform the wider assessment process in the future EIAR.
- 690 It should be noted that the list of data sources is not exhaustive and will be reviewed and added to as the works connected to the future EIAR progress. In addition to this, project-specific surveys have and continue to be undertaken to further obtain data to inform the Marine Mammal and Marine Turtle assessment.
- 691 A 24-month DAS programme commenced in April 2021 and is currently programmed up to March 2023 (inclusive). The DAS area includes the Potential Turbine Array Infrastructure Zone plus an additional buffer extending to 4km from the Potential Turbine Array Infrastructure Zone boundary.

# 9.5.3.3 Approach to Impact Assessment

- 692 The impact assessment methodology will be based on that described in EIAR Scoping Report Volume A Chapter 7 Environmental Impact Assessment Methodology and adapted to make it applicable to the assessment of Marine Mammals and Marine Turtles.
- 693 Where possible, the potential impacts scoped in will be assessed based on the potential ZoI. Marine Mammal density information from site-specific surveys where possible (and the most



recent and robust density information publicly available from other sources) will be used to determine the number of Marine Mammals that could potentially be impacted. Assessments will be put into the context of the relevant reference populations (MUs) in order to identify the potential for any population effects.

## 9.5.3.3.1 Sensitivity and Value

- 694 The determination of sensitivity of Marine Mammals and Marine Turtles will follow the methodology as provided in **Volume A Chapter 7** Environmental Impact Assessment Methodology this EIAR Scoping Report. In addition, for some assessments the 'value' of a receptor may also be considered, where relevant.
- 695 The 'value' of the receptor forms an important element within the assessment, for instance, if the receptor is a protected species or has an economic value. In the case of Marine Mammals, most species are protected by a number of international commitments as well as European and UK law and policy. All cetaceans in Irish waters are European Protected Species (EPS) and, therefore, are internationally important. Harbour porpoise, bottlenose dolphin, grey seal and harbour seals are also afforded international protection through the designation of European Sites. As such, all species of Marine Mammal can be considered to be of high value.

### 9.5.3.3.2 Magnitude

- 696 The thresholds for defining the potential magnitude of impact that could occur from a particular impact will be determined using expert judgement, current scientific understanding of Marine Mammal population biology. There is no specific guidance on defining magnitude levels for Marine Mammals for the Republic of Ireland, and therefore the guidance from JNCC (for UK waters) will be used. A similar group of Marine Mammal and Marine Turtle species are expected to be present in Irish waters, as for UK waters for which the JNCC *et al.* (2010) draft EPS guidance is based, and therefore is relevant for species expected to be present near The Proposed Development. In most cases, it would also be the same overall populations as for the UK, for which the JNCC guidance was developed (e.g. for harbour porpoise, the population of relevance covers an area including Irish waters and the Irish and Celtic Seas (which include UK waters).
- 697 The JNCC *et al.* (2010) draft guidance on disturbance to EPS species suggests definitions for a 'significant group' of individuals or proportion of the population for EPS species. As such this guidance has been considered in defining the thresholds for magnitude of effects.
- 698 The JNCC *et al.* (2010) draft guidance provides some indication on how many animals may be removed from a population without causing detrimental effects to the population at Favourable Conservation Status (FCS). The JNCC *et al.* (2010) draft guidance also provides limited consideration of temporary effects, with guidance reflecting consideration of permanent displacement.
- 699 Temporary effects are considered to be of medium magnitude at greater than 5% of the reference population. JNCC *et al.* (2010) draft guidance considered 4% as the maximum potential growth rate in harbour porpoise, and the 'default' rate for cetaceans. Therefore, beyond natural mortality, up to 4% of the population could theoretically be permanently removed before population growth



could be halted. In assigning 5% to a temporary impact in this assessment, consideration is given to uncertainty of the individual consequences of temporary disturbance.

- Permanent effects with a greater than 1% of the reference population being affected within a single year are considered to be high in magnitude in this assessment. This is based on Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (ASCOBANS) and (noting there is no Irish equivalent agreement) the UK's Department for Environment, Food and Rural Affairs (Defra) advice (Defra, 2003; ASCOBANS, 2015) relating to impacts from fisheries by-catch (i.e. a permanent effect) on harbour porpoise. A threshold of 1.7% of the relevant harbour porpoise population above which a population decline is inevitable has been agreed with Parties to ASCOBANS, with an intermediate precautionary objective of reducing the impact to less than 1% of the population (Defra, 2003; ASCOBANS, 2015).
- 701 The JNCC *et al.* (2010) draft EPS guidance (as described in paragraph 697) has been used to determine levels of magnitude of population level impacts to Marine Mammal species, as shown in **Table 9.19**. This is in line with the approach taken to defining magnitude levels at a number of UK offshore renewable projects and is used in lieu of Irish specific guidance being available.

Magnitude	Definition
	Permanent irreversible change to exposed receptors or feature(s) of the habitat which are of particular importance to the receptor.
	Assessment indicates that more than 1% of the reference population are anticipated to be exposed to the impact.
	OR
High	Long-term effect for 10 years or more, but not permanent (e.g. limited to Operational Phase of The Proposed Development).
High	Assessment indicates that more than 5% of the reference population are anticipated to be exposed to the impact.
	OR
	Temporary effect (e.g. limited to the Construction Phase of development) to the exposed receptors or feature(s) of the habitat which are of particular importance to the receptor.
	Assessment indicates that more than 10% of the reference population are anticipated to be exposed to the impact.
	Permanent irreversible change to exposed receptors or feature(s) of the habitat of particular importance to the receptor.
	Assessment indicates that between 0.01% and 1% of the reference population anticipated to be exposed to impact.
Medium	OR
Medium	Long-term effect for 10 years or more, but not permanent (e.g. limited Operational Phase of The Proposed Development).
	Assessment indicates that between 1% and 5% of the reference population are anticipated to be exposed to the impact.
	OR

Table 9.19 Definitions of Levels of Magnitude for Marine Mammals



Magnitude	Definition
	Temporary effect (e.g. limited to the Construction Phase of development) to the exposed receptors or feature(s) of the habitat which are of particular importance to the receptor. Assessment indicates that between 5% and 10% of the reference population anticipated to be exposed to impact.
Low	Permanent irreversible change to exposed receptors or feature(s) of the habitat of particular importance to the receptor. Assessment indicates that between 0.001% and 0.01% of the reference population anticipated to be exposed to impact. OR Long-term effect for 10 years or more, but not permanent (e.g. limited to Operational Phase of The Proposed Development). Assessment indicates that between 0.01% and 1% of the reference population are anticipated to be exposed to the impact. OR Intermittent and temporary effect (e.g. limited to the Construction Phase of development) to the exposed receptors or feature(s) of the habitat which are of particular importance to the receptor.
Negligible	Assessment indicates that between 1% and 5% of the reference population anticipated to be exposed to impact. Negligible Permanent irreversible change to exposed receptors or feature(s) of the habitat of particular importance to the receptor. Assessment indicates that less than 0.001% of the reference population anticipated to be exposed to impact. OR Long-term effect for 10 years or more (but not permanent, e.g. limited to lifetime of The Proposed Development). Assessment indicates that less than 0.01% of the reference population are anticipated to be exposed to the impact. OR Intermittent and temporary effect (limited to the Construction Phase of Operational Phase of The Proposed Development or The Proposed Development's timeframe) to the exposed receptors or feature(s) of the habitat which are of particular importance to the receptor. Assessment indicates that less than 1% of the reference population anticipated to be exposed to impact.

# 9.5.3.3.3 Effect Significance

702 Following the identification of receptor sensitivity and the magnitude of the impact, the effect significance will be determined using the matrix approach as set out in Section 7.5 of Volume A Chapter 7 Environmental Impact Assessment Methodology of this EIAR Scoping Report.

## 9.5.4 Receiving Environment

703 Ireland has recorded 25 species of cetacean and two species of pinnipeds, all of which are recognised as protected species under the Irish Wildlife Act; based on desk-based sources, approximately 13 of these species have been recorded off the south coast and may be present in



the Potential Offshore Infrastructure Zone, at least on a seasonal basis. Of those species, four are listed under Annex II of the Habitats Directive, requiring member states to designate areas of protection for those species.

# 9.5.4.1 Cetacean Species

## 9.5.4.1.1 Site-Specific Marine Mammal Surveys

- 704 indicated in **Table 9.23**, the most common species recorded during the DAS (to date) is the common dolphin, which has been recorded in each survey for which DAS data is available at the time of publication of this EIAR Scoping Report (i.e. data from April 2021 April 2022 inclusive). The highest number, to date, of common dolphins was recorded in August 2021. Common dolphin have been recorded in both the Potential Turbine Array Infrastructure Zone and the 4km buffer.
- 705 Harbour porpoise have been recorded in April, August, September and October 2021 and January, March and April 2022. The highest number of harbour porpoise recorded to date was in October 2021. Harbour porpoise have been recorded in both the Potential Turbine Array Infrastructure Zone and the 4km buffer.
- 706 Minke whale were recorded in October 2021 in the Potential Turbine Array Infrastructure Zone. Bottlenose dolphin were recorded in October 2021 in the 4km buffer area, to date bottlenose dolphin have not been recorded within the Potential Turbine Array Infrastructure Zone.
- 707 To-date no Marine Turtles have been recorded during the DAS.



Table 9.20 Raw Count Marine Mammal Sightings during the Digital Aerial Surveys from April 2021 to April 2022

Species	Apr- 21	May-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	Totals
Common dolphin	8	17	68	110	4	68	14	40	45	27	24	28	453
Harbour porpoise	3	-	-	1	1	25	-	-	6	-	11	1	48
Dolphin / porpoise species	-	-	-	-	1	5	5	8	9	15	17	-	60
Dolphin species	-	-	-	-	-	1	3	-	-	-	-	-	4
Minke whale	-	-	-	-	-	2	-	-	-	-	-	-	2
Unidentified Marine Mammal species	-	-	-	1	-	-	2	1	-	-	3	-	7
Seal species	-	-	-	-	-	-	-	1	-	2	1	-	4
Grey seal	-	1	-	-	-	-	-	-	-	-	-	-	1
Bottlenose dolphin	-	-	-	-	-	3	-	-	-	-	-	-	3



- For Marine Mammals, it is important to consider the individuals that it would not be possible to detect using observer-based survey or DAS techniques, due to time spent below the water surface, and therefore undetectable. In order to do this, the raw counts are corrected to account for the time that each species spends below the water surface (and therefore would not be detected in the DAS). Correction factors are based on the known dive behaviours of each species. For harbour porpoise, correction factors are based on the data presented in Voet *et al.* (2017), and use different factors for each season, and for submerged and surfacing individuals. For other species, correction factors are less well understood.
- 709 A review of available correction factors will be undertaken through the EIAR process for other Marine Mammal species and will include data from SMRU (2011) for both seal species, Rasmussen *et al.* (2013) for white-beaked dolphin, and Mate *et al.* (1994) for Atlantic white-sided dolphin, and Mate *et al.* (1995) for bottlenose dolphin.

## 9.5.4.1.2 Presence and Abundance of Cetacean Species

710 From the initial desk-based review, a number of data sources have been identified as outlined in **Table 9.21**. Noting that the approach to data collection, approach to analysis and timing of associated surveys vary across the studies listed, their inclusion provides further insight into the presence and abundance of cetacean species. As described in the Approach to Data Collection (**Section 9.5.3.1**), this ensures any potential assessment within the EIAR is not limited to the records of the site-specific surveys. All species identified as being common in **Table 9.21** will be included within the EIAR, and those recorded as uncommon will be investigated further to determine the potential for impacts upon them. All species recorded as rare will not be taken forward for further assessment in the EIAR.



Table 9.21 Summary of desk-based review on existing information on the presence and abundance of Cetacean Species.

Species	Indicative commonality in southern Irish waters	Sources (for distribution / presence)	Geographic region (population area)	Most recent abundance estimate(s) for relevant population area	Sources (for abundance estimate and population area)
Common dolphin	Common	ObSERVE I (Rogan <i>et al.,</i> 2018); Waggitt <i>et al.</i> (2019)	Celtic and Greater North Sea MU	102,656 (CV = 0.29; 95% Cl = 58,932 – 178,822)	Inter-Agency Marine Mammal Working Group (IAMMWG) (2021)
Risso's dolphin	Uncommon	Cetacean monitoring during the Celtic Sea Herring Acoustic Survey (CSHAS), 2014; ObSERVE I (Rogan <i>et al.</i> , 2018); Waggitt <i>et al.</i> (2019)	Celtic and Greater North Sea MU	12,262 (CV = 0.46; 95% CI = 5,227 – 28,764)	IAMMWG (2021)
			Irish waters	Lowest estimate = 35 (CV = 0.96; 95% CI = 7 - 188) Highest estimate = 2,630 (CV = 0.41; 95% CI = 1,212 - 5,707)	ObSERVE I survey (Rogan <i>et al.,</i> 2018)
Bottlenose dolphin	CSHAS (2014); ObSERVE I (Rogan et al., 2018); Waggitt et al. (2019)	Offshore Channel, Celtic Sea and South West England MU Potential for individuals to also be present from the Shannon Estuary MU; West Coast Ireland MU	Offshore Channel, Celtic Sea and South West England MU: 10,947 (CV = 0.25; 95% CI = 6,727 – 17,814)	IAMMWG (2021); Nykanen <i>et al.</i> (2019)	
			Irish waters	Lowest estimate = 12,633 (CV = 0.34; 95% CI = 6,609 - 24,148)	ObSERVE I survey (Rogan <i>et al.,</i> 2018)



Species	Indicative commonality in southern Irish waters	Sources (for distribution / presence)	Geographic region (population area)	Most recent abundance estimate(s) for relevant population area	Sources (for abundance estimate and population area)
				Highest estimate = 212,646 (CV = 0.15; 95% CI = 157,026 -287,967)	
Striped dolphin	Uncommon / rare	ObSERVE I (Rogan <i>et al.,</i> 2018)	European Atlantic (excluding Irish waters)	372,000 individuals (95% Cl = 198,583 – 698,134)	Hammond <i>et al.</i> (2021)
Striped dolphin			North-west Atlantic	54,800 (CV = 0.3)	Waring <i>et al.</i> ( 2014) <sup>17</sup>
White-beaked dolphin	Uncommon	obSERVE I (Rogan <i>et al.,</i> 2018); Waggitt <i>et al.</i> (2019)	Celtic and Greater North Sea MU	43,951 (CV = 0.22; 95% CI = 28,439 – 67,924)	IAMMWG (2021)
			Irish waters	Lowest estimate = 739 (CV = 0.63; 95% CI = 349 – 1,561) Highest estimate = 7,090 (CV = 0.44; 95% CI = 4,128 - 12,178)	ObSERVE I survey (Rogan <i>et al.,</i> 2018)
Atlantic white- sided dolphin	Uncommon / rare	ObSERVE I (Rogan <i>et al.,</i> 2018); Waggitt <i>et al.</i> (2019)	Celtic and Greater North Sea MU	18,128 (CV = 0.61; 95% CI = 6,049 – 54,323)	IAMMWG (2021)

<sup>17</sup> As reported by NAMMCO <u>https://nammco.no/striped-dolphin/#1567001868404-427c48cf-8e7e</u>



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Species	Indicative commonality in southern Irish waters	Sources (for distribution / presence)	Geographic region (population area)	Most recent abundance estimate(s) for relevant population area	Sources (for abundance estimate and population area)
			Irish waters	Lowest estimate = 497 (CV = 0.89; 95% CI = 186 - 1,331) Highest estimate = 2,907 (CV = 0.60; 95% CI = 1,417 - 5,963)	ObSERVE I survey (Rogan <i>et al.,</i> 2018)
Harbour porpoise	Common	CSHAS (2014); ObSERVE I (Rogan <i>et al.,</i> 2018); Waggitt <i>et al.</i> (2019)	Celtic and Irish Seas <sup>18</sup> Management Unit (MU)	62,517 (CV = 0.13; 95% CI = 48,324 – 80,877)	IAMMWG (2021)
			Irish waters	Lowest estimate = 14,333 (CV = 0.36; 95% CI = 9,648 - 21,295) Highest estimate = 39,118 (CV = 0.22; 95% CI = 29,519 -51,840)	ObSERVE I survey (Rogan <i>et al.,</i> 2018)
Long-finned pilot- whales	Uncommon / rare	ObSERVE I (Rogan <i>et al.,</i> 2018)	North-east and central Atlantic population	560,000	Based on the estimate for west Greenland [9,180; Hansen <i>et al.</i> (2018)], east Greenland [258; Hansen <i>et al.</i> (2018)], Iceland to Faroe Islands [344,148; Pike <i>et al.</i> (2019a)], Ireland maritime area [7,418; Rogan <i>et al.</i> (2018)], and

<sup>&</sup>lt;sup>18</sup> Celtic Sea = waters off the south coast of Ireland, north coast of Cornwall and south-west Wales; Irish Sea = waters between Wales and Ireland, from the southwest of Wales to south-east Ireland, and south-west Scotland and north-east Northern Ireland, including seas around the Isle of Man



Species	Indicative commonality in southern Irish waters	Sources (for distribution / presence)	Geographic region (population area)	Most recent abundance estimate(s) for relevant population area	Sources (for abundance estimate and population area)
					the European continental shelf [172,195; Rogan <i>et al.</i> (2017) plus 25,777; Hammond <i>et al.</i> (2017)] <sup>19</sup>
			Irish waters	Lowest estimate = 3,080 (CV = 0.41; 95% CI = 1,413 - 6,715) Highest estimate = 9,036 (CV = 0.32; 95% CI = 4,894 - 16,685)	ObSERVE I survey (Rogan <i>et al.,</i> 2018)
			North-east Atlantic waters (excluding Irish waters)	5,215 (CV = 0.605; 95% Cl = 1,704-15,965)	SCANS-III surveys (Hammond <i>et al.,</i> 2021)
Killer whale	Uncommon / rare	Waggitt <i>et al.</i> (2019)	North Atlantic	14,611 (95% CI = 4,055- 52,773; CV=0.55) <sup>20</sup>	Based on a North Atlantic Sightings Survey (NASS, 2015) estimate for the Atlantic, from the Faroe Islands to Canada <sup>21</sup>
Beaked whale species	Rare	ObSERVE I (Rogan <i>et al.,</i> 2018)	-	-	-

<sup>&</sup>lt;sup>19</sup> As reported by NAMMCO <u>https://nammco.no/long-finned-pilot-whale/#1475844082849-433d5060-e5a9</u> <sup>20</sup> Pike *et al.* (2020)

<sup>&</sup>lt;sup>21</sup> As reported by NAMMCO https://nammco.no/killer-whale/#1475844082849-433d5060-e5a9


Species	Indicative commonality in southern Irish waters	Sources (for distribution / presence)	Geographic region (population area)	Most recent abundance estimate(s) for relevant population area	Sources (for abundance estimate and population area)	
			Celtic and Greater North Sea MU	20,118 (CV = 0.18; 95% Cl = 14,061 – 28,786)	IAMMWG (2021)	
Minke whale	Common	CSHAS (2014); ObSERVE I (Rogan <i>et al.,</i> 2018); Waggitt <i>et al.</i> (2019)	Irish waters	Lowest estimate = 1,929 (CV = 0.57; 95% CI = 968 - 3,844) Highest estimate = 6,680 (CV = 0.50; 95% CI = 3,639 c-12,264)	ObSERVE I survey (Rogan <i>et al.,</i> 2018)	
Fin whale	Uncommon	CSHAS (2014); ObSERVE I (Rogan <i>et al.,</i> 2018); Waggitt <i>et al.</i> (2019)	North Atlantic	Over 70,000	Based on the estimate for Iceland and Faroe waters [36,773; Pike <i>et</i> <i>al.</i> (2019b)], east Greenland [6,440; Hansen <i>et al.</i> (2018)], west Greenland [2,215; Hansen <i>et al.</i> (2018)], Norway [3,729; Leonard and Oien (2020)], Canada east coast [4,412; Lawson and Gosselin (2018)], western Europe [18,142; Hammond <i>et al.</i> (2017)] <sup>22</sup>	
			Irish waters	Between 95 and 781, depending on season	ObSERVE survey (Rogan <i>et al.,</i> 2018)	

<sup>&</sup>lt;sup>22</sup> As reported by NAMMCO <u>https://nammco.no/fin-whale/#1475844082849-433d5060-e5a9</u>



Species	Indicative commonality in southern Irish waters	Sources (for distribution / presence)	Geographic region (population area)	Most recent abundance estimate(s) for relevant population area	Sources (for abundance estimate and population area)
Humpback whale	Uncommon	CSHAS (2014); ObSERVE I (Rogan <i>et al.,</i> 2018)	North Atlantic	Approximately 35,000	Based on the estimate for Iceland and Faroe waters and east Greenland [13,916; Pike <i>et al.</i> (2019b)], west Greenland [993; Hansen <i>et al.</i> (2018)], Norway [10,708; Leonard and Oien (2020)], Gulf of Maine and Scotian Shelf [1,000-2,000; Clapham <i>et al.</i> (2003); Palka (2012); Lawson & Gosselin (2018)], Newfoundland and Labrador [8,439; Lawson and Gosselin (2018)] <sup>23</sup>
Sei whale Balaenoptera borealis	Rare	ObSERVE I (Rogan <i>et al.,</i> 2018)	European Atlantic	366 (CV = 0.33; 95% Cl = 176-762)	Macleod <i>et al.</i> (2009) <sup>24</sup>

 <sup>&</sup>lt;sup>23</sup> As reported by NAMMCO <u>https://nammco.no/humpback-whale/#1475844082849-433d5060-e5a9</u>
<sup>24</sup> As reported by NAMMCO <u>https://nammco.no/sei-whale/</u>



Table 9.22 Summary of Desk-Based Review on Existing Information on the Presence and Abundance of Seal Species.

Species	Indicative commonality in southern Irish waters	Sources (for distribution / presence)	Haul-out site (and count of seals)	Sources for seal haul-out data	Geographic region (population area)	Most recent abundance estimate(s) for relevant population area	Sources (for abundance estimate and population area)	
			Breeding season = August - December	SCOS (2019)	Irish waters plus	Republic of Ireland =		
Grey seal	Common	Carter <i>et al.</i> (2020)	South-west Ireland haul- out sites count (2017/2018) = 792	Morris and Duck	Irish Sea; connectivity of grey seal with all of Irish	7,284 - 9,365 South and west England and Wales MU = 6,000	Carter <i>et al.</i> (2020); Ó Cadhla <i>et al.</i> (2013); SCOS (2017); SCOS	
			Republic of Ireland haul- out sites count (2017/2018) = 3,698	(2019)	Sea	Northern Ireland MU = 505	(2020)	
			Pupping = June / July	SCOS (2019)				
Harbour seal	Common	Carter <i>et al.</i> (2020)	South-west Ireland haul- out sites count (2017/2018) = 1,100	Morris and Duck	Irish waters; connectivity of harbour seal with	Republic of Ireland = 4,007 Northern Ireland MU =	Carter <i>et al.</i> (2020); SCOS (2020)	
			Republic of Ireland haul- out sites count (2017/2018) = 4,007	(2019)	Irish waters	1,012		



# 9.5.4.1.3 Favourable Conservation Status

711 The current FCS of each pinniped species is provided in **Table 9.23**, based on the most recent EU Article 17 report submitted to the European Commission (NPWS, 2019).

Table 9.23 Current Favourable Conservation Status of Seal Species (NPWS, 2019)

Seal Species	FCS for Population	FCS for Overall Assessment
Grey seal	Favourable	Favourable
Harbour seal	Favourable	Favourable

## 9.5.4.2 Marine Turtles

- 712 Between 2001 and 2021, five species of Marine Turtle have been recorded in the TURTLE database in Irish waters, including the green turtle *Chelonia mydas*, Kemp's ridley turtle *Lepidochelys kempii*, leatherback turtle *Dermochelys coriacea*, loggerhead turtle *Caretta caretta* and olive ridley turtle *Lepidochelys olivacea* (Penrose *et al.*, 2022). Leatherback turtles are the most frequently sighted Marine Turtle species and are considered to be resident in Irish waters (Penrose *et al.*, 2022; DECC, 2016). Loggerhead turtles were also recorded in significant numbers, while the other four species of marine turtle are considered to be rare or vagrant (Penrose *et al.*, 2022). In 2021, both Kemp's ridley turtle and leatherback turtles became stranded along the south and south-west Irish coastlines (Penrose *et al.*, 2022).
- 713 Leatherback turtles migrate through Irish waters, in response to seasonal variation in the distribution of their main food sources. Nesting locations are in the tropics and sub-tropics, and then individuals migrate north, some towards the European shelf, reaching Irish waters. Waters around Ireland are at a temperature that reaches their lower limit, and the species are therefore only present in warmer summer months (specifically between June to October) (DECC, 2016).
- A review of all marine turtle sightings, strandings, and captures from 1910 to 2018, reported through the TURTLE database, shows the potential for the presence of both loggerhead turtles and leatherback turtles to be in the vicinity of The Proposed Development, with leatherback turtles being the most common (Botterell *et al.*, 2020). Of the total 1,997 records within the database, 1,683 were of leatherback turtles. The majority of the loggerhead turtles were reported in December to February, while the majority of leatherback turtles were reported between July and September (Botterell *et al.*, 2020).
- 715 Within the site-specific DAS, no Marine Turtle species have been recorded to-date. Any sightings made of Marine Turtles in the site-specific surveys will be used to the inform the baseline in the future EIAR.



- 716 Initial assessments of the distribution of turtles throughout the Celtic and Irish Sea, as outlined above, has identified one marine turtle species that has the potential to occur in and around the Potential Offshore Infrastructure Zone, although in low numbers; the leatherback turtle. Other species of marine turtle have the potential to be present (i.e. Kemp's ridley and Loggerhead turtles) although are considered to be rare and not likely to require assessment in the EIAR.
- 717 While it is unlikely to be possible to undertake a quantitative assessment for Marine Turtles due to a lack of sightings of Marine Turtles, the potential for effects upon Marine Turtle species will be in the EIAR, and mitigation presented if appropriate to ensure protection to Marine Turtle species wherever relevant.

# 9.5.5 Potential Impacts

718 A range of potential impacts on Marine Mammals and Marine Turtles have been identified which may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development. These potential impacts include those issues identified as requiring consideration in accordance with the guidance documents listed in **Section 9.5.2** of this chapter. These potential impacts are discussed below and those that are proposed to be scoped in will be considered further in the future EIAR.

# 9.5.5.1 Potential Impacts during Construction

719 The potential impacts for Marine Mammals and Marine Turtles during the Construction Phase which are proposed to be scoped into the future EIAR are outlined below.

# 9.5.5.1.1 Underwater Noise

- 720 The key potential impacts during the Construction Phase for Marine Mammals and Marine Turtles are expected to be those from underwater noise. Underwater noise has the potential to cause the onset of Permanent Threshold Shift (PTS), Temporary Threshold Shift (TTS), disturbance, and behavioural effects, as well as impacts on prey species and barrier effects. Note that PTS and TTS can result in a change to hearing sensitivity, although as a precautionary approach are referred to as a form of auditory injury. Activities that have the potential to generate underwater noise associated with the Construction Phase of The Proposed Development are:
  - Clearance of unexploded ordnance (UXO), if required, within the Offshore Infrastructure Zone;
  - Piling of any pin-piles (if selected as the anchoring method) for the floating turbines or any piling associated with Offshore Substation Platform(s)) (if required);
  - Other Construction Phase activities such as seabed preparation, cable laying and rock placement; and
  - Underwater noise generated by vessels.



721 Site specific underwater noise modelling will be undertaken for all potential noise sources that could impact Marine Mammals and Marine Turtles. The potential impacts associated with underwater noise during the Construction Phase will be fully assessed in the future EIAR, taking into account the most recent and relevant research, guidance and information available. Should UXO be present in the region, controlled detonation may be required. This has the potential to cause direct injury, and injury via associated underwater noise. See Volume C Chapter 3 Underwater Noise and Vibration of the EIAR Scoping Report for more information on the approach to underwater noise modelling.

## 9.5.5.1.2 Vessel Interaction

- 722 Despite the potential for Marine Mammals to detect and avoid vessels, ship strikes are known to occur (Wilson *et al.*, 2007). An increase in vessels could potentially lead to an increase in vessel collision risk.
- 723 There is the potential increased risk of collision with Marine Mammals, particularly for larger species and Marine Turtles, during the Construction Phase therefore the risk will be assessed, and an assessment presented in the future EIAR, taking into account the most recent and relevant research, guidance and information available.

# 9.5.5.1.3 Disturbance at Seal Haul-Out Sites

- 724 Increased activity near to land, including vessel and human activity, could have the potential to disturb seals at nearby haul-out sites, particularly during sensitive periods, such as the breeding season and moult period.
- 725 Disturbance from vessel transits to and from The Proposed Development and the Construction port also has the potential to disturb seals at haul-out sites, depending on the route and proximity to the haul-out sites. Depending on the Cable Landfall location(s) selected and the vessel routes, there is the potential for disturbance at seal haul-out sites. The potential for disturbance at seal haul-out sites will therefore be assessed, taking into account the finalised Potential Export Cable Corridor Infrastructure Zone and installation methods.
- 726 The potential for any disturbance of seals at or from seal haul-out sites will be assessed in the EIAR, taking into account the most recent and relevant research, guidance and information available. The potential for any disturbance of seals from haul-out sites foraging at sea will also be determined in the future EIAR.

# 9.5.5.1.4 Changes to Prey Resource

727 The potential impacts on fish species and therefore the prey resource for Marine Mammals and Marine Turtles during the Construction Phase can result from:



- Physical disturbance and temporary habitat loss of seabed habitat, spawning or nursery grounds;
- Increased suspended sediments and sediment re-deposition;
- Re-mobilisation of contaminated sediment;
- Underwater noise impacts to hearing sensitive species during pile driving and other activities (vessels, seabed preparation, cable installation, etc);
- Barrier effects; and
- Cumulative effects from underwater noise, and changes to seabed habitat.
- 728 The potential for any changes to the prey resource for Marine Mammals and Marine Turtles during the Construction Phase will be assessed in the EIAR, based on the assessments described in **Volume C Chapter 8** Fish and Shellfish Ecology and **Volume C Chapter 4** Benthic, Epibenthic and Intertidal Ecology of this EIAR Scoping Report.

# 9.5.5.1.5 Changes to Water Quality

729 The increases in suspended sediments and for the accidental release of contamination during the Construction Phase has the potential to impact Marine Mammals and Marine Turtles and their prey. However, any changes to water quality would be localised and short lived, managed through standard measures, and the potential for any impacts from changes in water quality on Marine Mammals and Marine Turtles or their prey is expected to be insignificant. Potential impacts on Marine Mammals and Marine Turtles related to changes in water quality during the Construction Phase are therefore proposed to be scoped out of consideration for the Marine Mammal and Marine Turtles chapter of the future EIAR.

# 9.5.5.2 Potential impacts during Operations and Maintenance

730 The potential impacts for Marine Mammals and Marine Turtles during the Operation and Maintenance Phase proposed to be scoped in for assessment in the future EIAR are outlined in the following sections.

#### 9.5.5.2.1 Underwater noise

- 731 Potential sources of underwater noise during the Operation and Maintenance Phase include:
  - Operational noise from WTGs and from movement of floating turbine moorings on the seabed or in the water column;
  - Maintenance activities, such as cable re-burial and any additional rock placement; and
  - Operation and Maintenance vessel activity.
- 732 The potential for disturbance from underwater noise during the Operation and Maintenance Phase will be based on the underwater noise modelling and assessment of similar activities for



the Construction Phase. If suitable underwater noise data is not available for noise levels associated with the underwater noise from the floating WTGs, then a suitable proxy such as dredging will be used.

733 The potential impacts associated with underwater noise during the Operation and Maintenance Phase (including PTS, TTS, disturbance and behavioural effects, impacts on prey species and barrier effects) will be assessed in the EIAR, taking into account the most recent and relevant research, guidance and information available.

# 9.5.5.2.2 Entanglement

- 734 Depending on the method used, there is the perceived potential for entanglement in the mooring systems for floating WTGs. A full review of the available information available at the time of compiling this EIAR Scoping Report has been carried out, noting that there have been no recorded instances of Marine Mammal entanglement from mooring systems of renewable devices (Sparling *et al.*, 2013; Isaacman and Daborn, 2011), or for anchored Floating Production Storage and Unloading (FPSO) vessels in the oil and gas industry (Benjamins *et al.*, 2014) with potentially similar mooring lines as proposed for floating turbine structures. This review will be updated in preparing the future EIAR to ensure recent records, if any, are considered in the assessment of this potential impact.
- 735 The level of risk to become entangled varies with species (Benjamins *et al.*, 2014), these varying factors include body size, flexibility of movement, the ability to detect mooring lines, and the feeding ecology of the species. Toothed whales have a lower risk than baleen whales, primarily due to their small size and manoeuvrability. Seal species have a similar risk level to small toothed cetaceans, with an increase in manoeuvrability.
- Given the size and physical characteristics of the mooring systems required for floating offshore wind farms, it is unlikely that upon encountering them, a Marine Mammal of any size would become directly entangled in the moorings themselves (note that the mooring system will remain under tension at all times and no loops, as seen in fishing gear, will ever be formed to allow entanglement with the mooring system). Mooring systems in the offshore renewables industry typically have greater diameter (Benjamins *et al.*, 2014), compared to fishing gear, which has been identified as a major entanglement risk for whales (NOAA, 2018). Therefore, the greatest risk is most likely to be from indirect entanglement in anthropogenic debris, such as the lost, abandoned or discarded fishing gear and other marine debris, caught in the mooring lines.
- 737 The potential for entanglement will be assessed in the future EIAR, taking into account the risk to each Marine Mammal species and the worst case parameters for the mooring lines of the floating turbines and most recent and robust relevant research, guidance and information available.



## 9.5.5.2.3 Vessel Interaction

- As outlined for the Construction Phase, the increased risk of collision with Marine Mammals and Marine Turtles will be given further consideration in the future EIAR. It is anticipated that the impacts associated with vessel activities during the Operation and Maintenance Phase would be similar to, or of lower magnitude than those during the Construction Phase, due to a likely lower number of vessels.
- As for the Construction Phase, the increased risk of collision with Marine Mammals and Marine Turtles during the Operation and Maintenance Phase will be assessed in the future EIAR, taking into account the most recent and relevant research, guidance and information available.

## 9.5.5.2.4 Disturbance at Seal Haul-Out Sites

- As outlined for the Construction Phase, depending on the vessel routes, there is the potential for disturbance at seal haul-out sites. As for constriction, once the final Offshore Export Cable Route(s) and Cable Landfall location(s) are known, the potential for disturbance to seal haul-out sites will be determined. If seal haul-out sites are not identified within close proximity to the selected Cable Landfall location(s) disturbance at seal haul-out sites will be scoped of consideration for the Marine Mammal and Marine Turtles chapter of the future EIAR. However, it is anticipated that the impacts associated with vessel activities during the Operation and Maintenance Phase would be similar to those during the Construction Phase, although the number of vessels is likely to be lower.
- 741 The potential for any disturbance of seals at or from seal haul-out sites during the Operation and Maintenance Phase will be assessed in the EIAR, taking into account the Cable Landfall location(s) and vessel routes, as well as the most recent and relevant research, guidance and information available.

#### 9.5.5.2.5 Changes to Prey Resource

- 742 The potential impacts on fish species and therefore the prey resource for Marine Mammals and Marine Turtles during the Operation and Maintenance Phase can result from:
  - Temporary / permanent loss of seabed habitat and / or habitat disturbance;
  - Increased suspended sediments and sediment re-deposition;
  - Re-mobilisation of contaminated sediment;
  - Barrier effects;
  - Introduction of hard substrate;
  - Underwater noise; and
  - EMF.



743 The potential for any changes to the prey resource for Marine Mammals and Marine Turtles during the Operation and Maintenance Phase will be assessed further in the EIAR, based on the assessments in **Volume C Chapter 8** Fish and Shellfish Ecology and **Volume C Chapter 4** Benthic, Epibenthic and Intertidal Ecology of this EIAR Scoping Report.

# 9.5.5.2.6 Physical Barrier Effects

- 744 The presence of a wind farm could be seen as having the potential to create a physical barrier, preventing movement or migration of Marine Mammals and Marine Turtles between important feeding and / or breeding areas, or potentially increasing swimming distances if Marine Mammals and Marine Turtles avoid the Potential Turbine Array Infrastructure Zone.
- 745 Data from operational wind farms show no evidence of exclusion of Marine Mammals, including harbour porpoise and seals (for example, Diederichs *et al.*, 2008; Lindeboom *et al.*, 2011; Marine Scotland, 2012; McConnell *et al.*, 2012; Russell *et al.*, 2014; Scheidat *et al.*, 2011; Teilmann *et al.*, 2006; Tougaard *et al.*, 2005, 2009a, 2009b). In addition, Marine Mammal species, including harbour porpoise and seals, have been known to forage within operational wind farm sites (with fixed foundation) (e.g. Lindeboom *et al.*, 2011; Russell *et al.*, 2014) indicating no restriction to movements.
- 746 The spacing between moorings of the WTGs would allow animals to move between devices and through the operational wind farm even considering the spread of mooring systems.
- 747 The potential for a barrier effect due to the presence of The Proposed Development is unlikely to be significant, and therefore, the potential for any barrier effects as result of the physical presence of the wind farm is proposed to be scoped out of consideration for the Marine Mammal and Marine Turtles chapter of the future EIAR. Note that the potential for any acoustic barrier effects as a result of underwater noise during the Construction Phase will be included as part of the underwater noise assessment in the future EIAR.

# 9.5.5.2.7 Changes to Water Quality

As for the Construction Phase, the potential effects upon Marine Mammals and Marine Turtles and their prey related to changes in water quality during the Operation and Maintenance Phase are unlikely to be significant, and are therefore proposed to be scoped out of consideration for the Marine Mammal and Marine Turtles chapter of the future EIAR.

#### 9.5.5.2.8 Impacts of EMF

- 749 Studies indicate that magnetic fields decrease rapidly with vertical and horizontal distance from subsea cables and that the reduction is greater the deeper cables are buried (Normandeau *et al.,* 2011).
- 750 Although it is assumed that Marine Mammals and Marine Turtles are capable of detecting small differences in magnetic field strength, this is unproven and is based on circumstantial information.



There is also, at present, no evidence to suggest that existing subsea cables influence cetacean movements.

- 751 Harbour porpoise are known to move in and out of the Baltic Sea, over several operating subsea cables in the Skagerrak and western Baltic Sea with no apparent effect to their migratory movements. There is also no evidence to suggest that seal species respond to EMF (Gill *et al.,* 2005). In addition, as outlined above, data from a number of operational wind farms show no evidence of exclusion of Marine Mammals, including harbour porpoise and seals.
- 752 The potential for EMF effects on Marine Mammals and Marine Turtles is unlikely to be significant, and is therefore proposed to be scoped out of consideration for the Marine Mammal and Marine Turtles chapter of the future EIAR.

# 9.5.5.3 Potential Impacts during Decommissioning

- 753 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 754 The scope of the Decommissioning works cannot be defined at this early stage. Decommissioning may include the removal of the accessible installed components. Offshore, this is likely to include removal of all the WTG components, the anchors and chains (those above seabed level), and removal of some or all of the cables.
- 755 Decommissioning activities have the potential to impact Marine Mammals and Marine Turtles. Any potential impacts arising from Decommissioning are likely to be comparable to, or less than, those identified for the Construction Phase and will be assessed as part of the future EIAR.

# 9.5.6 Potential Cumulative Effects

- 756 The CIA for Marine Mammals and Marine Turtles will identify where the predicted impacts of The Proposed Development (during Construction, Operation and Maintenance and Decommissioning Phases) could interact with impacts from different plans or projects within the same region as the relevant Marine Mammal and Marine Turtle populations. It will be based on a ZoI identified during The Proposed Development-alone impact assessment which will define the geographical extent to which effects of The Proposed Development are expected.
- 757 The CIA will consider cumulative impacts with any other projects and marine users within the ZoI (aggregate extraction and dredging, subsea cables, oil and gas activity, and other wind farms, for



example). The approach to CIA is set out in **Section 7.5.10** of **Volume A Chapter 7** Environmental Impact Assessment Methodology of this EIAR Scoping Report.

- 758 The potential cumulative impacts that will be assessed further in the EIAR in relation to Marine Mammals and Marine Turtles) are:
  - Underwater noise;
  - Vessel interaction and entanglement; and
  - Changes to prey resources (including habitat loss).

# 9.5.6.1 Intra-Project

- 759 In line with the most recent EPA guidance on EIARs (EPA, 2022) the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 760 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared ZoI of The Proposed Development (for which Development Permission is sought).

# 9.5.6.2 Other Developments

761 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative effects are minimised.

# 9.5.7 Potential Transboundary Effects

- 762 There is a significant level of marine development being undertaken or planned in Ireland, the UK (including within the Irish and Celtic Sea), and other EU countries in the wider area. Populations of Marine Mammals and Marine Turtles are highly mobile and there is potential for transboundary effects, especially when considering potential noise impacts.
- 763 Transboundary effects will be assessed, where possible, in consultation with developers in other Member States to obtain up to date project information to feed into the assessment.
- 764 The potential for transboundary effects will be addressed by considering the reference populations (MUs) and potential linkages to international designated sites as identified through telemetry studies for seals and ranges and movements of cetacean species.
- 765 The assessment of the effect on the integrity of the transboundary Designated sites as a result of impacts on the designated Marine Mammal populations will be undertaken and presented in the NIS. Due to the nature and scale of The Proposed Development, an NIS will be prepared which will



fully assess the potential impacts on European Sites. The NIS will be submitted in support of a Development Permission application for The Proposed Development.

766 Transboundary effects will also be considered within the cumulative and in combination assessment.

## 9.5.8 Summary of Potential Impacts

**Table 9.24** outlines the impacts which are proposed to be scoped into and/or out of the EIAR for Marine Mammals and Marine Turtles. This may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.

Table 9.24 Summary of Potential Impacts Relating to Marine Mammals and Marine Turtles. Topics Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR

Potential Impact	Construction	Operation and Maintenance	Decommissioning
Underwater noise during UXO clearance	~	×	×
Underwater noise during foundation installation	~	×	×
Underwater noise from other activities (for example rock placement and cable laying)	~	~	~
Underwater noise and presence of vessels	~	✓	✓
Underwater noise from operational WTGs	N/A	✓	N/A
Barrier effects from underwater noise	~	✓	~
Collision risk with vessels	~	✓	~
Entanglement	N/A	✓	N/A
Disturbance at seal haul-out sites	~	✓	✓
Changes in water quality	×	×	×
Changes to prey availability (including from habitats loss and EMF)	~	~	~
Barrier effects from physical presence of wind farm	N/A	×	N/A
EMF direct and indirect effects	N/A	×	N/A
Cumulative effects from underwater noise	~	~	✓



Potential Impact	Construction	Operation and Maintenance	Decommissioning
Cumulative effects from collision risk and entanglement	$\checkmark$	$\checkmark$	$\checkmark$
Cumulative changes to prey availability (including habitat loss)	$\checkmark$	~	V
Transboundary effects	~	~	~

# 9.5.9 EIAR Scoping Consultation Questions

- 768 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Marine Mammals and Marine Turtles Chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Marine Mammals and Marine Turtles Chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Marine Mammals and Marine Turtles Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?
  - What other data sources or surveys, if any, should The Applicant have regard to in the preparation of the Marine Mammals and Marine Turtles Chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Marine Mammals and Marine Turtles Chapter of the EIAR for The Proposed Development?
  - Are you satisfied with the approach to impact assessment proposed for the Marine Mammals and Marine Turtles chapter of the EIAR for The Proposed Development?
  - Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Marine Mammals and Marine Turtles Chapter of the EIAR for The Proposed Development?

#### 9.5.10 Technical Consultation

769 This chapter has considered the potential impacts of The Proposed Development on Marine Mammals and Marine Turtles. **Table 9.25** sets out a series of areas for discussion which The Applicant would appreciate targeted feedback on. Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 9.25** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders



will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.

Table 9.25 Summary of Proposed Key Technical Stakeholders for Marine Mammals and Marine Turtles

Proposed Key Technical Stakeholder	Objective of Engagement
National Parks and Wildlife Services (NPWS)	1. To discuss and seek to agree the scope, approach and spatial extent for the proposed DAS undertaken to gather
Irish Whale and Dolphin Group (IWDG)	Marine Mammal and marine turtle data (note: proposed consultees on the DAS data relating to other marine
Bord Iascaigh Mhara (BIM)	chapters).
Ocean Research and Conservation Association Ireland (ORCA Ireland)	
Cork County Council	
Waterford County Council (WCC)	
All of the above	1. To discuss and seek to agree data available to date and to discuss any additional data collection requirements to inform the EIAR Phase.
NPWS and IWDG	1. To discuss and seek to agree the approach to impact assessment for Marine Mammals, and potential embedded mitigation measures.
	2. To present preliminary findings on DAS surveys and seek to agree key species of interest.
	3. To discuss provisional outputs of assessment and potential mitigation measures.

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#### 9.6 CHAPTER 6 OFFSHORE ORNITHOLOGY

#### 9.6.1 Introduction

- 770 This chapter of the EIAR Scoping Report considers the potential impacts of the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on Offshore Ornithology and sets out the approach to be taken to assessing their effects within the future EIAR. Offshore Ornithology receptors comprise seabirds (including divers, fulmar, petrels, shearwaters, gannet, gulls, skuas, terns and auks), together with migratory bird species.
- 771 The Offshore Ornithology Topic-specific Study Area is based on an area that is considered to represent a realistic maximum spatial extent of potential impacts on Important Ornithological Features. This Offshore Ornithology Topic-specific Study Area includes the Potential Turbine Array Infrastructure Zone and a 4 km buffer, plus the Potential Export Cable Corridor Infrastructure Zone<sup>25</sup>.

#### 9.6.2 Policy and Guidance

772 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context applicable to The Proposed Development. Policies and guidance documents of particular relevance to the Offshore Ornithology topic are set out in this section. These policy and guidance documents will be used to inform the Offshore Ornithology chapter of the future EIAR. Where certain guidance documents have been produced in relation to offshore wind farms in other countries, these will be reviewed as part of the EIAR process and considered in relation to The Proposed Development.

#### Policies

- The Offshore Renewable Energy Development Plan (OREDP) (DCCAE, 2014)<sup>26</sup>;
- Marine Planning Policy Statement (DHLGH, 2019); and
- National Marine Planning Framework (NMPF) (DHLGH, 2021a).

<sup>&</sup>lt;sup>25</sup> A 4 km buffer has been applied to the Potential Turbine Array Infrastructure Zone only. This is because impacts to offshore birds in the Potential Export Cable Corridor Infrastructure Zone will be temporary and small scale, confined to the construction period and to the corridor where the offshore export cable will be laid, and only in a localised area (or areas) at any one time, where cable laying vessels and associated plant are present. Therefore no likely significant effects are likely outside of the final cable corridor.

<sup>26</sup> It should be noted that OREDP II is currently being developed by the Department of the Environment, Climate and Communications and is expected to be available for consultation during 2022.



## Guidance

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Various specific guidance documents from UK Statutory Nature Conservation Bodies (SNCBs) regarding the approaches to assessment of collision and displacement impacts (various);
- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. Version 1.2 (CIEEM, 2018);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017); and
- Guidance on Marine Baseline Ecological Assessments and Monitoring Activities for Offshore Renewable Energy Projects Parts 1 and 2 April 2018 (DCCAE, 2018).

# 9.6.3 Methodology

## 9.6.3.1 Approach to Data Collection

- 773 Published guidance, research and datasets, including, but not limited to, the following will be incorporated into the Offshore Ornithology assessment, along with the survey data collected, as set out in **Section 9.6.2**, and will be considered further within the future EIAR where relevant matters are scoped into the EIAR process:
  - European Seabirds at Sea (ESAS) database (maintained by the Joint Nature Conservation Committee (JNCC);
  - ObSERVE aerial seabird survey data collected between 2015 and 2017 across all Exclusive Economic Zone (EEZ) waters surrounding the Republic of Ireland (<u>https://maps.biodiversityireland.ie/Dataset/322</u>);
  - BirdLife International (Breeding success of seabirds);
  - A review of assessment methodologies for offshore wind farms (e.g. Maclean *et al.,* 2009, SNH);
  - Atlas information on species densities within and around the offshore infrastructure zone will be assessed including: Stone *et al.* (1995). An atlas of seabird distributions in the north-west European waters. JNCC, UK;
  - Mackey *et al.* (2004). Cetaceans; Seabirds of Ireland's Atlantic Margin. Volume I Seabird distribution, density & abundance;
  - Pollock and Barton (2006). A Gap Analysis of Irish Waters using the European Seabirds at Sea (ESAS) database;



- Irish Wildlife Manuals. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland, including Cummins *et al.* (2019) The Status of Ireland's Breeding Seabirds (Irish Wildlife Manuals, No. 114);
- Relevant BirdWatch Ireland reports and publications (<u>https://birdwatchireland.ie/publications-list/</u>), including the Seatrack seabird migration survey (Keogh, 2014);
- The status and trends of Ireland's bird species Article 12 reporting (https://www.npws.ie/status-and-trends-ireland%E2%80%99s-bird-species-%E2%80%93-article-12-reporting);
- Colhoun and Cummins (2013), Birds of Conservation Concern in Ireland 2014-2019;
- Rogan *et al.* (2018). Aerial surveys of cetaceans and seabirds in Irish waters: Occurrence, distribution and abundance in 2015-2017;
- Mitchell et al. (2004) Seabird Populations of Britain and Ireland;
- Sensitivity of birds to OWFs (Wade *et al.,* 2016; Furness *et al.,* 2013; Furness and Wade, 2012; Langston, 2010; Stienen *et al.,* 2007; Drewitt and Langston, 2006; Garthe and Hüppop, 2004);
- Displacement and barrier effects on birds (UK SNCBs, 2017, 2022; Dierschke *et al.*, 2016; Masden *et al.*, 2012, 2010; Speakman *et al.*, 2009, SNCBs (2022); Garthe and Hüppop, 2004);
- Collision risk modelling, flight heights and flight behaviour in the vicinity of wind turbine generators, and avoidance rates for birds and OWFs, including the Band deterministic model, the stochastic model and the migratory species model (Tjørnløv *et al.*, 2021; Bowgen and Cook, 2018; MacGregor *et al.*, 2018; Skov *et al.* 2018; Cook *et al.*, 2014; Johnston *et al.*, 2014a and b; SNCBs, 2014; Band, 2012; Wright *et al.*, 2012; Cook *et al.*, 2012, Natural England, 2022);
- Population viability analysis modelling tool for seabirds (Searle et al., 2019);
- Seabird foraging ranges and distribution at sea (Cleasby *et al.,* 2020, 2018; Waggit *et al.,* 2019; Woodward *et al.,* 2019; Wakefield *et al.,* 2017, 2013; Kober *et al.,* 2010; Stone *et al.,* 1995);
- Publications on seabird distribution and movements within Irish waters and further afield, e.g., ObSERVE (Jessopp *et al.*, 2018; Rogan *et al.*, 2018); Critchley *et al.*, 2018; Waggitt *et al.*, 2019; Darby *et al.*, 2021; Stone *et al*, 1995; Stienen et al, 2007;
- Bird population estimates (Furness, 2015; Mitchell *et al.*, 2004; JNCC seabird monitoring programme database; designated site citations/departmental briefs/conservation advice from the websites of Ireland and UK SNCBs);
- Existing offshore wind farm EIARs (e.g. Arklow, Codling Bank, Oriel) where available as well as relevant documents from applications for other offshore wind farms in UK offshore waters; and



- Relevant ecological studies for species included in EIAR including peer reviewed scientific papers and 'grey' literature.
- 774 These guidance, research and datasets, will be supplemented as appropriate with new guidance, studies and research as they become available.
- 775 Data analysis will be corroborated and expanded upon by consultation with relevant stakeholders. Consultation will not only seek to validate the baseline, but also to identify any other additional data sources and to fully understand stakeholder concerns to inform the assessment within the EIAR. It is recognised that the various data sources have been gathered through a range of methods; consideration of the limitations of these will be undertaken when comparing these against the site-based digital aerial surveys.

# 9.6.3.2 Potential Additional Data and Proposed Surveys

- 776 The data sources listed are those identified to date which have been used to inform this EIAR Scoping Report and which will potentially be used to inform the wider assessment process in the future EIAR.
- 777 It should be noted that this list of data sources is not exhaustive and will be added to as the works connected to the future EIAR progress.
- 778 Baseline digital aerial surveys of the Potential Turbine Array Infrastructure Zone, plus a 4km buffer, began in April 2021 and will continue until March 2023. The methodology is based on the industry standard for offshore surveys, involving 24 monthly transect-based surveys of the Potential Turbine Array Infrastructure Zone plus an additional buffer extending to 4km from the Potential Turbine Array Infrastructure Zone boundary. This survey data collection will provide approximately 20% coverage of the survey area, of which a narrower strip-width is analysed resulting in approximately 12.5% coverage of the survey area.
- 779 The surveys will provide information on the abundance, distribution, behaviour, location, numbers, sex and age (where possible) and flight direction of bird species (or species-groups if species identification is not possible from aerial images). Detailed analysis of survey data will provide density and abundance estimates (with associated confidence intervals and levels of precision) for key ornithological receptors within the Potential Turbine Array Infrastructure Zone and 4km buffer. Site-specific flight-height data are also being obtained as part of surveys, although it is assumed that generic data (Johnston *et al.* 2014a, 2014b) will be used in the collision risk model.
- 780 The approach to assessing migratory birds which may not be identified in the DAS may include the potential use of the UK industry standard methods, such as the use of migratory corridors defined for relevant species within Wright *et al.* (2012); statistical modelling techniques that may be



adapted to be applicable in Ireland; the assessment of bird movements recorded in land-based Vantage Point (VP) surveys that are ongoing at the potential Cable Landfall location(s); and/or the deployment of an European Seabirds At Sea (ESAS) qualified observer aboard geophysical/environmental survey vessels expected to commence survey works within the Potential Turbine Array Infrastructure Zone and Potential Export Cable Corridor Infrastructure Zone in 2023.

## 9.6.3.3 Approach to Impact Assessment

- 781 The impact assessment methodology will be based on that described in EIAR Scoping Report, Volume A Chapter 7 Environmental Impact Assessment Methodology, and adapted to make it applicable to assessment of ornithological receptors.
- 782 The EIAR baseline will identify the seasonal use of the Offshore Ornithology Topic-specific Study Area by the bird species recorded in digital aerial surveys. The key parameters will be density and abundance estimates (with associated confidence intervals and levels of precision) for key ornithological receptors within the Potential Turbine Array Infrastructure Zone and 4 km buffer.
- 783 The impact assessment will be undertaken in line with industry standard guidance (Chartered Institute of Ecology and Environmental Management (CIEEM), 2018). The sensitivity of each species to each of the potential impacts will be determined based on the size of its seasonal populations, its conservation status, its known sensitivity to offshore wind farms and its ecological characteristics (e.g. auk flight heights are almost exclusively below rotor height and therefore these species have negligible collision risk). Species identified as key ornithological receptors for a given impact will be subject to full assessment.
- 784 Quantitative assessment methods will be used, including:
  - Displacement matrices combining ranges of displacement and mortality to obtain estimates of displacement mortality (SNCBs, 2017);
  - Collision risk modelling based on Natural England (2022). Subject to agreement with stakeholders (and will take account any guidance produced by NPWS), it is proposed that the stochastic model (McGregor, 2018, option 2) will be used (rather than the deterministic Band (2012) model), and the migratory birds collision risk tool for migratory species (Wright *et al.* 2012); and
  - Population Viability Analysis (where potential significant mortality is identified from displacement and/or collision risk) to provide predictions of the population consequences of the effects for The Proposed Development alone and also cumulatively with other wind farms. It is expected that the NE population modelling tool (Searle *et al.*, 2019) will be used.



- 785 The detailed methodology and scope of the impact assessment, and reference population sizes for each species, will be based on the best available information at the time of undertaking the assessment and will be agreed with key stakeholders.
- 786 The assessment for Offshore Ornithology will consider the final project design and will be consistent with any guidance or requirements relating to impact assessment at the point of application including the consideration of emerging jurisprudence and interpretation on such matters.

## 9.6.4 Receiving Environment

- 787 This section presents a preliminary overview of the existing environment and key bird species likely to be present within the Potential Offshore Infrastructure Zone. This is based on expert knowledge, species recorded to date during the first year baseline surveys (which began in April 2021), the location and reasons for designation of Special Protection Areas (SPAs) in the Celtic and Irish Seas, and other cited sources of information.
- The Potential Turbine Array Infrastructure Zone is situated in the Celtic Sea, approximately 22km from shore at the nearest point, off the coast of counties Waterford and Cork. The Celtic and Irish Seas are important for seabirds throughout the year. They provide foraging grounds for seabirds breeding in adjoining coastal areas of Ireland, the UK and the Isle of Man during the breeding season (many of them colonies of international importance designated as Special Protection Areas (SPAs)). Outside the breeding season seabirds from breeding colonies further afield, and migratory birds, occur on passage or overwinter, and sub-adult seabirds (pre-breeding age) may be present throughout the year.
- At the time of writing, results from the monthly digital aerial surveys are available for the period April 2021 to April 2022. Due to a planned change in surveying contractor part way through this period, work is being undertaken to ensure compatibility of the data collected, ensuring a consistent assessment and interpretation can be applied in the EIAR. A methodology for this activity would be provided in a technical appendix to the future EIAR Chapter. During this survey period for which data are available, the seabird species recorded regularly and in the largest numbers were:
  - Common Guillemot Uria aalge;
  - Black-legged Kittiwake Rissa tridactyla;
  - Manx shearwater Puffinus puffinus;
  - Gannet Morus bassanus;
  - Razorbill *Alca torda*;
  - Northern Fulmar Fulmaris glacialis;
  - Herring gull Larus argentatus;



- Lesser black-backed gull Larus fuscus;
- Atlantic Puffin Fratercula arctica;
- Gannet Morus bassanus;
- Razorbill *Alca torda*;
- Manx shearwater Puffinus puffinus;
- Herring gull *Larus argentatus*;
- Black-headed gull Chroicocephalus ridbundus;
- Lesser black-backed gull Larus fuscus;
- Common gull *Larus canus*; and
- Great black-backed gull Larus marinus.
- 790 Other seabird species recorded less frequently and/or in small numbers were:
  - European Storm petrel Hydrobates pelagicus;
  - Arctic tern *Sterna paradisaea*;
  - Common tern Sterna hirundo;
  - Great skua Stercorarius skua;
  - Red-throated diver *Gavia stellata;*
  - Glaucous gull *Larus hyperboreus*;
  - Great northern diver Gavia immer;
  - Little gull *Hydrocoloeus minutus*; and
  - Mediterranean gull *Ichthyaetus melanocephalus*.
- 791 The monthly counts for these species are presented in **Table 9.26**. Note that the data presented are the raw counts from the surveys undertaken to date; no abundance or density estimates have been undertaken at this stage. It is proposed that design-based abundance and density estimates will be provided in the EIAR, once the full 24-month survey programme has been completed. It is considered that the first year of survey information provides a good understanding of the range of species present in the Offshore Ornithology Topic Specific Study Area.



Table 9.26 Monthly Raw Species Count from the Digital Aerial Survey Data Available to Date (April 2021 – April 2022)

Species	Apr-21	May- 21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22
Arctic tern	-	4	-	-	-	-	-	-	-	-	-	-	-
Auk species	-	-	-	-	-	3	23	2	-	-	3	1	-
Auk/shearwater species	-	-	2	-	-	1	1	-	-	-	-	14	3
Black-backed gull species	-	-	-	-	-	-	3	1	11	-	2	10	-
Black-headed gull	-	-	-	-	-	-	-	-	-	-	266	-	-
Common gull	-	-	-	-	-	-	1	26	27	1	135	-	-
Common tern	-	1	-	-	3	-	-	-	-	-	-	-	-
Common/Arctic tern	-	-	2	-	-	-	-	-	-	-	-	-	-
Fulmar	41	10	30	443	33	12	2	49	103	236	98	40	37
Fulmar/gull species	-	-	2	-	-	-	-	-	-	-	-	-	-
Gannet	112	28	57	38	28	41	111	105	223	47	180	566	44
Glaucous gull	-	-	-	-	-	-	-	-	-	-	1	1	-
Great black-backed gull	40	-	5	-	9	20	70	19	43	30	61	121	12



Species	Apr-21	May- 21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22
Great northern diver	-	-	-	-	-	-	-	1	-	-	-	-	-
Great skua	-	-	-	-	-	-	3	-	-	-	-	-	-
Guillemot	1933	32	99	19	88	14	1322	830	821	335	1318	781	156
Guillemot/Razorbill	-	-	1	-	1	7	300	568	937	467	1882	384	13
Gull species	-	-	-	-	-	1	1	5	1	-	36	7	-
Herring gull	16	1	8	1	-	-	1	10	24	9	271	216	2
Kittiwake	64	8	11	17	8	-	26	765	1122	398	1189	629	20
Large gull species	-	-	-	-	-	6	5	9	24	-	141	57	1
Lesser black-backed gull	7	-	5	17	2	104	40	22	17	3	207	151	12
Little gull	-	-	-	-	-	-	-	1	-	-	-	-	-
Manx shearwater	318	2	1362	35	145	-	18	-	-	-	-	239	69
Mediterranean gull	-	-	-	-	-	-	-	-	-	-	1	-	-
Puffin	68	22	8	12	-	-	192	27	-	-	-	-	1
Raptor species	-	-	-	-	-	-	1	-	-	-	-	-	-
Razorbill	59	1	2	-	-	9	41	39	2	16	518	189	26
Red-throated diver	-	-	-	-	-	-	2	-	-	-	-	-	-



Species	Apr-21	May- 21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22
Small gull species	-	-	-	-	-	-	-	4	2	-	425	15	-
Small shearwater sp.	-	-	-	-	529	-	-	-	-	-	-	-	-
Storm petrel	-	-	63	21	-	-	-	-	-	-	-	-	-
Storm petrel species	-	-	-	-	-	8	-	-	-	-	-	-	-
Tern/small gull species	-	-	1	-	-	-	-	-	-	-	-	-	-
Unidentified species	54	-	-	3	-	-	-	4	1	-	4	3	-



- 792 The Potential Turbine Array Infrastructure Zone does not overlap with any designated sites for birds, although the Potential Export Cable Corridor Infrastructure Zone is in the vicinity of the following sites:
  - Helvick Head to Ballyquin SPA (29.5km from Potential Turbine Array Infrastructure Zone);
  - Blackwater Estuary SPA and Ramsar Site (29.1km from Potential Turbine Array Infrastructure Zone);
  - Ballymacoda Bay SPA and Ramsar Site (25.0km from Potential Turbine Array Infrastructure Zone);
  - Ballycotton Bay SPA and Ramsar Site (23.9km from Potential Turbine Array Infrastructure Zone); and
  - Cork Harbour SPA and Ramsar Site (32.4km from Potential Turbine Array Infrastructure Zone).
- 793 Of these, only two sites include qualifying breeding seabird species; Helvick Head to Ballyquin SPA (cormorant, herring gull and kittiwake) (11km from the Potential Export Cable Corridor Infrastructure Zone) and Cork Harbour SPA (common tern) (adjacent to the Potential Export Cable Corridor Infrastructure Zone). The other sites/qualifying species comprise wintering and passage waterfowl and wader species, which may be at risk during migratory flights to and from the designated sites.
- 794 Other sites designated for qualifying breeding seabird species in the vicinity of The Proposed Development comprise (noting the distance from the Potential Turbine Array Infrastructure Zone in brackets):
  - Sovereign Islands SPA (42.8 km): Cormorant;
  - Old Head of Kinsale SPA (49.4 km): Guillemot and kittiwake;
  - Mid-Waterford Coast SPA (45.5 km): Cormorant, herring gull; and
  - Saltee Islands SPA (64.8 km): Fulmar, gannet, cormorant, shag, lesser black-backed gull, herring gull, kittiwake, guillemot, razorbill and Puffin.
- 795 Given the scale and nature of The Proposed Development, it is anticipated that a NIS will support the Development Permission application. Further information on the location of The Proposed Development in relation to European Sites (SPAs and Ramsar sites) will be included in the NIS.

# 9.6.5 Potential Impacts

796 A range of potential impacts on Offshore Ornithology have been identified which may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The



Proposed Development. These potential impacts include those issues identified as requiring consideration in accordance with the guidance documents listed in **Section 9.6.2.** 

# 9.6.5.1 Potential Impacts During Construction

- 797 The key potential impacts during the Construction Phase will come from disturbance and consequent displacement of birds due to Construction Phase activities. These potential effects during the Construction Phase include:
  - Direct disturbance, displacement and/or barrier effects due to work activity; and
  - Indirect effects through effects on prey species/habitats of prey species.

## 9.6.5.1.1 Direct Disturbance and Displacement to Work Activity

- 798 The Construction Phase will require the mobilisation of vessels (day and night), to deliver or unload equipment, infrastructure and people, as well as to undertake the installation of the required infrastructure. It is unlikely that Construction would occur across the whole of the Potential Turbine Array Infrastructure Zone simultaneously or every day. Until The Proposed Development infrastructure is installed, disturbance impacts may occur only in the areas where Construction activities and vessels are operating at any given point.
- 799 During the Construction Phase, The Proposed Development therefore has the potential to impact Offshore Ornithology receptors through disturbance, leading to displacement and/or barrier effects on birds from Construction sites and the areas that surround them. These potential impacts, which have the potential to last for the duration of the Construction Phase, effectively result in temporary habitat loss through reduction in the area available for behaviours such as foraging, loafing and moulting in the case of displacement, or commuting and migration in the case of barrier effects. Before WTGs (and other structures) are secured in their final locations, the impacts will occur only in the areas where vessels are operating at any given point and not the entire Potential Turbine Array Infrastructure Zone. At such time as wind turbine generators (and other infrastructure) are anchored (or installed onto foundations, notably for Offshore Substation Platform(s)) displacement and or barrier effects would increase incrementally to the same levels as impacts during the Operation and Maintenance Phase. Disturbance may also affect waterfowl and wader populations where proposed Cable Landfall location(s) occur within, or close to, sites designated for these features, e.g. where works occur within the intertidal zone. These potential impacts are considered in EIAR Scoping Report Volume D, Chapter 5 Biodiversity,
- 800 Offshore Ornithology receptors differ considerably in their sensitivity to anthropogenic disturbance in the marine environment (Fliessbach *et al.*, 2019; Furness *et al.*, 2013; Furness and Wade, 2012; Garthe and Hüppop, 2004; MMO, 2018), though uncertainty also exists surrounding displacement effects (Wade *et al.*, 2016).



- 801 Birds are considered to be most at risk from disturbance and displacement effects when they are resident in an area at any time of year, as opposed to birds on passage during migratory seasons. Birds that are resident in an area during the breeding season may regularly encounter and be displaced by an offshore wind farm that is under Construction, during daily commuting trips to foraging areas from nest sites.
- 802 Birds on passage may encounter (and potentially be displaced from) a particular offshore wind farm that is under Construction only once during a given migration journey. The costs of one-off avoidances during migration have been calculated to be relatively small, accounting for less than 2% of available fat reserves (Masden *et al.*, 2012, 2009; Speakman *et al.*, 2009). Therefore, the impacts of construction disturbance, displacement and barrier effects on birds that only migrate through the Potential Turbine Array Infrastructure Zone (including seabirds, waders and waterbirds on passage) will likely be small, though the impact assessment will consider this aspect.

# 9.6.5.1.2 Indirect Effects Through Impacts on Prey Species/Habitats of Prey Species

- 803 Indirect effects on Offshore Ornithology receptors may occur during the Construction Phase of The Proposed Development if there are impacts on prey species and/or their habitats. Potential indirect effects include those resulting from the production of underwater noise and the generation of suspended sediments that may cause injury or mortality to or alter the behaviour or availability of prey species. Underwater noise may cause fish and mobile invertebrates to avoid the Construction area and also affect their physiology and behaviour. Suspended sediments may cause fish and mobile invertebrates to avoid the Construction area and may smother and hide immobile benthic prey. These mechanisms may result in less prey being available to Offshore Ornithology receptors within or adjacent to the Construction area.
- 804 Potential impacts on benthic invertebrates and fish will be assessed in their respective chapters, and the conclusions of those assessments will inform the assessment of indirect effects on Offshore Ornithology receptors in this chapter of the future EIAR.

# 9.6.5.2 Potential Impacts During Operation and Maintenance

- 805 Potential impacts during the Operation and Maintenance Phase will result from the presence of WTGs and offshore infrastructure, these may include:
  - Disturbance;
  - Displacement;
  - Barrier effects;
  - Collision risk; and
  - Indirect effects.



806 For the purposes of assessing impacts on designated sites, apportionment of seabirds to appropriate SPA populations during the breeding and non-breeding season will be undertaken based on current industry guidance. Further detail will be provided in the NIS.

# 9.6.5.2.1 Disturbance, Displacement and Barrier Effects

- 807 Operational Phase displacement is defined as a reduced number of birds occurring within or immediately adjacent to an offshore wind farm (Furness *et al.*, 2013), and involves flying birds and those on the water (UK SNCBs, 2017). Birds that do not intend to utilise an operational offshore wind farm but would have previously flown through it on the way to a feeding, resting or nesting area, and which either stop short or detour around it, are subject to barrier effects (UK SNCBs, 2017).
- 808 These potential impacts would result in a reduction in the area available for behaviours such as foraging, loafing and moulting in the case of displacement, or commuting and migration in the case of barrier effects, and have the potential to last for the duration of the Operational Phase of The Proposed Development. Displacement and barrier effects will begin as WTGs are installed during the latter part of the Construction Phase and will persist into the Decommissioning Phase until turbines are removed. The primary cause of displacement from operational offshore wind farms is considered to be visual cues due to the presence of operational WTGs and other infrastructure.
- 809 Offshore ornithology receptors differ considerably in their sensitivity to anthropogenic disturbance in the marine environment (Fliessbach *et al.*, 2019; Furness *et al.*, 2013; Furness and Wade, 2012; Garthe and Hüppop, 2004; MMO, 2018), though uncertainty also exists surrounding displacement effects (Wade *et al.*, 2016). As offshore wind farms are relatively new features in the marine environment, there is limited robust empirical evidence regarding disturbance and displacement effects of the operational infrastructure in the long term, although the number of available studies is increasing. The most applicable evidence available will be used to inform the assessment in the future EIAR.
- Birds are considered to be most at risk from disturbance and displacement effects when they are resident in an area at any time of year, as opposed to birds on passage during migratory seasons. Birds that are resident in an area may regularly encounter and be displaced by an offshore wind farm, for example during daily commuting trips to foraging areas from nest sites. For the future EIAR, displacement and barrier effects on the key resident species will be considered together. Masden *et al.*, (2010) suggested that the energetic costs of extra flight during breeding season foraging trips to avoid an operational offshore wind farm appear to be much less than those imposed by low food abundance or adverse weather, though they could be additive.



811 Birds on passage may encounter (and potentially be displaced from) a particular offshore wind farm only once during a given migration journey. As previously stated, the impacts on birds that will only migrate through The Proposed Development (including seabirds, waders and waterbirds on passage) are anticipated to be relatively small, though they will be considered in the impact assessment in the future EIAR.

# 9.6.5.2.2 Collision Risk

812 Birds which are not displaced and fly through an offshore wind farm at the height of the rotating blades will be at risk of collision with operational WTGs. Collisions are likely to result in direct mortality. Studies indicate that collisions do occur but are rare events (e.g. Tjørnløv *et al.*, 2021; Skov *et al.*, 2018), hence assessment involves modelling the risk of collision for individual seabird species. Consideration will also be given to potential impacts on migratory species, using the collision risk tool for migratory species (Wright *et al.* 2012).

## 9.6.5.2.3 Indirect Effects Through Impacts on Prey Species/Habitats of Prey Species

- 813 Indirect effects on Offshore Ornithology receptors may occur during the Operation Phase if there are impacts on prey species and/or their habitats. These effects include those resulting from the production of underwater noise (e.g. from the turning of the wind turbines), electromagnetic fields (EMF) and the generation of suspended sediments (e.g. due to scour or maintenance activities) that may alter the behaviour or availability of prey species. Underwater noise and EMF may cause fish and mobile invertebrates to avoid the operational area and also affect their physiology and behaviour. Suspended sediments may cause fish and mobile invertebrates to avoid particular areas and may smother and hide immobile benthic prey. All of these indirect effects could result in less prey being available within The Proposed Development to foraging seabirds. Changes in fish and invertebrate communities due to changes in presence of hard substrate (resulting in colonisation by epifauna) may also occur, and changes in fishing activity could influence the communities present.
- 814 Potential impacts on benthic invertebrates and fish will be assessed in their respective chapters, and the conclusions of those assessments will inform the assessment of indirect effects on Offshore Ornithology receptors.

# 9.6.5.3 Potential Impacts During Decommissioning

815 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.


- 816 The scope of the Decommissioning works cannot be defined at this early stage. However, Decommissioning may include the removal of the accessible installed components. Offshore, this is likely to include removal of all the WTG components, the anchors and chains (those above seabed level), and removal of some or all of the cables.
- 817 Decommissioning activities have the potential to impact Offshore Ornithology. Any potential impacts arising from Decommissioning are likely to be comparable to, or less than, those identified for the Construction Phase and will be assessed as part of the future EIAR.

#### 9.6.6 Potential Cumulative Effects

- 818 There may be potential for cumulative effects to occur on Offshore Ornithology as a result of other activities. The approach to assessment of potential cumulative impacts is set out in Section 7.5.10 of Volume A Chapter 7 Environmental Impact Assessment Methodology of this EIAR Scoping Report.
- 819 Offshore wind projects and other activities (such as oil and gas operations) relevant to the assessment of cumulative effects on Offshore Ornithology will be identified through a screening exercise. The potential impacts considered in the CIA as part of the future EIAR will be in line with those described for The Proposed Development-alone impact assessment, though it is possible that some will be screened out on the basis that the impacts are highly localised (i.e. they occur only within the Potential Turbine Array Infrastructure Zone itself) or where management measures in place for The Proposed Development and other projects will reduce the risk of impacts occurring.
- 820 Given the wide-ranging nature of many seabird species the CIA of The Proposed Development with other wind farms and relevant developments will be an essential element of the EIAR and NIS. The CIA will focus on cumulative displacement/barrier effects and collision risk due to the presence of offshore infrastructure when considered alongside other offshore wind farm projects, as discussed in **Volume C, Chapter 13** Coastal and Marine Infrastructure and Other Users of this EIAR Scoping Report.

#### 9.6.6.1 Intra-Project

- 821 In line with the most recent EPA guidance on EIARs (EPA, 2022) the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 822 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared ZoI of The Proposed Development (for which Development Permission is sought).



#### 9.6.6.2 Other Developments

823 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative impacts are minimised.

#### 9.6.7 Potential Transboundary Effects

- 824 Given the level of proposed offshore wind farm development in the Celtic Sea, and the fact that birds are highly mobile and migratory, there is potential for transboundary effects to arise, especially regarding displacement/barrier effects and collision risk. Any potential transboundary effects that are identified will be fully assessed.
- 825 Transboundary effects will be assessed, where possible, in consultation with developers in other Member States to obtain up to date project information to feed into the assessment.

#### 9.6.8 Summary of Potential Impacts

**Table 9.27** outlines the impacts which are proposed to be scoped into and/or out of the EIAR for Offshore Ornithology. This may be refined through the EIAR Process based on consultation with stakeholders and as additional information and data become available.

Table 9.27 Summary of impacts relating to Offshore Ornithology. Topics Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR.

Potential Impact	Construction	Operation and Maintenance	Decommissioning
Direct disturbance and displacement due to work activity (presence and movements of vessels and other plant, lighting)	V	~	~
Disturbance/displacement/barrier effect due to presence of turbines and other infrastructure	x	~	Х
Collision risk from operational wind turbine generators	x	~	х
Indirect effects through effects on prey species/habitats of prey species	V	~	V
Cumulative effects	~	~	✓
Transboundary effects	~	$\checkmark$	$\checkmark$



#### 9.6.9 EIAR Scoping Consultation Questions

- 827 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Offshore Ornithology chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Offshore Ornithology chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Offshore Ornithology Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?
  - What other data sources or surveys, if any, should The Applicant have regard to in the preparation of the Offshore Ornithology chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Offshore Ornithology chapter of the EIAR for The Proposed Development?
  - Are you satisfied with the approach to impact assessment proposed for the Offshore Ornithology chapter of the EIAR for The Proposed Development?
  - Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Offshore Ornithology chapter of the EIAR for The Proposed Development?

#### 9.6.10 Technical Consultation

828 This chapter has considered the potential impacts of The Proposed Development on Offshore Ornithology. **Table 9.28** sets out a series of areas for discussion which The Applicant would appreciate targeted feedback on. Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 9.28** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.

Table 9.28 Summary of Proposed Key Technical Stakeholders Offshore Ornithology.

Proposed Key Technical Stakeholder	Objective of Engagement
National Parks and Wildlife Services (NPWS)	



Proposed Key Technical Stakeholder	Objective of Engagement	
Irish Whale and Dolphin Group (IWDG)	To discuss and seek to agree the scope, approach and spatial extent for the proposed DAS undertaken to gather bird, marine mammal and other marine	
Bord Iascaigh Mhara (BIM)	megafauna data (This consultation already undertaken).	
Cork Nature Network (CNC)		
Waterford County Council (WCC)		
All of the above plus BirdWatch Ireland	1. To discuss and agree data available to date and to discuss any additional data collection requirements to inform the EIAR.	
NPWS and BirdWatch Ireland	1. To discuss and agree the approach to impact assessment for marine ornithology and SPA, and potential embedded mitigation measures.	
	2. To present preliminary findings on DAS surveys and to seek to agree key species of interest.	
	3. To discuss provisional outputs of assessment and potential mitigation measures.	

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#### 9.7 CHAPTER 7 OFFSHORE BATS

#### 9.7.1 Introduction

- 829 This chapter of the EIAR Scoping Report considers the potential impacts of Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on bats in the offshore environment and sets out the methodology and approach to be taken to assessing these potential impacts within the future EIAR.
- 830 Available evidence, albeit limited, show bats of several species can feed up to 10km offshore, and occasionally beyond that (Ahlen et al 2007). The Offshore Bats Topic-specific Study Area is yet to be defined due to a high degree of uncertainty of this group of species. Consideration of bats in a terrestrial environment is presented in **Volume D, Chapter 5** Biodiversity of this EIAR Scoping Report.

#### 9.7.2 Policy and Guidance

831 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context for The Proposed Development. Policies and guidance documents of particular relevance to bats in the offshore environment are detailed. These policy and guidance documents will be used to inform the bats in the offshore environment assessment in the future EIAR. Where certain guidance documents have been produced in relation to offshore wind farms in other countries these will be reviewed as part of the EIAR process and considered in relation to The Proposed Development.

#### Policies

- The Offshore Renewable Energy Development Plan (OREDP) (DCCAE, 2014)<sup>27</sup>;
- Marine Planning Policy Statement (DHLGH, 2019); and
- National Marine Planning Framework (NMPF) (DHLGH, 2021).

#### Guidance

- Bat Mitigation Guidelines for Ireland V2 (NPWS, 2022);
- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017);
- Wind Turbine/Wind Farm Development: Bat Survey Guidelines (Bat Conservation Ireland, 2012); and

<sup>&</sup>lt;sup>27</sup> It should be noted that OREDP II is currently being developed by the Department of the Environment, Climate and Communications and is expected to be available for consultation during 2022.



• EUROBATS Guidelines for consideration of bats in wind farm projects (Rodrigues *et al.,* 2014).

#### 9.7.3 Methodology

#### 9.7.3.1 Approach to Data Collection

- 832 Whilst it is internationally known that bats cross open seas during migration, it remains unclear if this includes migration to and/or from Ireland. To inform this EIAR Scoping Report, limited data sources have been identified and/or are available; however additional data sources may potentially be identified via consultation relating to this EIAR Scoping Report and/or during the subsequent stages of the EIAR process. Where additional information may become available, this will be reviewed and presented within the EIAR.
- An assessment of bat ecology will be informed by a desk-based review of available information on bat populations in Ireland, survey data obtained from the deployment of passive bioacoustic detectors (currently proposed to be deployed at potential Cable Landfall location(s) and cable routes where appropriate, and on geophysical survey (and/or other surveys) vessels), available evidence on potential impacts on bat ecology from offshore wind development internationally and the likelihood of potential effect pathways. In the absence of published guidance on this point, it is proposed that international best practice is used. EUROBATS guidance services is such an example (EUROBATS, 2022).
- 834 Where potential impacts are identified, avoidance of these potential impacts in the first instance will be sought; however, where required mitigation measures will be identified, these will be proposed and the residual potential effects presented within the EIAR.

#### 9.7.3.2 Approach to Impact Assessment

835 The ecological impact assessment would be undertaken in accordance with industry guidance, specifically the Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland (CIEEM, 2018) and presented in a standalone chapter of the future EIAR. Any additional requirements will be confirmed through consultation with the relevant stakeholders/regulators, notably NPWS and Bat Conservation Ireland (BCI).

#### 9.7.4 Receiving Environment

Using freely available information (e.g. Habitats Directive Article 17 Reports (NWS, 2019), scientific publications and available industry guidance), there are nine resident bat species within Ireland, with the most widespread species being the Soprano pipistrelle *Pipistrellus pygmaeus*. Other bat species are generally more widespread with many favouring the warmer temperatures of southern Ireland. Bat Conservation Ireland states that the resident species with the most restricted distribution is the Lesser horseshoe bat *Rhinolophus hipposideros* which is mainly found in Mayo, Galway, Clare, Limerick, Kerry and Cork. The Nathusius' pipistrelle *Pipistrellus nathusii* is the next most restricted species of the Irish bat species, with its distribution concentrated primarilyin



Northern Ireland (particularly around Lough Neagh) but has been recorded from many Lakeland areas across Ireland (Bat Conservation Ireland, 2021).

- 837 Bat Conservation Ireland has identified a number of bat hotspots (the closest of which is located within Kilkenny) across Ireland where high levels of bat activity and/or good bat diversity have been recorded, although these are limited to onshore locations. There are no identified offshore bat hotspot locations in Ireland.
- 838 Whilst there are uncertainties around the migration patterns of bat, particularly within Ireland, it is known that some bats are migratory, such as in continental Europe with some bats migrating south during the winter (Bat Conservation Ireland, 2020). Research has shown that a Nathusius' pipistrelle completed a 596 km journey from Bristol to the Netherlands which demonstrates the bats do successfully migrate across seas, and in this case the North Sea. Whilst the Nathusius' pipistrelle has been widely recorded throughout Britain and Ireland, its records of breeding are sparse, but this is thought to be as a result of under recording rather than it being an absent species.
- All-Ireland Nathusius's Pipistrelle Bat Working Group are investigating the distribution and status of Nathusius' Pipistrelle as to whether these species of bats that are migrating along the Atlantic coast, between southern and northern Europe may drift into Ireland (DHLGH, 2021). It is currently not known whether this species migrates within Ireland, or between Ireland and other countries although evidence indicates there is migration between Britain and continental Europe (Bat Conservation Trust, 2021).
- 840 In addition to the Nathusius' pipistrelle, other bat species have been recorded as undertaking significant migrations. For example, the Leisler's bat *Nyctalus leisleri* have been known to migrate long distances in continental Europe, travelling several hundreds of kilometres between summer and winter roosts. The greatest known distance travelled is 1,950km. There is however currently no evidence that this species (or any other bat species) undertakes migrations like this within, or to and from Ireland.

#### 9.7.5 Potential Impacts

841 A range of potential impacts on bats in the offshore environment have been identified which may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development. These potential impacts include those identified as requiring consideration in accordance with the guidance documents listed in **Section 9.7.2**.

#### 9.7.5.1 Potential Impacts during Construction

842 Potential impacts from The Proposed Development (specifically the Offshore Substation Platform(s) and/or WTGs), on bats in the offshore environment will be assessed in the future EIAR. The potential impacts presented have been identified and defined using expert judgement, guidance, published research and policy documents listed in **Section 9.6.2**, in combination with drawing on information from similar offshore wind farm projects.



- 843 The potential impacts during the Construction Phase could include:
  - **Temporary direct effect of habitat loss for migratory bats** this effect is primarily experienced during the Construction of an offshore wind farm and from an offshore perspective primarily linked to the installation of the WTGs.
  - **Temporary indirect effects on availability of prey species** this effect primarily relates to the Construction Phase and from an offshore perspective primarily linked to the installation of WTGs and the presence of infrastructure which in turn may discourage prey from the area and therefore reducing its availability for migratory bats.
  - **Disturbance from lights on migratory bats** this effect is primarily associated with lights from Construction vessels that may disturb/disrupt migratory bat routes as well as potentially increasing the attraction of food prey (insects) for which bats may feed on.

#### 9.7.5.2 Potential impacts during Operation and Maintenance

- 844 Potential impacts from The Proposed Development on bats in the offshore environment during the Operation and Maintenance Phase could include:
  - Direct effects of collision risk, mortality, displacement and barriers to migratory bats these effects will be predominantly influenced by the location of above sea infrastructure
    (Offshore Substation Platform(s) and WTGs) within the Potential Turbine Array
    Infrastructure Zone. Weather conditions also play an influencing factor particularly during
    night-time and low wind speed, warm temperatures and no precipitation as these
    conditions may increase bat activity at and around wind farms which in turn would result
    in increased collision risk, mortality and displacement of migratory bats.
  - Long-term direct effect of collision risk and displacement of migratory bats these effects are primarily linked to the presence of WTGs within a previously open and unobstructed environment, which may result in migratory bats becoming disorientated and consequently at an increased risk of collision with the WTGs.
  - Long-term direct effect from lights which may increase the attraction of food source for bats – this effect is primarily associated with lights that may be required on above sea infrastructure (Offshore Substation Platform(s) and WTGs) that may result in the increased attraction by food prey (insects) for which migratory bats may feed on.

#### 9.7.5.3 Potential impacts during Decommissioning

- A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 846 The scope of the Decommissioning works cannot be defined at this early stage. However, Decommissioning may include the removal of the accessible installed components. Offshore, this is likely to include removal of all the WTG components, the anchors and chains (those above seabed level), and removal of some or all of the cables.



847 Decommissioning activities have the potential to impact bats in the offshore environment. Any potential impacts arising from Decommissioning are likely to be comparable to, or less than, those identified for the Construction Phase and will be assessed as part of the future EIAR.

#### 9.7.6 Potential Cumulative Effects

848 There may be potential for cumulative effects to occur in relation to bats in the offshore environment as a result of other activities/projects or plans. The potential impacts on bats in the offshore environment will need to be assessed for The Proposed Development in isolation as well as in combination with other built or in Construction offshore wind farms. The initial list of plans, projects and activities to be considered will be developed and agreed with consultees. The approach to CIA for bats in the offshore environment will follow that set out in **Section 7.5.10** of **Volume A Chapter 7** Environmental Impact Assessment Methodology of this EIAR Scoping Report.

#### 9.7.6.1 Intra-Project

- 849 In line with the most recent EPA guidance on EIARs (EPA, 2022) the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 850 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared ZoI of The Proposed Development (for which Development Permission is sought).

#### 9.7.6.2 Other Developments

851 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative impacts are minimised.

#### 9.7.7 Potential Transboundary Effects

An initial screening exercise will be undertaken to determine the potential for transboundary effects to occur on bats in the offshore environment. A transboundary impact assessment will be undertaken of bats in the offshore environment if sufficient number of bats or the sensitivity/rareness of the bat species is identified. Conversely, no transboundary assessment will be presented in the EIAR if there are no (or insignificant numbers) bats in the offshore environment. Due to the distances involved, transboundary effects on offshore bats are not expected.

#### 9.7.8 Summary of Potential impacts

**Table 9.29** outlines the impacts which are proposed to be scoped into and/or out of the EIAR for bats in the offshore environment. This may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.



Table 9.29 Summary of Impacts Relating to Bats in the offshore environment. Topics proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR

Potential Impact	Construction	Operation and Maintenance	Decommissioning
Temporary direct effect of habitat loss for migratory bats	~	x	~
Temporary indirect effects on availability of prey species	$\checkmark$	x	$\checkmark$
Disturbance from lighting on Construction vessels on migratory bats	~	x	x
Direct effects of collision risk, mortality and displacement of migratory bats	x	~	Х
Long-term direct effect from lighting on above sea infrastructure which may increase the attraction of food source for bats	x	4	~
Cumulative effects	~	~	$\checkmark$
Transboundary effects	$\checkmark$	$\checkmark$	$\checkmark$

#### 9.7.9 EIAR Scoping Consultation Questions

- The following questions are designed to assist the respondent in providing feedback to The Applicant on the Offshore Bats chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Offshore Bats chapter of the EIAR for The Proposed Development?
  - What other data sources or surveys, if any, should The Applicant have regard to in the preparation of the Offshore Bats chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Offshore Bats chapter of the EIAR for The Proposed Development?
  - Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Offshore Bats chapter of the EIAR for The Proposed Development?

#### 9.7.10 Technical Consultation

855 This chapter has considered the potential impacts of The Proposed Development on Bats in the offshore environment. **Table 9.30** sets out a series of areas for discussion which The Applicant would appreciate targeted feedback on. Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 9.30** along with a number of key points that are proposed



to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.

Table 9.30: Summary of Proposed Key Technical Stakeholders for Offshore Bats.

Proposed Key Technical Stakeholder	Objective of Engagement
National Parks and Wildlife Services (NPWS)	1. To discuss and seek to agree the approach to impact assessment for Bats in the offshore environment and potential embedded mitigation measures.
Cork Nature Network (CNC)	2. To seek to agree key species of interest.
	3. To discuss provisional outputs of assessment and potential mitigation
All-Ireland Nathusius's Pipistrelle Bat Working Group	measures.
Bat Conservation Ireland	

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#### 9.8 CHAPTER 8 FISH AND SHELLFISH ECOLOGY

#### 9.8.1 Introduction

- 856 This Chapter of the EIAR Scoping Report considers the potential impacts of Construction, Operation and Maintenance, and Decommissioning of The Proposed Development on Fish and Shellfish Ecology and sets out the methodology and approach to be taken to assessing these potential impacts within the future EIAR.
- This chapter should be read alongside the following chapters of the EIAR Scoping Report:
  - Volume C, Chapter 1 Marine Geology, Oceanography and Physical Processes;
  - Volume C, Chapter 3 Underwater Noise and Vibration, which includes consideration of potential impacts upon fish and shellfish;
  - Volume C, Chapter 4 Benthic, Epibenthic and Intertidal Ecology, which includes consideration of potential impacts upon fish habitats; and
  - Volume C, Chapter 9 Commercial Fisheries, which includes consideration of potential impacts on species of commercial importance.
- Fish and shellfish species play vital commercial and ecological roles in the marine ecosystem. Many are important prey species for seabirds, marine mammals and other fish species, thereby forming a key component of marine food webs. They are also targeted by the commercial fishing industry, providing a livelihood to the fishing industry and associated supply chains (see Volume C, Chapter 9 Commercial Fisheries). Fish and shellfish can be categorised into the following broad classifications:
  - Pelagic species, which are mobile swimmers found in the mid to upper section of the water column. These species often have wide distributional ranges, making extensive movements or migrations between sea areas seasonally. Examples of pelagic species found in the Celtic Sea include: Atlantic mackerel *Scomber scombrus;* Atlantic herring *Clupea harengus;* European sprat *Sprattus sprattus;* and European anchovy *Engraulis encrasicolus.*
  - Demersal species, which live on or near the seabed. Examples of demersal species found in the Celtic Sea include: Hake *Merluccius merluccius;* Atlantic cod *Gadus morhua;* haddock *Melanogrammus aeglefinus;* and whiting *Merlangius merlangus*.
  - Elasmobranchs, which are cartilaginous fish including sharks and rays. Examples of elasmobranch species found in the Celtic Sea include: Blue shark *Prionace glauca;* basking shark *Cetorhinus maximus*; cuckoo ray *Leucoraja naevus*; spotted ray *Raja montagui*; thrornback ray *Raja clavata*; spurdog *Squalus acanthias*; and the common skate complex (*Dipturus batis* and *Dipturus intermedius*).
  - Diadromous fish are those which spend part of their life at sea and part in freshwater, undergoing migrations between the two environments at key points in their life cycles. Examples of diadromous species found in the Celtic Sea include: Atlantic salmon *Salmo*



salar; river lamprey Lampetra fluviatilis; sea lamprey Petromyzon marinus; and twaite shad Alosa fallax.

- Shellfish are generally demersal species such as: shrimps; crabs; Nephrops norvegicus (hereafter referred to as Nephrops); mussels; and scallops. Shellfish can also (but more uncommonly) be pelagic, a key example being squid.
- The International Council for the Exploration of the Seas (ICES) standardise the division of sea areas for analysis of commercial fish and shellfish landings. Each ICES statistical rectangle is 30 min latitude by 1-degree longitude, which is approximately 30 nm by 30 nm. Note that the area of ICES rectangles varies because the Earth is a sphere. ICES rectangles are amalgamated to create ICES areas.
- The Potential Turbine Array Infrastructure Zone is located within the 32E22, 32E23, 32E25, 32E26, 31E21, 31E24 and 31E29 ICES sub-rectangles. The Potential Export Cable Corridor Infrastructure Zone overlaps with ICES sub-rectangles 32E18, 32E21, 32E22 and 32E23 and runs from the 12 nm territorial seas boundary, through inshore waters to potential Cable Landfall(s) (see Figure 9.11). The Proposed Development extends across three ICES rectangles. Rectangle 32E1 contains the western section of the Potential Export Cable Corridor Infrastructure Zone. Rectangle 32E2 contains the eastern section of the Potential Export Cable Corridor Infrastructure Zone; and the northern section of the Potential Turbine Array Infrastructure Zone.
- 860 Given that the majority of fish and shellfish receptor populations are distributed at a wider spatial scale than that of the ICES sub-rectangles, and given that the majority of the useful datasets which inform the Fish and Shellfish Ecology baseline are collected at the level of the wider ICES rectangle (rather than sub-rectangle), it is appropriate to define the Fish and Shellfish Ecology Topic-specific Study Area in terms of the ICES rectangles (rather than sub-rectangles) that overlap with the Potential Offshore Infrastructure Zone, namely ICES rectangles 32E1, 32E2 and 31E2. Those species targeted within the ICES rectangles are considered to be of commercial and ecological importance to the region and present in the local area for considerable periods of the year. The Fish and Shellfish Ecology Topic-Specific Study Area is displayed in **Figure 9.11**.
- 861 The Fish and Shellfish Ecology Topic-specific Study Area will be reviewed during subsequent stages of the EIAR process and refined as necessary to reflect the development within the Potential Offshore Infrastructure Zone

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32E09	Clonakilty 32E13 Clonakilty Bay	urtmacsherry Bay 32E16	32E19	90 32E23	32E26	32E29	
31E07	31E11	31E14	31E17	31E21	31E24	31E27	
31E08	31E12	31E15	10 31E18	31E22	31E25 <b>31E2</b>	31E28	
31E09	31E13	31E16	31E19	<sup>82</sup> 31E23	31E26	31E29	
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#### 9.8.2 Policy and Guidance

862 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context for The Proposed Development. Policies and guidance documents of particular relevance to the Fish and Shellfish Ecology topic are detailed below. Where certain guidance documents have been produced in relation to offshore wind farms in other countries, these will be reviewed as part of the future EIAR process and considered in relation to The Proposed Development.

#### Policies

- The Offshore Renewable Energy Development Plan (OREDP) (DCCAE, 2014)<sup>28</sup>;
- Marine Planning Policy Statement (DHLGH, 2019); and
- National Marine Planning Framework (NMPF) (DHLGH, 2021a).

#### Guidance

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017);
- Guidance on Marine Baseline Ecological Assessments and Monitoring Activities for Offshore Renewable Energy Projects Parts 1 and 2 April 2018 (DCCAE, 2018);
- Assessment of Impact of Offshore Wind Energy Structures on the Marine Environment (Marine Institute, 2000);
- Assessment of the Environmental Impacts of Cables (OSPAR, 2009);
- Review of Cabling Techniques and Environmental Effects applicable to the Offshore Windfarm Industry (BERR, 2008);
- Bathing Water Quality in Ireland: A Report for the Year 2021 (EPA, 2022b);
- Guidelines for the assessment of dredge material for disposal in Irish waters (Cronin *et al.*, 2006);
- Shellfish Stocks and Fisheries Review 2021: an assessment of selected stocks. (Marine Institute and Bord Iascaigh Mhara, 2022);
- The Stock Book 2021: Annual Review of Fish Stocks in 2021 with Management Advice for 2022. (Marine Institute, 2021); and
- Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report prepared by ANSI-Accredited Standards Committee S3/SC1 and registered with ANSI (Popper *et al.*, 2014).

<sup>&</sup>lt;sup>28</sup> It should be noted that OREDP II is currently being developed by the Department of the Environment, Climate and Communications and is expected to be available for consultation during 2022.



#### 9.8.3 Methodology

#### 9.8.3.1 Approach to Data Collection

- 863 The following information and data sources (**Table 9.31**) have been considered during the production of this EIAR Scoping Report and will be considered further within the future EIAR where relevant matters are scoped into the EIAR process. Other relevant peer review publications, stock assessments, and consultation with stakeholders and fisheries organisations will be considered, where appropriate.
- 864 Baseline characteristics that will be considered in the assessment include:
  - Fish, shellfish, eggs and larvae;
  - Spawning grounds, nursery grounds and feeding grounds;
  - Overwintering areas for crustaceans (e.g. lobster and crab);
  - Migration routes;
  - Conservation importance;
  - Importance in the food web; and
  - Commercial importance.
- 865 Given that many fish species, particularly pelagic species, are highly mobile (often moving great distances inter- and intra-annually, with wide distributional ranges across the North East Atlantic), they may pass through the Fish and Shellfish Ecology Topic-specific Study Area during the lifetime of The Proposed Development and ideally assessments are informed by data collection that occurs over a wide temporal and spatial scale. In the case of fish and shellfish receptors, this type of data is already readily available in the form of multi-annual commercial landings data, multi-annual scientific fishing surveys, and multi-annual non-invasive scientific surveys (e.g. the Marine Institute Underwater Television Nephrops survey), all collected at multiple locations with good coverage across the wider Celtic Sea.
- 866 These datasets, in combination with other sources (e.g. citizen science Basking shark sightings) as outlined in **Table 9.31**, provide sufficient information, detail and coverage to characterise and describe the fish and shellfish resource within the Fish and Shellfish Ecology Topic-specific Study Area. Any previous monitoring from other marine projects in the area (e.g. Celtic Interconnector) also adds to this information.
- 867 It is therefore proposed that given the volume and robustness of existing data, any additional sitespecific fish and shellfish survey is unnecessary for The Proposed Development.
- 868 This approach is consistent with other recent offshore wind farms in the UK, where no project specific fish surveys have been required pre-construction.
- 869 Where possible, the scientific literature on the effect of climate change and warming sea temperatures on the movement of key fish and shellfish population in the Fish and Shellfish Ecology Topic-specific Study Area will be reviewed during the EIAR process to consider movement trends in addition to present day baselines.



Table 9.31 Data Sources used to inform the Fish and Shellfish Ecology chapter of this EIAR Scoping Report and that will be considered further within the EIAR

Source	Summary	Status and/or Coverage
Sea Fisheries Protection Authority (SFPA) (Annual and Quarterly Fisheries Landing Statistics) <u>https://www.sfpa.ie/</u>	Data and statistics relating to fisheries landings in Irish ports by Irish sea fishing vessels, including landing numbers and quotas.	National annual or quarterly dataset for Ireland (2002 to 2020), including Irish ports within the Fish and Shellfish Ecology Topic-specific Study Area
Central Statistics Office (CSO) (Irish Fisheries Landings Data by ICES Rectangle) <u>https://www.cso.ie/en/</u>	The ICES areas for Ireland have been further aggregated by the CSO to show meaningful areas for fish landings relating to Ireland.	National dataset for Ireland (2007 to 2020), including Irish ports within the Fish and Shellfish Ecology Topic-specific Study Area
Marine Institute (Ireland's Marine Atlas) https://www.marine.ie/Home/home	Ireland's Marine Atlas has been developed as part of Ireland's reporting for the Marine Strategy Framework Directive on the condition of the ocean. The atlas includes marine data such as fisheries, in particular in-shore and off-shore commercial fishing effort using beam trawls by Irish vessels. Fishing effort is defined as the time spent engaged in fishing operations or time spent at sea, this time may be multiplied by a measure of fishing capacity, (e.g. engine power). In this dataset fishing effort is measured as average hours fishing per kilometre square, per year.	National dataset for Ireland (2014 to 2018), including in-shore and off-shore commercial fishing effort within the Fish and Shellfish Ecology Topic-Specific Study Area. The data is collated from three sources: Vessel Monitoring Systems (VMS); logbooks; and EU fleet register.
Marine Institute (Acoustic Surveys) <u>https://www.marine.ie/Home/home</u>	The aim of these acoustic surveys is to determine the relative abundance of the target species in Irish coastal waters. This information is then used to determine catch rates and management advice for the following year.	Key fish species targeted only within the Celtic Sea since 1989, with some coverage including the Fish and Shellfish Ecology Topic-specific Study Area.



Source	Summary	Status and/or Coverage
Marine Institute (Irish Groundfish Fish Survey and Biological Sampling Survey) <u>https://www.marine.ie/Home/home</u>	The International Bottom Trawl Survey Working Group (IBTS) co-ordinates demersal trawl surveys under ICES for the North Sea and Northeast Atlantic. In order to make data as comparable as possible, each survey, including the Irish Groundfish Fish Survey (IGFS), operates under a set of agreed standard protocols. Each tow is 30min long and takes place during daylight hours at 3.5-4 knots. Net geometry and ground contact is monitored and logged. These surveys are fisheries independent and are therefore less susceptible to skewing of fish distribution data through disparate fishing effort tin different locations. The Biological Sampling Survey (BSS) was an annual demersal trawl survey.	The IGFS data set includes North-eastern Atlantic IBTS (2012 to 2021). The first BSS took place in 2004 and the last survey took place in 2009.
Marine Institute (Nephrops Grounds 2021 Underwater Television (UWTV) Survey Report) <u>https://www.marine.ie/Home/home</u>	UWTV survey that provided estimates of Nephrops burrow density and abundance.	Data covers the Nephrops Functional Unit (FU) 19, which spans the south and south-eastern Irish coastal waters.
Marine Institute (Spawning and nursery areas of commercially important species) <u>https://www.marine.ie/Home/home</u>	Spawning and nursery grounds of key selected fish species (and Nephrops).	Coverage is predominantly within the Irish Biologically Sensitive Area (BSA). The BSA boundaries were formulated in a political context, but were based on an area considered to hold a high concentration of juvenile hake. The Potential Offshore Infrastructure Zone overlaps with the BSA. Last updated in 2021.
Department of Agriculture, Food and the Marine (Sea Fishing Boat and Aquaculture Licence Applications and Conditions)	Sea fishing boat and aquaculture licence applications and conditions for the Irish commercial fishing fleet.	The register includes all registered commercial fishing vessels and aquaculture, including those



Source	Summary	Status and/or Coverage
https://www.gov.ie/en/		within the Fish and Shellfish Topic-specific Study Area as of 2022.
Gerritsen and Kelly (2019) (Atlas of Commercial Fisheries around Ireland)	The Atlas of Commercial Fisheries around Ireland maps fishing effort by gear type. Landings of the key commercial species are mapped individually and by gear type. This information is put into context by maps of effort and landings at a broader European scale and by the historical time series of landings that are provided for each species.	The data is collated five sources (from 1903 to 2013): official international landings; international effort and landings by rectangle; VMS; log books; and EU fleet register. Coverage includes Fish and Shellfish Topic-specific Study Area.
Shephard et al (2014) (Estimating biomass, fishing mortality, and total allowable discards for surveyed non-target fish)	Calculations of biomass for 14 demersal fish species in ICES Area VIIg (Celtic Sea) derived from applying species and length based catchability corrections to catch records from the IGFS.	Data based on the IGFS between 2008 and 2011. Coverage includes the Fish and Shellfish Ecology Topic-specific Study Area
Tully (2017) (Atlas of Commercial Fisheries for Shellfish around Ireland)	The Atlas of Commercial Fisheries for Shellfish around Ireland presents the distribution of shellfish fisheries in internal and territorial waters of Ireland. The Atlas complements that of Gerritsen and Lordan (2014) who describe the demersal and pelagic fisheries	The data is collated from varied sources (from 2008 to 2014): report landings at ICES statistical rectangle level only; VMS; Inshore VMS (iVMS); log books; and surveys. Coverage includes the Fish and Shellfish Ecology Topic-specific Study Area
European Commission (EC) (Fisheries & Aquaculture Database) <u>https://datacollection.jrc.ec.europa.eu/</u>	EC Data Collection Framework (DCF) database, with landings by ICES rectangle and vessel nationality for five-year period.	The DCF has existed since 2000. The EU Member States including Ireland collect fisheries data and report annually to the EC. Coverage includes the Fish and Shellfish Topic-specific Ecology Study Area.



Source	Summary	Status and/or Coverage
European Market Observatory for Fisheries and Aquaculture (EUMOFA) (Market Intelligence Tool) <u>https://www.eumofa.eu/</u>	The EUMOFA is a market intelligence tool on the European Union fisheries and aquaculture sector, developed by the European Commission.	Fisheries landing data in Ireland is based on 2009, 2010 and 2018 data sets (although for some species data are confidential). Coverage includes the Fish and Shellfish Ecology Topic-specific Study Area
ICES (Fishing Intensity Maps and Stock Assessments) https://www.ices.dk/Pages/default.aspx	ICES fishing intensity mapping, which includes shapefiles of VMS data for >12m vessels for all EU Member States by gear type. ICES stock assessments. For key species being landed, the stock assessments provide useful basis for determining the status of stocks and relative importance to EU Member States.	Data available since 2013 for the fishing intensity maps and stock assessments for EU Member States, including Ireland. Coverage includes the Fish and Shellfish Ecology Topic-specific Study Area
Coull et al (1998) and Ellis et al (2010) (Fish spawning and nursery grounds)	Broadscale nursery and spawning ground maps for fish in the North Sea, North East Atlantic, Irish and Celtic sea and Channel.	Key commercial fish species in the fish in the North Sea, North East Atlantic, Irish and Celtic sea and Channel are covered in the years 1998 and 2010. Coverage includes the Fish and Shellfish Ecology Topic-specific Study Area
National Parks and Wildlife Service (NPWS) (Designated sites)	Dataset containing boundaries and designating features for all European Sites in Ireland.	Ireland-wide coverage (both terrestrial and marine). Coverage includes the Fish and Shellfish Ecology Topic-specific Study Area



Source	Summary	Status and/or Coverage
Marine Conservation Society (Basking Shark Watch database)	Citizen science sightings of basking shark in the coastal waters of the British Isles.	Coverage of predominantly coastal waters of the British Isles over the period 1987-2022. Coverage includes the Fish and Shellfish Ecology Topic- specific Study Area.



- 870 Other data and information available to inform the EIAR includes:
  - Predictive European Nature Information System (EUNIS) seabed habitats, European Marine Observation and Data Network (EMODnet) (2022). This is a database containing information on the predicted seabed habitats present across Europe, mapped in accordance with the EUNIS habitat classification system, 2009 – 2013, 2013 – 2016 and 2017 – 2019.
  - Clarke et al (2016) Ireland Red List No. 11: Cartilaginous fish [sharks, skates, rays and chimaeras].

#### 9.8.3.2 Potential Additional Data

- 871 The data sources listed above are those identified to date which have been used to inform this EIAR Scoping Report and which will potentially be used to inform the wider assessment process in the future EIAR.
- 872 It should be noted that the list of data sources is not exhaustive and will be added to as the works connected to the future EIAR progress.

#### 9.8.3.3 Approach to Impact Assessment

- 873 The impact assessment methodology will be based on that described in EIAR Scoping Report, Volume A Chapter 7 Environmental Impact Assessment Methodology adapted to make it applicable to assessment of Fish and Shellfish Ecology receptors. In addition, a number of other guidance documents specific to the considerations of Fish and Shellfish Ecology are available from jurisdictions/countries with established offshore renewable energy sectors which are provided in Section 9.8.2.
- A key source of information will be fisheries landings data and scientific fishing data (e.g. IGFS); these provide both large spatial coverage and effort. These datasets will be complimented with existing site-specific data available from other projects (e.g. the Celtic Interconnector EIAR), combined with studies that have been undertaken in the region on this topic (e.g. the Greenlink Interconnector EIAR).
- 875 Furthermore, for the purposes of the assessment of underwater noise effects on fish and shellfish receptors, the most recent available guidance document will be followed:
  - Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report prepared by ANSI-Accredited Standards Committee S3/SC1 and registered with ANSI (Popper *et al.*, 2014).
- 876 This noise impact assessment will be informed by site-specific underwater noise modelling that will be undertaken for all potential noise sources that could impact fish and shellfish species, as discussed in **Volume C, Chapter 3** Underwater Noise and Vibration of this EIAR Scoping Report.
- 877 The assessment of impacts on Fish and Shellfish Ecology will be further informed by Marine Geology, Oceanography and Physical Processes (Volume C, Chapter 1 Marine Geology,



Oceanography and Physical Processes) and geophysical and benthic data from the benthic ecology assessments (as discussed in **Volume C, Chapter 4** Benthic, Epibenthic and Intertidal Ecology) of this EIAR Scoping Report.

#### 9.8.4 Receiving Environment

#### 9.8.4.1.1 Commercial Species

- 878 Commercial fisheries data provides an insight into the species found in the vicinity of the Potential Turbine Array Infrastructure Zone. This data is useful for characterising the broadscale distribution and abundance of the species of relevance to The Proposed Development. However, it should be noted that other factors, such as quota allocations and fishing effort can affect landings, so they are not an absolute measure of the abundance of any species.
- 879 Analysis of SFPA landings data (2020) highlights the top 20 most important fish and shellfish species targeted in Irish waters (ranked by landings weight) presented in Table 9.32. This table shows all species caught within the relevant ICES rectangle over 3 tonnes, and the value at first sale (Euro). All species displayed in this table will be assessed and included in the future EIAR.
- 880 The commercial fisheries in the Celtic Seas target a large number and diverse range of stocks. The pelagic fisheries, which account for the largest catches (by weight) in the region are the mid-water trawl fisheries for Atlantic mackerel; blue whiting *Micromesistius poutassou;* horse mackerel *Trachurus trachurus*; Atlantic herring; boarfish *Capros aper;* and European sprat. The largest demersal fishery targets hake along the shelf edge using gillnets and longlines. There are also large mixed bottom-trawl fisheries targeting demersal and benthic species; Nephrops, and gadoids (soft-finned fishes, like cod). The species composition of these mixed fisheries tends to vary, depending on the area and the countries involved in the fishery.

Species	Weight (tonnes)	Value at First Sale (€)
Atlantic mackerel Scomber scombrus	63,950	48,264,000
Blue whiting Micromesistius poutassou	34,940	9,013,000
Other mackerel species Trachurus sp.	17,210	9,859,000
European sprat Sprattus sprattus	14,300	3,250,000
Boarfish Capros aper	9,090	1,572,000
Whelk Buccinum undatum	5,570	8,591,000
Nephrops (Nephrops norvegicus)	5,520	35,517,000
Edible or brown crab Cancer pagurus	4,606	8,4912,000
Anglerfish Lophius sp	4,520	15,007,000
Haddock Melanogrammus aeglefinus	4,440	7,664,000

Table 9.32 Irish landings by Irish vessels in 2020 (Sea Fisheries Protection Authority, 2020)



Species	Weight (tonnes)	Value at First Sale (€)
European hake Merluccius Merluccius	3,580	9,181,000
Whiting Merlangius merlangus	2,840	4,099,000
European anchovy Engraulis encrasicolus	2,690	594,000
Megrim Lepidorhombus sp.	2,430	7,282,000
Atlantic Herring Clupea harengus	2,140	717,000
King scallop Pecten maximus	1,700	18,660,000
Long-finned squid Loligo forbesii	850	3,077,800
Albacore tuna Thunnus alalunga	750	1,770,000
Atlantic cod Gadus Morhua	650	1,870,000
Sword razor shell <i>Ensis siliqua</i> and <i>E.</i> magnus	650	3,117,000
Pollack Pollachius Pollachius	600	1,510,000

#### 9.8.4.1.2 Fish

- 881 Sandeels and herring are considered to be particularly sensitive to disturbance, due to the fact these fish have highly specific spawning habitat requirements, which results in tight zoning of their spawning grounds (unlike most fish species, which broadcast spawn over wide spatial scales, see Section 9.8.4.1.2.1). Sandeels and herring both favour a particular seabed composition containing a high proportion of medium and coarse sand and a very low silt content (Holland et al., 2005). They are particularly sensitive to the silt content of the seabed and are rarely encountered in substrate where this fraction exceeds 10% (Holland et al., 2005). Juvenile sandeels have similar substrate requirements to adults, leading to overlapping spawning and nursery grounds that are both tightly spatially controlled and patchy in regions where substrate type is variable over fine spatial scales. Once settled, sandeels remain in close association with their habitat, leading to highly localised populations that are vulnerable to local disturbances or stressors. Sensitivity maps suggest that there are no spawning or nursery grounds in the Fish and Shellfish Ecology Topicspecific Study Area (Ellis et al., 2012), however as there may be localised populations, they are scoped in at this stage pending further review of available data during the EIAR process and consultation with relevant stakeholders.
- The Marine Institute has mapped the known locations of herring spawning grounds around the coast of Ireland (O'Sullivan *et al.*, 2013). Daunt, a 308 km<sup>2</sup> commercially important area with four spawning grounds and three spawning beds overlaps with the Potential Export Cable Corridor Infrastructure Zone. For this reason, herring are scoped in as a key focal species for the Fish and Shellfish Ecology Chapter of the future EIAR.



#### 9.8.4.1.2.1 Spawning and Nursery Grounds

- 883 Coull *et al.* (1998); Ellis *et al.* (2012) and the Marine Institute (2022), provide broad scale overviews of the potential spatial extent of spawning and nursery grounds and the relative intensity and duration of spawning activity. Spawning and nursery grounds, in general, have a higher sensitivity to environmental impacts than non-breeding adult stages.
- 884 Fish species that are known to have spawning grounds that overlap with the Fish and Shellfish Ecology Topic-specific Study Area are whiting, Atlantic herring, plaice, sprat, Lemon sole, cod, Atlantic mackerel, horse mackerel, and haddock.
- 885 The fish nursery areas which overlap with the Fish and Shellfish Ecology Topic-specific Study Area are anglerfish, Atlantic mackerel, horse mackerel, ling, cod, spurdog, common skate complex, lemon sole, hake, megrim, whiting and haddock. Although further detailed below, key fish species which use Cork Harbour itself as a nursery area include Atlantic herring, Atlantic mackerel, horse mackerel and whiting.
- Fish a) spawning; and b) nursery grounds according to Ellis *et al.* (2012) and Coull *et al.* (1998) are displayed in Figure 9.12, Figure 9.13 a and b. Spawning and nursery grounds based on Marine Institute data are displayed in Figure 9.14 a and b and Figure 9.15 a and b.



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# Inis Ealga Marine Energy Park

## Figure 9.13a

Fish nursery grounds in relation to Inis Ealga Marine Energy Park based on Coull (1998) and Ellis (2012)

### Legend



Potential Turbine Array Infrastructure Zone



Potential Export Cable Corridor Infrastructure Zone

Nursery Grounds - Low Intensity



Ver	Date	Drawn by	Checked	Approved
P02	28/06/2022	AB	PB	BH
Coordinate System IRENET95 Irish Transverse Mercator				Size A3

IRENET95 Irish Transverse Mercator

#### Scale 1:650,000 Printed @ A3

Filename:

PC3504-RHD-ZZ-XX-DR-GS-0047\_FishNurseryCoullsEllisA

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# Inis Ealga Marine Energy Park

## Figure 9.13b

Fish nursery grounds in relation to Inis Ealga Marine Energy Park based on Coull (1998) and Ellis (2012)

### Legend



Potential Turbine Array Infrastructure Zone



- Potential Export Cable Corridor Infrastructure Zone Nursery Grounds - High Intensity
- Nursery Grounds Low Intensity



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Filename:

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# Inis Ealga Marine Energy Park

## Figure 9.14a

Fish spawning grounds in relation to Inis Ealga Marine Energy Park based on Marine Institute (2021) data

### Legend



Potential Turbine Array Infrastructure Zone



- Potential Export Cable Corridor Infrastructure Zone
- Herring Spawning
- Megrim Spawning
- Cod Spawning
- Mackerel Spawning



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Filename:

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Source: © ICES, 2022.Gerritsen, H.D. and Kelly, E. (2019). Atlas of Commercial Fisheries around Ireland. Marine Institute, Ireland



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# Inis Ealga Marine Energy Park

# Figure 9.14b

Fish spawning grounds in relation to Inis Ealga Marine Energy Park based on Marine Institute (2021) data

### Legend



Potential Turbine Array Infrastructure Zone Potential Export Cable Corridor Infrastructure Zone



- Whiting Spawning
  - Haddock Spawning
  - Horse Mackerel Spawning



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Filename:

PC3504-RHD-ZZ-XX-DR-GS-0053\_FishSpawningMarInstB

Source:  $\textcircled{\sc cond}$  ICES, 2022.Gerritsen, H.D. and Kelly, E. (2019). Atlas of Commercial Fisheries around Ireland. Marine Institute, Ireland



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# Inis Ealga Marine Energy Park

# Figure 9.15a

Fish nursery grounds in relation to Inis Ealga Marine Energy Park based on Marine Institute (2021) data

### Legend



Potential Turbine Array Infrastructure Zone



Potential Export Cable Corridor Infrastructure Zone



- Haddock Nursery
- Herring Nursery
- Cod Nursery
- White Belly Angler Monk Nursery



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Filename:

PC3504-RHD-ZZ-XX-DR-GS-0050 FishNurseryMarInstA

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# Inis Ealga Marine Energy Park

## Figure 9.15b

Fish nursery grounds in relation to Inis Ealga Marine Energy Park based on Marine Institute (2021) data

### Legend



Potential Turbine Array Infrastructure Zone



- Potential Export Cable Corridor Infrastructure Zone
- Hake Nursery
- Megrim Nursery
  - Whiting Nursery
  - Horse Mackerel Nursery
  - Mackerel Nursery



Ver	Date	Drawn by	Checked	Approved
P02	28/06/2022	AB	PB	BH
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### Scale 1:750,000 Printed @ A3

Filename:

PC3504-RHD-ZZ-XX-DR-GS-0054 FishNurseryMarInstB

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#### 9.8.4.1.3 Shellfish

- 887 Key shellfish species that will be considered within the baseline include common shrimp (*Palaemon serratus*); European lobster *Homarus gammarus;* brown crab *Cancer pagurus;* velvet crab *Necora puber;* king scallop *Pecten maximus* and Nephrops. Scallop habitat exists to the eastern section of the Potential Turbine Array Infrastructure Zone where the habitat is comprised of gravel and deep circalittoral sand.
- 888 Two Shellfish Waters Directive Designated Waters are located within the Fish and Shellfish Ecology Topic-specific Study Area, in Cork Harbour and Ballymacoda Bay. These are aquaculture sites for mussels and pacific oysters.
- A number of shellfish species have no commercial or significant ecological importance and are considered further in the EIAR Scoping Report **Volume C, Chapter 4** Benthic, Epibenthic and Intertidal Ecology at the habitat or community level. Data collection and impact assessment within the Benthic, Epibenthic and Intertidal Ecology chapter of the future EIAR will inform the Fish and Shellfish Ecology chapter in the future EIAR.

#### 9.8.4.1.4 Diadromous Species

- 890 The identified diadromous (migratory) fish which may pass through The Fish and Shellfish Ecology Topic-specific Study Area are:
  - Atlantic salmon;
  - Sea trout Salmo trutta;
  - Sea lamprey;
  - River lamprey;
  - European eel Anguilla anguilla;
  - Twaite shad; and
  - Allis shad *Alosa alosa*
- 891 Data on the marine distribution of these species within the Fish and Shellfish Ecology Topic-specific Study Area are limited due to gaps in the knowledge of the migratory Phases of these species. As a result, all the above species are scoped into the EIAR and will only be scoped out of consideration for the Fish and Shellfish Ecology chapter of the future EIAR if subsequent review of scientific literature and consultation with key stakeholders (e.g. IFI) can provide more certainty around their seaward migratory routes.
- 892 The migratory nature of diadromous species means they may be sensitive to effects such as EMF generated from subsea cables. Salmonids, lamprey and eels are likely to use EMF for navigational purposes during their long migrations. There is limited knowledge on the effects of EMF on diadromous species and, therefore, a level of uncertainty in their potential interaction with EMF. Atlantic salmon, both lamprey species and twaite shad, are designated features of Special Areas of Conservation (SAC) within 2km of The Proposed Development.



#### 9.8.4.1.5 Elasmobranchs

- 893 Elasmobranchs are cartilaginous fish comprising sharks, skates and rays, and exhibit characteristic 'K-selected' life history parameters such as such a slow growth, late maturity, low fecundity and productivity.
- 894 Elasmobranch species found in the Celtic Sea, and scoped into the future EIAR include: Blue shark, basking shark, cuckoo ray, spotted ray, thornback ray *Raja clavata*, spurdog and the common skate complex.
- 895 In the Fish and Shellfish Ecology Topic-specific Study Area, the IGFS calculates densities (number individual fish/km<sup>2</sup>) of some elasmobranch species annually. These are displayed in **Table 9.33**.

Table 9.33 Maximum density of elasmobranch species recorded in Fish and Shellfish Ecology Topic-specific Study Area by the Irish Groundfish Survey in 2019

Elasmobranch Species Name	Number of individuals/km <sup>2</sup>
Cuckoo ray	8
Lesser spotted dogfish Scyliorhinus canicula	661
Spotted ray	68
Spurdog	19
Thornback ray	12

- 896 There are nursery areas for several elasmobranchs in the Fish and Shellfish Ecology Topic-specific Study Area, including the tope shark *Galeorhinus galeus* and the common skate complex. Skates and rays are particularly vulnerable to seabed disturbance because they lay their eggs on the seabed, live on the seabed and exhibit slow growth rates, late maturity, low fecundity and productivity which limits their capacity to recover from population declines.
- 897 Blue sharks have been recorded in digital aerial surveys of the Potential Turbine Array Infrastructure Zone and are therefore scoped into the future EIAR. Blue sharks are listed as 'Near Threatened' in the IUCN Red List.
- 898 Basking shark is protected as an Annex II species and listed as endangered by IUCN. Basking sharks have also recently (March, 2022) been granted protection under the Wildlife Act in Irish waters (Oceanographic, 2022). Basking sharks are frequently sighted in Irish waters, including the south coast during summer months (Rogan *et al.*, 2018). Various groups and projects, including the Irish Whale and Dolphin Group (IWDG), Chondrichthyans of Ireland, Ireland's BioBlitz, and ObSERVE I (Aerial Surveys for Seabirds and Cetaceans in the Irish Atlantic Margin) have recorded sightings of



basking shark around the Irish Coast. Approximately 7 basking sharks have been sighted in the Fish and Shellfish Ecology Topic-specific Study Area in the period of January 2018 to 2021 (NBDC, 2022).

899 Many marine species have evolved sensory abilities to use electric and magnetic cues in essential aspects of life history, such as to detect prey, predators and mates as well as to orientate and migrate. In this regard, elasmobranchs are known to be particularly sensitive to EMF (Hutchinson *et al.*, 2020). Many bottom dwelling elasmobranchs utilise the EMF generated by infaunal invertebrate species in order to locate and prey upon them. It has been demonstrated that little skate *Leucoraja erinacea* increases foraging and movement behaviour in the presence of High Voltage Direct Current (HVDC) associated EMF. Studies have also shown that some elasmobranch species (lesser spotted dogfish and thornback ray) respond to the presence of electromagnetic fields generated from subsea cables (Gill *et al.*, 2009). When a reaction occurred (most often a change in movement direction), this was species specific and, in some cases, individual specific. The latest literature on the effects of EMF on elasmobranchs will be reviewed in full to appropriately assess for this potential impact in the future EIAR.

#### 9.8.4.1.6 Designated Sites

- 900 A desk-based review has identified a number of sites in proximity to the Potential Offshore Infrastructure Zone that have one or more Annex II fish or shellfish species as designating features. These designated sites are listed in **Table 9.34**.
- 901 Twaite shad, river lamprey, sea lamprey and Atlantic salmon are all diadromous species that may pass through the IEMEAP during migrations to or from their natal river systems. Freshwater pearl mussel *Margaritifera margaritifera*, whilst confined within its home river system, relies on migratory Atlantic salmon to move upstream in a key Phase of its lifecycle and so can potentially be indirectly impacted by any effects of The Proposed Development on migratory salmon.
- 902 It should be noted that due to the nature and scale of The Proposed Development, an NIS will be prepared which will fully assess the potential effects on European Sites. The NIS will be submitted in support of a Development Permission application for The Proposed Development. The NIS will cover in more detail matters associated with relevant designations and associated fish species listed in **Table 9.34**.

Table 9.34 Summary of sites designated for fish and shellfish species within 100 km (moving around the coast) of The Proposed Development

Site Name	Distance to The Proposed Development	Qualifying Feature
Blackwater River Special Area of Conservation (SAC)	2 km	Twaite shad <i>Alosa fallax</i> Atlantic salmon <i>Salmo salar</i> Sea lamprey <i>Petromyzon marinus</i> River lamprey <i>Lampetra fluviatilis</i> Brook lamprey <i>Lampetra planeri</i>



Site Name	Distance to The Proposed Development	Qualifying Feature
River Barrow and River Nore SAC	37 km	Twaite shad Atlantic salmon (only in fresh water) Sea lamprey River lamprey
Bandon River SAC	52 km	Freshwater pearl mussel <i>Margaritifera margaritifera</i> Brook Lamprey
Lower River Suir SAC	57 km	Freshwater pearl mussel White-clawed crayfish <i>Austropotamobius pallipes</i> Sea lamprey Brook lamprey River lamprey Twaite shad Atlantic salmon
Slaney River Valley SAC	94 km	Freshwater pearl mussel Sea lamprey Brook lamprey River lamprey Twaite shad Salmon

903 It is proposed that impacts on brook lamprey will be scoped out of consideration for the Fish and Shellfish Ecology chapter of the future EIAR as they are freshwater species and do not cross into the marine environment for any part of their life cycle.

#### 9.8.5 Potential Impacts

904 A range of potential impacts on Fish and Shellfish Ecology have been identified which may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development. These impacts include those issues identified as requiring consideration in accordance with the guidance documents listed in **Section 9.8.2.** These potential impacts are discussed and will be considered further in the future EIAR.

#### 9.8.5.1 Potential Impacts during Construction

905 Potential impacts during the Construction Phase may arise from physical and acoustic disturbance of seabed habitats and suspension of sediment during cable and foundation installation work (including seabed preparation) as briefly discussed below.



906 Impacts which may span the life of The Proposed Development (e.g. long term habitat loss) will be considered as part of the Operation and Maintenance Phase assessment (see **Section 9.8.5.2**) and are therefore not considered in the Construction Phase assessment to avoid duplication.

#### 9.8.5.1.1 Temporary Habitat Loss / Physical Disturbance

907 Demersal fish and shellfish (such as common shrimp, crab and lobster), including the egg and larval stages of certain species, will be prone to direct physical disturbance during the Construction Phase from the installation of the wind farm infrastructure (namely anchoring systems, foundations (noting the potential for fixed foundations associated with the Offshore Substation Platform(s)), scour protection and cables). This will especially be the case if disturbance coincides with key spawning or migration periods. The level of effect will be dependent upon the habitat in question, its distribution in the wider area and the presence of a species that is reliant on that habitat. This potential impact will be considered in the future EIAR.

#### 9.8.5.1.2 Increased Suspended Sediments and Sediment Re-Deposition

908 During Construction Phase activities there may be a temporary increase in suspended sediment concentrations and deposition. Suspended sediment has the potential to impair respiratory, filter feeding or reproductive functions, including the disruption of migration/spawning activity. Sediment deposition, especially if it changes the characteristics of the existing seabed sediments, could affect the quality of spawning and nursery habitats. This potential impact will be considered in the future EIAR.

#### 9.8.5.1.3 Remobilisation of Contaminated Sediment

909 Potential effects related to the resuspension of contaminants are currently scoped in for initial assessment, which will be detailed in the future EIAR. However, should the results of the initial sediment assessment (including benthic sampling results) demonstrate low levels of contamination present in the existing environment, this impact may be scoped out of further assessment in the future EIAR.

#### 9.8.5.1.4 Underwater Noise

910 Underwater noise generated by provision of anchoring systems or pile driving (if required) and other Construction Phase activities may result in disturbance and displacement of fish and shellfish species. Depending on the source type and dB level, underwater noise can have wide ranging effects, from direct physical injury, permanent or temporary shifts in auditory thresholds and behavioural effects (e.g. avoidance or startle responses) which has the potential to disrupt key life history processes and events including spawning behaviour, nursery areas and migration patterns. Given the potential for effects to result on Fish and Shellfish Ecology receptors during the Construction Phase, underwater noise this potential impact will be is scoped in to the future EIAR.

#### 9.8.5.1.5 Barrier Effects

911 Acoustic barrier effects (noting the potential presence of Annex II migratory species, see Table9.34) may also arise as a result of underwater noise during the Construction Phase and will be included as part of the underwater noise assessment. Interpretation of the results of this



assessment with regard to Fish and Shellfish Ecology Receptors will inform the assessment set out in the future EIAR.

#### 9.8.5.1.6 Changes in Fishing Activity

912 Construction of offshore infrastructure could result in changes to fishing activity not only within the Potential Offshore Infrastructure Zone but also in the wider area due to displacement of fishing activity into other areas. This could in turn result in changes to fish and shellfish receptors both within the Fish and Shellfish Ecology Topic-specific Study Area and in the wider Celtic Sea. An assessment of this potential impact will be provided in the future EIAR.

#### 9.8.5.2 Potential impacts during Operation and Maintenance

913 Potential impacts during the Operation and Maintenance Phase will mostly result from loss of habitat and changes to seabed substrata from the physical presence of infrastructure (e.g. anchoring systems (including cable sweeping of the sea bed), fixed foundations (if required), any cable protection above the seabed, all of which can be considered as introduced habitat that may support an encrusting invertebrate community and act to aggregate fish species). Other potential impacts during the Operation and Maintenance Phase may include those associated with underwater noise, EMF and barrier effects, such effects along with the potential loss of habitat and changes in seabed substrata are briefly discussed below.

#### 9.8.5.2.1 Permanent Habitat Loss

914 As The Proposed Development includes floating WTGs, the presence of anchors on the seabed compared to fixed foundations would result in a relatively small footprint of lost habitat in the context of the habitat from the surrounding region. Depending on whether the infrastructure is removed or left in-situ at the Decommissioning Phase this impact may be either long term or permanent habitat loss. The level of effect will be dependent upon the habitat in question, its distribution in the wider area and the presence of a species that is reliant on that habitat. As a worst case scenario it is assumed it would be permanent habitat loss. An assessment of this potential impact will be provided in the future EIAR.

#### 9.8.5.2.2 Increased Suspended Sediment Concentrations

915 Small volumes of sediment could be re-suspended during Operation and Maintenance activities, for example during cable sweep of the seabed from mooring lines as part of the anchoring system; although the volumes would be lower than for Construction. It is not expected that there would be significant effects, however the effect is scoped in to the future EIAR to allow for further justification with full baseline information. The results of this assessment will be provided in the future EIAR.

#### 9.8.5.2.3 Remobilisation of contaminated sediments

916 Potential effects related to the resuspension of contaminants are currently scoped in for assessment, which will be detailed in the future EIAR. However, should the results of the sediment assessment (including benthic sampling results) demonstrate low levels of contamination present in the existing environment, The Applicant would seek to scope these out of further assessment in the future EIAR.



#### 9.8.5.2.4 Underwater Noise

917 The main sources of noise during the Operation and Maintenance Phase (in addition to ambient noise) originates from the WTG gearbox and generator, in addition to any surface vessels undertaking Operation and Maintenance activities. Operational noise impacts are considered highly unlikely to cause physical damage to fish or shellfish species (Nedwell *et al.*, 2007; MMO, 2014) (note that these studies focus on fixed-foundation turbines; work on characterising the operational noise of floating turbines is ongoing in the form of the FORTUNE project, led by the Scottish Association of Marine Sciences) and it follows that any significant behavioural disturbance would be limited to the area immediately surrounding the WTG, however the impact is scoped in to allow for further justification with full baseline information.

#### 9.8.5.2.5 Interactions with EMF

- 918 Potential EMF effects from operational export and inter-array cables will also be considered within the future EIAR. However, for offshore wind farms, where cables are buried to a depth of at least 1.5 m below the seabed, it has generally been assumed that no impact assessment is required in relation to EMF effects on Fish and Shellfish Ecology receptors during the Operation and Maintenance Phase of an offshore wind farm.
- 919 It may not be possible to bury cables at all locations (e.g. at crossings or in hard substrate) and therefore there may be sections of surface laid cables with cable protection. The assessment in the future EIAR will consider a worst case scenario based on the outputs of the Cable Burial Risk Assessment and subsequent engineering decisions, with the potential for cables to be buried at less than 1.5 m depth. Where cable protection for surface laid cables is used, the EMF field strength likely to be experienced by different receptor groups will be taken into account in the assessment (e.g. an edible crab may be able to enter gaps in the cable protection, while a larger elasmobranch *sp.* will not).

#### 9.8.5.2.6 Barrier Effects

920 It is not expected that barrier effects would be significant during the Operation and Maintenance Phase, given the scale of activities during this project Phase. However, this potential impact is scoped in to the future EIAR to allow for further justification on the likelihood for significant effects to arise to be set out..

#### 9.8.5.2.7 Introduction of Hard Substrate

921 Concrete and steel subsurface structures may be colonised by a range of benthic invertebrate species, potentially increasing ecological diversity and with the potential to act as fish aggregating devices. The potential effect on fish and shellfish species will be dependent on the anchoring/floating substructure(s) used, and the volume and type of scour protection deployed as well as any hard substrate introduced as part of any foundations required for the Offshore Substation Platform(s). This potential for introduction of hard substrate to affect Fish and Shellfish Ecology receptors during the Operation and Maintenance Phase will be scoped in to the future EIAR.



#### 9.8.5.2.8 Changes in Fishing Activity

922 The Operation and Maintenance Phase of offshore elements of The Proposed Development could result in changes to fishing activity not only within the Potential Offshore Infrastructure Zone but also in the wider area due to displacement of fishing activity into other areas. This could in turn result in changes to Fish and Shellfish Ecology receptors both within the Fish and Shellfish Ecology Topic-specific Study Area and in the wider Celtic Sea and this potential effect impact has been scoped in to the future EIAR.

#### 9.8.5.3 Potential impacts during Decommissioning

- 923 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 924 The scope of the Decommissioning works cannot be defined at this early stage. However, Decommissioning may include the removal of the accessible installed components. Offshore, this is likely to include removal of all the WTG components, the anchors and chains (those above seabed level), and removal of some or all of the cables.
- 925 Decommissioning activities have the potential to impact Fish and Shellfish Ecology receptors. Any potential impacts arising from Decommissioning are likely to be comparable to, or less than, those identified for the Construction Phase and will be assessed as part of the future EIAR. For example, where Construction may require drilling or piling of foundations (e.g. for the Offshore Substation Platform(s) or if pin piles are used for the floating WTGs) and/or seabed preparation, Decommissioning would likely require cutting of foundations to seabed level and may potentially result in less seabed disturbance than Construction.

#### 9.8.6 Potential Cumulative Effects

- 926 There may be potential for cumulative effects to occur in relation to Fish and Shellfish Ecology as a result of other activities.
- 927 The CIA for Fish and Shellfish Ecology will be based on a ZoI identified during The Proposed Development-alone impact assessment (in line with the approach set out **Volume A Chapter 7** Environmental Impact Assessment Methodology of this EIAR Scoping Report) which will define the geographical extent to which effects of The Proposed Development are expected. The potential impacts considered in the CIA as part of EIAR will be in line with those described for The Proposed Development-alone impact assessment, though it is possible that some will be screened out on the basis that the impacts are highly localised (i.e. they occur only within the Potential Offshore Infrastructure Zone) or where there are management measures in place to robustly reduce the risk of impacts occurring.
- 928 The CIA will consider cumulative impacts with any other projects and marine users within the ZoI (aggregate extraction and dredging, subsea cables, oil and gas activity, and other wind farms, for



example). The approach to CIA is set out in **Section 7.5.10** of **Volume A Chapter 7** Environmental Impact Assessment Methodology of this EIAR Scoping Report. The CIA for Fish and Shellfish Ecology will specifically consider cumulative noise impacts, habitat loss and changes to seabed habitat.

#### 9.8.6.1 Intra-Project

- 929 In line with the most recent EPA guidance on EIARs (EPA, 2022) the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 930 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared ZoI of The Proposed Development (for which Development Permission is sought).

#### 9.8.6.2 Other Developments

931 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative effects are minimised.

#### 9.8.7 Potential Transboundary Effects

932 The distribution of fish and shellfish species is independent of national geographical boundaries. The EIAR will take into account the distribution of fish stocks and populations irrespective of national jurisdictions. As a result, it is considered that a specific assessment of transboundary effects is unnecessary. This approach was adopted and accepted for several previous projects in the UK (e.g. East Anglia THREE (East Anglia THREE Ltd, 2015), East Anglia ONE North (East Anglia ONE North Ltd, 2019), Norfolk Vanguard (Planning Inspectorate, 2016) and Awel Y Mor (Planning Inspectorate, 2020).

#### 9.8.8 Summary of Potential Impacts

933 **Table 9.35** outlines the potential impacts which are proposed to be scoped into and/or out of the future EIAR for Fish and Shellfish Ecology. This may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.

Table 9.35 Summary of Potential Impacts Relating to Fish and Shellfish Ecology. Topics Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR.

Potential Impact	Construction	Operation and Maintenance	Decommissioning
Temporary habitat loss / physical disturbance	~	$\checkmark$	~
Increased suspended sediment concentrations	~	$\checkmark$	~
Remobilisation of contaminated sediments	<ul> <li>✓ dependant</li> <li>on sediment</li> <li>contamination</li> </ul>	<ul> <li>✓ dependant on sediment contamination</li> </ul>	<ul> <li>✓ dependant on sediment contamination</li> </ul>



Potential Impact	Construction	Operation and Maintenance	Decommissioning
Underwater noise	~	$\checkmark$	$\checkmark$
Barrier effects	~	√	~
Permanent habitat loss	х	√	х
Interactions with EMF	x	~	х
Introduction of hard substrate	x	✓	x if seabed infrastructure removed ✓ if seabed infrastructure left -in- situ
Changes in fishing activity	~	$\checkmark$	✓
Cumulative effects	~	√	~
Transboundary effects	✓	$\checkmark$	$\checkmark$

#### 9.8.9 EIAR Scoping Consultation Questions

- 934 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Fish and Shellfish Ecology chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Fish and Shellfish Ecology chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Fish and Shellfish Ecology Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?
  - What other data sources or surveys, if any, should The Applicant have regard to in the preparation of the Fish and Shellfish Ecology chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Fish and Shellfish Ecology chapter of the EIAR for The Proposed Development?
  - Are you satisfied with the approach to impact assessment proposed for the Fish and Shellfish Ecology chapter of the EIAR for The Proposed Development?
  - Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Fish and Shellfish Ecology chapter of the EIAR for The Proposed Development?

#### 9.8.10 Technical Consultation

935 This chapter has considered the potential impacts of The Proposed Development on Fish and Shellfish Ecology. **Table 9.36** sets out a series of areas for discussion which The Applicant would



appreciate targeted feedback on. Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 9.36** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.

Table 9.36: Summary of Proposed Key Technical Stakeholders Fish and Shellfish Ecology.

Proposed Key Technical Stakeholder	Objective of Engagement			
Inland Fisheries	1. To discuss any available data that will inform the EIAR.			
Ireland	2. To discuss the approach to the assessment of effects.			
	3. To discuss preliminary findings of the assessment and potential mitigation measures.			
Irish Basking Shark	1. To discuss any available data that will inform the EIAR.			
Group	2. To discuss the approach to the assessment of effects.			
	3. To discuss preliminary findings of the assessment and potential mitigation measures.			
Marine Institute	1. To discuss any available data that will inform the EIAR.			
	2. To discuss the approach to the assessment of effects.			
	3. To discuss preliminary findings of the assessment and potential mitigation measures.			
NPWS	1. To discuss any available data that will inform the EIAR.			
	2. To discuss the approach to the assessment of effects.			
	3. To discuss preliminary findings of the assessment and potential mitigation measures.			
Sea Fisheries	1. To discuss any available data that will inform the EIAR.			
Protection	2. To discuss the approach to the assessment of effects.			
Authonity	3. To discuss preliminary findings of the assessment and potential mitigation measures.			
Department of	1. To discuss any available data that will inform the EIAR.			
Agriculture, Food	2. To discuss the approach to the assessment of effects.			
(DAFM)	3. To discuss preliminary findings of the assessment and potential mitigation measures.			
Individual Fishers	1. To discuss any available data that will inform the EIAR.			
and Regional	2. To discuss the approach to the assessment of effects.			
Organisations	3. To discuss preliminary findings of the assessment and potential mitigation.			

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#### 9.9 CHAPTER 9 COMMERCIAL FISHERIES

#### 9.9.1 Introduction

- 936 This Chapter of the EIAR Scoping Report considers the potential impacts of Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on Commercial Fisheries and sets out the methodology and approach to be taken to assessing these effects within the future EIAR.
- 937 This chapter should be read alongside the following chapters of the EIAR Scoping Report:
  - Volume C, Chapter 8 Fish and Shellfish Ecology which includes consideration of potential impacts on species of commercial importance;
  - Volume C, Chapter 10 Shipping and Navigation, which includes consideration of potential impacts on vessel routing and navigational safety; and
  - Volume C, Chapter 13 Coastal and Marine Infrastructure and Other Users, which includes consideration of potential impacts on charter angling businesses.
- 938 The Potential Offshore Infrastructure Zone is located within the European Union (EU) waters associated with the Inner Celtic Sea Protection Zone (CSPZ); and ICES Division 7g of Area 27. International Council for the Exploration of the Sea (ICES) statistical rectangles are a gridded, latitude-longitude based area notation system covering the north-east Atlantic region developed by the ICES in the 1970s, for simplified analysis and visualization of spatial data of relevance to that organisation's interests. ICES statistical rectangles provide a grid covering the area between 36°N and 85°30'N and 44°W and 68°30'E.
- 939 For fisheries, the ICES statistical rectangles are used as bounding management areas for calculation of fish statistics, for example catch per unit effort (CPUE); and stock estimates. For the purpose of recording fisheries landings, ICES Division 7g is further divided into statistical rectangles which are consistent across all EU and Non-EU Member States (including the United Kingdom) operating in the Celtic Sea.
- 940 The Potential Turbine Array Infrastructure Zone is located within the 32E22, 32E23, 32E25, 32E26 and 31E21, 31E24 and 31E29ICES sub-rectangles. The Potential Export Cable Corridor Infrastructure Zone overlaps with ICES sub-rectangles 32E18,32E21,32E22 and 32E23 and runs from the 12 nm territorial seas boundary, through inshore waters to Cable Landfall(s) (**Figure 9.16**).
- 941 Given that the most fish and shellfish receptor populations are distributed at a wider spatial scale than that of the ICES sub-rectangles, and given that the majority of the useful datasets which inform the commercial fisheries baseline are collected at the level of the wider ICES rectangle or diversion (rather than sub-rectangle), it is appropriate to define the Commercial Fisheries Topicspecific Study Area in terms of the ICES rectangles (rather than sub-rectangles) that overlap with the Potential Offshore Infrastructure Zone, namely ICES rectangles 32E1, 32E2 and 31E2, with reference also to the wider area in regard to ICES Division 7g. Those species targeted within the ICES rectangles and division are considered to be of commercial and ecological importance to the



region and present in the local area for significant periods of the year. It should be noted the use of ICES Division data has been a key data source for the annual review of fish stocks in Ireland (Marine Institute, 2021).



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N 33E09.reet	33E13	33E16 Watergr	33E19	33E23	Dungarvan Dung 33E26Harbour	Water, Ha bi	ford our
BZE07	Macroom 32E11	Blarney 32E14 Glanmire Ballincollig Cork Passac	Carrigtwohill 32E17	Youghal 32E21hal	32E24	32E27	
32E08 Dunmanway	32E12 Bandon	Carrigaline 32E15 32E1 Kinsale	32E18	32E22	32E25 32E2 86	32E28	
32E09	Clonakilty 32E13 Clonakilty Bay	Burtmacsherry 32E16	32E19	90 32E23	32E26	32E29	
31E07	31E11	31E14	31E17	31E21	31E24	31E27	
31E08	31E12	31E15	10 31E18	5 31E22	31E25 <b>31E2</b>	31E28	
31E09	31E13	31E16	31E19	<sup>82</sup> 31E23	31E26	31E29	
<b>30E07</b> 0 520150	<b>30E11</b> 10 20 540150	126 30E14 40 km 560150	30E17 580 <sup>1</sup> 50 600	30E21 © OpenStreetMap (and) contributors, Geonames.org, and other contributor 0150 620150	120 30E24 , CC-BY-SA, Sources: Esri, GEBCO, I S 640150	<b>30E27</b> NOAA, National Geographic, Garmin, 660150	HEI



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#### 9.9.2 Policy and Guidance

942 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context for The Proposed Development. Policies and guidance documents of particular relevance to the Commercial Fisheries topic are detailed below. Where certain guidance documents have been produced in relation to offshore wind farms in other countries these will be reviewed as part of the future EIAR process and considered in relation to The Proposed Development.

#### Policies

- The Offshore Renewable Energy Development Plan (OREDP) (DCCAE, 2014)<sup>29</sup>;
- Marine Planning Policy Statement (DHLGH, 2019); and
- National Marine Planning Framework (NMPF) (DHLGH, 2021a).

#### Guidance

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017);
- Shellfish Stocks and Fisheries Review 2021: an assessment of selected stocks. (Marine Institute and Bord Iascaigh Mhara, 2022;
- The Stock Book 2021: Annual Review of Fish Stocks in 2021 with Management Advice for 2022. (Marine Institute, 2021);
- Gerritsen, H.D. and Kelly, E. (2019). Atlas of Commercial Fisheries around Ireland, third edition. Marine Institute, Ireland. ISBN 978-1-902895-64-2. 72 pp;
- Tully, O. (2017). Atlas of Commercial Fisheries for Shellfish around Ireland, Marine Institute, March 2017. ISBN 9781902895611 58pp;
- Best Practice Guidance for Fishing Industry Financial and Economic Impact Assessments (United Kingdom Fisheries Economic Network [UKFEN] and Seafish, 2012);
- Economic Impact Assessments of Spatial Interventions on Commercial Fishing: Guidance for Practitioners. Second Edition (Seafish and UKFEN, 2013);
- Fisheries Liaison with Offshore Wind and Wet Renewables Group (FLOWW) Recommendations for Fisheries Liaison: Best Practice guidance for offshore renewable developers (FLOWW, 2014 and BERR, 2008);
- FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Disruption Settlements and Community Funds (FLOWW, 2015);
- Options and opportunities for marine fisheries mitigation associated with wind farms (Blyth-Skyrme, 2010a);

<sup>&</sup>lt;sup>29</sup> It should be noted that OREDP II is currently being developed by the Department of the Environment, Climate and Communications and is expected to be available for consultation during 2022.



- Developing guidance on fisheries Cumulative Impact Assessment for wind farm developers (Blyth-Skyrme, 2010b);
- Cumulative impact assessment guidelines, guiding principles for cumulative impacts assessments in offshore wind farms (RenewableUK, 2013);
- Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects. Contract report: ME5403 (Cefas, 2012);
- Fisheries Liaison Guidelines Issue 6 (UK Oil and Gas, 2015);
- Fishing and Submarine Cables Working Together (International Cable Protection Committee, 2009); and
- Offshore Wind Farms Guidance note for Environmental Impact Assessment in respect of Food and Environment Protection Act (FEPA) and Coast Protection Act (CPA) requirements (Centre for Environment, Fisheries and Aquaculture Science (Cefas) Marine Consents and Environment Unit [MCEU], Department for Environment, Food and Rural Affairs [DEFRA] and Department of Trade and Industry [DTI], 2004).
- 943 It should be noted, due to the maturity of the offshore renewable industry in the UK, where there is an absence in guidance from Ireland, relevant UK documents will be referred to.
- 944 Fish and shellfish are identified within the DCCAE guidance as receptors under both biodiversity, flora and fauna and population, and human health for their commercial exploitation. In accordance with this, the baseline will be developed in parallel with the baseline for fish and shellfish ecology (and vice versa).

#### 9.9.3 Methodology

#### 9.9.3.1 Approach to data collection

- 945 It is intended that during the EIAR, full acquisition and analysis of the baseline data sources listed in **Table 9.37** is completed. Data analysis will then be corroborated and expanded upon by consultation with the fishing industry and other relevant stakeholders, including the following:
  - Inland Fisheries Ireland (IFI);
  - Marine Institute;
  - Bord lascaigh Mhara;
  - Killybegs Fishermen's Organisation (KFO);
  - Irish Fish Producers Organisation (IFPO);
  - Irish South & East Fish Producer's Organisation (ISEFPO);
  - Irish South & West Fish Producer's Organisation (ISWFPO);
  - Sea Fisheries Protection Authority;
  - Regional and National Inshore Fisheries Forums;
  - National Inshore Fishermen's Association (NIFA);
  - Individual Fishermen (or representatives) as identified by the Company FLO/other means; and
  - EU Member State representative organisations as identified during baseline data analysis.



- 946 Consultation will not only seek to validate the baseline, but also to identify any other additional data sources and understand stakeholder concerns to inform the impact assessment. Further information regarding consultation is provided in **Volume A Chapter 3** Stakeholder Engagement and Consultation
- 947 The following information and data sources (**Table 9.37**) have been considered during the production of this EIAR Scoping Report and will be considered further within the future EIAR where relevant matters are scoped into the EIAR process.

Table 9.37 Data Sources used to inform the Commercial Fisheries chapter of this EIAR Scoping Report and that will be considered further within the EIAR

Source	Summary	Status and/or Coverage
Sea Fisheries Protection Authority (SFPA) (Annual and Quarterly Fisheries Landing Statistics) <u>https://www.sfpa.ie/</u>	Data and statistics relating to fisheries landings in Irish ports by Irish sea fishing vessels, including landing numbers and quotas.	National annual or quarterly dataset for Ireland (2002 to 2020), including Irish ports within the Commercial Fisheries Topic- specific Study Area.
Central Statistics Office (CSO) (Irish Fisheries Landings Data by ICES Rectangle) <u>https://www.cso.ie/en/</u>	The ICES areas for Ireland have been further aggregated by the CSO to show meaningful areas for fish landings relating to Ireland.	National dataset for Ireland (2007 to 2020), including Irish ports within the Commercial Fisheries Topic-specific Study Area.
Marine Institute (Ireland's Marine Atlas) <u>https://www.marine.ie/Home/home</u>	Ireland's Marine Atlas has been developed as part of Ireland's reporting for the Marine Strategy Framework Directive on the condition of the ocean. The atlas includes marine data such as fisheries, in particular in-shore and off-shore commercial fishing effort using beam trawls by Irish vessels. Fishing effort is defined as the time spent engaged in fishing operations or time spent at sea, this time may be multiplied by a measure of fishing capacity, (e.g. engine power). In this dataset fishing effort is measured as average hours fishing per kilometre square, per year.	National dataset for Ireland (2014 to 2018), including in- shore and off-shore commercial fishing effort within the Commercial Fisheries Study Area. The data is collated from three sources: Vessel Monitoring Systems (VMS); logbooks; and EU fleet register.
Marine Institute (Fisheries Resource Maps for Irish Groundfish Survey and Biological Sampling Survey) <u>https://www.marine.ie/Home/home</u>	The Irish Groundfish Survey (IGFS) is an annual six-week demersal trawl survey that takes place in the shelf waters around Ireland each winter. It is part of a	The IGFS data set includes North- eastern Atlantic IBTS (2012 to 2021). The first BSS took place in 2004 and the last survey took place in 2009. Coverage includes



Source	Summary	Status and/or Coverage
	Europe-wide survey effort coordinated by International Bottom Trawl Survey (IBTS). The core objective of these surveys is to provide an independent estimate of abundance for commercially exploited fish stocks, in particular their reproductive success for that year. The Biological Sampling Survey (BSS) was an annual demersal trawl survey.	the Commercial Fisheries Topic- specific Study Area.
Marine Institute (Acoustic Surveys) <u>https://www.marine.ie/Home/home</u>	The aim of these acoustic surveys is to determine the relative abundance of the target species in Irish coastal waters. This information is then used to determine catch rates and management advice for the following year.	Key fish species targeted only within the Celtic Sea since 1989, with some coverage including the Commercial Fisheries Topic- specific Study Area.
Department of Agriculture, Food and the Marine (Sea Fishing Boat and Aquaculture Licence Applications and Conditions) <u>https://www.gov.ie/en/</u>	Sea fishing boat and aquaculture licence applications and conditions for the Irish commercial fishing fleet.	Register includes all registered commercial fishing vessels and aquaculture, including those within the Commercial Fisheries Topic-specific Study Area as of 2022.
Gerritsen and Kelly (2019)) (Atlas of Commercial Fisheries around Ireland)	The Atlas of Commercial Fisheries around Ireland maps fishing effort by gear type. Landings of the key commercial species are mapped individually and by gear type. This information is put into context by maps of effort and landings at a broader European scale and by the historical time series of landings that are provided for each species.	The data is collated from three key sources (from 2014 to 2018); VMS; log books; and EU fleet register. Coverage includes the Commercial Fisheries Topic- specific Study Area.
Shephard et al (2014) (Estimating biomass, fishing mortality, and total allowable discards for surveyed non- target fish)	Calculations of biomass for 14 demersal fish species in ICES Area 7g (Celtic Sea) derived from applying species and length based catchability corrections to catch records from the IGFS.	Data based on the IGFS between 2008 and 2011. Coverage includes the Commercial Fisheries Topic-specific Study Area.



Source	Summary	Status and/or Coverage
Tully (2017) (Atlas of Commercial Fisheries for Shellfish around Ireland)	The Atlas of Commercial Fisheries for Shellfish around Ireland presents the distribution of shellfish fisheries in internal and territorial waters of Ireland. The Atlas complements that of Gerritsen and Kelly (2019) who describe the demersal and pelagic fisheries.	The data is collated from varied sources (from 2008 to 2014): report landings at ICES statistical rectangle level only; VMS; Inshore VMS (iVMS); log books; and surveys. Coverage includes the Commercial Fisheries Topic- specific Study Area.
European Commission (EC) (Fisheries & Aquaculture Database) <u>https://datacollection.jrc.ec.europa.eu/</u>	EC Data Collection Framework (DCF) database, with landings by ICES rectangle and vessel nationality for five-year period.	The DCF has existed since 2000. The EU Member States including Ireland collect fisheries data and report annually to the EC. Coverage includes the Commercial Fisheries Topic- specific Study Area.
European Market Observatory for Fisheries and Aquaculture (EUMOFA) (Market Intelligence Tool) https://www.eumofa.eu/	The EUMOFA is a market intelligence tool on the European Union fisheries and aquaculture sector, developed by the European Commission.	For fisheries landing in Ireland data is based on 2009, 2010 and 2018 data sets (although some species are confidential). Coverage includes the Commercial Fisheries Topic- specific Study Area.
ICES (Fishing Intensity Maps and Stock Assessments) <u>https://www.ices.dk/Pages/default.aspx</u>	ICES fishing intensity mapping, which includes shapefiles of VMS data for >12m vessels for all EU Member States by gear type. ICES stock assessments. For key species being landed, the stock assessments provide useful basis for determining the status of stocks and relative importance to EU Member States.	Data available since 2013 for the fishing intensity maps and stock assessments for EU Member States, including Ireland. Coverage includes the Commercial Fisheries Topic- specific Study Area.
Fisheries Liaison Officer (FLO)	Engagement with the FLO during the EIAR will provide a valuable source of knowledge regarding all aspects of commercial fisheries.	In-depth knowledge of commercial fisheries within Commercial Fisheries Topic- specific Study Area.

948 It should be noted that the quantitative datasets identified in Table 9.37 may not capture all fishing activity in the Commercial Fisheries Topic-specific Study Area. For instance, the VMS datasets generally only covers vessels ≥12 m (ICES data) in length and within the Irish Exclusive Economic Zone (IEEZ) which extends to 200 nm off the coast; although there is potential for the implementation of Inshore VMS (iVMS) for vessels <12 m within inshore coastal waters of Ireland</p>



(although to date this has only been trialled for 120 Irish fishing vessels as part of a project to help provide evidence of fishing vessel activity in support of protecting a sustainable razor clam fishery). However, other published data does provide a useful and robust insight into fishing activity undertaken in inshore areas, including those noted in **Table 9.37** (e.g. log books, existing surveys and reports, Atlas of Commercial Fisheries for Shellfish); and consultation with the FLO for The Proposed Development; fisheries stakeholders and industry, is expected to further inform the EIAR. Consultation will be undertaken to verify the findings of the baseline data analysis; and to provide insight into specific fishing grounds and activity of any vessels active in the Commercial Fisheries Topic-specific Study Area. Consultation will also be important to inform gear specifications for vessels active in the Commercial Fisheries Topic-specific Study Area which will allow a full understanding of how they may be affected.

949 Variations and trends in commercial fisheries activity are an important aspect of the baseline assessment and is the principal reason for considering up to five years of key baseline data. Given the time periods considered in this scoping exercise, existing baseline data captures potential changes in commercial fisheries activity resulting from the COVID pandemic, notable through changes in fishing effort from 2019 to 2021. Long term environmental and climatic changes may be expected to be detectable within the five year time series, but may benefit from longer-term analysis dependant on the target species. Inclusion of such longer term analysis will be informed by stakeholder consultation.

#### 9.9.3.2 Potential Additional Data and Proposed Surveys

- 950 The data sources listed above are those identified to date which have been used to inform this EIAR Scoping Report and which will potentially be used to inform the wider assessment process in the future EIAR.
- 951 It should be noted that the list of data sources is not exhaustive and will be added to as the works connected to the future EIAR progress. Additional data sources will potentially be identified via consultation related to this EIAR Scoping exercise and over the duration of the EIAR process; although given the large volume of robust spatial and temporal data which exists for the Commercial Fisheries Topic-specific Study Area, as presented in **Table 9.37**, no fisheries surveys will be specifically undertaken for The Proposed Development.

#### 9.9.3.3 Approach to Impact Assessment

- 952 The impact assessment methodology will be based on that described in EIAR Scoping Report, Volume A Chapter 7 Environmental Impact Assessment Methodology and adapted to make it applicable to assessment of Commercial Fisheries.
- 953 Detailed analysis of baseline datasets will be undertaken to characterise long-term (i.e. over several years) patterns in commercial fisheries activity across the Commercial Fisheries Topicspecific Study Area and predict potential impacts upon commercial fishing activities. Consultation with the commercial fishing industry via the FLO will be undertaken to ground-truth available baseline data and gain further understanding of fishing activity by smaller vessels across the



inshore portion of the Commercial Fisheries Topic-specific Study Area. Analysis of data and the results of consultation will provide an extended baseline characterisation of the Commercial Fisheries Topic-specific Study Area, which will underpin the impact assessment.

954 Impacts will be assessed for each relevant fleet/fishery active in the Commercial Fisheries Topicspecific Study Area; and where relevant, impacts associated with the Potential Turbine Array Infrastructure Zone and the Potential Export Cable Corridor Infrastructure Zone will be separately assessed.

#### 9.9.4 Receiving Environment

- 955 The waters around Ireland contain a very productive and biologically diverse marine ecosystem. These waters include a large area of shallow continental shelf (<200 m); two important off-shore banks (Porcupine and Rockall); and a large area of continental slope. Over the last number of centuries fisheries have developed and expanded from coastal waters initially, throughout the shelf in the last century, to the deep sea and oceanic waters in the last few decades. On an average day, more than 1000 fishing vessels are active in the waters around Ireland, accounting for more than 8 million fishing hours per year (Gerritsen and Kelly,2019).
- 956 Most of the seabed near Ireland is trawled at least once per year; and some regions are trawled more than 10 times per year. The dominant fishing method is bottom (otter) trawling (demersal fisheries) which makes up a large proportion of the marine harvest. Bottom trawling is the most valuable component of the Irish fishing fleet and makes up the largest of the EU fishing fleets within the IEEZ (**Plate 9.1** and **Plate 9.2**).
- 957 As such, based on **Plate 9.1** and **Plate 9.2**, fishing is clearly one of the most significant ocean uses in the waters around Ireland, including the Commercial Fisheries Topic-specific Study Area.
- 958 Further information on the key fishing methods and practises used for demersal and pelagic finfish; shellfish; and aquaculture within the Commercial Fisheries Topic-specific Study Area are outlined below. Information on the key commercial fish species landed by weight (tonnes) within the Commercial Fisheries Topic-specific Study Area are also outlined.





Plate 9.1 Fishing gears used by vessels  $\geq$ 15m fishing in the Irish EEZ based on VMS data between 2014 – 2018 (Source: Gerritsen and Kelly, 2019). Otter trawlers account for the majority (57%) of fishing effort inside Irish EEZ.




Plate 9.2 Nationality of vessels  $\geq$ 15m fishing in the Irish EEZ based on VMS data between 2014 – 2018 (all gears combined). The vast majority of fishing effort (77%) by Irish vessels takes place within Irish EEZ. (Source: Gerritsen and Kelly,2019). IRL = Ireland; GBR = United Kingdom; FRA = France; ESP = Spain; BEL = Belgium; OTH = Other Nationalities



# 9.9.4.1 Demersal Finfish Fisheries

959 Demersal finfish fisheries target species which live on or near the seabed that generally feed on living organisms and other fish on the bottom of the seabed. Demersal landings by Irish vessels are greatest in shallow coastal and inshore waters, with activity generally declining with increasing distance from shore and increasing water depth (Gerritsen and Kelly, 2019). Key demersal finfish species and fishing methods, such as otter trawling, used for the demersal finfish within the Commercial Fisheries Topic-specific Study Area is presented in **Table 9.38**; and the weight (tonnes) of the key demersal species landed from 2006 to 2019 within the wider south coast area is presented in **Plate 9.3**.

Species	Depth (m)	Dominant Fishing Method	Country
Hake Merluccius merluccius	25m to 200m	Otter trawling, beam trawling, gill netting, seine netting, long lines	Ireland, UK, France, Belgium, Netherlands, German and Spain
Cod Gadus morhua	10 m to 200 m	Otter trawling, beam trawling and seine netting	Ireland, UK, France, Belgium, Netherlands, and Spain
Haddock Melanogrammus aeglefinus	50 m to 200 m	Otter trawling, beam trawling and seine netting	Ireland, UK, France, Belgium, Netherlands, and Spain
Whiting Merlangius merlangus	10 m to 100 m	Otter trawling, beam trawling and seine netting	Ireland, UK, France, Belgium, Netherlands, and Spain
Ling Molva molva	10 m to 200 m	Otter trawling and seine netting	Ireland, UK, France, Belgium, and Spain
Angler/ Monkfish Lophius spp	50 m to 200m	Otter trawling, beam trawling and seine netting	Spain and France
Saithe Pollachius virens	100 m to 200 m	Otter trawling, beam trawling, gill netting, seine netting	Ireland, UK, France, Belgium, and Spain
Pollack Pollachius pollachius	40 m to 200 m	Otter trawling, beam trawling, gill netting, seine netting	Ireland, UK, France, Belgium, and Spain



Species	Depth (m)	Dominant Fishing Method	Country
Megrim Lepidorhombus spp	100 m to 200 m	Otter trawling, beam trawling, seine netting	Ireland, UK, France, Belgium, and Spain
Lemon Sole Microstomus kitt	10 m to 200 m	Otter trawling, beam trawling, seine netting	Ireland, UK, France, Belgium, and Spain
Black Sole Solea solea	10 m to 200 m	Otter trawling, beam trawling, seine netting	Ireland, UK, France, Belgium, Netherlands, and Spain
Plaice Pleuronectes platessa	10 m to 200 m	Otter trawling, beam trawling, seine netting	Ireland, UK, France, Belgium, Netherlands, and Spain

Source: Gerritsen and Kelly (2019) ; FAO 2022 – ICES Catch Dataset (2006-1019);

<u>https://shiny.marine.ie/speciesdash;</u> Coull et al (1998); https://shiny.marine.ie/stockbook/; and consultation with the FLOs for The Proposed Development. It should be noted the above list is an indicative guide only of key species within the Commercial Fisheries Study Topic-specific Area.





Plate 9.3 Key commercial demersal finfish landed by weight (tonnes) from 2006 to 2019 for ICES Division 7g



# 9.9.4.2 Pelagic Finfish Fisheries

- 960 Pelagic species are those which, as adults, live in the midwater column of coastal and ocean waters. They are often found in large shoals, and typically undergo extensive migrations between feeding, spawning and overwintering grounds. Four principal species, Atlantic mackerel *Scomber scombrus*, horse mackerel *Trachurus trachurus*; sprat *Sprattus sprattus*; and herring *Clupea harengus* are commonly targeted by fishing vessels while migrating and spawning in the Celtic Sea and within the Commercial Fisheries Topic-specific Study Area. In addition, boarfish (*Capros aper*) shoal in large numbers along the south coast of Ireland which are targeted by fishing vessels; with the potential for an increased Albacore tuna (*Thunnus alalunga*) fishery to be present within the Celtic Sea off the south coast. This is in response to Albacore tuna becoming more common in Irish waters along with Bluefin tuna (*Thunnus thynnus*), for which Iceland have quota for within Irish waters.
- 961 A key mid-water trawl fishery for herring operates around the active herring spawning grounds along the coast of the Commercial Fisheries Topic-specific Study Area and within the Potential Export Cable Corridor Infrastructure Zone, in particular from Kinsale to Ardmore (approximately 32 km off the coast), with a key area focused upon by the herring trawlers being the estuary mouth of Cork Harbour; and off Ballycotton (Gerritsen and Kelly, 2019). For further details on locations of key pelagic finfish spawning grounds within the Commercial Fisheries Topic-specific Study Area, please see **Volume C, Chapter 8** Fish and Shellfish Ecology
- 962 The aforementioned pelagic species along with fishing methods are presented in **Table 9.39**; and the weight (tonnes) of the key pelagic species landed from 2006 to 2019 within the wider south coast are presented in **Plate 9.4**.

Species	Depth (m)	Dominat Fishing Methods	Country	Season	
Herring Clupea harengus	Surface to 200 m		Ireland, Netherlands, Germany, UK, France, Denmark	September to January	
Sprat Sprattus sprattus		Midwater trawl. for	Ireland		
Atlantic Mackerel Scomber scombrus		example pelagic pair trawling and otter trawling	Ireland, Netherlands, Germany, UK, France, Denmark, Belgium	May to September	
Horse Mackerel Trachurus trachurus			Ireland, Netherlands, Germany, France, Portugal	October to February	

Table 9.39 Key pelagic finfish fisheries and methods within the Commercial Fisheries Topic-specific Study Area



Species	Depth (m)	Dominat Fishing Methods	Country	Season
Boarfish <i>Capros aper</i>	40 m to 600 m		Ireland, Netherlands, UK	May to September
Albacore tuna Thunnus alalunga	> 200 m	Line caught, pelagic pair-trawling	Ireland, Spain, France, UK	July/ August to September
Bluefin tuna Thunnus thynnus	> 200 m	Line caught	Iceland, Ireland, Portugal, Netherlands, France	July to November

Source: Gerritsen and Kelly (2019); <u>https://shiny.marine.ie/speciesdash/</u>; Coull et al (1998); Egerton et al (2017); FAO 2022 – ICES Catch Dataset (2006-1019); https://shiny.marine.ie/stockbook/;and consultation with the FLOs for The Proposed Development.





Plate 9.4 Key commercial pelagic finfish landed by weight (tonnes) from 2006 to 2019 for ICES Division 7g



## 9.9.4.3 Shellfish Fisheries

- *963* The main shellfish species commercially exploited within the Commercial Fisheries Topic-specific Study Area are presented in **Table 9.40** and briefly described below. The weight (tonnes) of the key shellfish landed from 2006 to 2019 within the Commercial Fisheries Topic-specific Study Area are presented in **Plate 9.5**.
- 964 The Nephrops fishery requires muddy habitats and therefore catches are limited to well-defined fishing grounds in the Celtic Sea with the fishery generally operating at depths between 40 m and 200 m, although the fishery in the vicinity to The Proposed Development occurs within the shallow waters surrounding the Galley Grounds and Canyons, moving into the shallower waters eastwards of Mine Head (Tully, 2017). Brown crab *Cancer pagurus* are targeted by potting in water depths ranging up to 200 m. The brown crab and lobster fishery is seasonal (March to November), as is the inshore shrimp potting fishery (March to November). Although the brown crab fishery is predominantly within the area of the Potential Export Cable Corridor Infrastructure Zone, the fishery is also moving offshore in localised areas, including areas at the eastern end of the Potential Turbine Array Infrastructure Zone. Key areas of scallop dredging within the Commercial Fisheries Topic-specific Study Area occur offshore outside of the 12 nm territorial seas boundary; and east of the Potential Turbine Array Infrastructure Zone (see Figure 9.17 for dredge trawling, which includes scallop dredging).

Species	Depth (m)	Dominant Fishing Methods	Country
Nephrops	10 m to 200 m	Otter trawling, potting or creel	Ireland, Belgium, Spain, France, UK
Brown Crab Cancer pagurus	10 m to 200 m	Potting (baited traps) mainly March to November	Ireland, France, UK, Belgium, Spain, Isle of Man
Velvet Crab Necora puber	Shallow waters less than 20 m	Potting (baited traps) mainly March to October	Ireland, France, UK
Lobster Homarus gammarus	10 m to 100 m	Potting (baited traps) mainly March to October	Ireland, France, UK, Belgium, Isle of Man
Shrimp Palaemon serratus	Shallow Waters, less than 20 m	Potting (baited traps) mainly March to November	Ireland, UK
Scallops Pecten maximus	10 m 200 m	Beam trawling (and dredging)	Ireland, France, UK, Belgium, Spain

Table 9.40 Key shellfish fisheries and methods within the Commercial Fisheries Topic-specific Study Area



Species	Depth (m)	Dominant Fishing Methods	Country
Cockle Cerastoderma edule	10 m 100 m	Dredging, hand gathering	Ireland

Source: Gerritsen and Kelly (2019); Tully, (2017); Coull et al (1998); and consultation with the FLOs for The Proposed Development



Plate 9.5 Key commercial shellfish landed by weight (tonnes) from 2006 to 2019 for ICES Division 7g (Source: FAO (2022) ICES catch Dataset 2006-2019)

## 9.9.4.4 Aquaculture

965 There is no finfish aquaculture within the Potential Turbine Array Infrastructure Zone, although several inshore sites within the Commercial Fisheries Topic-specific Study Area which have dedicated shellfish aquaculture comprising oysters (Cork Harbour and Ballymacoda Bay) and mussels (Cork Harbour and Ballymacoda Bay).

# 9.9.4.5 Fishing Effort

**Figure 9.17** and **Figure 9.18** provide a summary of the above demersal and pelagic finfish and shellfish fisheries within the Commercial Fisheries Topic-specific Study Area based upon fishing effort for the following fishing methods: trawling (beam, otter, pelagic), gill netting, seine netting, potting and dredging. Please refer to **Table 9.38**, **Table 9.39**, and **Table 9.40** for an indication of the potential corresponding commercial fish species associated with the fishing methods.





Long Li	ne Effort <sup>19</sup>	33E23	33E26	33E29 33E33	Pot Fish	ing Effort	33E23	33E26	33E29
32E14 re Cork	Carrigtwohill 32E17	Youghal 32E21icl Ba	32E24	32E27 32E31	32E14 vre Cork Passag	Carrigtwohill 32E17 West Cobh	roughal 32E21 al Ba	32E24	32E27
Carrigaline 32E15	32E18	32E22	32E25 86	32E28 32E32	Carrigaline 32E15	32E18	32E22	32E25 86	32E28
32E16	32E19	90 32E23	32E26	32E29 32E33	32E16	32E19	90 32E23	32E26	32E29
31E14	31E17	31E21	31E24	31E31 31E27	31E14	31E17	31E21	31E24	31E27
31E15	<b>31E18</b>	<b>31E22</b> © Op GEBC Geon	enStreetMap (and) contributor CO, NOAA, National Geograph ames.org, and other contributo	S, CC-BY-SA <u>₁Sou</u> rces: Esri, nic, Garmin, HER <mark>E</mark> , ors	31E15	31E18	31E22	© OpenStreetMap (anୁd),contributor GEBCO, NOAA, National Geograpi Geonames.org, and other contribut	s, CC-BY-SAപ്പട്ടര്യ hic, Garmin, HERE ors
Seines	Fishing Effort	33E23	33E26	33E29 33E33	Gill Net I	Effort 33E19	33E23	33E26	33E29
Seines	Fishing Effort	33E23	33E26	33E29 33E3 32E27 32E31	Gill Net	Effort 33E19 Carrigtwohil 32E17 West Cloyne	33E23	33E26 32E24	33E29 32E27
Seines	Fishing Effort	33E23	33E26 32E24 32E25 86	33E29 33E3 32E27 32E3 32E28 32E32	Gill Net	Effort 33E19	33E23	33E26 32E24 32E25 &	33E29 32E27 32E28
Seines	Fishing Effort	33E23	33E26 32E24 32E25 66 32E25	33E29 33E3 32E27 32E3 32E28 32E32 32E29 32E33	Gill Net	Effort 33E19	33E23	33E26 32E24 32E25 60 32E25	33E29 32E27 32E28 32E28
Seines	Fishing Effort	33E23	33E26 32E24 32E25 5 32E26 32E26	33E29 33E3 32E27 32E31 32E28 32E32 32E29 32E33 32E29 32E33 32E29 32E33	Gill Net	Effort 33E19	33E23 vurina 32E21ud 32E22 32E22 90 32E23 90 32E23 91 31E21	33E26 32E24 32E25 32E26 32E26 32E26 31E24	33E29 32E27 32E28 32E28 32E29 32E29 32E29





## 9.9.4.6 Designated Sites

967 Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are areas designated for the conservation and protection of marine habitats and species under the EU Habitats Directive (EC 92/43). Special Protection Areas (SPAs) are areas designated for the protection of birds under the Birds Directive (EC 79/409). Each area has specific features that are subject to conservation objectives and targets. The interaction of fisheries with such features, depending on the risk posed by a particular fishery to the feature, may need to be managed and this may lead to restriction, including spatial restriction, on where such fisheries could be permitted. Assessments under Article 6 of the Habitats Directive of the risk posed by commercial fisheries to habitats and species in SACs were completed for Irish territorial waters in 2015; and mitigations including spatial restrictions on fisheries continue to be developed. It should be noted that SACs and SPAs are located along the coastline within Potential Export Cable Corridor Infrastructure Zone.

## 9.9.5 Potential Impacts

968 A range of potential impacts on Commercial Fisheries have been identified which may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development. These impacts include those issues identified as requiring consideration in accordance with the guidance documents listed in **Section 9.9.2**. These potential impacts are discussed and will be considered further in the future EIAR.

## 9.9.5.1 Potential Impacts during Construction

969 The following potential impacts have been identified as relevant to the Construction Phase for The Proposed Development.

# 9.9.5.1.1 Reduction in Access to, or Exclusion from Established Fishing Grounds

970 Installation activities and physical presence of constructed infrastructure may lead to a temporary reduction in access to, or exclusion from established fishing grounds. There is potential for some loss of fishing opportunities over the Construction Phase, though the effect is expected to be localised, and the operational range of relevant fleets will not typically be limited to the Potential Offshore Infrastructure Zone. However, there is overall potential for changes in access or exclusion from some established fishing grounds, and as such, this impact has been scoped into the future EIAR.

# 9.9.5.1.2 Displacement Leading to Gear Interference and Increased Fishing Pressure on Adjacent Grounds

971 Fishing activity may be temporarily displaced from the Potential Offshore Infrastructure Zone, leading to gear conflict and increased fishing pressure on adjacent grounds. There is potential for displacement of fishing activity, though the effect is expected to be localised, and the operational range of relevant fleets will not typically be limited to the Potential Offshore Infrastructure Zone. However, there is overall potential for displacement leading to gear interference conflict and increased fishing pressure on adjacent grounds, and as such, this impact has been scoped into the future EIAR.



- 9.9.5.1.3 Displacement or Disruption of Commercially Important Fish and Shellfish Resources
- 972 Construction Phase activities may lead to temporary displacement or disruption of commercially important fish and shellfish resources. Assessment will be informed by the outcomes of the Fish and Shellfish Ecology impact assessment which will assess such impacts through GIS constraints mapping combined with baseline information on commercially important fish and shellfish resources within the Commercial Fisheries Topic-specific Study Area. It will be assumed that commercial fisheries, including aquaculture, may be affected as a result of any loss of resources. The conclusions presented in the Fish and Shellfish Ecology impact assessment regarding effect significance will be taken into account in determining the magnitude of impact on commercial fisheries (see **Volume C, Chapter 8** Fish and Shellfish Ecology). As such, the potential for displacement or disruption of commercially important fish and shellfish resources has been scoped into the future EIAR.
- 9.9.5.1.4 Increased vessel traffic associated with The Proposed Development within Fishing Grounds Leading to Interference with Fishing Activity
- 973 Movement of vessels associated with The Proposed Development may temporarily add to the existing volume of marine traffic in the area, leading to interference of fishing activity. The assessment will be informed by the outcomes of the Shipping and Navigation impact assessment (see **Volume C, Chapter 10** Shipping and Navigation); the conclusions presented in the Shipping and Navigation impact assessment will be considered in determining the magnitude of impact on commercial fisheries. The potential for increased vessel traffic associated with The Proposed Development within fishing grounds leading to potential interference with fishing activity has been scoped into the future EIAR.

# 9.9.5.1.5 Additional Steaming to Alternative Fishing Grounds for Vessels that would otherwise Fish within the Potential Offshore Infrastructure Zone

974 This impact would be localised to safety zones and Construction Phase activities and therefore limited deviations to steaming routes are expected. Assessment within the future EIAR will be informed by consultation with the local fishing industry as to the nature and extent of alternative grounds and associated additional steaming requirements. The potential for additional steaming to alternative fishing grounds has been scoped into the future EIAR.

## 9.9.5.2 Potential impacts during Operation and Maintenance

975 The potential impacts identified as relevant to the Operation and Maintenance Phase for The Proposed Development are as per those identified for the Construction Phase, with the addition of the potential for gear snagging.

## 9.9.5.2.1 Reduction in Access to, or Exclusion from Established Fishing Grounds

976 Maintenance activities and physical presence of constructed infrastructure (including anchoring systems) may lead to reduction in access to, or exclusion from established fishing grounds, with the majority of fishing methods, such as seining, trawling, beaming, dredging, gill netting and potting potentially being restricted or excluded from some areas of the Potential Offshore Infrastructure Zone. The effects will be long-term but potentially localised, and the operational range of relevant fleets may not typically be limited to, for example, the Potential Offshore



Infrastructure Zone, although this will be further assessed in the EIAR with particular regard to seiners which are restricted in the types of ground they can operate. As such, the potential reduction in access to, or exclusion from established fishing grounds has been scoped into the future EIAR.

## 9.9.5.2.2 Displacement Leading to Gear Conflict and Increased Fishing Pressure on Adjacent Grounds

977 Fishing activity may be displaced from the Potential Offshore Infrastructure Zone, potentially leading to gear conflict and increased fishing pressure on adjacent grounds, with fishing methods, such as seining, trawling, beaming, dredging, gill netting and potting potentially restricted or excluded from some areas of the Potential Offshore Infrastructure Zone. The effect will be long-term but localised, and the operational range of relevant fleets will not typically be limited to the Potential Offshore Infrastructure Zone. However, this will be further assessed in the EIAR and as such, the potential for displacement leading to gear conflict and increased fishing pressure on adjacent grounds has been scoped into the future EIAR.

#### 9.9.5.2.3 Displacement or Disruption of Commercially Important Fish and Shellfish Resources

978 Maintenance activities and EMF emitted from operational cables within the Potential Offshore Infrastructure Zone, may lead to displacement or disruption of commercially important fish and shellfish resources. The assessment will be informed by the outcomes of the Fish and Shellfish Ecology impact assessment which also considers potential impacts of EMF upon fish and shellfish; and it will be assumed that commercial fisheries may be affected as a result of any loss of resources. The conclusions presented in the Fish and Shellfish Ecology impact assessment regarding effect significance will be taken into account in determining the magnitude of impact on commercial fisheries (see **Volume C, Chapter 8** Fish and Shellfish Ecology). The potential effect of displacement or disruption of commercially important fish and shellfish resources has been scoped into the future EIAR.

# 9.9.5.2.4 Increased Vessel Traffic Associated with The Proposed Development within Fishing Grounds Leading to Interference with Fishing Activity

979 Movement of vessels associated with The Proposed Development may add to the existing volume of marine traffic in the area, leading to interference of fishing activity. Assessment will be informed by the outcomes of the Shipping and Navigation impact assessment (see **Volume C, Chapter 10** Shipping and Navigation); the conclusions presented in the Shipping and Navigation impact assessment will be considered in determining the magnitude of impact on commercial fisheries. The potential for increased vessel traffic associated with The Proposed Development within fishing grounds leading to interference with fishing activity has been scoped into the future EIAR.

## 9.9.5.2.5 Physical Presence Infrastructure Leading to Gear Snagging

980 Standard industry practice and protocol (e.g. seabed infrastructure will be buried where practicable and/or marked on nautical charts) will minimise the risk of gear snagging and displacement from fishing grounds, but it remains likely to be an area of industry concern in relation to floating wind where anchoring tethers are present within the water column. Safety aspects associated with this impact, including potential loss of life as a result of snagging risk, will be assessed within the Shipping and Navigation impact assessment (see **Volume C, Chapter 10** 



Shipping and Navigation). The potential for the physical presence of infrastructure leading to gear snagging has been scoped into the future EIAR.

- 9.9.5.2.6 Additional Steaming to Alternative Fishing Grounds for Vessels that would otherwise Fish within the Potential Offshore Infrastructure Zone
- 981 This effect will be localised to safety zones and installed structures and therefore limited deviations to steaming routes are expected. The assessment will be informed by consultation with the local fishing industry as to the nature and extent of alternative grounds and associated additional steaming requirements. The potential for additional steaming to alternative fishing grounds has been scoped into the future EIAR.

## 9.9.5.3 Potential Impacts during Decommissioning

- 982 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 983 The scope of the Decommissioning works cannot be defined at this early stage. However, Decommissioning may include the removal of the accessible installed components. Offshore, this is likely to include removal of all the WTG components, the anchors and chains (those above seabed level), and removal of some or all of the cables.
- 984 Decommissioning activities have the potential to impact Commercial Fisheries. Any potential impacts arising from Decommissioning are likely to be comparable to, or less than, those identified for the Construction Phase and will be assessed as part of the future EIAR.

## 9.9.6 Potential Cumulative Effects

- 985 There may be potential for cumulative effects to occur in relation to Commercial Fisheries as a result of other activities.
- 986 The CIA for Commercial Fisheries will be based on a ZoI identified during The Proposed Development-alone impact assessment (in line with the approach set out in **Volume A Chapter 7** Environmental Impact Assessment Methodology of this EIAR Scoping Report) which will define the geographical extent to which effects of The Proposed Development are expected. The potential impacts considered in the CIA as part of the EIAR will be in line with those described for The Proposed Development-alone impact assessment, though it is possible that some will be screened out on the basis that the impacts are highly localised (i.e. they occur only within the Potential Offshore Infrastructure Zone) or where there are management measures in place to robustly reduce the risk of impacts occurring.
- 987 The CIA will consider cumulative effects with any other projects and marine users within the ZoI (aggregate extraction and dredging, subsea cables, oil and gas activity, and other wind farms, for



example). The approach to CIA is set out in **Section 7.5.10** of **Volume A Chapter 7** Environmental Impact Assessment Methodology of this EIAR Scoping Report.

## 9.9.6.1 Intra-Project

- 988 In line with the most recent EPA guidance on EIARs (EPA, 2022) the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 989 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared ZoI of The Proposed Development (for which Development Permission is sought).

## 9.9.6.2 Other Developments

990 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative effects are minimised.

## 9.9.7 Potential Transboundary Effects

991 There is potential for transboundary effects upon fisheries, particularly with regard to the issue of displacement of fishing effort. Potential transboundary effects will be fully assessed in the future EIAR. Consultation with representatives of the commercial fisheries industries in countries potentially affected will be undertaken.

## 9.9.8 Summary of Potential Impacts

992 **Table 9.41** outlines the impacts which are proposed to be scoped into and/or out of the EIAR for Commercial Fisheries. This may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.

Table 9.41 Summary of Potential Impacts Related to Commercial Fisheries. Topics Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR

Potential Impact	Construction	Operation and Maintenance	Decommissioning
Reduction in access to, or exclusion from established fishing grounds	~	$\checkmark$	~
Displacement leading to gear interference and increased fishing pressure on adjacent grounds	~	$\checkmark$	~
Displacement or disruption of commercially important fish and shellfish resources	~	$\checkmark$	4
Increased vessel traffic associated with The Proposed Development within fishing grounds leading to interference with fishing activity	✓	$\checkmark$	1



Potential Impact	Construction	Operation and Maintenance	Decommissioning
Physical presence of infrastructure leading to potential gear snagging	x	~	✓
Additional steaming to alternative fishing grounds for vessels that would otherwise fish within the Potential Offshore Infrastructure Zone	~	~	~
Cumulative effects	$\checkmark$	$\checkmark$	$\checkmark$
Transboundary effects	$\checkmark$	$\checkmark$	✓

## 9.9.9 EIAR Scoping Consultation Questions

- 993 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Commercial Fisheries chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Commercial Fisheries chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Commercial Fisheries Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?
  - What other data sources or surveys, if any, should The Applicant have regard to in the preparation of the Commercial Fisheries chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Commercial Fisheries chapter of the EIAR for The Proposed Development?
  - Are you satisfied with the approach to impact assessment proposed for the Commercial Fisheries chapter of the EIAR for The Proposed Development?
  - Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Commercial Fisheries chapter of the EIAR for The Proposed Development?

## 9.9.10 Technical Consultation

994 This chapter has considered the potential impacts of The Proposed Development on Commercial Fisheries. **Table 9.42** sets out a series of areas for discussion which The Applicant would appreciate targeted feedback on. Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 9.42** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.



Table 9.42: Summary of Proposed Key Technical Stakeholders Commercial Fisheries.

Proposed Key Technical Stakeholder	Objective of Engagement
Marine Institute	
Department of Agriculture, Food and the Marine	
Bord Iascaigh Mhara (BIM)	
Sea Fisheries Protection Authority	
Inland Fisheries Ireland	1. To discuss commercial fisheries activity in the area that will feed into the baseline environment
Irish Fish Producers Organisation	2. To discuss the approach to the assessment of
Irish South and East Fish Producers Organisation	effects. 3. To discuss preliminary findings of the assessment
Irish South and West Fish Producers Organisation	and potential mitigation measures.
Killybegs Fish Producers Organisation	
National Inshore Fishers Organisation / National Inshore Fisheries Association	
Southeast Regional Inshore Fisheries Forum	
Individual Fishers	

## 9.9.11 References

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## 9.10 CHAPTER 10 SHIPPING AND NAVIGATION

## 9.10.1 Introduction

- 995 This chapter of the EIAR Scoping Report considers the potential impacts of Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on Shipping and Navigation and sets out the methodology and approach to be taken to assessing these potential impacts within the future EIAR.
- 996 The Shipping and Navigation Topic-specific Study Area is that area within a 10 nm radius of the Potential Turbine Array Infrastructure Zone. This Shipping and Navigation Topic-specific Study Area has been selected to ensure localised context for the analysis of marine traffic and is standard for offshore wind farm Navigational Risk Assessments (NRA) currently being undertaken for projects within Irish Waters. A Shipping and Navigation Topic-specific Study Area will be defined for the Potential Export Cable Corridor Infrastructure Zone as part of the NRA, likely the area within a 2 nm buffer around the Potential Export Cable Corridor Infrastructure Zone.

## 9.10.2 Policy and Guidance

- 997 Volume A Chapter 4 Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context applicable to The Proposed Development. Policies and guidance documents of particular relevance to Shipping and Navigation are set out in this section. Where certain guidance documents have been produced in relation to offshore wind farms in other countries, these will be reviewed as part of the EIAR process and considered in relation to The Proposed Development.
- 998 At present there is limited guidance relating directly to shipping and navigation currently available for Irish offshore wind farm development, although it is understood that such guidance is currently being authored by the Marine Survey Office (MSO) and may be published in 2022. Such guidance is expected to closely follow United Kingdom (UK) guidance, which The Applicant is aware is proposed to be applied to other Irish offshore wind farm developments in agreement with key stakeholders. All guidance in place at the time of the Development Permission application will be appropriately considered by The Applicant.

## Policies

- The Offshore Renewable Energy Development Plan (OREDP) (DCCAE, 2014)<sup>30</sup>; and
- National Marine Planning Framework (NMPF) (DHLGH, 2021a).

## Guidance

• Any guidance is likely to closely follow Marine Guidance Note (MGN) 654 (Maritime and Coastguard Agency (MCA), 2021) which is the primary guidance document for UK offshore renewable energy developments, with current overarching guidance (Department of

<sup>&</sup>lt;sup>30</sup> It should be noted that OREDP II is currently being developed by the Department of the Environment, Climate and Communications and is expected to be available for consultation during 2022.



Communications, Climate Action and Environment (DCCAE), 2017) referencing MCA guidance as relevant for shipping and navigation issues.

- In addition to MGN 654, the following guidance documents are also referenced by the DCCAE guidance<sup>31</sup>:
  - Methodology for Assessing the Marine Navigational Safety & Emergency Response Risks of Offshore Renewable Energy Installations (OREI) (MCA, 2021);
  - International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) Recommendation O-139 on the Marking of Man-Made Structures (IALA, 2021); and
  - IALA Guideline G1162 Guidance on the Marking of Offshore Man-Made Structures (IALA, 2021).
- For the risk assessment itself, the Revised Guidelines for Formal Safety Assessment (FSA) (International Maritime Organization (IMO), 2018) will be considered, as decreed by the MCA methodology. Use of FSA is standard for shipping and navigation assessments and is a structured systematic process which uses frequency of occurrence and severity of consequence to determine the significance of risk for identified hazards.

# 9.10.3 Methodology

# 9.10.3.1 Approach to Data Collection

999 The following information and data sources (**Table 9.43**) have been considered during the production of this EIAR Scoping Report and will be considered further within the future EIAR where relevant matters are scoped in to the EIAR process.

Table 9.43 Data Sources Used to Inform Shipping and Navigation chapter of this EIAR Scoping Report and that will be considered further within the EIAR

Dataset	Year	Source
28 days of Automatic Identification System (AIS) Marine Traffic Surveys (Potential Turbine Array Infrastructure Zone)	5 to 18 June 2021 (14 days) and 17 to 30 January 2022 (14 days)	Anatec
Admiralty charts 1123, 2049 and 2424	2022	United Kingdom Hydrographic Office (UKHO)
Admiralty Sailing Directions Irish Coast Pilot	2016	ИКНО
South and West Coast of Ireland Sailing Directions	2022	Irish Cruising Club (ICC)
Marine Casualty Investigation Board (MCIB) incidents	2010 to 2019	MCIB

<sup>&</sup>lt;sup>31</sup> The latest versions of these guidance documents are listed given that the versions provided in the DCCAE guidance have been superseded; the MCA methodology now forms an annex to MGN 654 and IALA Guideline G1162 should be considered alongside an updated IALA Recommendation O-139.



Dataset	Year	Source
Royal National Lifeboat Institution (RNLI) incidents	2010 to 2019	RNLI

- 1000 AIS carriage is not mandatory for all vessels. In particular, fishing vessels less than 15 m length and recreational vessels are not required to broadcast information on AIS although many choose to do so voluntarily given the associated safety benefits, and there is an increasing trend in the number of fishing vessels and recreational vessels doing so. AIS is fitted aboard all ships of 300 gross tonnage and upwards engaged on international voyages, cargo ships of 500 gross tonnage and upwards not engaged on international voyages and all passenger ships irrespective of size.
- 1001 It is proposed that the characterisation of marine traffic movements in the NRA will be primarily undertaken using the outputs of marine traffic surveys undertaken following consultation with the Marine Survey Office (MSO) and the Commissioner of Irish Lights (CIL). It is anticipated that the surveys will closely follow the MCA requirements for similar surveys in the UK which are outlined in MGN 654 (MCA, 2021). In particular, the surveys are anticipated to consist of two periods of 14 days (summer and winter) to allow assessment of seasonal variation and include AIS, Radio Detection and Ranging (Radar) and visual observations. This will ensure non-AIS vessels are suitably considered and that any effects due to Brexit or the COVID-19 pandemic are accounted for (such as the return of the Brittany Ferries commercial ferry route between Cork (Ireland) and Roscoff (France) in March 2022).
- 1002 Additionally, AIS data covering the same period as the marine traffic surveys will be analysed in the NRA for the Potential Export Cable Corridor Infrastructure Zone. This will ensure a thorough baseline characterisation of vessel movements within the Potential Export Cable Corridor Infrastructure Zone with the Shipping and Navigation Topic-specific Study Area for this analysis to be determined through consultation with key stakeholders (see **Section 9.10.4.2**).

## 9.10.3.2 Potential Additional Data and Proposed Surveys

- 1003 The data sources listed above are those identified to date which have been used to inform this EIAR Scoping Report and which will potentially be used to inform the wider assessment process in the future EIAR.
- 1004 It should be noted that the list of data sources is not exhaustive and will be added to as the works connected to the future EIAR progress.

## 9.10.3.3 Approach to Impact Assessment

- 1005 An NRA will be undertaken in support of the EIAR in line with DCCAE guidance (DCCAE, 2017), which recommends the undertaking of an NRA as a method of assessment for shipping and navigation.
- 1006 As a key input to the NRA, consultation will be undertaken with shipping and navigation stakeholders, including a Hazard Workshop. The Hazard Workshop is a standard step within the



NRA process and allows a variety of stakeholders to raise specific concerns, and work together to assess potential risks and mitigation measures. A Hazard Log is then produced summarising the findings of the Hazard Workshop and included in the NRA. Stakeholders to be included in the Shipping and Navigation consultation effort include:

- MSO;
- CIL
- Irish Coast Guard;
- ICC;
- RNLI;
- Regular vessel operators (identified from marine traffic survey data);
- Fisheries representatives; and
- Local port operators including Port of Cork Company, Youghal Harbour and Ballycotton Harbour.
- 1007 The findings of the NRA will inform the shipping and navigation assessment in the EIAR. As an internationally recognised approach for risk assessment of shipping and navigation users, the IMO FSA (2018) methodology will be applied. This methodology assesses each hazard in terms of frequency of occurrence and severity of consequence, with a risk ranking matrix used to determine the resulting significance of risk for each hazard, as illustrated in **Table 9.44**. The level of risk in terms of frequency and consequence will be determined based on a number of factors, including:
  - Baseline data;
  - Expert opinion;
  - Consultation feedback including the Hazard Workshop;
  - Quantitative modelling; and
  - Lessons learnt from existing offshore developments.

Table 9.44 Risk Ranking Matrix for Determining Significance of Risk

	Major	Tolerable	Tolerable	Unacceptable	Unacceptable	Unacceptable	
rence	Serious	Broadly Acceptable	Tolerable	Tolerable	Unacceptable	Unacceptable	
	Moderate	Broadly Acceptable	Broadly Acceptable	Tolerable	Tolerable	Unacceptable	
	Minor	Broadly Acceptable	Broadly Acceptable	Broadly Acceptable	Tolerable	Tolerable	
Conseq	Negligible	Broadly Acceptable	Broadly Acceptable	Broadly Acceptable	Broadly Acceptable	Tolerable	
		Negligible	Extremely Unlikely	Remote	Reasonably Probable	Frequent	
		Frequency					



1008 The significance of risk may be deemed Broadly Acceptable, Tolerable or Unacceptable. Where a hazard is assessed to have an Unacceptable significance of risk, additional mitigation measures will be required to reduce the significance of risk to within Tolerable (with mitigation) parameters.

## 9.10.4 Receiving Environment

## 9.10.4.1 Navigational Features

1009 **Figure 9.19** presents the navigational features in proximity to the Shipping and Navigation Topicspecific Study Area







- 1010 The number of navigational features within the Potential Turbine Array Infrastructure Zone is low, with only two charted wrecks noted at 72 and 78 metres (m) below Chart Datum (CD).
- 1011 Outside of the Potential Turbine Array Infrastructure Zone there are multiple subsea cables passing east-west to the south, with the closest passing at approximately 470 m at its closest point. A gas pipeline passes approximately 9.5 nm west of the Potential Turbine Array Infrastructure Zone (and crosses the Export Cable Corridor Infrastructure Zone in the approaches to the Port of Cork) and connects the Kinsale Head, Ballycotton and Seven Heads gas fields to shore. These gas fields are decommissioned having ceased production in 2020 and the platforms are expected to be removed in 2022 (Kinsale Energy, 2022).
- 1012 The Port of Cork is located approximately 15 nm north west of the Potential Turbine Array Infrastructure Zone with marine traffic within the port limits coordinated by the Port of Cork Company. The Port of Cork is the largest port on the south coast, reporting a traffic throughput of 10.5 million tonnes in 2020 (Port of Cork, 2022). Several facilities are provided including those at City Quays, Tivoli, Ringaskiddy and Cobh including Roll On-Roll Off (Ro-Ro) services and cruise liners. There are two pilot boarding stations located in the approaches to Cork Harbour, one for laden crude oil tankers and the other for vessels over 130 m length; the latter of these lies within the Export Cable Corridor Infrastructure Zone.
- 1013 Other notable ports/harbours in the region include Youghal Harbour and Ballycotton Harbour, with the Potential Export Cable Corridor Infrastructure Zone encompassing Cable Landfall options within Cork Harbour and the approaches to Youghal Harbour.
- 1014 There are two Traffic Separation Schemes (TSS) which the Potential Turbine Array Infrastructure Zone lies between: the Off Tuskar Rock TSS is located approximately 46 nm to the east of the Potential Turbine Array Infrastructure Zone and the Off Fastnet Rock TSS is located approximately 63 nm to the west of the Potential Turbine Array Infrastructure Zone. Although located a substantial distance from the Potential Turbine Array Infrastructure Zone, regular commercial vessel routeing occurs directly between these routeing measures (see **Section 9.10.4.2**).

# 9.10.4.2 Marine Traffic

1015 **Figure 9.20** presents 28-days of Automatic Identification System (AIS) data collected across two 14-day periods (during June 2021 and January 2022). This dataset is presented within the Shipping and Navigation Topic-specific Study Area







- 1016 An average of 26 unique vessels per day were recorded as part of the data collection within the Shipping and Navigation Topic-specific Study Area throughout the summer period, with an average of seven unique vessels per day within the Potential Turbine Array Infrastructure Zone itself. An average of 15 unique vessels per day were recorded within the Shipping and Navigation Topic-specific Study Area throughout the winter period, with an average of one to two unique vessels per day within the Potential Turbine Array End of the Shipping and Navigation Topic-specific Study Area throughout the winter period, with an average of one to two unique vessels per day within the Potential Turbine Array Infrastructure Zone.
- 1017 Fishing vessels and cargo vessels were the most common vessel types recorded within the Shipping and Navigation Topic-specific Study Area during the 28-day combined summer/winter survey period, accounting for 39% and 32% of vessels respectively. Other main vessel types recorded included tankers (11%), recreational vessels (10%) and oil and gas vessels (5%).
- 1018 There is a clear south east/north west route consisting of cargo vessels and tankers passing parallel to the south western boundary of the Potential Turbine Array Infrastructure Zone; the majority of these vessels were travelling between Cork (Ireland) and other destinations in the southern North Sea such as Rotterdam (Netherlands) and Zeebrugge (Belgium), including commercial ferries operated by Cobelfret Ferries and Grimaldi Lines. It is noted that during the 28-day period, commercial ferries between Cork (Ireland) and Roscoff (France) operated by Brittany Ferries were suspended due to the COVID-19 pandemic, with these resuming at the end of March 2022 (Travel Weekly, 2022). Brittany Ferries currently operate this service twice a week.
- 1019 There is also an east/west commercial vessel route between the Potential Turbine Array Infrastructure Zone and south coast; some of this traffic is headed to/from Cork while some transits are passing between the Off Tuskar Rock and Off Fastnet Rock TSSs on transatlantic routes in/out of Dublin.
- 1020 There was significant seasonal variation in fishing vessel activity, with volumes approximately 67% higher in the summer period than the winter period. Likewise, there was significant seasonal variation in recreational vessel activity; all recreational activity was recorded in the summer period. This is the reason for the seasonal disparity in overall vessel counts within the Shipping and Navigation Topic-specific Study Area and Potential Turbine Array Infrastructure Zone.
- 1021 A number of sailing events take place on the Irish south coast, such as Cork Week. One race in particular has been identified from the 28-day AIS dataset: the Dun Laoghaire to Dingle Race is responsible for an unusually high level of recreational activity recorded on AIS during the 10 June 2021. On this day, there was five to six times the level of usual daily summer recreational activity which accounted for approximately 39% of recreational activity recorded overall. The activity was located at the north of the Shipping and Navigation Topic-specific Study Area and consisted of sailing vessels passing westbound midrace.
- 1022 Based on the navigational status broadcast on AIS, a speed analysis undertaken and a review of vessel track behaviour, no vessels were recorded at anchor within the Shipping and Navigation Topic-specific Study Area during the 28-day period. However, two instances of an oil/chemical tanker awaiting orders were observed prior to entering the Port of Cork and after leaving. This



activity occurred approximately 4nm west of the Potential Turbine Array Infrastructure Zone in the approaches to Cork.

## 9.10.4.3 Marine Incidents

- 1023 The Marine Casualty Investigation Board (MCIB) is tasked with examining and, if necessary, undertaking investigations into all types of marine casualties to, or on board, Irish registered vessels worldwide and other vessels in Irish territorial waters and inland waterways.
- 1024 From a full search of investigation reports published by the MCIB, there were 17 incidents associated with the county of Cork between 2010 and 2019. Of these, four were without coordinates with one of the remaining 13 located within the Shipping and Navigation Topic-specific Study Area. This incident occurred on the evening of the 9 April 2010 and involved a fishing vessel experiencing technical issues at the north western extent of the Potential Turbine Array Infrastructure Zone causing the vessel to flood. The vessel was lost but there were no fatalities.
- 1025 The Royal National Lifeboat Institution (RNLI) operates lifeboats suitable for all weather conditions and coastal operations, and have stations located at frequent intervals along the Irish south coast, including at Cork (Crosshaven), Ballycotton, Youghal, Courtmacsherry, Castletownbere, Union Hall and Kinsale.
- 1026 From incident data published by the RNLI, there were 33 incidents within the Shipping and Navigation Topic-specific Study Area between 2010 and 2019. Of these, one occurred within the Potential Turbine Array Infrastructure Zone, this being the same fishing vessel incident reported by the MCIB. The vessel was attended by a lifeboat out of the Ballycotton RNLI station.

## 9.10.5 Potential Impacts

- 1027 An indicative list of hazards that should be considered in relation to Shipping and Navigation when undertaking an EIAR is provided in the DCCAE guidance (DCCAE, 2017):
  - Allision risk<sup>32</sup> (surface);
  - Displacement of shipping; and
  - Collision risk caused by reduced visibility of other vessels.
- 1028 The DCCAE guidance also requires consideration of reduced trade supply; however this assessment pertains to navigational safety matters rather than commercial matters. Therefore, commercial hazards will be considered separately as required, either as part of shipping and navigation or within other chapter topics, as appropriate.
- 1029 The hazards identified at the scoping stage for assessment in the NRA are outlined in the following subsections.

<sup>&</sup>lt;sup>32</sup> The DCCAE guidance refers to "collision risk" but it is assumed that this refers to vessel to structure contacts given that surface and subsurface scenarios are referenced. This scoping exercise refers to vessel to structure contacts as 'allisions' and vessel to vessel contacts as 'collisions' as per recognised shipping and navigation terminology.


# 9.10.5.1 Potential Impacts During Construction

# 9.10.5.1.1 Displacement and Third-Party Collision Risk

1030 Construction Phase activities associated with the installation of WTGS, Offshore Platform(s) and associated floating structures and cables (and associated ancillary works) may temporarily displace existing routes and activity, resulting in an increase in the likelihood of vessel to vessel encounters between third-party vessels and a subsequent increase in vessel to vessel collision risk.

# 9.10.5.1.2 Third-Party Vessel to Project Vessel Collision Risk

1031 The presence of vessels associated with Construction Phase activities may result in a temporary increase in the likelihood of vessel to vessel encounters between third-party vessels and vessels in use for The Proposed Development, with a subsequent increase in vessel to vessel collision risk.

# 9.10.5.1.3 Port Access

1032 Construction Phase activities associated with the installation of WTGs, Offshore Substation Platform(s) and associated floating substructures and cables may displace existing routes and activity, temporarily reducing access to local ports located on the south coast.

# 9.10.5.2 Potential Impacts during Operation and Maintenance

# 9.10.5.2.1 Displacement and Third-Party Collision Risk

1033 The presence of WTGs, Offshore Substation Platform(s) and any other surface structures may displace existing routes and activity, resulting in an increase in the likelihood of vessel to vessel encounters between third-party vessels and a subsequent increase in vessel to vessel collision risk.

# 9.10.5.2.2 Third-Party Vessel to Project Vessel Collision Risk

1034 The presence of vessels associated with Operation and Maintenance activities may result in an increase in the likelihood of vessel to vessel encounters between third-party vessels and vessels in use for The Proposed Development and a subsequent increase in vessel to vessel collision risk.

# 9.10.5.2.3 Allision Risk

1035 The presence of WTGs, Offshore Substation Platform(s) and any other surface structures may increase allision risk, including for vessels under power, adrift and navigating internally within the Potential Turbine Array Infrastructure Zone.

# 9.10.5.2.4 Loss of Station

1036 A mooring or anchoring system failure may lead to the complete or partial detachment of a floating structure resulting in the structure losing station and creating a hazard to third-party vessels or other marine infrastructure.

#### 9.10.5.2.5 Port Access

1037 The presence of surface structures and Operation and Maintenance activities associated with the structures and cables may displace routes and activity, reducing access to local ports located on the south coast



# 9.10.5.2.6 Use of Aids to Navigation

1038 The presence of surface structures may reduce the effectiveness or prevent use of existing aids to navigation located both offshore and onshore in all weather conditions.

# 9.10.5.2.7 Under Keel Interaction

1039 The presence of cable protection and mooring or anchoring systems may reduce charted water depths resulting in an increase in under keel interaction risk for passing vessels, particularly where such features are located in proximity to the approaches to ports/harbours.

# 9.10.5.2.8 Subsea Structure Interaction

1040 The presence of offshore cables and mooring lines associated with floating turbines may increase the likelihood of a vessel's anchor interacting with a cable including a snagging risk.

# 9.10.5.2.9 Emergency Response Provision

1041 The presence of structures and the undertaking of Operation and Maintenance activities may increase the number of emergency incidents resulting in a reduction in emergency response capability or reduced access for emergency responders including Search and Rescue (SAR) assets. The extent of this impact will be dependent on the array layout including the minimum spacing between structures and use of lines of orientation.

# 9.10.5.2.10Use of Navigation, Communication and Position Fixing Equipment

1042 The presence of the structures and cables may adversely affect a vessel's use of its navigation, communication and position fixing equipment.

# 9.10.5.3 Potential Impacts during Decommissioning

- 1043 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 1044 The scope of the Decommissioning works cannot be defined at this early stage. However, Decommissioning may include the removal of the accessible installed components. Offshore, this is likely to include removal of all the WTG components, the anchors and chains (those above seabed level), and removal of some or all of the cables.
- 1045 Decommissioning activities have the potential to impact Shipping and Navigation. Any potential impacts arising from Decommissioning are likely to be comparable to, or less than, those identified for the Construction Phase and will be assessed as part of the future EIAR.

# 9.10.6 Potential Cumulative Effects

1046 All hazards assessed for The Proposed Development in isolation will also be considered cumulatively with the presence of other offshore developments and activities in the NRA. However, it is anticipated that only the hazards outlined in the following subsections will require a full cumulative risk assessment.



# 9.10.6.1 Displacement and Third-Party Collision Risk

1047 The presence of surface structures associated with The Proposed Development and other offshore developments may displace existing routes and activity, resulting in an increase in the likelihood of vessel to vessel encounters between third-party vessels and a subsequent increase in vessel to vessel collision risk.

# 9.10.6.2 Third-Party Vessel to Project Vessel Collision Risk

1048 The presence of vessels associated with The Proposed Development and other offshore developments may result in an increase in the likelihood of vessel to vessel encounters between third-party vessels and project vessels and a subsequent increase in vessel to vessel collision risk.

# 9.10.6.3 Allision Risk

1049 The presence of surface structures associated with The Proposed Development and other offshore developments may increase allision risk, including for vessels under power, adrift and navigating internally within the Potential Turbine Array Infrastructure Zone.

#### 9.10.6.4 Port Access

1050 The presence of surface structures and activities associated with The Proposed Development and other offshore developments may displace routes and activity, reducing access to local ports.

# 9.10.6.5 Use of Aids to Navigation

1051 The presence of surface structures associated with The Proposed Development and other offshore developments may reduce the effectiveness or prevent use of existing aids to navigation located both offshore and onshore.

# 9.10.6.6 Emergency Response Provision

1052 The presence of structures and activities associated with The Proposed Development and other offshore developments may increase the number of incidents resulting in a reduction in emergency response capability or reduce access for emergency responders including SAR assets.

# 9.10.6.7 Intra-Project Impacts

- 1053 In line with the most recent EPA guidance on EIARs (EPA, 2022) the importance of assessing the interactions between effects on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 1054 Project impacts will be assessed where there is potential for other elements of Operation and Maintenance Phase of The Proposed Development that do not form part of the Development Permission application to occur within the shared ZoI of The Proposed Development (for which Development Permission is sought).



# 9.10.7 Potential Transboundary Effects

1055 Transboundary hazards associated with vessels transiting to/from other countries including in relation to effects on transboundary ports will be considered as part of the risk assessment for The Proposed Development in isolation and cumulatively with the presence of other offshore developments and activities.

# 9.10.8 Summary of Potential Impacts

**Table 9.45** outlines the impacts which are proposed to be scoped into and/or out of the EIAR for Shipping and Navigation. This may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.

Table 9.45 Summary of Potential Impacts Relating to Shipping and Navigation. Topics Proposed to be Scoped In ( ✓) and Out (x)of future EIAR

Potential Impact	Construction	Operation and Maintenance	Decommissioning
Displacement and third-party collision risk	~	$\checkmark$	$\checkmark$
Third-party to Project vessel collision risk	~	$\checkmark$	✓
Allision risk	x	$\checkmark$	x
Loss of station	x	$\checkmark$	x
Port access	~	$\checkmark$	$\checkmark$
Use of existing aids to navigation	x	~	Х
Under keel interaction	~	$\checkmark$	x
Subsea structure interaction	Х	$\checkmark$	x
Emergency response provision	Х	$\checkmark$	x
Use of navigation, communication and position fixing equipment	x	$\checkmark$	x
Cumulative effects	~	$\checkmark$	✓
Transboundary effects	~	$\checkmark$	✓

# 9.10.9 EIAR Scoping Consultation Questions

- 1057 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Shipping and Navigation chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Shipping and Navigation chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Shipping and Navigation Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?



- What other data sources or surveys, if any, should The Applicant have regard to in the preparation of the Shipping and Navigation chapter of the EIAR for The Proposed Development?
- What additional guidance and policy should The Applicant have regard to in the preparation of the Shipping and Navigation chapter of the EIAR for The Proposed Development?
- Are you satisfied with the approach to impact assessment proposed for the Shipping and Navigation chapter of the EIAR for The Proposed Development?
- Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Shipping and Navigation chapter of the EIAR for The Proposed Development?

# 9.10.10 Technical Consultation

1058 This chapter has considered the potential impacts of The Proposed Development on Shipping and Navigation. **Table 9.46** out a series of areas for discussion which The Applicant would appreciate targeted feedback on. Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 9.46** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.

Proposed Key Technical Stakeholder	Objective of Engagement
Marine Survey Office	1. Review NRA methodology and assessment approach.
	2. Discuss potential impacts of The Proposed Development on navigation safety.
	3. Review possible risk control options.
Commissioner of Irish Lights	1. Discuss navigational routeing through the Shipping and Navigation Topic-specific Study Area.
	2. Review possible risk control controls including marking and lighting requirements.
SAR providers (Irish Coast Guard, Royal National	1. Discuss historical incidents in the Shipping and Navigation Topic-specific Study Area.
Lifeboat Institute)	2. Discuss possible impacts of The Proposed Development on SAR capabilities.
Ports and Harbours (Rosslare Europort, Wexford, Courtown, Arklow, etc.).	1. Review operations including constraints on navigating into relevant ports and harbours.
	2. Discuss potential impacts of The Proposed Development on vessel access into ports.

Table 9.46: Summary of Proposed Key Technical Stakeholders Shipping and Navigation.



Proposed Key Technical Stakeholder	Objective of Engagement
Ferry Companies (Stena Line, Irish Ferries and	1. Review ferry routeing through Shipping and Navigation Topic-specific Study Area, including in adverse weather.
Brittany Ferries).	2. Discuss potential impacts of The Proposed Development on ferry safety and commercial operations (e.g. timetables).
Recreational User Groups (Irish Sailing, Irish Cruising	1. Establish types, magnitude, seasonality of recreational activity through Shipping and Navigation Topic-specific Study Area.
Club, Irish Cruising Association etc.).	<ol> <li>Discuss potential impacts of The Proposed Development on recreational activities.</li> </ol>
Fishing Representatives	1. Establish types, magnitude, seasonality of fishing activity within the Shipping and Navigation Topic-specific Study Area.
	2. Discuss potential impacts of The Proposed Development on fishing activities.

# 9.10.11 References

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# 9.11 CHAPTER 11 MARINE ARCHAEOLOGY AND CULTURAL HERITAGE

# 9.11.1 Introduction

- 1059 This chapter of the EIAR Scoping Report considers the potential impacts of the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on Marine Archaeology and Cultural Heritage receptors and sets out the methodology and approach to be taken to assessing these potential impacts within the future EIAR.
- 1060 The Marine Archaeology and Cultural Heritage Topic-specific Study Area comprises the Potential Offshore Infrastructure Zone noting that impacts will be restricted to the footprint of any Construction Phase works affecting the seabed and the near-field only. The Marine Archaeology and Cultural Heritage Topic-specific Study Area will be refined during the next stages of project development.

# 9.11.2 Policy and Guidance

1061 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context of relevance to The Proposed Development. Policies and guidance documents of particular relevance to the Marine Archaeology and Cultural Heritage topic are set out in this section. These policy and guidance documents will be used to inform the Marine Archaeology and Cultural Heritage chapter of the EIAR. Where certain guidance documents have been produced in relation to offshore wind farms in other countries, these will be reviewed as part of the future EIAR process and considered in relation to The Proposed Development.

# Policies

- 1062 Overarching policies relevant to the assessment of Marine Archaeology and Cultural Heritage are included in:
  - The Offshore Renewable Energy Development Plan (OREDP) (DCCAE, 2014);
  - Marine Planning Policy Statement (DHLGH, 2019); and
  - National Marine Planning Framework (NMPF) (DHLGH, 2021a).
- 1063 National policy on the protection of the archaeological heritage in the course of development is set out in the Framework and Principles for the Protection of the Archaeological Heritage (DAHGI, 1999a). In the context of development, the following general principles apply:
  - Whenever the archaeological heritage is affected, or proposed to be affected, by development the approach to be followed must be preservation in-situ or preservation by record through archaeological excavation and recording.
  - Archaeological assessment is a method of, and the first step in, ensuring that the approaches of preservation in-situ and preservation by record are applied appropriately. In certain circumstances it may, on the basis of the results of archaeological assessment, be considered appropriate to carry out archaeological monitoring. However,



archaeological monitoring is not an end in itself, rather a method of ensuring that preservation in-situ or preservation by record take place as appropriate.

- Archaeological assessment, monitoring and excavation must always be carried out by suitably qualified professional archaeologists.
- Having regard to the national significance of the archaeological heritage as a cultural and scientific resource of great importance and to the non-renewable nature of that resource, the Minister for Arts, Heritage, Gaeltacht, and the Islands considers that the costs of archaeological work necessitated by development are a legitimate part of development costs.
- 1064 Further detail regarding the licensing and control of archaeological excavations is set out in the document Policy and Guidelines on Archaeological Excavation (DAHGI, 1999b). The aim of the policy is:
  - to secure the conservation and proper management of the archaeological heritage, having regard to that heritage's great importance as a cultural and scientific resource and its non-renewable nature;
  - to promote and secure best practice and professional standards in the conduct of archaeological excavations. (Post-excavation analysis and conservation work and appropriate publication and dissemination of results are an integral part of such excavations);
  - to ensure the proper excavation, conservation and curation of archaeological objects found in archaeological excavations; and
  - to have regard to the existence of a public interest in access to the results of archaeological excavations while protecting legitimate rights of those who undertake such excavations.
- 1065 Under the Planning and Development Act (2000), regional planning guidelines, development plans and local area plans are required to include archaeological policies and the Planning and Development Act (2000), also provides for conditions relating to archaeology to be attached to individual planning permissions.
- 1066 The Minister for Housing, Local Government and Heritage is a statutory consultee in relation to potential impacts of any proposed development on the archaeological heritage. Archaeological advice to planning and other relevant authorities, in respect of individual planning applications, is provided by the National Monuments Service, with advice specific to potential development impacts on marine archaeology, provided by the Underwater Archaeology Unit of the National Monuments Service.
- 1067 Specific considerations relevant to the assessment, investigation and protection of marine archaeology and cultural heritage within the Potential Offshore Infrastructure Zone are set out below.



National Monuments (Amendment) Acts 1930 to 2004 (Section 3)

- 1068 Section 3 of the National Monuments (Amendment) Act 1987 provides protection to all wrecks over 100 years old and archaeological objects underwater, irrespective of their age or location. Wrecks that are less than 100 years old and the potential location of wrecks or archaeological objects may also be protected under Section 3 of the 1987 (Amendment) Act by the placement of an underwater heritage order if the wreck, area, or object is considered to be of sufficient historical, archaeological or artistic importance to merit such protection.
- 1069 Diving or general interference with any wreck over 100 years old or any archaeological object located on, in or under the seabed (or on, or buried within land covered by water) is prohibited except under licence. A licence is also required in order to survey a wreck or archaeological object or a wreck that is protected by an underwater heritage order.

# National Monuments (Amendment) Act 1987 (Section 2)

- 1070 Section 2 of the National Monuments (Amendment) Act 1987 requires that consent must be obtained for the use of a detection device to search for archaeological sites (including protected wrecks) and objects at a specified place. A detection device is defined as 'a device designed or adapted for locating any metal or mineral on or in the ground, on, in or under the seabed or on or in land covered by water, but does not include a camera'.
- 1071 Consent for the use of a detection device on protected wreck sites or for the purpose of searching for archaeological objects are only issued as part of a defined archaeological research project or survey or in connection with an archaeological impact assessment for planning-related cases.

# National Monuments Act 1930 (Section 26)

1072 Section 26 of the National Monuments Act 1930 (as amended) requires that excavations for archaeological purposes must be carried out by archaeologists acting under an excavation licence. A licence is required for each archaeological excavation and an excavation licence may only be granted to a licence-eligible archaeologist (qualified archaeologists with an appropriate level of experience who have passed an interview to assess their competency to hold such a licence).

# **Reporting Discoveries**

- 1073 In order to ensure that the recording and protection of a new wreck or archaeological object is addressed immediately, there is a statutory obligation under the National Monuments Acts to report:
  - a newly discovered wreck to either the Minister for Housing, Local Government and Heritage (through the National Monuments Service) or to the Garda Síochána within four days of the find; and
  - archaeological objects (which are not part of a wider wreck site or wreck), to the Director of the National Museum of Ireland.



1074 There is also a statutory obligation under the Merchant Shipping (Salvage and Wreck) Act 1993 to report any material legally identified as 'wreck' (jetsam, flotsam, lagan, and derelict found in or on the shores of the sea or any tidal water or harbour) to the Receiver of Wreck. This applies to any wreck, or wreck related material, regardless of size, found in Irish territorial waters (up to the 12nm limit) or outside Ireland and brought within Irish territorial waters. If the Receiver of Wreck is unable to establish ownership of the material, the Director of the National Museum of Ireland can claim wreck material on behalf of the State.

# Guidance

- 1075 Professional standards and guidance relevant to the completion of the assessment of Marine Archaeology and Cultural Heritage include:
  - Chartered Institute of Archaeologists (CIfA) Standard and Guidance for Historic Environment Desk-Based Assessments (2014a) and Code of Conduct (2014b); and
  - Institute of Environmental Management and Assessment (IEMA), Institute of Historic Building Conservation (IHBC) and CIfA Principles of Cultural Heritage Impact Assessment (2021).
- 1076 Guidance prepared for the wider offshore renewables industry which will also be relevant to the assessment includes:
  - COWRIE Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy (COWRIE, 2007);
  - Historic Environment Guidance for the Offshore Renewable Energy Sector (Wessex Archaeology, 2007);
  - Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy (Oxford Archaeology, 2008);
  - The Crown Estate Protocol for Archaeological Discoveries: Offshore Renewables Projects (2014); and
  - The Crown Estate guidance on Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects (2021).
- 1077 The assessment will also take account of global standards and guidance as relevant including:
  - International Council on Monuments and Sites (ICOMOS) guidance, non-governmental international organisation dedicated to the conservation of the world's monuments and sites (ICOMOS, 2011); and
  - United Nations Educational, Scientific and Cultural Organization (UNESCO) guidance, who seeks to encourage the identification, protection and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity (UNESCO, 1972).



# 9.11.3 Methodology

# 9.11.3.1 Approach to Data Collection

- 1078 The following information and data sources have been considered during the production of this EIAR Scoping Report and will be considered further within the future EIAR where relevant matters are scoped into the EIAR process.
- 1079 Desk-based data sources accessed to characterise the receiving historic environment with respect to Marine Archaeology and Cultural Heritage are set out in **Table 9.47**.

Table 9.47 Desk-Based Sources for the Assessment of Marine Archaeology and Cultural Heritage chapter of this EIAR Scoping Report and that will be considered further within the EIAR

Data Source	Data Contents
National Monuments Service's Wreck Inventory of Ireland Database	Locations of known wrecks and records of recorded losses for which there is no precise recorded location within Ireland's Designated Maritime Boundary for the Continental Shelf.
UK Hydrographic Office (UKHO)	Data for all known charted wrecks and obstructions
INFOMAR Shipwreck Viewer	Downloadable wreck reports, imagery and 3d models for mapped shipwrecks
National Monuments Service's Sites and Monuments Record (SMR)	The SMR contains details of all monuments and places (sites, primarily archaeological monuments) pre-dating AD 1700 but including a selection of monuments from the post-AD 1700 period. The SMR database can be viewed on-line through the Historic Environment Viewer and will be reviewed as relevant to archaeology within the intertidal zone.
The Heritage Council 'Heritage Maps viewer'	Including the National Museum of Ireland finds database (2010)
Existing archaeological studies and published sources	Background information on the archaeology of Ireland and the Celtic Sea, (including palaeolandscapes) including the results of archaeological assessments carried out for existing and planned projects where the results are in the public domain, such as the EIAR for The Celtic Interconnector.

# 9.11.3.2 Potential Additional Data and Proposed Surveys

- 1080 The data sources listed above are those identified to date which have been used to inform this EIAR Scoping Report and which will potentially be used to inform the wider assessment process in the future EIAR.
- 1081 It should be noted that the list of data sources is not exhaustive and will be added to as the works connected to the future EIAR progress.
- 1082 In addition to this, project-specific surveys may be undertaken to further provide data to inform the assessment. With respect to Marine Archaeology and Cultural Heritage, the following surveys will be undertaken to inform the EIAR (**Table 9.48**). Survey methodologies will be agreed in advance with the stakeholders where possible.



Dataset	Purpose as it relates to the Marine Archaeology and Cultural Heritage topic	Spatial Coverage	Estimated Survey Timings
Geophysical survey (Multibeam Echo Sounder, (including back scatter), Sidescan Sonar, Magnetometer and Sub- bottom Profiler)	Identification of archaeological and cultural heritage features	Potential Turbine Array Infrastructure Zone and Export Cable Corridor Infrastructure Zone	2023
Geotechnical survey (Vibrocores and Cone Penetration Test (CPTs))	Identification of archaeological and cultural heritage features	Potential Turbine Array Infrastructure Zone and Export Cable Corridor Infrastructure Zone	2023
Intertidal walkover survey	Identification of archaeological and cultural heritage features	Potential Landfall locations	2022 and 2023

Table 9.48 Proposed Baseline Surveys to inform the EIAR

- 1083 The geophysical survey data which will be acquired to inform the EIAR will be subject to archaeological assessment by a qualified and experienced, licence-eligible archaeological contractor. In addition, for any geotechnical investigations completed, allowance will be made for archaeological involvement in the planning of such surveys and the samples will be made available for geoarchaeological assessment, as advised by the archaeological contractor. The geophysical survey will be carried out in advance of any proposed site survey/geotechnical works offshore, to ensure that all potential impacts to marine archaeology can be avoided.
- 1084 Prior to any geophysical survey commencing, a licence application will be submitted to the National Monuments Service as required under the National Monuments Acts 1930-2004 with respect to Section 2 (detection licence) for geophysical surveys and Section 3 (survey/dive licence) in areas of known or suspected wrecks over 100 years old. Licence applications will be accompanied by a detailed method statement setting out the scope of the survey works to which they relate.. A methodology for archaeological monitoring of site survey works will be proposed which may include scaled monitoring for offshore site survey works (particularly grab samples).
- 1085 In advance of any intertidal site survey works at Cable Landfall location(s), a field survey will be required to include a walkover survey accompanied by a metal detection survey of the areas on the foreshore/intertidal zone within which site survey works will take place. Any foreshore/intertidal survey will be undertaken at Maximum Low Water spring tides, to allow the widest area to be assessed. All identified sites, features or anomalies will be georeferenced and mapped to inform any requirements for Archaeological Exclusion Zones (AEZs) or the need for further archaeological mitigation. Trial pits and other site survey works (if required) on the foreshore will be archaeologically monitored.



1086 All programmes of intertidal field survey, geophysical data assessment and geoarchaeological assessment will be undertaken by a licence-eligible, suitably experienced archaeologist, with a track record in dealing with marine and offshore developments and the interpretation of marine geophysical and geotechnical data for archaeological purposes.

# 9.11.3.3 Approach to Impact Assessment

- 1087 The marine archaeology assessment of the EIAR will be informed by the interpretation of the geophysical survey data (namely the bathymetry and side-scan sonar data to identify seabed features, such as wrecks, magnetometry data to identify magnetic anomalies and sub-bottom profile data to identify palaeolandscape features).
- 1088 A marine archaeological desk-based study will be undertaken to establish the baseline for both known and potential sites within the defined areas based upon the desk-based sources listed in **Table 9.47**. Dependent upon the results, a walkover survey at the Cable Landfall(s) may be carried out to ground truth existing records and identify any potential unrecorded sites. This may also be required to inform an assessment of potential setting impacts upon sites below Mean High Water (MHW) within the intertidal zone.
- 1089 The desk-based study and assessment of geophysical data will be used to identify a strategy for mitigation including the avoidance of identified sites through the application of AEZs where appropriate.
- 1090 The archaeological assessment of marine geophysical data, and any geoarchaeological assessment and site survey (walkover surveys), will be carried out by a licence-eligible archaeological contractor (or contractors) with relevant experience in marine and intertidal archaeology in Ireland. All technical reports produced by the archaeological contractor(s) will be used to inform the desk-based study and impact assessment and will be included as appendices to the EIAR.
- 1091 The overall approach to the assessment and investigation of marine and intertidal archaeology will also take account of guidance prepared for the wider offshore renewables industry where relevant as presented in **Section 9.12.2.**

# 9.11.4 Receiving Environment

- 1092 The Marine Archaeology and Cultural Heritage assessment in the EIAR will include consideration of the existing marine and intertidal historic environment seawards of MHW. This will provide an account of both the 'known' archaeological and cultural heritage resource and a summary of the 'potential' for previously unrecorded archaeological sites and finds to be present within the Marine Archaeology and Cultural Heritage Topic-specific Study Area. The known and potential offshore and intertidal archaeological resource will be identified with respect to:
  - Seabed prehistory (i.e., archaeological remains on the seabed corresponding to the activities of prehistoric populations that may have inhabited what is now the seabed when sea levels were lower);



- Maritime archaeology (i.e., the remains of boats and ships and archaeological material associated with prehistoric and historic maritime activities);
- Aviation archaeology (i.e., the remains of crashed aircraft and archaeological material associated with historic aviation activities); and
- Buried archaeology (including palaeoenvironmental deposits) within the intertidal zone below MHW.
- 1093 Although no known prehistoric archaeological sites have been identified within the Marine Archaeology and Cultural Heritage Topic-specific Study Area there is high potential for the presence of previously unidentified sites to be encountered.
- 1094 The potential for prehistoric sites to be present within the Marine Archaeology and Cultural Heritage Topic-specific Study Area, either exposed on or buried within the seabed, is primarily associated with surviving terrestrial features and deposits corresponding to times when sea levels were lower and hence prehistoric hominin populations may have inhabited what is now the seabed. Archaeological material may also be present within secondary contexts, as isolated finds within deposits comprising material from terrestrial Phases that may have been reworked by marine or glacial processes, for example.
- 1095 There is limited archaeological evidence from the Palaeolithic in Ireland, with only four isolated lithic finds (two handaxes and two flakes) of Lower to Middle Palaeolithic appearance previously recorded (Westley and Woodman, 2020). During the last ice age, at its maximum extent (c. 27,000– 23,000 cal Before Present (BP)), ice entirely covered Ireland and its continental shelf as far west and south as the Atlantic shelf break and Celtic Sea shelf edge. Whilst the reasons for the missing Irish Palaeolithic remain unclear, it is possible that the scouring effect of glacial activity could have removed deposits corresponding to this Phase of human occupation. However, whilst the later Mesolithic and subsequent Neolithic is much more visible within the Irish archaeological record, there are still very few recorded intertidal and sub-tidal sites, and only one that has been systematically investigated (Eleven Ballyboes, located on the north coast, County Donegal).
- 1096 Westley and Woodman (2020) speculate that a possible reason for this absence in comparison to Britain, and the North Sea in particular, is the nature of offshore activities. Around the British Isles the majority of chance finds offshore have come from aggregates extraction and trawling, both activities which do not see extensive application in Irish waters. Similarly, palaeolandscape and palaeoenvironmental assessments undertaken in advance of large-scale offshore renewables developments in the North Sea have contributed significantly to research and a wider understanding of the geomorphological and environmental evolution of areas of, what is now, the seabed. This suggests that similar, systematic surveys undertaken in advance of development projects in Ireland's offshore areas may also have high potential to contribute to an understanding of Irish prehistoric occupation.
- 1097 The Marine Archaeology and Cultural Heritage Study Area is located in an area which may previously have provided a 'bridge' between Ireland and Wales (c.13000 years ago) and there is abundant onshore evidence for prehistoric settlement in County Cork which is indicative of the



potential for submerged prehistoric landscapes (which may include cave systems) and possible archaeological sites. Assessments undertaken to inform the development of the permitted Celtic Interconnector project have revealed the presence of a submerged landscape of Holocene date beneath Claycastle Beach, immediately to the west of Youghal (Cotswold Archaeology, 2019).

- 1098 Based upon publicly available geophysical data sources and literature, the preliminary ground model for The Proposed Development, suggests that bedrock is present at or near seafloor within the Potential Export Cable Corridor Infrastructure Zone, transitioning to a deep-water plane with dune fields in the Potential Turbine Array Infrastructure Zone. The extents of buried channels (palaeochannels) were identified with some limited evidence of boulders or coarse material infilling the channels and a single example of possible shallow gas (which can indicate the presence organic material) was also observed (see **Figure 9.2**). Peat has previously been identified in vibrocore samples acquired for the Celtic Interconnector (Cotswold Archaeology, 2019), indicating the presence of an extensive, submerged prehistoric landscape within the Potential Offshore Infrastructure Zone.
- 1099 With respect to maritime and aviation archaeology there are 43 known wrecks with recorded locations within the National Monuments Service's Wreck Inventory of Ireland Database within the Marine Archaeology and Cultural Heritage Topic-specific Study Area, as shown in **Figure 9.21**. Of this, 26 are unknown wrecks recorded by the United Kingdom Hydrographic Record (UKHO), from INFOMAR Wreck Data or by previous development related assessments. Two are recorded as lost in the 1990's and are, therefore, unlikely to be of archaeological interest. The remaining 15 wrecks include vessels lost between 1690 and 1947, with 12 over 100 years old and automatically protected under Section 3 of the National Monuments (Amendment) Act 1987. Seven of the losses occurred during the First World War, including the submarine UC-42 (W05519) and one during the Second World War, the steam trawler Exeter (W08241). The oldest wreck is the Bredah (W08009) a 3rd rate Ship of the Line of the English Royal Navy destroyed by an accidental fire in 1690. Although the wreck is recorded at a location to the south of Spike Island in Cork Harbour the extent of any wreck material at the location is unclear.
- 1100 In comparison, the publicly available INFOMAR wreck data provides a revised position for the wreck UC-42, 250m to the south of that recorded in the National Monuments Service's Wreck Inventory, and two additional 'unknown' shipwrecks. The nature and extent of known wrecks will be clarified through the archaeological assessment of project specific survey data.
- 1101 In addition to these wrecks, there are many more records of losses within the National Monuments Service's Wreck Inventory without a known location. These losses are more broadly described in terms of their location of loss. For example, 109 losses are recorded as lost off or near Youghal, with 104 in Cork Harbour and many more off or near the Cork and Waterford coasts. Although these losses are historically documented, the wrecks themselves are yet to be located and may be present, previously unidentified within the Marine Archaeology and Cultural Heritage Topicspecific Study Area. The potential for previously undiscovered wrecks, and associated archaeological objects, is likely to be higher further offshore where the depths of fine sediment and sand dunes increases, with greater potential for the burial and preservation of archaeological



material. The archaeological potential within the Marine Archaeology and Cultural Heritage Topicspecific Study Area will be considered within the future EIAR.

- 1102 Although none of these wrecks are identified as aircraft crash sites, recorded losses of aircraft which crashed offshore but are yet to be found may also be present within the Potential Offshore Infrastructure Zone. Such remains may include military and civilian aircraft that have been lost at sea.
- 1103 There is also potential for the presence of monuments and sites, including buried archaeological remains within the intertidal zone. As described previously, the remains of a submerged landscape beneath Claycastle Beach have been investigated (Cotswold Archaeology, 2019) and there are known records of sites along the Cork coast as recorded in the National Monuments Historic Environment Viewer. Archaeological material can include archaeological sites eroding from the cliffs and isolated discoveries on the beach such as a find of flint cores and a scraper on the beach at Ballyrobin South (CO100A001). A full data search will be required to inform assessment of the intertidal zone in the EIAR once the Cable Landfall location(s) is further refined.



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# 9.11.5 Potential Impacts

- 1104 Marine and intertidal cultural heritage can be affected by direct and indirect physical changes or by changes to the setting of identified archaeological monuments or sites, which could affect their cultural significance.
- 1105 Direct impacts to archaeological monuments, sites and finds present on the seafloor, within the intertidal zone or buried within seabed or intertidal deposits, may result in damage to, or the destruction of any archaeological material, or the relationship between that material and the wider environment (stratigraphic context or setting). Relationships between archaeological material and the wider environment are crucial to developing a full understanding of such material. These potential impacts may occur if archaeological monuments, sites or finds are present within the footprint of the Potential Offshore Infrastructure Zone (i.e. anchors for the floating substructures, Offshore Substation Platform foundations or cables) or from Construction Phase related activities (i.e. seabed clearance and vessel anchoring and possible use of jack-up vessels).
- 1106 There is also the potential for The Proposed Development to directly and indirectly change the local and regional hydrodynamic and sedimentary process regimes. Changes in coastal processes can lead to the re-distribution of erosion and accretion patterns. Similarly, changes in tidal currents may affect the stability of nearby morphological and archaeological features. Indirect impacts to archaeological monuments, sites and finds may occur if buried archaeology becomes exposed to increased wave/tidal action, as this will deteriorate faster than assets protected by sediment. Conversely, if increased sedimentation results in an exposed site becoming buried, it may add some protection and be considered a beneficial impact. This will be considered based on the assessment undertaken for Marine Geology, Oceanography and Physical Processes in the EIAR (Volume C Chapter 1 Marine Geology, Oceanography and Physical Processes of this EIAR Scoping Report).
- 1107 Impacts to the cultural significance of a site may also occur if a development changes the setting (the surroundings in which it is located, experienced and appreciated).

# 9.11.5.1 Potential Impacts during Construction

- 1108 Direct impacts to marine and intertidal archaeology may occur if archaeological material is present within the footprint of The Proposed Development associated with the following activities:
  - Seabed preparation (UXO and boulder or debris clearance);
  - Installation of anchors for floating structures;
  - Installation of ancillary infrastructure including Offshore Substation Platform foundations;
  - Installation of Offshore Export Cables and Inter-array cables;
  - Installation of Scour Protection;
  - Seabed contact by legs of jack-up vessels and / or anchors; and
  - Cable installation at Cable Landfall.



- 1109 Indirect impacts to archaeological monuments, sites and finds may occur if the physical presence of Construction vessels and offshore infrastructure impacts the hydrodynamic regime. Similarly, if seabed preparation leads to localised effects upon sedimentary processes this could lead to indirect physical impacts to archaeological monuments, sites or finds.
- 1110 There would also be potential for temporary impacts to the setting of archaeological monuments and sites from the presence of vessels associated with the installation of offshore infrastructure and activities at Cable Landfall location(s).

# 9.11.5.2 Potential impacts during Operation and Maintenance

- 1111 Direct impacts may occur if archaeological material is present within the footprint of works required for routine maintenance activities which disturb the seabed (for example, seabed contact by legs of jack-up vessels and / or anchors). Similarly, this can occur in exceptional circumstances such as the replacement of cabling.
- 1112 However, given the areas where such activities would be undertaken would already have been disturbed during the Construction Phase, there would be limited further impact.
- 1113 Indirect impacts to archaeological monuments, sites and finds may occur if the physical presence of the installed infrastructure impact the hydrodynamic or sedimentary regime. This includes the potential for increased scour, around substructures for example.
- 1114 There would also be potential for impacts to the setting of archaeological monuments and sites from the presence of the installed infrastructure and ongoing maintenance activities.

# 9.11.5.3 Potential impacts during Decommissioning

- 1115 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 1116 The scope of the Decommissioning works cannot be defined at this early stage. However, Decommissioning may include the removal of the accessible installed components. Offshore, this is likely to include removal of all the WTG components, the anchors and chains (those above seabed level), and removal of some or all of the cables.
- 1117 If cables and anchoring systems, for example, are left in place there would be no potential for direct impact. Direct impacts to archaeological monuments, sites and finds may occur if the accessible infrastructure is removed, although the anticipated effect on archaeological material would be limited as any remains at the locations of the installed infrastructure will already have been impacted/mitigated during the Construction Phase. If archaeological material is present within the footprint of jack-ups or vessel anchors deployed during decommissioning activities, direct impacts may also occur.



# 9.11.6 Potential Cumulative Effects

1118 Individual heritage assets would not be subject to cumulative direct impacts from other known plans or projects as they are discrete and there would be no physical overlap of different infrastructure. However, although individual assets are discrete, taken together they could have collective heritage significance. Therefore, multiple impacts upon similar assets could occur cumulatively. In addition, there is potential for multiple developments to affect the larger-scale archaeological features such as palaeolandscapes. There is also the potential for cumulative indirect impacts associated with changes to marine physical processes.

#### 9.11.6.1 Intra-Project

- 1119 In line with the most recent EPA guidance on EIARs (EPA, 2022) the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 1120 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared ZoI of The Proposed Development (for which Development Permission is sought).

#### 9.11.6.2 Other Developments

1121 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative impacts are minimised.

#### 9.11.7 Potential Transboundary Effects

- 1122 Direct transboundary impacts may occur during the Construction Phase if wrecks or aircraft of non-Irish nationality are subject to impact from The Proposed Development. Such wrecks may fall within the jurisdiction of another country, and may include, for example, foreign warships lost in Irish waters. Similarly, where palaeolandscapes within the Celtic Sea cross international boundaries, direct transboundary impacts may occur.
- 1123 Indirect transboundary impacts, associated with changes to marine physical processes, where those changes cross an international boundary, are not expected to occur. This is confirmed in Volume C, **Chapter 1** Marine Geology, Oceanography and Physical Processes of this EIAR Scoping Report.

#### 9.11.8 Summary of Potential Impacts

**Table 9.49** outlines the impacts which are proposed to be scoped into and/or out of the EIAR for marine archaeology and cultural heritage. This may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.



Table 9.49 Summary of impacts relating to Marine Archaeology and Cultural Heritage. Topics Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of the future EIAR.

Potential Impact	Construction	Operation and Maintenance	Decommissioning
Direct impacts to marine and intertidal archaeological heritage	~	$\checkmark$	✓
Indirect impacts to marine and intertidal archaeological heritage associated with changes to marine physical processes.	$\checkmark$	~	~
Change to the setting of archaeological monuments or sites, which could affect their heritage significance.	✓	~	~
Cumulative effects	~	$\checkmark$	$\checkmark$
Transboundary effects (direct)	~	х	х
Transboundary effects (indirect)	x	x	x

# 9.11.9 EIAR Scoping Consultation Questions

- 1125 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Marine Archaeology and Cultural Heritage chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Marine Archaeology and Cultural Heritage chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Marine Archaeology and Cultural Heritage Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?
  - What other data sources or surveys, if any, should The Applicant have regard to in the preparation of the Marine Archaeology and Cultural Heritage chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Marine Archaeology and Cultural Heritage chapter of the EIAR for The Proposed Development?
  - Are you satisfied with the approach to impact assessment proposed for the Marine Archaeology and Cultural Heritage chapter of the EIAR for The Proposed Development?
  - Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Marine Archaeology and Cultural Heritage chapter of the EIAR for The Proposed Development?

# 9.11.10 Technical Consultation

1126 This chapter has considered the potential impacts of The Proposed Development on Marine Archaeology and Cultural Heritage. **Table 9.50** out a series of areas for discussion which The



Applicant would appreciate targeted feedback on. Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 9.50** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.

Table 9.50 Summary of Proposed Key Technical Stakeholders Marine Archaeology and Cultural Heritage

Proposed Key Technical Stakeholder	Objective of Engagement
NMS/UAU	1. To discuss and agree approach to marine geophysical surveys and geotechnical campaigns to inform the EIAR process
	2. To update on marine geophysical surveys and geotechnical campaigns completed to date and to discuss any additional data collection requirements
	3. To discuss the approach to the assessment of effects.
	4. To discuss preliminary findings of the assessment and potential mitigation measures.

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# 9.12 CHAPTER 12 AVIATION AND RADAR

#### 9.12.1 Introduction

- 1127 This Chapter of the EIAR Scoping Report considers the potential impacts of Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on Aviation and Radar receptors and sets out the methodology and approach to be taken to assessing these effects within the future EIAR.
- 1128 WTGs have the potential to cause a variety of adverse effects on Aviation and Radar receptors. WTGs can have the potential to impact radars used by civil and military air traffic controllers because the characteristics of moving turbine blades are similar to those of aircraft, leading to spurious returns, or clutter, on radar displays. This can affect the safe provision of air traffic services. WTGs can also have the potential to present a physical obstruction for aviation activities such as military low flying or helicopter Search and Rescue (SAR) operations.
- 1129 To account for this, the Aviation and Radar Topic-specific Study Area encapsulates the Potential Turbine Array Infrastructure Zone and a 30 km radius of same. A 30 km radius has been identified for use as this is the recommended consultation zone within the vicinity of an aerodrome with a surveillance radar facility (as defined in Irish Aviation Authority (IAA) Statutory Instrument (S.I) 215 and United Kingdom (UK) Civil Aviation Publication (Civil Aviation Publication 764) (a smaller range of 17 km is also recommended for a non-radar equipped aerodrome).
- 1130 Aviation stakeholders potentially affected include the Irish Aviation Authority (IAA), the Department of Defence (DoD), regional airports and offshore helicopter operators such as CHC Ireland who undertake SAR services on behalf of the Irish Coast Guard.

# 9.12.2 Policy and Guidance

1131 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context applicable to The Proposed Development. Policies and guidance documents of particular relevance to the Aviation and Radar topic are set out in this section. These policy and guidance documents will be used to inform the Aviation and Radar chapter of the future EIAR. Where certain guidance documents have been produced in relation to offshore wind farms in other countries, these will be reviewed as part of the future EIAR process and considered in relation to The Proposed Development.

#### Policies

- The Offshore Renewable Energy Development Plan (OREDP) (DCCAE, 2014)<sup>33</sup>;
- Marine Planning Policy Statement (DHLGH, 2019); and
- National Marine Planning Framework (NMPF) (DHLGH, 2021a).

<sup>&</sup>lt;sup>33</sup> It should be noted that OREDP II is currently being developed by the Department of the Environment, Climate and Communications and is expected to be available for consultation during 2022.



#### Guidance

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidance on EIS and NIS Preparation for Offshore Renewable Energy Projects (DCCAE, 2017);
- IAA Aeronautical Services Advisory Memorandum (ASAM) Guidance Material on Off-Shore Wind Farms ASAM No. 018 Issue 2, 2015;
- IAA Aerodrome Licensing Memorandum (ALM) No. 002, 2014;
- IAA Statutory Instruments S.I. No. 423/1999 En Route Obstacles to Air Navigation, 1999;
- IAA Statutory Instruments S.I. No. 72/2004 Rules of the Air, 2004;
- IAA Statutory Instruments S.I. No. 215/2005 Obstacles to Aircraft in Flight, 2005;
- IAA Statutory Instruments S.I. No. 266/2019 Standardised Rules of the Air, 2019;
- IAA Aeronautical Information Publication (AIP) Ireland, 2022;
- International Civil Aviation Organisation (ICAO) Annex 14 Aerodrome Design and Operations, 2018;
- ICAO EUR DOC 015 European Guidance Material on Managing Building Restricted Areas, 2015;
- Eurocontrol Guidelines for Assessing the Potential Impact of Wind Turbines on Surveillance Sensors, 2014;
- Civil Aviation Authority (CAA) Civil Aviation Publication 032 UK AIP, 2022;
- CAA Civil Aviation Publication 764 Policy and Guidelines on Wind Turbines, 2016; and
- Maritime and Coastguard Agency (MCA) Marine Guidance Note (MGN) 654: Safety of Navigation: OREIs (Offshore Renewable Energy Installations) – Guidance on UK Navigational Practice, Safety and Emergency Response, 2021.

# 9.12.3 Methodology

# 9.12.3.1 Approach to Data Collection

1132 The primary source of Aviation and Radar related data to be used during the desk-based studies in support of the EIAR is the Irish AIP. The AIP contains details on airspace and en-route procedures as well as charts and other air navigation information. Similarly, details on the adjacent UK airspace are available in the UK AIP.

# 9.12.3.2 Potential Additional Data Sources and Proposed Surveys

- 1133 The data sources listed above are those identified to date which have been used to inform this EIAR Scoping Report and which will potentially be used to inform the wider assessment process in the future EIAR.
- 1134 It should be noted that the list of data sources is not exhaustive and will be added to as the works connected to the future EIAR progress.



1135 There are no identified data gaps as relevant airspace and user information is available in the IAIP and associated S.I., therefore no site-specific surveys are proposed to further characterise the site and/or to inform the assessment of potential aviation/radar impacts in the EIAR.

# 9.12.3.3 Approach to Impact Assessment

1136 The EIAR process will be supported by further desk-based studies, including Radar Line of Sight modelling, that will identify and examine in greater detail sensitive Aviation and Radar receptors. Studies will be undertaken in parallel with consultation with relevant stakeholders to provide a robust understanding of potential impacts. It is expected that consultation will be an iterative process, allowing for concerns that are raised to be considered in the wind farm design optimisation process. Stakeholders to be consulted include the IAA and the DoD, together with the Air Navigation Service Providers at potentially impacted airports and helicopter operators including those undertaking SAR missions.

# 9.12.4 Receiving Environment

- 1137 The receiving environment is shown in **Figure 9.22**. The airspace above and adjacent to the Potential Turbine Array Infrastructure Zone is used by civil and military aircraft and lies within the Shannon Flight Information Region (FIR) for air traffic control (ATC), airspace regulated by the IAA. The Shannon FIR is adjacent to the London FIR, whose boundary is approximately 6 km to the south-east of the Potential Turbine Array Infrastructure Zone and is regulated by the UK CAA.
- 1138 Airspace is classified as either controlled or uncontrolled and is divided into a number of classes depending on what kind of Air Traffic Service (ATS) is provided and under what conditions. Within the Shannon FIR there are three classes of airspace, A, C and G. The first two are controlled airspace classes while Class G is uncontrolled. Within controlled airspace aircraft are monitored and instructed by ATC, whereas in uncontrolled airspace aircraft are not subject to ATC instruction but rather operate according to a simple set of regulations. ATC may still provide information, if requested, to ensure flight safety.
- 1139 Aircraft operate under one of two flight rules: Visual Flight Rules (VFR) or Instrument Flight Rules (IFR). VFR flight is conducted with visual reference to the natural horizon while IFR flight requires reference solely to aircraft instrumentation.
- 1140 From sea level to Flight Level (FL) 75, approximately 7,500 feet (ft) above mean sea level (amsl), the airspace in the vicinity of the Potential Turbine Array Infrastructure Zone is Class G uncontrolled airspace. This airspace is used predominantly by low level flight operations and generally by aircraft flying under VFR. Under VFR the pilot is responsible for maintaining a safe distance from terrain, obstacles, and other aircraft.
- 1141 Above FL 75 is Class C controlled airspace with an upper vertical limit of FL 245, approximately 24,500 ft amsl.
- 1142 Four (4) km north-west of the Potential Turbine Array Infrastructure Zone is the Class C Shannon Control Area (CTA) with a lower limit of 3,500 ft amsl, while further Shannon CTA airspace in the



form of the Waterford Southern Stub is more than 22 km to the north of the Potential Turbine Array Infrastructure Zone and has a lower limit of 2,500ft amsl.

- 1143 The IAA provides en-route civil ATS within the Shannon FIR and operates a network of radar facilities at nine sites across Ireland which provide en-route information for both civil and military aircraft. The closest radar facility to the Potential Turbine Array Infrastructure Zone is the combined Primary Surveillance Radar (PSR) / Secondary Surveillance Radar (SSR) system at Tullig More, 51 km north-west of the Potential Turbine Array Infrastructure Zone.
- 1144 The IAA do not consider the impact of WTGs on SSR to be material or relevant for WTGs that are beyond 16 km from their SSR facilities (Eurocontrol, 2014). At more than 50 km from the Potential Turbine Array Infrastructure Zone, it is proposed that the impact on Tullig More SSR, and all other SSRs, is scoped out of consideration for the Aviation and Radar chapter of the future EIAR.
- 1145 Conversely, the impact of WTGs on PSR must be considered in the EIAR for WTGs that are in radar line of sight of the PSR facility.
- 1146 Preliminary Radar Line of Sight analysis undertaken indicates that WTGs of maximum proposed tip height would be visible to the Tullig More PSR across more than 60 % of the Potential Turbine Array Infrastructure Zone. The significance of the impact on the PSR depends on airspace usage in the vicinity of the turbines and the nature of the ATS provided in that airspace and will be consulted on with the IAA.
- 1147 A military Danger Area (DA), EID13, is established approximately 60 km to the west of the Potential Turbine Array Infrastructure Zone. DAs are defined as airspace within which activities dangerous to the flight of aircraft may exist at specified times. EID13 is a Military Firing Range with vertical limits from the sea surface up to 4,500 ft amsl.
- 1148 Within the London FIR, approximately 15 km south-west of the Potential Turbine Array Infrastructure Zone, is a further DA, EGD064A-C, known as the South West Managed Danger Area. This airspace has a lower limit of FL 50, approximately 5,000 ft amsl, and military activity within it consists of 'High Energy Manoeuvres'.
- 1149 The nearest civil airport to the Potential Turbine Array Infrastructure Zone is Cork Airport, approximately 50 km to the west north-west, with Waterford Airport being located approximately 61 km to the north. Class C controlled airspace in the form of Control Zones (CTRs) exists around civil airports, as shown in **Figure 9.22**. Unlike the airspace within a CTA, which extends upwards from a specified limit above the earth, CTR airspace extends upwards from the earth's surface. CTRs are thus established within and below CTAs.
- 1150 These airports have published Instrument Flight Procedures (IFPs) and associated Minimum Sector Altitudes (MSAs). A MSA defines the minimum safe altitude an aircraft can descend to within a sector of 25 nm (approximately 46 km). These sectors provide obstacle clearance protection of at least 1,000 ft to aircraft within that area and are validated considering an additional 5 nm (9.3 km) obstacle buffer. This allows pilots of aircraft flying under IFR the reassurance of properly designated obstacle and terrain clearance protection whilst making an approach and landing at an



airport in poor weather. The Cork Airport MSA extending towards the Potential Turbine Array Infrastructure Zone is 1,700 ft amsl and the WTGs would lie within the 5 nm obstacle buffer.

- 1151 The Irish Coast Guard provides helicopter search and rescue services from four bases across the country under contract by CHC Ireland, including one at Waterford Airport.
- 1152 The nearest major UK airport is Cardiff Airport, approximately 270 km to the east of the Potential Turbine Array Infrastructure Zone.
- 1153 The nearest offshore helidecks to the Potential Turbine Array Infrastructure Zone are associated with the Kinsale Head gas field. The Kinsale Head Bravo platform is 18 km south-west of the Potential Turbine Array Infrastructure Zone. It is understood that gas extraction has now ceased, and that decommissioning works have commenced. The removal of both the Alpha and Bravo platforms is due to be concluded in 2023..



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#### 9.12.5 Potential Impacts

- 1154 A range of potential impacts on Aviation and Radar have been identified which may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development.
- 1155 WTGs have the potential to affect civil and military aviation (fixed-wing and helicopters), either through their physical dimensions presenting an obstruction, limiting access and affecting safe passage, or through their effects on PSR systems which can impact the safe provision of an ATS.
- 1156 PSR impacts are caused by the characteristics of rotating WTG blades being similar to aircraft, leading to spurious clutter on ATC radar displays.
- 1157 The creation of a new obstacle environment increases the risk of collision for military low flying aircraft, helicopters in support of the oil and gas industry, and SAR operations.
- 1158 Helicopter traffic as a result of planned activities in support of The Proposed Development may raise the overall level of air traffic in the area and increase the likelihood of aircraft-to-aircraft collision.

# 9.12.5.1 Potential Impacts during Construction

# 9.12.5.1.1 Creation of an Aviation Obstacle Environment

1159 Construction of the WTGs and Offshore Platform(s) will involve tall crane vessels and the installation of infrastructure above sea level which could pose a physical obstruction to low flying aircraft, increasing the risk of collision or requiring aircraft to fly extended routes to avoid obstacles. If the Port of Cork was to be used as the Construction Base, this may have an impact on Obstacle Limitation surfaces and Instrument Flight Procedures at Cork Airport.

# 9.12.5.1.2 Increased Air Traffic in the Area related to Windfarm Activities

1160 Helicopter traffic associated with the Construction Phase could impact on existing traffic in the area, increasing the risk of aircraft collision.

# 9.12.5.2 Potential impacts during Operation and Maintenance

# 9.12.5.2.1 Creation of an Aviation Obstacle Environment

1161 The presence of operational WTGs could pose a physical obstruction to low flying aircraft, increasing the risk of collision or requiring aircraft to fly extended routes to avoid obstructions.

#### 9.12.5.2.2 Increased air traffic in the area related to wind farm activities

1162 Helicopter traffic associated with maintenance activities could impact on existing traffic in the area, increasing the risk of aircraft collision.

# 9.12.5.2.3 Impact on Tullig More PSR

1163 To discriminate wanted aircraft targets from unwanted clutter, PSRs ignore static objects and only display moving targets. PSRs that can see the rotating blades of WTGs can mistake them for aircraft and so present them on ATC radar displays as clutter. Controllers may not be able to distinguish aircraft from the clutter.



# 9.12.5.3 Potential Impacts during Decommissioning

- 1164 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 1165 The scope of the Decommissioning works cannot be defined at this early stage. However, Decommissioning may include the removal of the accessible installed components. Offshore, this is likely to include removal of all the WTG components, the anchors and chains (those above seabed level), and removal of some or all of the cables.

# 9.12.5.3.1 Increased Air traffic in the Area Related to Windfarm Activities

1166 Helicopter traffic associated with the Decommissioning Phase could impact on existing traffic in the area, increasing the risk of aircraft collision.

# 9.12.6 Potential Cumulative Effects

- 1167 The cumulative impact assessment will consider the impacts arising from The Proposed Development alongside impacts potentially arising from other offshore infrastructure and other potential offshore wind farm developments. Three aspects will be considered:
  - Creation of an aviation obstacle environment;
  - Increased air traffic in the area related to offshore aviation activities; and
  - Impact on Tullig More PSR.

# 9.12.6.1 Intra-Project

- 1168 In line with the most recent EPA guidance on EIARs (EPA, 2022) the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 1169 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared ZoI of The Proposed Development (for which Development Permission is sought).

# 9.12.6.2 Other Developments

1170 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative impacts are minimised.


## 9.12.7 Potential Transboundary Effects

1171 The potential impacts of WTGs on aviation are localised and the Potential Turbine Array Infrastructure Zone is completely within Irish airspace, located approximately 6 km from the boundary between the Shannon and London FIRs at its closest point. There are no expected impacts on UK military operations within the South West MDA, which is more than 15 km from the Potential Turbine Array Infrastructure Zone, and which has a lower airspace limit of FL 50. The WTGs would be beyond the detection capability of any UK civil or military PSRs. As such, transboundary impacts would not exist, and it is proposed that they are scoped out of consideration for the Aviation and Radar chapter of the future EIAR.

## 9.12.8 Summary of Potential Impacts

**Table 9.51** outlines the impacts which are proposed to be scoped into and/or out of the EIAR for Aviation and Radar. This may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.

Table 9.51 Summary of impacts relating to Aviation and Radar. Topics Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of the future EIAR.

Potential Impact	Construction	Operation and Maintenance	Decommissioning
Creation of an aviation obstacle environment	~	$\checkmark$	$\checkmark$
Increased air traffic in the area related to wind farm activities	~	$\checkmark$	$\checkmark$
Impact on Tullig More PSR	~	ß	х
Cumulative effects	~	$\checkmark$	~
Transboundary effects	x	x	х

### 9.12.9 EIAR Scoping Consultation Questions

- 1173 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Aviation and Radar chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Aviation and Radar chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Aviation and Radar Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?
  - What other data sources or surveys, if any, should The Applicant have regard to in the preparation of the Aviation and Radar chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Aviation and Radar chapter of the EIAR for The Proposed Development?



- Are you satisfied with the approach to impact assessment proposed for the Aviation and Radar chapter of the EIAR for The Proposed Development?
- Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Aviation and Radar chapter of the EIAR for The Proposed Development?

# 9.12.10 Technical Consultation

1174 This chapter has considered the potential impacts of The Proposed Development on Aviation and Radar. **Table 9.52** out a series of areas for discussion which The Applicant would appreciate targeted feedback on. Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 9.52** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.

Proposed Key Technical Stakeholder	Objective of Engagement
ΙΑΑ	1. To discuss and agree any WTG operational or technical effects to inform the EIAR including potential mitigation measures
CHC Ireland (CHCI)	1. To discuss and agree any WTG effects on SAR operations to inform the EIAR including potential mitigation measures
Cork Airport	1. To discuss and agree any WTG operational or technical effects to inform the EIAR including potential mitigation measures
Department of Defence (Irish Air Corps and Garda)	1. To discuss and agree any WTG operational or technical effects to inform the EIAR including potential mitigation measures
Met Éireann	1. To discuss and agree any WTG technical effects on meteorological radar to inform the EIAR including potential mitigation measures
NATS	1. To discuss and agree any WTG operational transboundary or technical effects to inform the EIAR including potential mitigation measures

Table 9.52: Summary of Proposed Key Technical Stakeholders Aviation and Radar.

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## 9.13 CHAPTER 13 COASTAL AND MARINE INFRASTRUCTURE AND OTHER USERS

## 9.13.1 Introduction

- 1175 This chapter of the EIAR Scoping Report considers the potential impacts of Construction, Operation and Maintenance and Decommissioning Phases of The Proposed Development on Coastal and Marine Infrastructure and Other Users of the offshore area which have the potential to be affected by The Proposed Development. The reader is directed to **Volume C, Chapter 9** Commercial Fisheries, **Volume C, Chapter 10** Shipping and Navigation and **Volume C, Chapter 12** Aviation and Radar.
- 1176 The Coastal and Marine Infrastructure and Other Users Topic-specific Study Area is defined as a 20 km radius from the Potential Offshore Infrastructure Zone. This equates to approximately one tidal excursion and the distances over which far field impacts may arise in the water column (e.g. potentially affecting aquaculture or other remote uses of the sea). This Coastal and Marine Infrastructure and Other Users Topic-specific Study Area sufficiently allows for any direct effects on Coastal and Marine Infrastructure and Other Users which may have a physical overlap with any proposed offshore infrastructure associated with The Proposed Development. The buffer easily exceeds any required safety zones which are typically implemented around, for example, active oil and gas infrastructure and any such zone (nominally 500 m) around The Proposed Development's infrastructure during the Construction Phase and potentially during certain periods of maintenance.

### 9.13.2 Policy and Guidance

1177 Volume A Chapter 4 Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context for The Proposed Development. Policies and guidance documents of particular relevance to Coastal and Marine Infrastructure and Other Users are detailed below. Where certain guidance documents have been produced in relation to offshore wind farms in other countries these will be reviewed as part of the EIAR process and considered in relation to The Proposed Development. Specific policies and guidance to be considered for certain other users, including Shipping and Navigation (Volume C, Chapter 10 Shipping and Navigation) and Aviation and Radar (Volume C, Chapter 12 Aviation and Radar) are set out within those chapters of this EIAR Scoping Report.

## Policies

- The Offshore Renewable Energy Development Plan (OREDP) (DCCAE, 2014)<sup>34</sup>;
- Marine Planning Policy Statement (DHLGH, 2019); and
- National Marine Planning Framework (NMPF) (DHLGH, 2021a).

<sup>&</sup>lt;sup>34</sup> It should be noted that OREDP II is currently being developed by the Department of the Environment, Climate and Communications and is expected to be available for consultation during 2022.



## Guidance

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017)
- Proximity of Offshore Renewable Energy Installation and Submarine Cable Infrastructure in UK waters (European Subsea Cables Association (ESCA), 2016);
- OSPAR Guidance on Environmental Considerations for Offshore Wind Farm Development (OSPAR, 2008);
- Decommissioning of Offshore Renewable Energy Installations: Guidance Notes for Industry (Department of Business Energy and Industrial Strategy, 2019); and
- Cumulative Impact Assessment Guidelines Guiding Principles for Cumulative Impacts Assessment in Offshore Wind Farms (Renewable UK, 2013).

# 9.13.3 Methodology

# 9.13.3.1 Approach to Data Collection

- 1178 The following information and data sources have been considered during the production of this EIAR Scoping Report and will be considered further within the future EIAR where relevant matters are scoped into the EIAR process:
  - Marine Institute Open Access Repository and Ireland's Marine Atlas;
  - European Marine Observation and Data Network (EMODnet);
  - The Kingfisher Information Service Offshore Renewable and Cable Awareness project (KISORCA, 2020);
  - A Coastal Atlas of Recreational Boating in Ireland Irish Cruising Club;
  - National Marine Planning Framework SEA Environmental Report;
  - South West of Ireland Sea Angling Guide, Guide to Sea Angling in South East;
  - Department of Communications, Climate Action and Environment (DECC) Current Applications for Statutory Consents;
  - Department of Housing, Local Government and Heritage (DHLGH) Foreshore Unit Applications;
  - Department of Agriculture, Food and the Marine (DAFM) Aquaculture Licence Applications; and
  - EIAR for the Celtic Interconnector.
- 1179 The Coastal and Marine Infrastructure and Other Users assessment will be informed by further acquisition of spatial data on assets and activities as well as through further consultations with industry groups, governing bodies and local communities. Further information will be collected in relation to the following to ensure the baseline on which the EIAR is based is correct and robust:
  - Tourism and recreation;



- Port and harbour infrastructure;
- Oil and gas assets; and
- Other seabed users (cables, disposal grounds, munition grounds, offshore renewable energy project Foreshore Licences, military danger areas).
- 1180 Where there is potential for interactions with other users, The Applicant will liaise with the relevant infrastructure owners / operators.
- 1181 Further information regarding recreational usage within the Coastal and Marine Infrastructure and Other Users Topic-specific Study Area will also be collected through community consultation, and liaison with groups and organisations involved in coastal activities such as surfing, sailing etc.

# 9.13.3.2 Potential Additional Data

- 1182 The data sources listed above are those identified to date which have been used to inform this EIAR Scoping Report and which will potentially be used to inform the wider assessment process in the future EIAR.
- 1183 It should be noted that the list of data sources is not exhaustive and will be added to as the works connected to the future EIAR progress.

## 9.13.3.3 Approach to Impact Assessment

- 1184 The impact assessment methodology will be based on that described in EIAR Scoping Report, Volume A Chapter 7 Environmental Impact Assessment Methodology and adapted to make it applicable to assessment of Coastal and Marine Infrastructure and Other Users.
- 1185 The Applicant will undertake consultation with all relevant developers, operators, and marine users within the Coastal and Marine Infrastructure and Other Users Topic-specific Study Area to ascertain any concerns relating to The Proposed Development. Any areas of concern will be identified and considered within the future EIAR. However, it is likely that any impacts will either be non-significant or able to be fully mitigated after consultation with the relevant parties as discussed above.
- 1186 The future EIAR will be based on existing data and supplementary information gathered through consultation. The future EIAR will focus on the Coastal and Marine Infrastructure and Other Users Topic-specific Study Area and will consider infrastructure or users that overlap with these boundaries or where indirect effects may occur. The assessment will consider agreed or best practice mitigation.

## 9.13.4 Receiving Environment

## 9.13.4.1 Offshore Renewable Energy Projects

1187 There are currently no operational offshore wind farms off the counties of Cork or Waterford. Tthe closest operational offshore wind farm to The Proposed Development is Arklow Bank Wind Park Phase 1, approximately 350 km north east of The Proposed Development. However, the following



proposed offshore wind projects are in their early development Phase with applications for Foreshore Licences having been submitted to the DHLGH as shown in **Figure 9.23**:

- North Celtic Sea Offshore Wind Farm proposed to be located off the Waterford coast, approximately 10 km north of the Potential Turbine Array Infrastructure Zone;
- Celtic Sea Array Offshore Wind Farm proposed to be located approximately 8 km north east of Potential Turbine Array Infrastructure Zone
- Emerald Offshore Wind Farm which is proposed to be located adjacent to part of the Potential Turbine Array Infrastructure Zone;
- Celtic Two Offshore Wind Farm is proposed to overlap the Potential Turbine Array Infrastructure Zone; and
- Helvic Head Offshore Wind Farm proposed to be located off the Waterford coast, approximately 25 km north east of the Potential Turbine Array Infrastructure Zone.
- 1188 It should be noted that the progression of these projects is subject to receipt of Maritime Area Consent, with the EIAR for The Proposed Development to consider all offshore renewable energy projects which are in progression (i.e. either at Pre-Application Phase noting that limited information may be available on such projects, with an application currently under consideration or, under construction) at the time of submission of the Development Permission application for The Proposed Development, in accordance with EPA Guidelines (2022).





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# 9.13.4.2 Oil and Gas Infrastructure and Licencing

- 1189 Within the Potential Export Cable Corridor Infrastructure Zone there are two pipelines present. To the south of the Potential Turbine Array Infrastructure Zone there are four gas and oil licenced blocks. They have various uses and activity statuses as follows (shown in **Figure 9.24**):
  - One supply pipeline; and
  - Two decommissioned pipelines. One unnamed pipeline on the western side of west of cork harbour and another the Kinsale gas pipeline connecting the Kinsale Head, Ballycotton and Seven Heads gas fields to shore. These gas fields are undergoing decommissioning having ceased production in 2020 and the platforms are expected to be removed in 2022 (Kinsale Energy, 2022).
- 1190 Out of the four gas and oil licenced blocks, three are exploration type zones each under different operators: Providence Resources, Predator Oil & Gas and Island Expro. The fourth licenced block is operated by PSE Kinsale Energy for exploitation.
- 1191 However, none of the above overlap with the Potential Turbine Array Infrastructure Zone.

## 9.13.4.3 Subsea Cables, Pipelines and Outfalls

- 1192 There is no direct overlap with the Potential Export Cable Corridor Infrastructure Zone and cable developments, however there are cables in proximity to The Proposed Development (which may comprise of more than one individual cable), as follows (and shown in **Figure 9.24**)
  - Five outfalls;
  - Two power line cables;
  - One industrial cable;
  - One cable not in use; and
  - One cable with an unknown use.
- 1193 The five outfalls are present within Cork Harbour and overlap with the Potential Export Cable Corridor Infrastructure Zone. However, none of the above overlap the Potential Turbine Array Infrastructure Zone.
- 1194 There are a number of subsea cables running from east-west just south of the Potential Turbine Array Infrastructure Zone., including the Celtic Interconnector cable, which has recently been granted planning permission. The Celtic Interconnector will have a capacity up to 700 MW, with a HVDC subsea cable spanning approximately 500 km making landfall at Claycastle Beach, County Cork (Wood, 2021).



## 9.13.4.4 Disposal and Aggregate Sites

1195 There is one spoil disposal ground located within the Potential Export Cable Corridor Infrastructure Zone, approximately 5 km south of Power Head (shown in **Figure 9.24**). No dumping, disposal or aggregate extraction sites are located within the Potential Turbine Array Infrastructure Zone.

## 9.13.4.5 Defence and Military Activity and Unexploded Ordnance (UXO)

- 1196 There are two military Danger Areas (DA) established near-to the Potential Turbine Array Infrastructure Zone. For more information, see Chapter 12 Aviation and Radar.
  - Military DA EID13 60km west of the Potential Turbine Array Infrastructure Zone. EID13 is a military firing range with vertical limits from the sea surface up to 4,500 ft amsl.
  - Military DA EGD064A-C 15km south west of the Potential Turbine Array Infrastructure Zone. Activity consists of 'High Energy Manoeuvres' and vertical limits up to 5,000 ft amsl.

## 9.13.4.6 Aquaculture

1197 There are no aquaculture sites located within The Proposed Development however there is one large blue mussel aquaculture site located in the eastern side of Cork Harbour. The Potential Export Cable Corridor Infrastructure Zone overlaps with Cork Harbour 'Harmful Algal Blooms Shellfish Safety Monitoring and Reporting Area'. For more information, see **Volume C, Chapter 8** Fish and Shellfish Ecology

## 9.13.4.7 Tourism and Recreation

- 1198 Across the Potential Export Cable Corridor Infrastructure Zone there are a number of locations used for tourism and recreational purposes. The coastal waters of the Celtic Sea are used for recreational boating activities and hosts a number of popular beaches and Regulated Bathing Waters (for more information please refer to **Volume C Chapter 2** Marine Water Quality (shown in **Figure 9.24**). Key recreational locations include:
  - Marinas and Harbours
    - Crosshaven boat yard;
    - Salve Marina;
    - Royal Cork Yacht Club;
    - o Ballycotton Harbour; and
    - Youghal Harbour.
    - o Crosshaven
  - Beaches / Regulated Bathing Waters
    - Blue Flag 2022: Fountainstown;
    - Blue Flag 2022: Redbarn Beach;



- Blue Flag 2022: Youghal Front Strand and Claycastle Beach;
- Garryvoe Beach;
- $\circ \quad \text{Myrtleville Beach; and} \\$
- Blue Flag 2022: Ardmore Beach.
- Tourist attractions
  - Spike Island (adjacent to the Potential Export Cable Corridor Infrastructure Zone); and
  - Ballycotton Lighthouse.
- Sailing routes
  - o Dungarvan to Kinsale
- Sailing clubs
  - Baltimore Sailing Club;
  - Cove Sailing Club;
  - Glandore Yacht Club;
  - Kinsale Yacht Club;
  - Lower Aghada Tennis & Sailing Club;
  - Monkstown Bay Sailing Club;
  - Royal Cork Yacht Club;
  - Waterford Harbour Sailing Club;
  - o Dungarvan Harbour Sailing Club; and
  - Waterford Sports Partnership.
- Surf / windsurf
  - Oysterhaven; and
  - Inchydoney.
- Angling locations
  - Ballycotton;
  - Cork Harbour; and
  - Knockadoon Head.
- 1199 Recreational fishing in the Coastal and Marine Infrastructure and Other Users Topic-specific Study Area includes shore anglers, private boat anglers and commercial charter boat operators. Commercial charter boats are vessels that can be hired from Kinsale and Youghal by recreational anglers for fishing trips. Further information on commercial fishing within the Coastal and Marine Infrastructure and Other Users Topic-specific Study Area can be found in **Volume C, Chapter 9** Commercial Fisheries of this EIAR Scoping Report



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### 9.13.5 Potential Impacts

- 1200 A range of potential impacts on Coastal and Marine Infrastructure and Other Users have been identified which may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development. These potential impacts include those issues identified as requiring consideration in accordance with the guidance documents listed in **Section 9.13.2.**
- 1201 These potential impacts are discussed below and will be considered further in the future EIAR.

## 9.13.5.1 Potential Impacts during Construction

- 1202 Construction Phase works such as the installation of cables, WTGs and Offshore Substation Platform(s) have the potential to impact on other marine infrastructure and users within the Construction footprint or adjacent to it. The physical presence of infrastructure has the potential to disturb, displace or exclude users from the area. The presence of increased vessel numbers during the Construction Phase may also impact on other marine users.
- 1203 Due to the potential for other offshore renewable energy projects to be developed in close proximity to The Proposed Development any potential impacts on these projects will be set out in the EIAR. However, this issue may be scoped out of the future EIAR if the projects currently identified are not progressed and no new projects are identified within the Coastal and Marine Infrastructure and Other Users Topic-specific Study Area.
- 1204 No operational oil or gas installations are present that could be affected, although a small amount of gas related infrastructure is present within the Coastal and Marine Infrastructure and Other Users Topic-specific Study Area including a supply pipeline. There are a number of oil and gas licenced blocks in close proximity to The Proposed Development and therefore an assessment of Construction Phase activities on this infrastructure will be provided in the EIAR.
- 1205 Cable or pipeline crossings may be required by the Offshore Export Cable. Any crossings will be designed in order to protect the integrity of existing assets. All methods will be pre-agreed with the relevant asset owner and an assessment of effects on the operators of any cable potentially affected will be set out in the future EIAR.
- 1206 Effects on the soil disposal ground located within the Potential Export Cable Corridor Infrastructure Zone will be assessed due to its potential overlap with The Proposed Development, notably effects on accessing the location due to Construction Phase vessel activities.
- 1207 Due to the distance of The Proposed Development from the nearest area formally used by the military, no impacts on such military activities are expected during the Construction Phase of and



therefore it is proposed to scope this out of the future EIAR. Impacts on military Aviation and Radar are discussed in **Volume C, Chapter 13** Coastal and Marine Infrastructure and Other Users

- 1208 There are no aquaculture sites within The Proposed Development footprint, therefore there are no expected effects to aquaculture operations. However, as the Potential Export Cable Corridor Infrastructure Zone overlaps with a Shellfish Monitoring and Reporting Zone, an assessment of potential impacts will be set out in the EIAR (see **Volume C, Chapter 8** Fish and Shellfish Ecology.
- 1209 Recreational activities can be affected by Construction Phase activities with examples being the potential to displace recreational sailing routes or direct/indirect effects on shore based recreational angling at or near the export cable landing location. The future EIAR will set out an assessment of potential impacts on recreational activities.

## 9.13.5.2 Potential Impacts during Operation and Maintenance

- 1210 The presence of permanent offshore infrastructure has the potential to impact infrastructure assets or recreational activities either within, or adjacent to the Potential Offshore Infrastructure Zone. Vessel movements during Operation and Maintenance Phases also has the potential to interact with other marine users.
- 1211 Noting the potential proximity of other offshore renewable developments potential interference may occur during the Operation and Maintenance Phase, and potential impacts will be scoped in to the EIAR if such projects are still undergoing development at the point of Development Permission application for The Proposed Development.
- 1212 The presence of The Proposed Development may affect recreational activities depending on the final location of infrastructure. Examples of long-term effects could include displacement of sailing from areas around infrastructure or, effects on recreational fishing/water sports coastal locations due to the presence of the export cable and associated protection (if required).
- 1213 The following aspects are proposed to be scoped out and no assessment provided in the future EIAR:
  - The potential for interference with oil and gas operations during the Operation and Maintenance Phase is limited and with limited infrastructure present in the Coastal and Marine Infrastructure and Other Users Topic-specific Study Area (notably one supply pipeline) no significant effects are likely.
  - The licensing of any new areas for oil or gas exploration will be monitored and if no activity is planned potential impacts on such activity will be scoped out of the EIAR.
  - Physical impacts on subsea cables or pipelines will be scoped out of the EIAR, noting that standard industry techniques would be followed to ensure that other operators' cables and pipelines are not significantly impacted by such works.



- No significant effects to the soil disposal ground are likely during the Operation and Maintenance Phase and effects on this receptor will be scoped out of the EIAR.
- Due to the distance of the site from the nearest area formally used by the military, no impacts on such military activities are expected during the Operation and Maintenance Phase of The Proposed Development and therefore the Applicant proposes to scope this out of the EIAR.
- The potential for impacts to aquaculture during the Operation and Maintenance Phase are limited and due to no aquaculture sited being within The Proposed Development footprint, no significant effects are likely.

# 9.13.5.3 Potential impacts during Decommissioning

- 1214 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 1215 The scope of the Decommissioning works cannot be defined at this early stage. However, Decommissioning may include the removal of the accessible installed components. Offshore, this is likely to include removal of all the WTG components, the anchors and chains (those above seabed level), and removal of some or all of the cables.
- 1216 Decommissioning activities have the potential to impact Benthic, Epibenthic and Intertidal Ecology. Any potential impacts arising from Decommissioning are likely to be comparable to, or less than, those identified for the Construction Phase and will be assessed as part of the future EIAR.

## 9.13.6 Potential Cumulative Effects

- 1217 Cumulative impacts from a range of activities, developments and users will be considered including: aquaculture, oil/gas, other offshore renewable energy projects, port/harbour developments, other cables and pipeline developments, and disposal grounds.
- 1218 A list of plans and projects (i.e. other developments) will be identified which may result in cumulative effects and this list will be updated regularly as new developments are identified. Relevant details of such developments will be identified in the context of the potential for cumulative effects to arise and a confidence level determined in relation to any likely effects (noting that early stage developments may have little information available). An assessment of cumulative effects will then be undertaken and presented in the EIAR.



## 9.13.6.1 Intra-Project

- 1219 In line with the most recent EPA guidance on EIARs (EPA, 2022) the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 1220 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared ZoI of The Proposed Development (for which Development Permission is sought).

## *9.13.6.2 Other Developments*

1221 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative impacts are minimised.

## 9.13.7 Potential Transboundary Effects

1222 The only potential transboundary receptors for the Coastal and Marine Infrastructure and Other Users topic area are cables owned by international operators, these will be covered in the assessments outlined above and will be covered by crossing agreements if required, and therefore no significant transboundary effects are predicted and its is proposed that transboundary effects are scoped out of the future EIAR.

### 9.13.8 Summary of Potential Impacts

**Table 9.53** outlines the impacts which are proposed to be scoped into and/or out of the EIAR for infrastructure and other users. This may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.

Table 9.53 Summary of Impacts relating to Coastal and Marine Infrastructure and Other Users. Topics Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR

Potential Impact	Construction	Operation and Maintenance	Decommissioning
Potential impacts on other offshore renewable energy projects	$\checkmark$	$\checkmark$	x
Potential impacts on oil and gas infrastructure and licencing	$\checkmark$	Х	x
Physical impacts on subsea cables, pipelines and outfalls	$\checkmark$	x	х



Potential Impact	Construction	Operation and Maintenance	Decommissioning
Potential impacts on disposal and aggregate sites	$\checkmark$	х	х
Potential impacts on defence and military activity and unexploded ordnance (UXO)	Х	x	x
Potential impacts on aquaculture	х	х	х
Potential impacts on tourism and recreation	$\checkmark$	$\checkmark$	×
Cumulative effects	$\checkmark$	$\checkmark$	$\checkmark$
Transboundary effects	х	х	х

## 9.13.9 EIAR Scoping Consultation Questions

- 1224 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Infrastructure and Other Users chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Coastal and Marine Infrastructure and Other Users chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Coastal and Marine Infrastructure and Other Users Topicspecific Study Area is suitable for the purpose of the EIAR for The Proposed Development?
  - What other data sources or surveys, if any, should The Applicant have regard to in the preparation of the Coastal and Marine Infrastructure and Other Users chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Coastal and Marine Infrastructure and Other Users chapter of the EIAR for The Proposed Development?
  - Are you satisfied with the approach to impact assessment proposed for the Coastal and Marine Infrastructure and Other Users chapter of the EIAR for The Proposed Development?
  - Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Coastal and Marine Infrastructure and Other Users chapter of the EIAR for The Proposed Development?

### 9.13.10 Technical Consultation

1225 This chapter has considered the potential impacts of The Proposed Development on Coastal and Marine Infrastructure and Other Users. **Table 9.54** sets out a series of areas for discussion which The Applicant would appreciate targeted feedback on. Whilst welcoming input from all interested



parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 9.54** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.

Table 9.54: Summary of Proposed Key Technical Stakeholders Coastal and Marine Infrastructure and Other Users.

Proposed Key Technical Stakeholder	Objective of Engagement
Department of Defence	1. To identify and discuss potential data that could inform the Coastal and Marine Infrastructure and Other Users chapter of the EIAR.
	2. To discuss potential mitigation measures that may be required with respect to military practice and exercise areas.
Rosslare Europort	1. To identify and discuss potential data that could inform the Coastal and Marine Infrastructure and Other Users chapter of the EIAR.
	2. To discuss potential mitigation measures that may be required with respect to port activities.
Department of Agriculture, Food	1. To identify and discuss potential data that could inform the Coastal and Marine Infrastructure and Other Users chapter of the EIAR.
and the Marine	2. To discuss potential mitigation measures that may be required with respect to any existing or planned aquaculture activities.
Recreational Sailing Groups	1. To identify and discuss potential data that could inform the Coastal and Marine Infrastructure and Other Users chapter of the EIAR.
(Irish Sailing, Irish Cruising Club, Irish Cruising Association)	2. To discuss potential mitigation measures that may be required with respect to recreational sailing. Note that this consultation will be led by the specialist Shipping and Navigation Consultant (Anatec) and will form part of the NRA process.
Various Commercial	1. To identify and discuss potential data that could inform the Coastal and Marine Infrastructure and Other Users chapter of the EIAR.
Fishing Organisations	2. To discuss potential mitigation measures may be required with respect to commercial fishing activities. Note that this consultation will be led by The Applciant's Fisheries Liaison Officer (FLO) in the primary context of the Commercial Fisheries EIAR topic.
Sea Fisheries Protection	1. To identify and discuss potential data that could inform the Coastal and Marine Infrastructure and Other Users chapter of the EIAR.
Authority	2. To discuss potential mitigation measures may be required with respect to fishing and aquaculture activities. Note that this consultation will be led by The Applicant's Fisheries Liaison Officer (FLO) in the primary context of the Commercial Fisheries EIAR topic.
Inland Fisheries Ireland	1. To identify and discuss potential data that could inform the Coastal and Marine Infrastructure and Other Users chapter of the EIAR.



Proposed Key Technical Stakeholder	Objective of Engagement
	2. To discuss potential mitigation measures may be required with respect to recreational sea angling.
Cork County Council	1. To identify and discuss potential data that could inform the Coastal and Marine Infrastructure and Other Users chapter of the EIAR.
	2. To discuss potential mitigation measures may be required with respect to coastal activities.
Waterford County Council	1. To identify and discuss potential data that could inform the Coastal and Marine Infrastructure and Other Users chapter of the EIAR.
	2. To discuss potential mitigation measures may be required with respect to coastal activities.
Environmental Protection Agency	1. To identify and discuss potential data that could inform the Coastal and Marine Infrastructure and Other Users chapter of the EIAR.
	2. To discuss potential mitigation measures may be required with respect to any marine disposal/dumping at sea activities/permits.

# 9.13.11 References

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## 9.14 CHAPTER 14 OFFSHORE AIR QUALITY

### 9.14.1 Introduction

1226 This Chapter of the EIAR Scoping Report considers the potential impacts of Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on Offshore Air Quality and sets out the methodology and approach to be taken to assessing these potential impacts within the future EIAR.

#### 9.14.2 Receiving Environment

- 1227 The main source of offshore atmospheric emissions offshore in the vicinity of the Wind Farm is likely to be from vessels (exhaust emission) operating within the Celtic Sea. The typical pollutants associated with vessel emissions are nitrogen oxides (NOx), particulate matter (PM) and sulphur dioxide (SO<sub>2</sub>).
- 1228 The International Maritime Organisation (IMO) has enacted regulations to reduce vessel emissions under Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL). The revised Annex VI of MARPOL introduced a more stringent sulphur limit in fuel globally from 1<sup>st</sup> January 2020 (known as 'IMO 2020') which required fuel to contain no more than 0.5% sulphur by mass. Whilst the Celtic Sea is not currently a dedicated Emission Control Area under MARPOL, vessels operating within it will be required to comply with the IMO 2020 limit.
- 1229 The relevant health-based air quality standards only apply where there is representative exposure. There are few human receptors offshore, and marine-based ecological designations are unlikely to be sensitive to air pollution impacts, or they are usually dominated by other sources of inputs (Centre for Ecology and Hydrology, 2022). Receptors may, therefore, only be affected where there are isolated locations of relevant human exposure (e.g. residential properties) close to the shoreline, and designated terrestrial ecological sites.

### 9.14.3 Potential Impacts

### 9.14.3.1 Potential Impacts during Construction, Operation and Maintenance and Decommissioning

1230 Vessel movements during the Construction, and Operation and Maintenance Phases of The Proposed Development may give rise to pollutant emissions offshore. However, in the context of the existing vessel traffic operating within the Celtic Sea the contribution from The Proposed Development would form a small percentage. The majority of Construction, Operation and Maintenance Phase works would be undertaken at a significant distance from land and therefore would be unlikely to impact upon landside human or ecological receptors. As water depths are shallower closer to the shore, it is expected that larger, potentially more polluting vessels would



not be operating in close proximity to land-based receptors. Where smaller vessels may be required to construct the Offshore Export Cable close to Cable Landfall location(s), it is expected that these works would be of a relatively short duration and therefore significant impacts are unlikely to arise. The majority of vessel movements would be during the Construction Phase, these Construction Phase activities are temporary in nature anticipated to take place over a period of three years.

1231 The main source of emissions would be exhaust emissions from vessels, and due to the nature and location of The Proposed Development associated vessel movements would only generate a small increase in emissions in all Phases, which is unlikely to result in significant effects to land based human and ecological receptors. As it is expected that there would be a relatively low number of vessels utilised as part of The Proposed Development, the limitations on sulphur content in fuel and the distance to sensitive receptors, it is considered that impacts would not be significant.

## 9.14.4 Potential Cumulative Effects

1232 Most offshore works would be undertaken at a significant distance from any landside sensitive receptors. As such, it is considered unlikely that any significant cumulative effects would occur with other offshore emission sources (i.e. vessels) used for any other plans or projects in the vicinity of The Proposed Development.

### 9.14.5 Potential Transboundary Effects

- 1233 It is considered unlikely that emissions from vessels operating within the Celtic Sea would give rise to any significant transboundary effects, based on the distances to EU Member States.
- 1234 Due to the limited pathway for offshore air quality to impact receptors it is proposed that Offshore Air Quality is scoped out of the future EIAR for further consideration. As a result of the nature and location of The Proposed Development, associated vessel movements would only generate a small increase in emissions, which is unlikely to result in significant effects to land based human and ecological receptors for all Phases. As such, it is proposed to scope Offshore Air Quality impacts out of the future EIAR.

## 9.14.6 Summary of Potential Impacts

1235 **Table 9.55** outlines the potential impacts which are proposed to be scoped into and/or out of the EIAR relating to Offshore Air Quality. This may be refined as additional information and data become available.



Table 9.55 Summary of Impacts Relating to Offshore Air Quality. Topics Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR

Potential Impact	Construction	Operation and Maintenance	Decommissioning
Impacts of emissions from vessels on human receptors	х	х	x
Impacts of emissions from vessels on ecological receptors	х	Х	x
Cumulative effects	х	х	х
Transboundary effects	х	х	х

## 9.14.7 References

Centre for Ecology and Hydrology (2022) Air Pollution Information System. [Online] Available at: < http://www.apis.ac.uk/habitat\_table.html> Accessed 14/06/2022



### 9.15 CHAPTER 15 OFFSHORE AIRBORNE NOISE

### 9.15.1 Introduction

1236 This Chapter of the EIAR Scoping Report considers the potential impacts of Construction, Operation and Maintenance, and Decommissioning of The Proposed Development on Offshore Airborne Noise. The potential impacts on onshore noise and vibration are discussed in Volume D, Chapter 2 Noise and Vibration of this EIAR Scoping Report and potential impacts on underwater noise and vibration are assessed in Volume D, Chapter 3 Underwater Noise and Vibration).

#### 9.15.2 Receiving Environment

- 1237 Two main sources of airborne noise are considered to characterise the offshore environment:
  - Natural noise generated by wind, wave and precipitation; and
  - Anthropogenic noise from vessel traffic and other users (oil and gas infrastructure).

#### 9.15.3 Potential Impacts

### 9.15.3.1 Potential Impacts during Construction, Operation and Maintenance and Decommissioning

- 1238 Construction, Operation and Maintenance, and Decommissioning Phase activities have the potential to increase airborne noise within the Potential Offshore Infrastructure Zone. The main sources of noise would be from increased vessel activity, cable laying and foundation installation and subsequent Operation and Maintenance of infrastructure.
- 1239 The Potential Turbine Array Infrastructure Zone lies approximately 22 km from shore at its nearest point, and it is therefore highly unlikely that onshore receptors (i.e. coastal recreation users, coastal ecological designated sites and coastal settlements) will be affected by increases in noise from Construction Phase or Operation and Maintenance Phase activities in this area, in the context of the baseline noise sources. Disturbance to offshore biological receptors (including fish and marine mammals) from underwater noise will be considered within the relevant chapters for these topics (**Volume C** Chapter **8** Fish and Shellfish Ecology, **Chapter 5** Marine Mammals and Marine Turtles) and disturbance to birds is covered in onshore ornithology (**Volume D, Chapter D** Biodiversity) and offshore ornithology (**Volume C, Chapter 6** Offshore Ornithology).
- 1240 Nearshore Construction Phase activities that will generate airborne noise onshore will be limited to installation of the Offshore Export Cable, which may require mechanical cutting, ploughing, trenching, or jetting of the Offshore Export Cable and Horizontal Directional Drilling (HDD) or open cut trenching at Cable Landfall location(s). The impact of nearshore works on onshore receptors will be assessed in the onshore noise and vibration assessment (see **Volume D, Chapter 3** Underwater Noise and Vibration).



1241 Due to the limited pathway for Offshore Airborne Noise to impact receptors it is proposed that Offshore Airborne Noise is scoped out of the future EIAR for further consideration. Noting that the main impacts from noise to ecological receptors occur from underwater noise, which is to be assessed in other relevant aspects chapters.

## 9.15.4 Summary of Potential Impacts

1242 **Table 9.56** outlines the potential impacts which are proposed to be scoped into and/or out of the EIAR relating to Offshore Airborne Noise. This may be refined as additional information and data become available.

Table 9.56 Summary of Impacts Relating to Offshore Airborne Noise. Topics Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR

Potential Impact	Construction	Operation and Maintenance	Decommissioning
Impacts of offshore airborne noise emissions on human receptors	x	x	x
Impacts of offshore airborne noise emissions on ecological receptors	x	x	x
Cumulative effects	x	х	x
Transboundary effects	x	х	x



# **10** VOLUME D EIAR ONSHORE TOPIC-SPECIFIC CHAPTERS

- 1243 These chapters, contained within **Volume D** of this EIAR Scoping Report, consider the potential impacts of the Construction, Operation and Maintenance and Decommissioning Phases of The Proposed Development on the onshore aspects of The Proposed Development. Each chapter of **Volume D** of this EIAR Scoping Report sets out preliminary information on the receiving environment, the proposed approach to data collection to inform the future EIAR and the methodologies proposed for use in the future EIAR to assess potential impacts of The Proposed Development on its receiving environment
- 1244 It should be noted that Topic specific-Study Areas for each topic in this EIAR Scoping Report are defined in each chapter based on the potential spatial and temporal considerations of the potential impacts on relevant receptors and are intended to cover the area within which an effect can reasonably be expected.



### 10.1 CHAPTER 1 AIR QUALITY

### 10.1.1 Introduction

- 1245 This chapter of the EIAR Scoping Report considers the potential impacts of the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development in relation to onshore Air Quality and sets out the methodology and approach to be taken to assessing these potential impacts within the future EIAR.
- 1246 The Air Quality Topic-specific Study Area in this EIAR Scoping Report comprises the Potential Onshore Infrastructure Zone. It should be noted that as the design of The Proposed Development is refined, the Air Quality Topic-specific Study Area will be revised accordingly and presented within the future EIAR to more accurately reflect the receiving environment affected by The Proposed Development.
- 1247 It is proposed that the Air Quality Topic-specific Study Area in the future EIAR will extend up to 350 m from a Construction site or up to 50 m of the Trackout routes (as described in **Section 10.1.3.3**), or within 500 m from any Construction site entrance.

### 10.1.2 Policy and Guidance

- 1248 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context applicable to The Proposed Development. Policies and guidance documents of particular relevance to the Air Quality topic are set out in this section.
- 1249 These policy and guidance documents will be used to inform the Air Quality chapter of the future EIAR.

## Policy

- Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011);
- Directive 2008/50/EC on ambient Air Quality and cleaner air for Europe;
- Cork County Development Plan 2022-2028;
- Local Area Plans for the municipal districts of East Cork, Cobh and Carrigaline, as appropriate; and

#### Guidance

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017);



- Guidance on the assessment of dust from demolition and construction (Institute of Air Quality Management (IAQM), 2014); and
- Land-Use Planning and Development Control: Planning for Air Quality (UK Environmental Protection and IAQM, 2017).
- 1250 The key pollutants considered relevant to The Proposed Development in terms of Air Quality are outlined below:
  - Nitrogen Dioxide (NO<sub>2</sub>), associated with atmospheric emissions from traffic and equipment associated with The Proposed Development;
  - Dust, associated with Construction; and
  - Particulate matter (PM<sub>10</sub>/PM<sub>2.5</sub>), associated with atmospheric emissions, for example from traffic.
- 1251 Directive 2008/50/EC on ambient Air Quality and cleaner air for Europe was adopted in May 2008 and consolidates previous Air Quality directives (apart from the Fourth Daughter Directive (2001/107/EC). This Directive sets out a range of mandatory Limit Values for different pollutants and times by which they are to be achieved for the purpose of protecting human health and the environment by avoiding, reducing or preventing harmful concentrations of air pollutants.
- 1252 The Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011) implement the EU Ambient Air Quality Directive (2008/50/EC). The numerical Air Quality Standards (AQS) are set at concentrations below which human health impacts or ecological impacts are not expected to occur.
- **Table 10.1** presents the relevant AQS and limit values for the pollutants relevant to this assessment as prescribed by EU and Irish legislation.

Table 10.1 Relevant Air Quality Standards

Pollutant	Averaging Period	Limit Value (µg/m³)	Basis of Application of the Limit Value
For the protection of huma	n health		
NO <sub>2</sub>	1 Hour	200	Not to be exceeded more than 18 times in a calendar year
	1 Calendar Year	40	-
NO <sub>2</sub>	Annual	40	-



Pollutant	Averaging Period	Limit Value (µg/m³)	Basis of Application of the Limit Value
PM10	24 hours	50	Not to be exceeded more than 35 times in a calendar year
	1 Calendar year	40	-
PMas	1 Calendar year	25	-
1 1112.3	1 Calendar year	20	-
For the protection of veget	ation and ecosystems		
NO <sub>2</sub>	Annual	40	-

Source: Environmental Protection Agency Air Quality Standards

- 1254 The AQS presented within **Table 10.1** are for the protection of human health and for the protection of vegetation and ecosystems and only apply at locations of relevant exposure. The Air Quality Standards Regulations 2011 sets out that the limit values apply everywhere with the exception of:
  - Any locations situated within areas where members of the public do not have access and there is no fixed habitation;
  - On factory premises or at industrial installations to which all relevant provisions concerning health and safety at work apply; and
  - On the carriageway of roads; and on the central reservations of roads except where there is normally pedestrian access to the central reservation.

## 10.1.3 Methodology

# 10.1.3.1 Approach to Data Collection

1255 The following information and data sources (**Table 10.2**) have been considered during the production of this EIAR Scoping Report and will be considered further within the future EIAR where relevant matters are scoped into the EIAR process.



Table 10.2 Data Sources used to inform the Air Quality chapter of this EIAR Scoping Report and that will be considered further within the EIAR

Data source	Date	Data contents
Environmental Protection Agency	2019	Baseline Air Quality, available at; http://www.epa.ie/air/quality/zones/
Cork City Council; Cork City Air Quality Dashboard	2022	Live air quality monitoring; http://corkairguality.ie/

## 10.1.3.2 Potential Additional Data

- 1256 The data sources listed above are those identified to date which have been used to inform this EIAR Scoping Report and which will potentially be used to inform the wider assessment process in the future EIAR.
- 1257 It should be noted that the list of data sources is not exhaustive and may be added to as the works connected to the future EIAR progress.

## 10.1.3.3 Approach to Impact Assessment

- 1258 The impact assessment methodology will be based on that described in EIAR Scoping Report, Volume A Chapter 7 Environmental Impact Assessment Methodology as adapted to make it applicable to assessment of Air Quality receptors.
- 1259 The Air Quality impact assessment methodology will be undertaken in accordance with Guidance on the assessment of dust from demolition and construction (IAQM, 2014).

## 10.1.3.3.1 Dust emissions

- 1260 Construction activities can result in temporary effects from dust. Dust is a generic term and usually refers to particulate matter in the size range of 1-75 microns in diameter. The most common impacts from dust emissions are soiling and increased ambient PM<sub>10</sub> concentrations. Dust can arise from numerous Construction activities such as concrete batching, piling, wind erosion on material stockpiles and earth moving. It can be mechanically transported either via wind or through the movements of vehicles onto public highways (transport of debris on vehicle wheels or uncovered loads).
- 1261 Guidance from the IAQM (2014) states that, where appropriate, a site can be divided into 'zones' for the dust risk assessment to allow different mitigation levels to be applied to each zone. This will be undertaken to allow the most appropriate risk level and mitigation to be assigned to each Construction Phase activity.



- 1262 As The Proposed Development will consist of several different construction activities at different locations, and separate construction dust assessments will be conducted in the future EIAR, as appropriate, for:
  - Onshore Cables, including associated works such as temporary laydown areas and Joint Bays/Passing Bays and temporary compounds associated with Joint Bays/Passing Bays;
  - Connection Point(s), Onshore Project Substation(s) and Battery Energy Storage System;
  - Works associated with Overhead Line loop-in options;
  - Works associated with Cable Landfall(s) and Transition Joint Bays; and
  - Other elements of The Proposed Development, e.g. temporary construction compounds.
- 1263 This is to ensure that the most appropriate mitigation measures will be applied to each Construction activity which reflects the potential significance of the impact, rather than applying the same generic mitigation to the entire Proposed Development.
- 1264 The Construction activities for each construction dust assessment will be split into four separate source categories and the dust risk associated with each of these activities will be assessed individually:
  - Demolition<sup>35</sup>;
  - Earthworks;
  - Construction; and
  - Trackout.
- 1265 The magnitude of dust impacts depends on the nature and scale of the construction activities and the proximity of sensitive receptors to the construction activities or construction site boundary. Each assessment will be used to confirm the mitigation measures proportional to the level of risk, to reduce impacts from dust such that significant effects are not likely.
- 1266 Each assessment will consider three separate impacts from dust:
  - Annoyance due to dust soiling;
  - Harm to ecological receptors; and
  - The risk of impact on humans due to increased exposure to PM<sub>10</sub>.

<sup>&</sup>lt;sup>35</sup> Guidance on the assessment of dust from demolition and construction (IAQM, 2014) defines demolition as "Any activity involved with the removal of an existing structure (or structures). This may also be referred to as deconstruction, specifically when a building is to be removed a small part at a time."



- 1267 As per the IAQM guidance, Step 1 of each assessment will apply screening criteria to The Proposed Development which states that an assessment will be required where there is:
  - A 'human receptor' within:
    - $\circ$  350 m of the boundary of the construction site; and
    - 50 m of the route(s) used by construction vehicles on the public highway up to 500 m from the site entrance(s).
  - An 'ecological receptor' within:
    - 50 m of the boundary of the site; and
    - 50 m of the route(s) used by construction vehicles on the public highway up to 500 m from the site entrance(s).
- 1268 To assess the likely dust risk, the need to quantify the overall dust emission magnitude (Small, Medium or Large) from each of the dust sources identified (demolition, earthworks, Construction and Trackout) will first be established in alignment with the criteria provided in **Appendix 2** of this EIAR Scoping Report.
- 1269 The sensitivity of the surrounding area will be determined for each activity using the matrices provided in **Appendix 2** of this EIAR Scoping Report. The sensitivity of the area will be based on the distance of the source to the closest receptors, the receptors sensitivity and, in the case of PM<sub>10</sub> effects, the local background concentration. The highest level of area sensitivity defined for dust effect will be used in each assessment.
- 1270 The final step of the assessment will combine the dust emission magnitude and the sensitivity of the surrounding area using the matrices presented in **Appendix 2** of this EIAR Scoping Report to determine the dust risk categories for each activity for dust soiling and health effects.
- 1271 The dust risk category defined for each dust source and effect will then be used to determine appropriate site-specific mitigation measures to be adopted. It should be noted that, in line with the recommendations of IAQM guidance, significance is only assigned to construction effects following mitigation.

## 10.1.3.3.2 Construction site plant and machinery emissions

1272 Construction will require the use of different plant for example excavators, cranes and on-site generators. All Construction plant has an energy demand, with some resulting in direct emission to air from exhausts. Guidance from the IAQM (2014) notes that effects from exhausts will likely not be significant. Given the nature of the site plant, which are expected to be similar to plant used in any civil engineering project, the effects of plant emissions on local Air Quality are anticipated to be of negligible significance compared to that from surrounding road traffic contributions on the local road network. Construction plant emissions will however be considered


in the EIAR with respect to Air Quality and mitigation measures to reduce the effects on local Air Quality will be presented in the future EIAR.

## 10.1.3.3.3 Construction Phase traffic emissions

- 1273 The Environmental Protection UK and IAQM (2017) guidance indicates that an assessment of traffic emissions is only likely to be required for large, long term Construction sites that will generate an additional annual average flow of greater than 100 Heavy Duty Vehicles (HDVs) of greater than 3.5 tonnes per day, or greater than 500 Light Duty Vehicles (LDVs) of less than 3.5 tonnes per day.
- 1274 The EPUK/IAQM criteria of a change in HDV flows of 100 Annual Average Daily Traffic (AADT) movements is not anticipated to be exceeded during the Construction Phase.
- 1275 LDV flows associated with the Construction Phase are also not anticipated to exceed the EPUK/IAQM screening criteria of 500 AADT. The effects of construction road traffic on ambient Air Quality will be considered in the future EIAR, however as detailed above, LDV and HDV flows are predicted to be below the relevant screening criteria.

### **10.1.4** Receiving Environment

- 1276 Information on existing Air Quality in Ireland will be obtained from the EPA who undertake monitoring at a number of locations across the country. For the purpose of Air Quality, Ireland is split into four main regions:
  - Zone A: Dublin conurbation;
  - Zone B: Cork conurbation;
  - Zone C: Cities and large towns with population >15,000 (Limerick, Galway, Waterford, Drogheda, Dundalk, Bray, Navan, Ennis, Tralee, Kilkenny, Carlow, Naas, Sligo, Newbridge, Mullingar, Wexford, Letterkenny, Athlone, Celbridge, Clonmel, Balbriggan, Greystones, Leixlip and Portlaoise); and
  - Zone D: Rural Ireland, i.e. the remainder of the state excluding zones A, B and C (EPA, 2019).
- 1277 The Potential Onshore Infrastructure Zone will be located within Zone D. The closest Zone D monitoring site to the Onshore Infrastructure Zone is located in Enniscorthy, County Wexford. However, data for this site is only available for 2015 and 2016. Therefore, data from the Zone D monitoring site at Castlebar, a monitoring site located in a similar environment will also be presented.



- 1278 Monitoring data from the suburban monitoring sites (Heatherton Park and UCC Distillery Fields) in Zone B (Cork) will also be reviewed due to their closer proximity to the Potential Onshore Infrastructure Zone.
- 1279 **Table 10.3, Table 10.4,** and **Table 10.5** present the NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> monitoring results from these sites between 2015 to 2019. Annual mean NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations monitored at these sites are all well below the respective national AQS.

Site Name	Location <sup>36</sup>		Site Type	Annual mean NO <sub>2</sub> concentrations ( $\mu$ g/m <sup>3</sup> )				
	х	Y	one type	2015	2016	2017	2018	2019
Enniscorthy	697902	639825	Suburban Zone D	9 (94%)	9.6 (97%)	_(a)	_(a)	_(a)
Castlebar	514462	789842	Suburban Zone D	8 (100%)	8.5 (99%)	7.4 (99%)	8 (99%)	8 (98%)
UCC Distillery Fields	566517	572116	Suburban Zone B	_(a)	_(a)	_(a)	11 (95%)	10 (100%)

Table 10.3 Annual mean NO2 concentrations

Source: EPA Data Archive. Data Capture is presented in parenthesis. Heatherton Park does not monitor NO<sub>2</sub> so is not presented above.(a) No data available (site decommissioned, not yet operational or low data capture)

Table 10.4 Annual mean PM<sub>10</sub> concentrations

Site Name	Location <sup>37</sup>		Site Type	Annual mean PM <sub>10</sub> concentrations ( $\mu$ g/m <sup>3</sup> )				
	х	Y	Site Type	2015	2016	2017	2018	2019
Enniscorthy	697902	639825	Suburban Zone D	18 (99%)	17.3 (98%)	_(a)	_(a)	18 (100%)
Castlebar	514462	789842	Suburban Zone D	13 (98%)	11.9 (99%)	11.2 (96%)	11 (93%)	16 (93%)
Heatherton Park	568528	570069	Suburban Zone B	11 (75%)	11.5 (100%)	10.4 (98%)	11 (79%)	12 (95%)

Source: EPA data Archive. Data Capture is presented in parenthesis. UCC Distillery Fields does not monitor PM<sub>10</sub> so is not presented above. (a) No data available (site decommissioned, not yet operational or low data capture)

<sup>&</sup>lt;sup>36</sup> Irish Transverse Mercator Co-Ordinates

<sup>&</sup>lt;sup>37</sup> Irish Transverse Mercator Co-Ordinates



#### Table 10.5 Annual mean PM<sub>2.5</sub> concentrations

Site Name	Location <sup>38</sup>	Site Type	Annual mean PM <sub>2.5</sub> concentrations (µg/m <sup>3</sup> )				
	(X,Y)	Site Type	2015	2016	2017	2018	2019
Heatherton Park	568528, 570069	Suburban Zone B	7 (100%)	7 (100%)	5.7 (100%)	_(a)	8 (95%)
UCC Distillery Fields	566517, 572116	Suburban Zone B	_(a)	_(a)	_(a)	9 (89%)	8 (94%)

Source: EPA data Archive. Data Capture is presented in parenthesis. Enniscorthy and Castlebar do not monitor PM<sub>2.5</sub> so is not presented above. No data available (site decommissioned, not yet operational or low data capture)

#### **10.1.5** Potential Impacts

1280 A range of potential impacts on Air Quality have been identified which may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development. These potential impacts include those issues identified as requiring consideration in the future EIAR in accordance with the guidance documents listed in **Section 10.1.2**.

#### 10.1.5.1 Potential Impacts during Construction

#### 10.1.5.1.1 Dust emissions

- 1281 As with any construction project, there is potential for dust to be generated during the Construction Phase. As a result of Construction Phase activities associated with;
  - Onshore Cables, including associated works such as temporary laydown areas and Joint Bays/Passing Bays and temporary compounds associated with Joint Bays/Passing Bays;
  - Connection Point(s), Onshore Project Substation(s) and Battery Energy Storage System;
  - Works associated with Overhead Line loop-in options;
  - Works associated with Cable Landfalls and Transition Joint Bay; and
  - Other elements of The Proposed Development, e.g. temporary Construction Compounds.
- 1282 As dust impacts associated with The Proposed Development are anticipated to only occur during the Construction Phase, all effects from the construction dust emissions are expected to be

<sup>&</sup>lt;sup>38</sup> Irish Transverse Mercator Co-Ordinates



described in the future EIAR as either temporary or short-term, depending on the duration of the Construction Phase activity.

## 10.1.5.1.2 Construction site plant and machinery and traffic emissions

1283 Air Quality effects associated with vehicle traffic and combustion activities during the Construction Phase of The Proposed Development will be assessed in the future EIAR but are anticipated to be of negligible significance, given the nature of the activities.

# 10.1.5.2 Potential Impacts during Operation and Maintenance

## 10.1.5.2.1 Dust emissions

1284 Certain maintenance activities, for example removal of rust/paint etc from above-ground infrastructure, can result in localised dust impacts however the impacts are not likely to be significant with the implementation of standard management measures.

#### 10.1.5.2.2 Site plant and machinery and traffic emissions

1285 Air Quality effects associated with traffic and combustion activities during the Operation and Maintenance Phase of The Proposed Development will be assessed in the future EIAR but are anticipated to be of negligible significance.

#### 10.1.5.3 Potential Impacts during Decommissioning

- 1286 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 1287 The scope of the Decommissioning works cannot be defined at this early stage. Decommissioning activities have the potential to impact Air Quality i.e. by the removal of the infrastructure.
- 1288 Any potential impacts arising from Decommissioning are likely to be comparable to, or less than, those identified for the Construction Phase and will be assessed as part of the future EIAR.

#### 10.1.6 Potential Cumulative Effects

1289 There may be potential for cumulative effects to occur in relation to Air Quality as a result of other activities.



- 1290 The Cumulative Impact Assessment (CIA) for Air Quality will be based on a Zone of Influence (ZoI) identified during The Proposed Development-alone impact assessment, which will define the geographical extent to which effects of The Proposed Development are expected.
- 1291 The potential impacts considered in the CIA as part of EIAR will be in line with those described for The Proposed Development-alone impact assessment, though it is possible that some will be screened out on the basis that the impacts are highly localised (i.e. the ZoI is anticipated to be limited) or where there are management measures in place to robustly reduce the risk of impacts occurring.
- 1292 The CIA will consider cumulative impacts with any other projects and/or developments within the Zone of Influence in line with the approach set out in **Section 7.5.10** of **Volume A Chapter 7** Environmental Impact Assessment Methodology of this EIAR Scoping Report.

# 10.1.6.1 Intra-Project

- 1293 In line with the most recent EPA guidance on EIARs (EPA, 2022) the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 1294 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared Zone of Influence of The Proposed Development (for which Development Permission is sought).

# 10.1.6.2 Other Developments

1295 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative impacts are minimized.

# **10.1.7** Potential Transboundary Effects

1296 In accordance with IAQM guidance, the risk associated with Construction Phase dust impacts occurs up to 350 m from a construction site or within 50 m of the Trackout routes, or within 500 m from the construction site entrance. Beyond this distance, the risk is considered to be negligible. Therefore, transboundary effects associated with Construction Phase dust are not anticipated to occur and it is not expected that transboundary effects will be identified with respect to Air Quality in the future EIAR. As such, it is proposed to scope onshore Air Quality impacts out of the future EIAR.



#### **10.1.8** Summary of Potential Impacts

**Table 10.6** outlines the potential impacts to onshore Air Quality, which are proposed to be scoped into and/or out of the future EIAR. These may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available. These may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.

Table 10.6 Summary of Potential Impacts Relating to Onshore Air Quality. Topics proposed to be Scoped In ( $\checkmark$ ) and Out (x) and future EIAR

Potential Impacts	Construction	Operation and Maintenance	Decommissioning
Dust Impacts	$\checkmark$	$\checkmark$	$\checkmark$
Site plant and machinery	$\checkmark$	$\checkmark$	$\checkmark$
Traffic emissions	~	√	√
Cumulative effects	√	√	√
Transboundary effects	x	x	х

#### **10.1.9 EIAR Scoping Consultation Questions**

- 1298 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Air Quality chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Air Quality chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Air Quality Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?
  - What other data sources, if any, should The Applicant have regard to in the preparation of the Air Quality chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Air Quality chapter of the EIAR for The Proposed Development?
  - Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Air Quality chapter of the EIAR for The Proposed Development?



# **10.1.10 Technical Consultation**

- 1299 This chapter has considered the potential impacts of The Proposed Development on Air Quality. **Table 10.7** sets out a series of areas for discussion which The Applicant would appreciate targeted feedback on.
- 1300 Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 10.7** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.

Table 10.7: Summary of Proposed Key Technical Stakeholders Air Quality.	

Proposed Key Technical Stakeholder	Objective of Engagement
	<ol> <li>To discuss and agree the Topic-specific Study Area in relation to onshore Air Quality.</li> </ol>
Cork County Council	<ol> <li>To gather information in relation to relevant available monitoring data within the Air Quality Topic-specific Study Area.</li> </ol>
	<ol> <li>To discuss and agree approach to impact assessment and potential mitigation measures in the future EIAR.</li> </ol>

#### 10.1.11 References

Cork County Council (2022), Cork County Development Plan 2022-2028

DCCAE (2017), Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects

EPA (2022), Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. Available at: https://www.epa.ie/pubs/advice/ea/EPA%20EIAR%20Guidelines.pdf

European Commission (2017), Environmental Impact Assessment of Projects. Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU)

European Union (2014), DIRECTIVE 2014/52/EU. Official Journal of the European Union L 124/1

European Union (April 2008) Directive on Ambient Air Quality and cleaner Air for Europe, Directive 2008/50/EC Official Journal, vol. 152, pp. 0001-0044

IAQM (2014), Guidance on the assessment of dust from demolition and construction



IEMA (2017), Assessing Greenhouse Gas Emissions and Evaluating Their Significance

IEMA (2019), Guidance on the assessment of the air quality effects of development on designated nature conservation sites

S.I No. 180 of 2011, The Air Quality Standards Regulation 2011

UK Environmental Protection and Institute of Air quality Management (2017), Land-Use Planning and Development Control: Planning for Air Quality

Waterford City and County Council (2022), Waterford City and County Draft Development Plan 2022-2028



### **10.2** CHAPTER **2** NOISE AND VIBRATION

#### 10.2.1 Introduction

- 1301 This chapter of the EIAR Scoping Report considers the potential impacts of the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on onshore Noise and Vibration receptors, and sets out the methodology and approach to be taken to assessing these potential impacts within the future EIAR. This chapter relates to Noise and Vibration impacts on onshore receptors only and the reader is directed to **Volume C, Chapter 3** Underwater Noise and Vibration of this EIAR Scoping Report for information relevant to the scope of underwater noise and vibration in the future EIAR and to **Volume C, Chapter 15** Offshore Airborne Noise.
- 1302 The Noise and Vibration Topic-specific study area in this EIAR Scoping Report comprises the Potential Onshore Infrastructure Zone and any will also include Construction activities associated with the nearshore cable laying of within the within the Potential Export Cable Corridor Infrastructure Zone and Cable Landfall(s). The Noise and Vibration Topic-specific Study Area will be refined for the future EIAR based on positioning of the refined and revised design of The Proposed Development.
- 1303 Indicatively, the Topic-specific Study Area for the assessment in the future EIAR is proposed to extend 300 m from any noise-emitting works assuming activities, and 500 m from noise-emitting equipment where it is operational during the night-time during the Operation and Maintenance Phase. However, the spatial extents of the assessment for all phases will be determined by the potential for relevant assessment criteria to be exceeded rather fixed distances.

#### 10.2.2 Policy and Guidance

- 1304 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context applicable to The Proposed Development. Policies and guidance documents of particular relevance to the Noise and Vibration topic are set out in this section.
- 1305 These policy and guidance documents will be used to inform the Noise and Vibration chapter of the future EIAR.

Policies

- Environmental Noise Regulations, 2006 (S.I. No. 140/2006);
- European Communities (Environmental Noise Regulations) 2018 (S.I. No. 549/2018);
- EPA Act S.I. No. 7/1992 (as amended);
- EPA Act, 1992 (Noise) Regulations, 1994 S.I. No. 179/1994;



- Protection of the Environment Act 2003 S.I. No.27/2003 (as amended);
- Cork County Development Plan 2022-2028;
- Local Area Plans for the municipal districts of East Cork, Cobh and Carrigaline, as appropriate; and

## Guidance

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017);
- Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4), (EPA Office of Environmental Enforcement, 2016);
- Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes (Transport Infrastructure Ireland (TII), 2014);
- British Standard (BS) 5228 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1 Noise/Annex F for the prediction of construction noise impacts;
- Acoustics Sound Attenuation During Propagation Outdoors Part 2 General Method of Calculation [International Standard Organization (1996). ISO 9613];
- BS 5228 Code of Practice for Noise and Vibration Control on Construction and Open Sites - Part 2 Vibration [British Standards Institution (2009+A1:2014)]; and
- BS 4142 Method for rating and assessing industrial and commercial sound [British Standards Institution (2014+A1:2019)].
- 1306 The Environmental Noise Regulations (ENR)<sup>39</sup> transposes EU Directive 2002/49/EC<sup>40</sup> (commonly referred to as the Environmental Noise Directive (END)) for the strategic control of environmental noise in Ireland.
- 1307 Nuisance due to noise is dealt with by the Environmental Protection Agency Act S.I. No. 7/1992 (as amended), and the Environmental Protection Agency Act, 1992 (Noise) Regulations, 1994 (S.I. No. 179/1994). In addition, the Protection of the Environment Act 2003 (S.I. No.27/2003) (as amended) requires that Best Available Techniques are used in controlling noise as a result of human activity "which may be harmful to human health or the quality of the environment, result in damage to material property, or impair or interfere with amenities and other legitimate uses of

<sup>&</sup>lt;sup>39</sup> Environmental Noise Regulations, 2006 (S.I. No. 140/2006) and European Communities (Environmental Noise Regulations) 2018 (S.I. No. 549/2018).

<sup>&</sup>lt;sup>40</sup> The European Parliament and the Council of the European Union, 2002. Directive 2002/49/EC of 25 June 2002 relating to the assessment and management of environmental noise.



*the environment*". The Protection of Environment Act 2003 Part 2 Chapter 1 clarifies that 'noise' includes vibration.

1308 It should be noted that EPA noise guidance (2016) relates only to scheduled activities, and wind turbine operations, the potential for offshore airborne noise to impact onshore receptors is considered in Volume C, Chapter 15 Offshore Airborne Noise. Therefore, this chapter (Volume B, Chapter 2 Noise and Vibration) has had regard to relevant content of other guidance documents, including Transport Infrastructure Ireland's Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes (National Roads Authority, 2014).

# 10.2.3 Methodology

# 10.2.3.1 Approach to Data Collection

1309 The following information and data sources (Table 10.8) have been considered during the production of this EIAR Scoping Report and will be considered further within the future EIAR where relevant matters are proposed to be scoped into the EIAR. The data sources set out in Table 10.8 relate to both sound power data and that data required to inform the proposed modelling approach to be used as set out in Section 10.2.3.3.

Table 10.8 Data Sources used to inform the Noise and Vibration chapter of this EIAR Scoping Report and that will be considered further within the EIAR

Data source	Date	Data contents
Equipment providers	Various	Sound power levels for plant and equipment
Topographical data	Various	Noise modelling
OSI Mapping	Various	Noise modelling
Met Eireann Meteorological Database (available at https://www.met.ie)	Various	Weather condition

# 10.2.3.2 Potential Additional Data and Proposed Surveys

- 1310 The data sources listed above are those identified to date which have been used to inform this EIAR Scoping Report and which will potentially be used to inform the wider assessment in the future EIAR.
- 1311 It should be noted that the list of data sources is not exhaustive and will be added to as the works connected to the future EIAR progress.



1312 In addition to this, project-specific surveys may be undertaken to further provide data to inform the assessment. With respect to Noise and Vibration, it is anticipated that background noise measurements will be undertaken to represent the closest Noise Sensitive Locations (NSL) at specific locations considered to be representative of the ambient/background noise environment at potentially affected receptors.

# 10.2.3.3 Approach to Impact Assessment

- 1313 The impact assessment methodology for the EIAR will be based on that described in EIAR Scoping Report, **Volume A Chapter 7** Environmental Impact Assessment Methodology adapted to make it applicable to assessment of Noise and Vibration receptors.
- 1314 The potential noise impacts during the Construction and Operation and Maintenance Phase of The Proposed Development will be predicted using three-dimensional acoustic models developed within DataKustik CadnaA software. The software implements the procedures described within:
  - BS 5228 'Code of Practice for Noise and Vibration Control on Construction and Open Sites

     Part 1 Noise' (2009+A1:2014) Annex F for the prediction of construction noise impacts;
     and
  - International Standard ISO 9613 'Acoustics Sound Attenuation During Propagation Outdoors Part 2 General Method of Calculation' (1996) for the prediction of noise from sources of operational noise.
- 1315 The methodology and case studies described within 'BS 5228 Part 2: Vibration (2009+A1:2014)' will be used for the prediction of ground-borne vibration from some types of construction activity. It should be noted that the generation, transmission and reception of ground-bone vibration is affected by many parameters including energy input, boundary impedances and the properties of the intervening ground.

# 10.2.3.3.1 Construction Noise

The British Standard BS 5228 Part 1:2009+A1:2014 is typically used in Ireland and therefore will be adopted for the assessment of effects at noise sensitive receptors. It provides comprehensive guidance including details of typical noise levels associated with items of plant and activities, prediction methods, and options for mitigation measures, and therefore is considered appropriate for use in this assessment.

1316 Based on the BS 5228 Part 1 'Example method 1 – ABC Method' in BS 5228 Part 1:2009+A1:2014, noise levels generated by site activities are deemed to be potentially significant if the predicted construction noise level (L<sub>Aeq,T</sub>) at the receptor exceeds the applicable threshold value. Table F.1



of the BS 5228 Part 1:2009+A1:2014 is reproduced in **Table 10.9** identifying threshold levels at which a significant effect is indicated.

Table 10.9: Threshold of potential significant effects due to construction noise at sensitive receptors (residential)

Accessment category and threshold value period	Threshold value LAeq,T dB			
Assessment category and threshold value period	Category A	Category B	Category C	
Night-time (any day 11 p.m. – 7 a.m.)	45	50	55	
Evenings and Weekends (weekdays 7 p.m. – 11 p.m., Saturdays 1 p.m. – 11 p.m., and Sundays 7 a.m. – 11 p.m.)	55	60	65	
Standard working hours (weekdays 7 a.m 7 p.m. and Saturdays 7 a.m. – 1 p.m.)	65	70	75	

- 1317 The threshold value is assigned based on the representative baseline ambient noise level for the receptor:
  - Category A: Threshold value to use when ambient noise levels (when rounded to the nearest 5 dB) are less these threshold values;
  - Category B: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as Category A values; and
  - Category C: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than Category A values.
- 1318 If the (baseline) ambient noise level exceeds the Category C threshold value, a significant effect is identified if the contribution of site noise results in a 3 dB increase in the period ambient noise level.
- 1319 BS 5228 Part 1:2009+A1:2014 states: "The assessor then needs to consider other project-specific factors, such as the number of receptors affected and the duration and character of the impact, to determine if there is a significant effect".
- 1320 BS 5228 Part 1:2009+A1:2014 provides the following criteria for impact duration for the purposes of assessing eligibility for the provision of noise insulation and temporary rehousing due to the impact of construction noise:
  - A period of 10 or more days of working in any 15 consecutive days; or
  - A total number of days exceeding 40 in any 6 consecutive months.



- 1321 Typical and maximum noise levels from general construction activity will be evaluated against the appropriate threshold values for each defined element of The Proposed Development in turn, as follows.
  - Onshore Cable, including associated works such as temporary laydown areas and Joint Bays/Passing Bays and temporary compounds associated with Joint Bays/Passing Bays;
  - Connection Point(s) Onshore Project Substation(s) and Battery Energy Storage System;
  - Works associated with Overhead Line loop-in options;
  - Works associated with Cable Landfall(s) and Transition Joint Bay(s); and
  - Other elements of The Proposed Development, e.g. construction compounds.

# 10.2.3.3.2 Construction Vibration

- 1322 BS 5228 Part 2:2009+A1:2014 provides comprehensive guidance on the assessment of vibration due to construction activity. It considers levels of vibration from construction in terms of peak particle velocity (ppv) defined as the instantaneous maximum velocity reached by a vibrating element as it oscillates about its rest position and is expressed in millimetres per second (mm/s).
- 1323 BS 5228 Part 2:2009+A1:2014 provides guidance on the levels of vibration associated with human perception and disturbance and the onset of potential structural damage to different types of buildings.
- **Table 10.10** presents guidance on threshold values for the human perception of vibration arising during construction, with the significance of effects also provided.

Table 10.10 BS 5228 Part 2 guidance on the human perception effects of vibration due to construction activity and significance of effect

Vibration level ppv mm/s	Effect	Significance
0.14	Vibration might be perceptible in most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.	Not significant
0.3	Vibration might be just perceptible in residential environments.	Not significant
1.0	It is likely that vibration of this level in residential environments will cause complaint but can be tolerated if prior warning has been given to the residents.	Significant
10.0	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments.	Significant



- 1325 BS 5228 Part 2:2009+A1:2014 states that low frequency vibration at a ppv of 15 mm/s may cause cosmetic damage in un-reinforced or light framed structures e.g. for residential/light commercial use. BS 5228 Part 2:2009+A1:2014 states that vibration at a ppv of 50 mm/s may cause cosmetic damage in heavy commercial buildings. These values apply to transient vibration which does not induce a resonant response in structures and low-rise buildings. A source of continuous low frequency vibration may induce a vibration response in buildings or structures at their resonant frequencies. The building would then be subject to additional dynamic forces arising from its own motion. Therefore, BS 5228 Part 2:2009+A1:2014 recommends that the values given should be reduced by 50% to take into account for dynamic magnification due to resonances.
- **Table 10.11** presents guidance on threshold values for the potential onset of cosmetic damage to buildings due to vibration arising during construction, the significance of effects is also given.

Table 10.11 BS 5228 Part 2 guidance on potential cosmetic damage to buildings due to construction activity and significance of effect

Vibration level ppv mm/s	Effect	Significance
Less than 7.5	Low risk of cosmetic damage to un-reinforced or light framed structures/buildings (e.g. residential buildings)	Not significant
7.5 or more	Onset of increased risk of cosmetic damage to un-reinforced or light framed structures/buildings	Significant

# 10.2.3.3.3 Operational Noise

- 1327 The British Standard BS 4142 'Method for rating and assessing industrial and commercial sound' (2014, amended 2019) provides a methodology for assessing the impact of industrial noise sources on residential receptors as a process to assess sound from sources of an industrial nature.
- 1328 The level of sound from an industrial source, the 'rating level', is expressed in terms of the L<sub>Aeq,T</sub> descriptor, and compared to the existing background sound level, expressed in terms of L<sub>A90,T</sub> descriptor. If the source is impulsive, intermittent or tonal in nature, then the 'rating level' includes a penalty, to account for the character of the sound. For the purpose of this assessment, a penalty of +5 dB is added to all predicted specific noise levels.
- 1329 BS 4142 assesses the significance of noise impact based upon the difference between the rating level and background sound level:

"Typically, the greater this difference, the greater the magnitude of the impact;

• A difference of around +10 dB or more is likely to be an indication of a significant adverse impact depending on the context;



- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context; and;
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact.
- Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."
- **Table 10.12** sets out the proposed assessment of operational nose impacts and significance of effects. It will be assumed that predicted rating noise levels include a +5 dB penalty for acoustic features.

Excess of rating level over background sound level	BS 4142 assessment depending on context	Significance depending on context
2 dB or less	Low likelihood of adverse or significant impact	Not significant
3 dB to 7 dB	Likelihood of adverse impact	Not significant
8 dB or greater	Likelihood of significant adverse impact	Significant

Table 10.12 BS 4142 assessment of operational noise and significance of effect

# 10.2.3.3.4 Operational Vibration

1331 Operational vibration due to The Proposed Development is anticipated to be negligible because:

- The plant to be installed will not generate significant vibration during operation; and
- An appropriate separation distance will be designed between plant and nearest sensitive receptors.

#### **10.2.4** Receiving Environment

- 1332 Once location specific details of The Proposed Development become available, background sound measurements will be undertaken to represent the closest NSLs to The Proposed Development.
- 1333 The background sound climate at the Potential Connection Point(s) may however be dominated by existing substation transformer noise, corona discharge noise from towers and/or road traffic noise.
- 1334 The background sound climate for in-road Onshore Cable installation is anticipated to be dominated by road traffic noise.



- 1335 The background sound climate for other elements of The Proposed Development is not known as location specific detail is not yet available but may potentially include 'very quiet' areas within rural areas.
- 1336 The anticipated ZoI ecological noise disturbance effects of the various onshore elements of The Proposed Development will be established and this will inform the ZoI to be appraised for ecological receptors, refer to **Section 10.2.1** of this EIAR Scoping Report.

## **10.2.5** Potential Impacts

- 1337 A range of potential impacts on Noise and Vibration have been identified which may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development. These potential impacts include those issues identified as requiring consideration in the future EIAR in accordance with the guidance documents listed in **Section 10.3.2**
- 10.2.5.1 Potential Impacts during Construction

## 10.2.5.1.1 Potential Noise Impacts during Construction

- 1338 Similar to any civil engineering project, there is potential for Noise and Vibration to be generated during the Construction Phase.
- 1339 Noise impacts arising during the Construction Phase for the in-road and off-road Onshore Cables will be temporary.
- 1340 Noise impacts arising during the Construction Phase for any OHL elements of The Proposed Development also will be temporary.
- 1341 Activities within temporary construction compounds and passing bays are expected to be relatively limited and intermittent. Following site set up, activities within construction laydown areas will mainly comprise the occasional movement of vehicles and the loading and unloading of materials and equipment. The set-up of passing bays is expected to involve small scale works and their use will be similar to existing traffic movements.
- 1342 An assessment of temporary changes in the noise environment associated with Construction Phase activities (e.g. potentially piling, road opening, traffic, HDD etc) will be provided in the future EIAR.

#### 10.2.5.1.2 Potential Vibration Impacts during Construction

1343 Vibration due to any type of piling method used (for example, if required for substation foundations) at the closest dwelling to the extent of the piling activity will be predicted using the



case study and empirical methods presented in Annexes D and E of BS 5228 Part 2:2009+A1:2014. This will predict whether or not the vibration due to piling works undertaken at the closest part of the works to the closest adjacent dwellings is likely to result in vibration levels that would be perceptible, have the potential to cause complaint or expose buildings or structures to vibration levels corresponding with the onset of potential cosmetic damage.

- 1344 Activities that are expected to generate ground-borne vibration during the installation of the Onshore Cables include:
  - Breaking out of existing pavements;
  - Excavation; and
  - Vibratory compaction of fill materials and rolling of surfacing as part of reinstatement.
- 1345 Annex E of BS 5228 Part 2:2009+A1:2014 includes an empirical method for the prediction of vibration arising from vibratory compaction. Using parameters corresponding with a moderate-size vibratory roller (one vibrating drum, 1 m width and 1 mm maximum amplitude of drum vibration), the distances at which the thresholds of significant effects are exceeded will be provided in the EIAR.

# 10.2.5.2 Potential Impacts during Operation and Maintenance

1346 Operational noise will originate from the various items of fixed plant to be installed as part of The Proposed Development. The predicted rating levels at NSL positions (inclusive of a +5 dB penalty for acoustic features such as tonal noise generated by any electrical plant to be installed such as transformers (if necessary)) of fixed plant against typical night-time background sound levels will be presented in the future EIAR. Operational noise will be assessed in line with the above in the future EIAR.

#### 10.2.5.3 Potential Impacts during Decommissioning

- 1347 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 1348 The scope of the Decommissioning works cannot be defined at this early stage.
- 1349 Decommissioning activities have the potential to impact Noise and Vibration i.e. by the removal of the infrastructure. Any potential impacts arising from Decommissioning are likely to be



comparable to, or less than, those identified for the Construction Phase and will be assessed as part of the future EIAR.

## **10.2.6** Potential Cumulative Effects

- 1350 There may be potential for cumulative effects to occur in relation to Noise and Vibration as a result of other activities.
- 1351 The Cumulative Impacts Assessment (CIA) for Noise and Vibration will be based on a Zone of Influence identified by the assessment of the impacts attributed to The Proposed Development alone, which will define the geographical extent to which effects of The Proposed Development are expected.
- 1352 The potential impacts considered in the CIA as part of EIAR will be in line with those described for the assessment of effects due to The Proposed Development-alone, though it is possible that some will be screened out on the basis that the impacts are highly localised (i.e. where the potential impacts are anticipated to be limited) or where there are control measures in place to robustly reduce the risk of impacts occurring.
- 1353 The CIA will consider cumulative impacts with any other projects and/or developments within the Zone of Influence in line with the approach set out in **Section 7.5.10** of **Volume A Chapter 7** Environmental Impact Assessment Methodology of this EIAR Scoping Report.

# 10.2.6.1 Intra-Project

- 1354 In line with the most recent EPA guidance on EIARs (EPA, 2022) the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 1355 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared Zone of Influence of The Proposed Development (for which Development Permission is sought).

#### 10.2.6.2 Other Developments

1356 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative impacts are minimised.



#### **10.2.7** Potential Transboundary Effects

1357 Given the location of where potential effects to arise as a result of The Proposed Development, and the distance to other Member jurisdictions, there is no pathway for transboundary effects to occur. It is not expected that transboundary effects will therefore occur in relation to onshore Noise and Vibration and this issue is proposed to be scoped out in the future EIAR.

#### 10.2.8 Summary of Potential Impacts

**Table 10.13** outlines the anticipated impacts to onshore Noise and Vibration receptors, which are proposed to be scoped into and/or out of the future EIAR. These may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available. These may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.

Potential Impacts	Construction	Operation and Maintenance	Decommissioning
Change in noise environment associated with Construction Phase/Decommissioning Phase activities (potentially piling, road opening, traffic, HDD etc)	~	x	~
Change in noise environment associated with Operation and Maintenance Phase activities and plant and equipment (Onshore Project Substation and BESS equipment, tonal noise etc)	x	~	x
Vibration (subject to location and techniques applied for example vibratory rolling, piling and HDD)	$\checkmark$	$\checkmark$	~
Cumulative effects	~	$\checkmark$	$\checkmark$
Transboundary effects	x	x	x

Table 10.13 Summary of Potential Impacts Relating to Onshore Noise and Vibration. Topics proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR

#### **10.2.9 EIAR Scoping Consultation Questions**

- 1359 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Noise and Vibration chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Noise and Vibration chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Noise and Vibration Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?



- What other data sources, if any, should The Applicant have regard to in the preparation of the Noise and Vibration chapter of the EIAR for The Proposed Development?
- What additional guidance and policy should The Applicant have regard to in the preparation of the Noise and Vibration chapter of the EIAR for The Proposed Development?
- Are you satisfied with the approach to impact assessment proposed for the Noise and Vibration chapter of the EIAR for The Proposed Development?
- Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Noise and Vibration chapter of the EIAR for The Proposed Development?

# 10.2.10 Technical Consultation

- 1360 This chapter has considered the potential impacts of The Proposed Development on Noise and Vibration. **Table 10.14** sets out a series of areas for discussion which The Applicant would appreciate targeted feedback on.
- 1361 Whilst welcoming input from all interested parties, the Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 10.14** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.

Proposed Key Technical Stakeholder	Objective of Engagement	
	<ol> <li>To discuss and agree the Topic-specific Study Area in relation to onshore Noise and Vibration.</li> </ol>	
Cark County Council	2. To discuss and agree suitable baseline noise monitoring locations.	
	3. To discuss Cork County Council views on relevant sensitive noise receptors.	
	<ol> <li>To discuss and agree approach to impact assessment and potential mitigation measures in the future EIAR.</li> </ol>	

Table 10.14: Summary of Proposed Key Technical Stakeholders Noise and Vibration.

# 10.2.11 References

Acoustics - Sound Attenuation During Propagation Outdoors Part 2 General Method of Calculation [International Standard Organization (1996). ISO 9613]



BS 4142 Method for rating and assessing industrial and commercial sound [British Standards Institution (2014+A1:2019)].

BS 5228 Code of Practice for Noise and Vibration Control on Construction and Open Sites - Part 1 Noise / Annex F for the prediction of construction noise impacts

BS 5228 Code of Practice for Noise and Vibration Control on Construction and Open Sites - Part 2 Vibration [British Standards Institution (2009+A1:2014)]

Environmental Noise Regulations, 2006 (S.I. No. 140/2006)

Environmental Protection Agency Office of Environmental Enforcement (2016). Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relations to Scheduled Activities (NG4).

EPA Act S.I. No. 7/1992 (as amended)

EPA Act, 1992 (Noise) Regulations, 1994 S.I. No. 179/1994

European Communities (Environmental Noise Regulations) 2018 (S.I. No. 549/2018)

European Union (2014), Directive 2014/52/EU. Official Journal of the European Union L 124/1

Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes (TII, 2014)

Guidelines for the Treatment of Noise and Vibration in National Road Schemes (TII, 2004)

Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relations to Scheduled Activities (NG4), (EPA Office of Environmental Enforcement, 2016).

National Roads Authority (2014). Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes.

Protection of the Environment Act 2003 S.I. No.27/2003 (as amended)



### 10.3 CHAPTER 3 LAND, SOILS AND HYDROGEOLOGY

#### 10.3.1 Introduction

- 1362 This chapter of the EIAR Scoping Report considers the potential impacts of the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on Land, Soils and Hydrogeology and sets out the methodology and approach to be taken to assessing these potential impacts within the future EIAR. In addition, the approach to the assessment of the compliance of The Proposed Development with the Water Framework Directive (WFD) 2000/60/EC, in terms of groundwater, is also presented.
- 1363 The Land, Soils and Hydrogeology Topic-specific Study Area in this EIAR Scoping Report comprises the Potential Onshore Infrastructure Zone. However, the Land, Soils and Hydrogeology Topicspecific Study Area will be refined for the future EIAR based on positioning of onshore infrastructure elements and locations of construction activities. Indicatively, the study area for the assessment in the future EIAR is proposed extend to 500 m either side of the Onshore Cable route(s), Connection Point(s) and Transition Joint Bay and extend up to a 1 km radius from proposed above ground structures.
- 1364 The impact assessment in the future EIAR will be divided into the following sections, as appropriate:
  - Onshore Cables, including associated works such as temporary laydown areas and Joint Bays/Passing Bays and temporary compounds associated with Joint Bays/Passing Bays;
  - Onshore Project Substation and Battery Energy Storage System;
  - Works associated with Overhead Line loop-in options;
  - Transition Joint Bay; and
  - Other elements of The Proposed Development, e.g. temporary construction compounds.
- 1365 Scoping the approach to the assessment of the compliance of The Proposed Development with the WFD in terms of transitional and coastal waterbodies is presented in Volume C, Chapter 2 Marine Water Quality of this EIAR Scoping Report.

#### 10.3.2 Policy and Guidance

1366 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context applicable to The Proposed Development. Policies and guidance documents of particular relevance to the Land, Soils and Hydrogeology topic are set out in this section.



1367 These policy and guidance documents will be used to inform the Land, Soils and Hydrogeology chapter of the future EIAR.

## Policies

- S.I. No. 272 of 2009: European Communities Environmental Objectives (Surface Waters) Regulations 2009 (as amended by S.I. No. 296/2009; S.I. No. 386/2015; S.I. No. 327/2012; and S.I. No. 77/2019 and giving effect to Directive 2008/105/EC on environmental quality standards in the field of water policy and Directive 2000/60/EC establishing a framework for Community action in the field of water policy);
- S.I. No. 722 of 2003 European Communities (Water Policy) Regulations which implement EU Water Framework Directive (2000/60/EC) establishing a framework for the Community action in the field of water policy and provide for implementation of 'daughter' Groundwater Directive (2006/118/EC) on the protection of groundwater against pollution and deterioration. Since 2000 water management in the EU has been directed by the Water Framework Directive (2000/60/EC) (as amended by Decision No. 2455/2011/EC; Directive 2008/32/EC; Directive 2008/105/EC; Directive 2009/31/EC; Directive 2013/39/EU; Council Directive 2013/64/EU; and Commission Directive 2014/101/EU (WFD). The WFD was given legal effect in Ireland by the European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003);
- S.I. No. 684 of 2007: Waste Water Discharge (Authorisation) Regulations 2017, resulting from EU Directive 80/68/EEC on the protection of groundwater against pollution caused by certain dangerous substances (the Groundwater Directive); S.I. No. 106 of 2007: European Communities (Drinking Water) Regulations 2007; and S.I. No. 122 of 2014: European Communities (Drinking Water) Regulations 2014, arising from EU Directive 98/83/EC on the quality of water intended for human consumption (the Drinking Water Directive) and EU Directive 2000/60/EC;
- S.I. No. 9 of 2010: European Communities Environmental Objectives (Groundwater) Regulations 2010 [as amended by S.I. No. 389/2011 - European Communities Environmental Objectives (Groundwater) (Amendment) Regulations 2011, S.I. No. 149/2012 - European Communities Environmental Objectives (Groundwater) (Amendment) Regulations 2012, S.I. No. 366/2016 - European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016]
- Protection of the Environment Act 2003 S.I. No.27/2003 (as amended);
- Cork County Development Plan 2022-2028;
- Local Area Plans for the municipal districts of East Cork, Cobh and Carrigaline, as appropriate; and
- Draft Waterford City and County Development Plan 2022 2028.



### Guidance

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017);
- Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (National Roads Authority, 2009), hereafter referred to as the National Roads Authority Guidelines;
- Guidelines for Preparation of Soils, Geology & Hydrogeology Chapters in Environmental Impact Statements (Institute of Geologists Ireland, 2013); and
- Construction Industry Research and Information Association (CIRIA) 2006: Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors. (CIRIA C532. London, 2006)

# 10.3.3 Methodology

# 10.3.3.1 Approach to Data Collection

1368 The information and data sources set out in **Table 10.15** have been considered for the purposes of this EIAR Scoping Report and will be considered further within the future EIAR.

Table 10.15 Data Sources used to inform the Land, Soils and Hydrogeology chapter of this EIAR Scoping Report and that will be considered further within the EIAR

Data source	Date	Data contents
Geological Survey of Ireland (GSI) database ( <u>https://www.gsi.ie/en–</u> <u>ie/data–and–maps</u> )	Various	Quaternary Sediments 1:50,000 Bedrock 1:100,000 Karst Landforms Karst Traced Underground Connections Geological Heritage Audited Sites Bedrock Aquifers 1:100,000 Sand and Gravel Aquifers 1:40,000 Groundwater Recharge 1:40,000 Groundwater Vulnerability 1:40,000 Hydrostatigraphic Rock Units 1:100,000 Public Source Protection Areas 1:15,000 – 1:20,000 Subsoil Permeability 1:40,000 Quarry Directory (2014) Groundwater Wells and Springs



Data source	Date	Data contents
		Landslide Susceptibility and Landslide Extent Locations
		CORINE Land cover (CLC)
Environmental Protection Agency	Various	Irish Soil Information System (SIS) National Database 1:250,000
(EPA) database (www.epa.je/GetData/Download)		Historic Mines Project – Site Boundaries
( <u>www.epane</u> ) Gerbata/Download)		OSI Rivers and Lakes
		WFD Groundwater Bodies – Cycle 3
		WFD River Water Bodies – Cycle 3
Geological Survey of Ireland ( <u>www.gsi.ie</u> )	Various	Groundwater Database
National Parks & Wildlife Service (NPWS)	Various	Public Map Viewer (www.npws.ie)
Water Framework Directive Catchments	Various	Map Viewer (www.catchments.ie)
Geological Survey of Ireland	Various	Groundwater Body Characterisation Reports
Environment Protection Agency	Various	Water Framework Ireland Map viewer databases
Environment Protection Agency	Various	Extractive Industries Register
Map of Irish Wetlands ( <u>https://www.wetlandsurveys.ie/miw–</u> intro).	Various	Wetlands
Geological Survey of Ireland – ( <u>www.gsi.ie</u> )	Various	Groundwater Database

# 10.3.3.2 Potential Additional Data and Proposed Surveys

- 1369 The data sources listed above are those identified to date which have been used to inform this EIAR Scoping Report and which may be used to inform the wider assessment process in the future EIAR.
- 1370 It should be noted that the list of data sources is not exhaustive and may be added to as the works connected to the future EIAR progress.



## 10.3.3.3 Approach to Impact Assessment

- 1371 The impact assessment methodology in the future EIAR will be based on that described in EIAR Scoping Report, **Volume A Chapter 7** Environmental Impact Assessment Methodology as adapted to make it applicable to assessment of Land, Soils and Hydrogeology receptors.
- 1372 The Land, Soils and Hydrogeology impact assessment methodology will be in accordance with the Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (National Roads Authority, 2009).

## 10.3.3.3.1 Identification of Receptors

1373 The scope presented in **Table 10.16** will be used to identify the various baseline receptors in proximity to The Proposed Development.

Receiving Environment	Scope		
Land and land use	Land use types and potential contaminant profiles		
	Soils, subsoils, bedrock geology and other geological features, further to a review of GSI data.		
Soils and geology	Mapped karst landforms including boreholes, caves, dry valleys, enclosed depressions, estavelles, springs, superficial solution features, swallow holes and turloughs.		
	Traced underground connections of known water dye trace studies and results.		
	Geological heritage sites.		
	Geohazards: recorded events, primarily landslides, karst features		
	Groundwater body and both quantitative and qualitative status classification as assigned under the WFD.		
	Groundwater: Groundwater abstractions from Public Supply Schemes, Group Water Schemes and local domestic/agricultural wells (with varying degrees of location accuracy) mapped by the GSI.		
	Groundwater Drinking Water Protection Areas.		
Hydrogeology	Aquifer Type, as assigned by the GSI; relates to the aquifers productivity in terms of well yields as detailed below:		
	<ul> <li>LI – Locally Important Aquifer – Bedrock which is Moderately Productive only in Local Zones;</li> </ul>		
	<ul> <li>Lm – Bedrock which is Generally Moderately Productive;</li> </ul>		
	<ul> <li>Lk – Locally Important Aquifer – Karstified to a limited degree or area</li> </ul>		
	<ul> <li>Rkd – Regionally Important Aquifer–Karstified (diffuse); and</li> </ul>		
	<ul> <li>Lg – Locally Important Aquifer – Sand and gravel.</li> </ul>		

Table 10.16 Scope for identification of baseline Land, Soils and Hydrogeology receptors



Receiving Environment	Scope
	Aquifer Vulnerability. Groundwater recharge.
	Designated sites that are hydrologically or hydrogeologically connected to The Proposed Development (e.g. by way of karst connections, or by linear features such as water courses).

# 10.3.3.3.2 Assessment of Importance/Sensitivity of Receptors

1374 The importance/sensitivity of the geological and hydrogeological receptors will be assessed following National Roads Authority (2009) Guidance, with additional criteria for the assessment of ground stability. The criteria that will be used for assessing the importance and sensitivity of the geological and hydrogeological environments in the EIAR is outlined below in **Table 10.17** and **Table 10.18**.

Table 10.17 Criteria for the determination of the Importance of Geological Attributes

Importance	Criteria	Typical Example
Very High	Attribute has a high quality, significance or value on a regional or national scale. Degree or extent of soil contamination is significant on a national or regional scale. Volume of peat and/or soft organic soil underlying route is significant on a national or regional scale. Ground instability is significant on a national or regional scale.	Geological feature rare on a regional or national scale (NHA). Large existing quarry or pit. Proven economically extractable mineral resource. Major historical landslide or widespread subsidence.
High	High Attribute has a high quality, significance or value on a local scale. Degree or extent of soil contamination is significant on a local scale. Volume of peat and/or soft organic soil underlying site is significant on a local scale. Ground instability is significant on a local scale.	Contaminated soil on site with previous heavy industrial usage. Large recent landfill site for mixed wastes. Geologically feature of high value on a local scale (County Geological Site). Well drained and/or high fertility soils. Moderately sized existing quarry or pit. Marginally economic extractable mineral resource. Large or small repeated historical landslide or localised subsidence.



Importance	Criteria	Typical Example
Medium	Medium Attribute has a medium quality, significance or value on a local scale. Degree or extent of soil contamination is moderate on a local scale. Volume of peat and/or soft organic soil underlying site is moderate on a local scale. Ground instability is moderate on a local scale.	Contaminated soil on site with previous light industrial usage. Small recent landfill site for mixed wastes. Moderately drained and/or moderate fertility soils. Small existing quarry or pit. Sub-economic extractable mineral resource. Minor historical landslide or historical subsidence.
Low	Low Attribute has a low quality, significance or value on a local scale. Degree or extent of soil contamination is minor on a local scale. Volume of peat and/or soft organic soil underlying site is small on a local scale. Ground instability is very limited and only on a local scale.	Large historical and/or recent site for construction and demolition wastes. Small historical and/or recent site for construction and demolition wastes. Poorly drained and/or low fertility soils. Uneconomically extractable mineral resource. No historical landslides, weak or no evidence of any localised subsidence

Source: National Roads Authority (2009)/Mott MacDonald

- 1375 Geohazards will be identified, such as any karst features or areas susceptible to landslides/subsidence. Karst features include sinkholes, caves, some types of springs and turloughs. Sinkholes caves and springs are all noted within the Potential Onshore Infrastructure Zone.
- 1376 Soil and subsoil receptors will be identified using Teagasc and GSI databases, with the latter including the national Quaternary sediments database.

 Table 10.18 Criteria for the determination of the Importance of Hydrogeology Attributes

Importance	Criteria	Typical Example
Extremely High	Attribute has a high quality or value on an international scale	Groundwater supports river, wetland or surface water body ecosystem protected by EU legislation, e.g. Special Area of Conservation (SAC) or Special Protection Area (SPA) status.
Very High	Attribute has a high quality or value on a regional or national scale	Regionally Important Aquifer with multiple wellfields. Groundwater supports river, wetland or surface water body ecosystem protected by national legislation – National Heritage Area (NHA) status.



Importance	Criteria	Typical Example
		Regionally important potable water source supplying >2500 homes Inner source protection area for regionally important water source.
High	Attribute has a high quality or value on a local scale	Regionally Important Aquifer Groundwater provides large proportion of baseflow to local rivers. Locally important potable water source supplying >1000 homes. Outer source protection area for regionally important water source. Inner source protection area for locally important water source.
Medium	Attribute has a medium quality or value on a local scale	Locally Important Aquifer. Potable water source supplying >50 homes. Outer source protection area for locally important water source
Low	Attribute has a low quality or value on a local scale	Poor Bedrock Aquifer Potable water source supplying <50 homes

Source: National Roads Authority, 2009

- 1377 The hydrogeology receptors that will be identified include aquifers, boreholes/abstractions, groundwater/surface water interactions and karst features. These will be identified using relevant GSI and EPA datasets.
- 1378 The aquifer types will be described both by the aquifer productivity and through the bedrock aquifer types. The productivity of the aquifer will be used to assign receptor value.
- 1379 For boreholes/abstractions the value will be identified by the productivity and use of the abstraction for public/domestic or agricultural supply, where such information is available.
- 1380 The Groundwater/surface water interactions will include the identification of any designated ecological sites that may be influenced by the hydrogeology of the local area.
- 1381 Springs will be identified using the GSI dataset. Only the springs listed within 1 km of The Proposed Development in the GSI dataset will be included. Karst data will be included both within the hydrogeology and geology assessments.

# 10.3.3.3 Assessment of Effects

1382 Potential effects (beneficial and adverse) on the receiving environment will be described qualitatively based on an assessment of the characteristics of The Proposed Development (for example construction phase activities).



## 10.3.3.3.4 WFD Assessment Methodology

- 1383 The design of The Proposed Development will be screened against the following characteristics for groundwater bodies:
  - Water balance;
  - Groundwater abstraction related deterioration of dependent surface water body status;
  - Groundwater dependent ecosystems; and
  - Saline or other intrusion test.
- 1384 This will determine whether the physical works require a further assessment to be undertaken in order to ensure it is compliant with the WFD. The assessment will be repeated if the proposed works are significantly altered in the future.

#### **10.3.4 Receiving Environment**

- 1385 An overview of the baseline features within the receiving environments: land and land use, soils and geology and hydrogeology will be presented in the EIAR. The baseline will be identified using the methodology outlined in **Section 10.3.3.** The WFD groundwater bodies intersected by The Proposed Development will also be presented.
- 1386 **Figure 10.1** presents land, soil and hydrogeological features of note (karst features, groundwater source protection zones, geological heritage unaudited sites) within the Potential Onshore Infrastructure Zone.



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# 10.3.4.1 Land and Land Use

- 1387 The baseline encountered for The Proposed Development may include any or all of the land and land use types listed below:
  - Electricity infrastructures (including existing substations);
  - Agricultural land (Pastures, non-irrigated arable land, complex cultivation patterns);
  - Industrial land use;
  - Residential and community land use;
  - Roads/Car Parking;
  - Quarries; and
  - Railway Lines.
- 1388 It is anticipated that there may be a wide range of shallow, basic, and poorly drained soil types interspersed throughout the Land, Soils and Hydrogeology Topic-specific Study Area. Devonian Sandstone Till is the primary subsoil receptor identified within the Potential Onshore Infrastructure Zone but there are also a variety of bedrock outcrop, marine and estuarine sediments and manmade sub soil layers.
- 1389 There are numerous Geological Heritage Unaudited Sites within the Potential Onshore Infrastructure Zone. The term unaudited denotes that the feature, with an applied buffer, has not yet been audited but is a potential site of conservation interest.

# 10.3.4.2 Hydrogeology

- 1390 The Potential Onshore Infrastructure Zone includes two Groundwater Source Protection Areas.
  - Cloyne-Aghada Water Supply Scheme:
    - According to a 2002 Geological Survey of Ireland report (the GSI Report 2002), the Cloyne-Aghada Water Supply Scheme comprises five production boreholes, of which four were in use at the time of writing the report. The boreholes are spread across the townlands of Town Parks (just southeast of the town of Cloyne), Castlemary and Lissanly (southeast of the town), Commons East (south of the town) and Farrannamanagh (southeast of the town). According to the GSI Report 2002, each of the bores is well protected from potentially polluting activities, by concrete chambers which enclose the wellheads.



- Dower Spring (Whitegate Regional Water Supply Scheme):
  - According to the GSI Report (2002), the spring emerges from a cave in a low limestone cliff on the south side of a minor road, and abstracted water serves the Whitegate Refinery and domestic consumers in the Ballinacurra, Ballycotton, Churchtown, Garryvoe/Shanagarry, Gyleen/Trabolgan, Saleen, Upper Aghada and Whitegate areas.

## 10.3.4.3 WFD Groundwater Bodies

- 1391 There are a number of WFD groundwater bodies within the Potential Onshore Infrastructure Zone. These include:
  - Ringaskiddy IE\_SW\_G\_072;
  - Ballinhassig East IE\_SW\_G\_004;
  - Midleton IE\_SW\_G\_058;
  - Knockadoon East IE\_SW\_G\_045;
  - Cloyne IE\_SW\_G\_028; and
  - Whitegate IE\_SW\_G\_079.

#### **10.3.5** Potential Impacts

- 1392 A range of potential impacts on Land, Soils and Hydrogeology have been identified which may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development. These potential impacts include those issues identified as requiring consideration in accordance with the guidance documents listed in **Section 10.3.2**.
- 1393 Certain elements of the Construction Phase and Operation and Maintenance Phase activities have the potential to impact Land, Soils and Hydrogeology. Each element will be evaluated in turn, as appropriate, under the following headings
  - Onshore Cable Corridors, including associated works such as temporary laydown areas and Joint Bays/Passing Bays and temporary compounds;
  - Connection Point(s), Onshore Project Substation(s) and Battery Energy Storage System;
  - Works associated with Overhead Line loop-in options;
  - Works associated with Cable Landfalls and Transition Joint Bay;
  - Operation and maintenance tasks for the onshore infrastructure; and
  - Other elements of The Proposed Development, e.g. temporary construction compounds.


### 10.3.5.1 Potential Impacts during Construction

- 1394 Construction Phase impacts to be considered will include those which have the potential to impact the following receiving environments:
  - Land and Land Use;
  - Soils and Geology; and
  - Hydrogeology.
- 1395 The following table sets out the potential Construction Phase impacts on Land Use, Soils and Hydrogeology which will be assessed in the EIAR.

Table 10.19 Potential Construction Phase Impacts

Proposed Development	Receiving Environment	Construction Phase Impacts	
Connection Point(s)	Land and land use	<ul> <li>Temporary disruption to surface during installation.</li> <li>Temporary disruption to land use with excavation, temporary storage of excavated material and potential laydown areas.</li> <li>Increase in traffic in surrounding area due to vehicles accessing site during construction.</li> </ul>	
	Soils and Geology	Localised pollution risk from surface mobilisation of the soil layer during excavation.	
	Hydrogeology	Localised pollution risk from mobilisation of soil contaminants during excavation.	
	Land and land use	Permanent change in land use. Increased traffic in area surrounding site due to construction vehicles. Vegetation will be removed for excavation.	
Onshore Project Substation(s) and Battery Energy Storage System (BESS) and loop-in options	Soils and Geology	Localised pollution risk from surface mobilisation of the soil layer during excavation. Disruption to underground soil and subsoil layers could impact soils' physical, chemical and biological characteristics. Alteration of drainage due to new drainage design and loss of permeable recharge areas. Infilling of depressions disturbing infiltration and recharge to aquifers.	



Proposed Development	Receiving Environment	Construction Phase Impacts	
		Loss of surface vegetation and exposure of sub soils increasing risk of soil erosion.	
		Risk of groundwater pollution through rapid karst pathways to designated ecological sites.	
		Risk of pollution and altered recharge regimes to distinctive karst habitat.	
		Risk of ground collapse associated with karst cavities in bedrock.	
		Disruption to surface during construction risks groundwater pollution.	
		Disruption to surface during construction risks groundwater pollution.	
	Hydrogeology	Risk of groundwater pollution through rapid karst pathways.	
		Risk of groundwater pollution through rapid karst pathways to designated ecological sites.	
	Land and land use	Temporary disruption to surface during installation through open cut trenching.	
		Temporary disruption to land use with excavation, temporary storage of excavated material and laydown areas.	
		Temporary disruptions to traffic due to road closures, diversions and traffic control.	
		Vegetation will be removed.	
		Tree roost systems may be damaged/severed.	
Onshore Cables , TJB and	Soils and Geology	Localised pollution risk from surface mobilisation of the soil layer.	
compounds		Temporary removal and storage of top layer of ground increasing risk of soil erosion, contamination and compaction.	
		Disruption to underground soil and subsoil layers could impact soils physical, chemical and biological characteristics.	
		Water crossings have the potential to generate silt and suspended solids during the proposed works and disturb riparian environments.	
		Risk of leakage of fluid on site.	
		Excavation changing soil compaction resulting in altered recharge regime.	



Proposed Development	Receiving Environment	Construction Phase Impacts
		Risk of ground collapse associated with karst cavities in bedrock.
	Hydrogeology	Temporary removal of top layer of ground increasing risk of groundwater pollution. Trench water crossings have the potential to generate silt and suspended solids during the proposed works leading to potential groundwater pollution and increased localised turbidity. Disruption of soils and subsoil layers, risk of leakage of fluid on site, lack of geological cohesion to support drilling process. Altered recharge regime to soil and geology may reduce rate of infiltration and recharge to aquifer. Risk of groundwater pollution through rapid karst pathways to designated ecological sites during construction and excavation of bays and Horizontal Directional Drilling (HDD) operations.
	Risk of pollution and altered recharge regimes to karst aquifers which are an important source of water supply for river baseflow and groundwater dependent habitats.	

# 10.3.5.2 Potential Impacts during Operation and Maintenance

- 1396 Operation and Maintenance impacts to be considered will include those which have the potential to impact the following receiving environments:
  - Land and Land Use;
  - Soils and Geology; and
  - Hydrogeology.
- 1397 **Table 10.20** details the potential Operation and Maintenance Phase impacts on Land Use, Soils and Hydrogeology which will be assessed in the EIAR.

Proposed Development	Receiving Environment	Operational and Maintenance Impacts	
Connection Point(s)	Land and land use	No operational impacts anticipated.	
connection Folint(s)	Soils and Geology		

Table 10.20 Potential Operation and Maintenance Phase Impacts



Proposed Development	Receiving Environment	Operational and Maintenance Impacts	
	Hydrogeology		
Onshore Project Substation(s) and BESS and loop-in options	Land and land use	Drainage and foul water discharges have potential to	
	Soils and Geology	Potential increase in flood risk.	
	Hydrogeology	Potentially polluting substances will be contained in suitable containers in bunds where required	
	Land and land use	Traffic disruption during periods of maintenance (Land	
Onshore Cables	Soils and Geology	cross roads).	
	Hydrogoology	Risk of ground pollution and surface water pollution to soil and geology during periods of maintenance.	
	пушодеоюду	Risk of surface water pollution to groundwater during periods of maintenance.	

### 10.3.5.2.1 WFD Groundwater screening assessment

- 1398 The small scale of the onshore elements relative to the magnitude of the WFD waterbodies means that it is anticipated that significant impacts are not likely to occur and that The Proposed Development will have no potential to cause deterioration in status of any groundwater body and/or jeopardise the attainment of good groundwater status of any groundwater body.
- 1399 For completeness, the potential of The Proposed Development to cause deterioration in status of any groundwater body and/or jeopardise the attainment of good groundwater status of any groundwater body will however be assessed as part of the future EIAR.

#### 10.3.5.3 Potential Impacts during Decommissioning

- 1400 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 1401 The scope of the Decommissioning works cannot be defined at this early stage.
- 1402 Decommissioning activities have the potential to impact Land, Soils and Hydrogeology i.e. by the removal of the infrastructure. Any potential impacts arising from Decommissioning are likely to



be comparable to, or less than, those identified for the Construction Phase and will be assessed as part of the future EIAR.

### **10.3.6** Potential Cumulative Effects

- 1403 There may be potential for cumulative effects to occur in relation to Land, Soils and Hydrogeology as a result of other activities.
- 1404 The Cumulative Impact Assessment (CIA) for Land, Soils and Hydrogeology will be based on a Zone of Influence identified during The Proposed Development-alone impact assessment, which will define the geographical extent to which effects of The Proposed Development are expected.
- 1405 The potential impacts considered in the CIA as part of EIAR will be in line with those described for The Proposed Development-alone impact assessment, though it is possible that some will be screened out on the basis that the impacts are highly localised (i.e. the Zone of Influence is anticipated to be limited) or where there are management measures in place to robustly reduce the risk of impacts occurring.
- 1406 The CIA will consider cumulative impacts with any other projects and/or developments within the Zone of Influence in line with the approach set out in **Section 7.5.10** of **Volume A Chapter 7** Environmental Impact Assessment Methodology of this EIAR Scoping Report.

# 10.3.6.1 Intra-Project

- 1407 In line with the most recent EPA guidance on EIARs (EPA, 2022) the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 1408 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared Zone of Influence of The Proposed Development (for which Development Permission is sought).

# 10.3.6.2 Other Developments

1409 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative impacts are minimised.

#### **10.3.7** Potential Transboundary Effects

1410 Given the location of potential effects that are likely to arise as a result of The Proposed Development, the distance to other jurisdictions, and the lack of a pathway for transboundary



effects to occur in relation to Land Use, Soils and Hydrogeology it is not expected that transboundary effects will occur with respect to Land Use, Soils and Hydrogeology. It is therefore proposed to scope this out from the future EIAR.

### **10.3.8** Summary of Potential Impacts

1411 **Table 10.21** outlines the anticipated impacts for Land, Soils and Hydrogeology, which are proposed to be scoped into and/or out of the future EIAR. These may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available. These may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.

Table 10.21 Summary of Potential Impacts Relating to Land, Soils and Hydrogeology. Topics proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR

Potential Impacts	Construction	Operation and Maintenance	Decommissioning
Land and land use			
Temporary disruption to land during installation.			
Permanent change in land use.			
Temporary disruption to land use with excavation, temporary storage of excavated material and potential laydown areas.	~	v	$\checkmark$
Increase in flood risk.			
Increase in traffic in surrounding area due to vehicles accessing site during construction/ decommissioning impacting on land use for example movement of farm animals.			
Soils and geology			
Localised pollution risk from surface mobilisation of soils during excavation.			
Temporary removal and storage of top layer of soil increasing risk of soil erosion, contamination, and compaction.			
Disruption to underground soil and subsoil layers could impact soils' physical, chemical and biological characteristics.	~	~	<b>~</b>
Alteration of drainage due to new drainage design and loss of permeable recharge areas.			
Loss of surface vegetation and exposure of subsoils increasing risk of soil erosion.			



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Potential Impacts	Construction	Operation and Maintenance	Decommissioning
Tree roost systems may be damaged / severed Risk of leaks and spills of potentially polluting substances from Construction plant Risk of pollution and altered recharge regimes to distinctive karst habitat. Risk of ground collapse associated with karst cavities in bedrock. Risks groundwater pollution. Disruption to underground soil and subsoil layers could impact soils physical, chemical, and biological characteristics. Water crossings have the potential to generate silt and suspended solids during the proposed works and disturb riparian environments. Excavation changing soil compaction resulting in altered recharge regime.			
<ul> <li>Hyarogeology</li> <li>Localised pollution risk from mobilisation of soil contaminants during excavation.</li> <li>Risk of leaks and spills of potentially polluting substances affecting groundwater.</li> <li>Risk of groundwater pollution through rapid karst pathways to designated ecological sites.</li> <li>Disruption to surface during construction risks groundwater pollution.</li> <li>Risk of groundwater pollution through rapid karst pathways.</li> <li>Trench water crossings have the potential to generate silt and suspended solids during the proposed works leading to potential groundwater pollution and increased localised turbidity.</li> </ul>	¥	v	V
Cumulative effects	$\checkmark$	V	~
Transboundary effects	x	x	x



### **10.3.9 EIAR Scoping Consultation Questions**

- 1412 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Land, Soils and Hydrogeology chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Land, Soils and Hydrogeology chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Land, Soils and Hydrogeology Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?
  - What other data sources, if any, should The Applicant have regard to in the preparation of the Land, Soils and Hydrogeology chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Land, Soils and Hydrogeology chapter of the EIAR for The Proposed Development?
  - Are you satisfied with the approach to impact assessment proposed for the Land, Soils and Hydrogeology chapter of the EIAR for The Proposed Development?
  - Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Land, Soils and Hydrogeology chapter of the EIAR for The Proposed Development?

#### **10.3.10 Technical Consultation**

- 1413 This chapter has considered the potential impacts of The Proposed Development on Land, Soils and Hydrogeology. **Table 10.22** sets out a series of areas for discussion which The Applicant would appreciate targeted feedback on.
- 1414 Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 10.22** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.



Table 10.22: Summary of Proposed Key Technical Stakeholders Land, Soils and Hydrogeology.

Proposed Key Technical Stakeholder	Objective of Engagement
<u></u>	<ol> <li>To gather available information in relation to ground conditions within the Land, Soils and Hydrogeology Topic-specific Study Area.</li> </ol>
GSI	2. To inform of The Proposed Development, the proposed approach to The Proposed Development and to invite potential feedback.
EPA	<ol> <li>To inform of The Proposed Development, the proposed approach to The Proposed Development and to invite potential feedback, in particular in relation to the proposed approach to the WFD assessment.</li> </ol>
	<ol> <li>To discuss and agree the Topic-specific Study Area in relation to Land, Soils and Hydrogeology.</li> </ol>
Cork County Council	<ol> <li>To gather available information in relation to ground conditions within the Land, Soils and Hydrogeology Topic-specific Study Area.</li> </ol>
	3. To identify other planned / proposed developments to be considered in the future EIAR
	<ol> <li>To discuss and agree approach to impact assessment and potential mitigation measures in the future EIAR.</li> </ol>

#### 10.3.11 References

EPA Catchments. (2020). EPA Catchments data explorer. Retrieved from Catchments.ie: https://www.catchments.ie/data/#/waterbody/IE\_SW\_G\_058?\_k=9I3z1h

European Commission, 2017, Environmental Impact Assessment of Projects. Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU)

European Union (2014), DIRECTIVE 2014/52/EU. Official Journal of the European Union L 124/1

GIS EPA Interactive Map. Retrieved from Environmental Protection Agency Maps: https://gis.epa.ie/EPAMaps/ (EPA, 2020).

GIS Web Map Viewer. Retrieved from Geological Survey Ireland (GSI, 2020). https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=de7012a99d2748ea9106e7ee1b6ab 8d5&scale=0

Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (IGI, 2013)

Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (National Roads Authority, 2009)



Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. Available at: https://www.epa.ie/pubs/advice/ea/EPA%20EIAR%20Guidelines.pdf (EPA, 2022)

National Association Soil Map Ireland 1:250,000 digital Interactive map. Teagasc. (2020). Retrieved from Teagasc: <u>http://gis.teagasc.ie/soils/map.php</u>



#### 10.4 CHAPTER 4 SURFACE WATER, INCLUDING FLOOD RISK

#### 10.4.1 Introduction

- 1415 This chapter of the EIAR Scoping Report considers the potential impacts of the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on Surface Water, including Flood Risk and sets out the methodology and approach to be taken to assessing these potential impacts within the future EIAR in relation to:
  - Surface water drainage (including surface watercourses);
  - Water supply and wastewater discharge (including drinking water supply network, foul water and the drainage network);
  - Water Framework Directive (WFD) surface water objectives; and
  - Flood risk.
- 1416 The Surface Water, including Flood Risk, Topic-specific Study Area in this EIAR Scoping Report comprises the Potential Onshore Infrastructure Zone. However, the Surface Water, including Flood Risk, Topic-specific Study Area will be refined for the future EIAR based on positioning of onshore infrastructure elements and locations of construction activities.
- 1417 Indicatively, the Surface Water, including Flood Risk, Topic-specific Study Area for the assessment in the future EIAR is proposed to extend 500 m around the proposed Onshore Infrastructure. This is in line with the study areas for assessments of impact on the water environment for other linear construction projects.
- 1418 Where impacts are deemed to have the potential to extend beyond 500 m, due to the presence of sensitive receptors with potential hydraulic connectivity outside of this 500 m buffer area, the Surface Water, including Flood Risk Topic-specific Study Area will be extended to the point whereby the significance of the effect from The Proposed Development of any impact is deemed to be imperceptible.
- 1419 Scoping the approach to the assessment of the compliance of The Proposed Development with the WFD in terms of transitional and coastal waterbodies is presented in Volume C, Chapter 2 (Marine Water Quality) of this EIAR Scoping Report.

#### 10.4.2 Policy and Guidance

1420 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context applicable to The Proposed Development. Policies and guidance documents of particular relevance to the Surface Water, including Flood Risk, topic are set out in this section.



1421 These policy and guidance documents will be used to inform the Surface Water, including Flood Risk, chapter of the future EIAR.

### Policies

- S.I. No. 272 of 2009: European Communities Environmental Objectives (Surface Waters) Regulations 2009 (as amended by S.I. No. 296/2009; S.I. No. 386/2015; S.I. No. 327/2012; and S.I. No. 77/2019 and giving effect to Directive 2008/105/EC on environmental quality standards in the field of water policy and Directive 2000/60/EC establishing a framework for Community action in the field of water policy, i.e. the WFD;
- European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003), which gave legal effect to the WFD in Ireland;
- Cork County Development Plan 2022-2028;
- Local Area Plans for the municipal districts of East Cork, Cobh and Carrigaline, as appropriate; and
- Draft Waterford City and County Development Plan 2022 2028.

### Guidance

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017);
- Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (National Roads Authority, 2009), hereafter referred to as the National Roads Authority Guidelines;
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (Inland Fisheries Ireland, 2016);
- Planning for Watercourses in the Urban Environment: A Guide to the Protection of Watercourses through the use of Buffer Zones, Sustainable Drainage Systems, Instream Rehabilitation, Climate/Flood Risk and Recreational Planning (Inland Fisheries Ireland, 2020);
- EirGrid's Ecology Guidelines for Electricity Transmission Projects (EirGrid, 2020);
- Control of Water Pollution from Construction Sites Guide to Good Practice (C532) (CIRIA, 2001); and
- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Office of Public Works, OPW, 2009), hereafter referred to as the Flood Risk Guidelines.
- 1422 The following sections provide a background to the WFD surface water objectives and flood risk.



# 10.4.2.1 WFD 2000/60/EC

- 1423 The WFD 2000/60/EC commits EU member states to meet targets for the ecological and chemical status of waterbodies over a given period. The WFD classification scheme for surface water quality includes five status classes: High, Good, Moderate, Poor and Bad based on the biological and supporting physicochemical (nutrients, oxygen condition, temperature, transparency, salinity, river basin specific pollutants (RBSPs) and hydromorphological quality elements.
- 1424 The Biological Quality Elements comprise phytoplankton, macrophytes, phytobenthos, benthic invertebrate fauna and fish.
- 1425 The overall ecological status relates to the biological and physicochemical parameters. Overall ecological status classification for a waterbody is determined, according to the 'one out, all out' principle, by the element with the worst status out of all the biological and supporting quality elements.
- 1426 Good status means achieving satisfactory quality water, suitable for local communities' drinking, bathing, agricultural, industrial and recreational needs, while maintaining ecosystems that can support all the species of plants, birds, fish and animals that live in these aquatic habitats.
- 1427 While the overall objective of the WFD is to achieve good status, some waterbodies require extra protection by virtue of their location in a protected area or their function as a drinking water or bathing water. In accordance with the requirements of the WFD and the associated National regulations a register of protected areas has been set out for each River Basin District in Ireland. The protected areas are identified as those requiring special protection under existing National or European legislation, either to protect the surface water resource, or to conserve habitats or species that directly depend on those waters.
- 1428 The different protected areas included in this register are European drinking water protected areas, designated waters such as fish protected areas and shellfish protected areas, nitrates vulnerable zones, urban wastewater sensitive areas and bathing water protected areas.
- 1429 Public Consultation on the draft River Basin Management Plan for Ireland 2022-2027 closed on 31 March 2022. The finalised plan is due to be published in 2022.

#### 10.4.2.2 Flood Risk

- 1430 The Flood Risk Guidelines aim to integrate flood risk management into the planning process to assist the delivery of sustainable development. They aim to encourage a transparent and consistent consideration of flood risk in the planning process.
- 1431 The objectives of the Flood Risk Guidelines are given as:



- Avoid inappropriate development in areas at risk of flooding;
- Avoid new developments increasing flood risk elsewhere, including that which may arise from surface water runoff;
- Ensure effective management of residual risks for development permitted in floodplains;
- Avoid unnecessary restriction of national, regional or local economic and social growth;
- Improve the understanding of flood risk among relevant stakeholders; and
- Ensure that the requirements of EU and national law in relation to the natural environment and nature conservation are complied with at all stages of flood risk management.

### 10.4.3 Methodology

### 10.4.3.1 Approach to Data Collection

1432 The information and data sources set out in **Table 10.23** have been considered as part of the preparation of this EIAR Scoping Report and will be considered further within the future EIAR.

Table 10.23 Data Sources used to inform the Surface Water, including Flood Risk chapter of this EIAR Scoping Report and that will be considered further within the EIAR

Data source	Date	Data contents
Environment Protection Agency Water Framework Ireland Map viewer databases	Various	WFD status, risks and objectives
Environment Protection Agency Water Quality in Ireland 2013-2018	2019	Water quality
Environment Protection Agency WFD Status 2013-2018	2019	WFD status, risks and objectives
EPA 2022 EcoStatus Value and Assessment Technique	2022	WFD status where unassigned
Cork County Council (flood risk assessments /studies/mapping)	Various	Identified flood risk
OPW Flood Mapping (https://www.floodinfo.ie/map/floodmaps/)	Various	Identified flood risk
Topographical data	Various	Flood risk
OSI Mapping	Various	Flood risk



Data source	Date	Data contents
Met Eireann Meteorological Database (available at https://www.met.ie);	Various	Flood risk

# 10.4.3.2 Potential Additional Data and Proposed Surveys

- 1433 The data sources listed above are those identified to date which have been used to inform this EIAR Scoping Report and which will potentially be used to inform the wider assessment process in the future EIAR.
- 1434 It should be noted that the list of data sources is not exhaustive and will be added to as the works connected to the future EIAR progress.

# 10.4.3.3 Approach to Impact Assessment

- 1435 The impact assessment methodology in the future EIAR will be based on that described in EIAR Scoping Report, **Volume A Chapter 7** Environmental Impact Assessment Methodology as adapted to make it applicable to assessment of Surface Water, including Flood Risk receptors.
- 1436 The Surface Water impact assessment methodology will be in accordance with the National Roads Authority Guidelines.
- 1437 The Flood Risk assessment will be in accordance with the Flood Risk Guidelines.
- 1438 The Flood Risk Guidelines categorise flood risk in the form of three Flood Zones. These Flood Zones each relate to geographical areas at high, moderate or low flood risk, depending on if they are zone A, B or C respectively. **Table 10.24** provides a definition of each Flood Zone.
- 1439 The flood risk likelihood is defined as a percentage risk of occurring in any year. For example, a flood event may be described as having an annual exceedance probability (AEP) of 1%; this can also be written as a 1 in 100 year event. Critical infrastructure vulnerable to flooding should be located in Flood Zone C.

Table 10.24 Definition	of Flood Zones
------------------------	----------------

Flood Zone	Description
А	The AEP of flooding from rivers and seas is highest (greater than 1%AEP for flooding, or 0.5%AEP for coastal flooding).
В	The AEP of flooding from rivers and the sea is moderate (between 0.1% AEP and 1% AEP for river flooding, and between 0.1% AEP and 0.5% AEP for coastal flooding).



Flood Zone	Description
С	The probability of flooding from rivers and the sea is low (less than 0.1% AEP for both river and coastal flooding). Flood Zone C covers all areas of the plan which are not in Zone A or B.

Source: The Office of Public Works, The Planning System and Flood Risk Management, Guidelines for Planning Authorities (November 2009).

- 1440 A desktop qualitative assessment will be undertaken to identify the baseline characteristics relating to the hydrology of surface waterbodies within the Surface Water, including Flood Risk Topic-specific Study Area.
- 1441 Identification of the flood extent will initially be based on OPW and Cork County Council predictive flood extent maps. Given the nature and scale of The Proposed Development it is anticipated that The Proposed Development will potentially pass over a number of watercourses and through existing mapped flood extents. It is important to note that OPW and Cork County Council Flood Zone Extents are indicative of fluvial (river) and coastal flood risk only, and do not include information on the flood risk from other sources such as surface water, groundwater or artificial drainage systems.
- 1442 The significance of Surface Water effects will be assessed in terms of the magnitude of the impact and the importance of that receptor, based on the criteria outlined in the Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (National Roads Authority, 2009). The WFD status detailed in **Table 10.25** (criteria for rating site attributes) has been used in lieu of Biotic Index Q values as appropriate, as detailed in **Table 10.26**. **Table 10.27** sets out the criteria for rating magnitude **Table 10.28** sets out the criteria for rating significance.

Importance	Criteria	Typical Examples
Extremely High	Attribute has a high quality or value on an international scale	River, wetland or surface water body ecosystem protected by EU legislation
Very High	Attribute has a high quality or value on a regional or national scale	River, wetland or surface water body ecosystem protected by national legislation
		Regionally important potable water source supplying >2500 homes
		Quality Class A (Biotic Index Q4, Q5)
		Flood plain protecting more than 50 residential or commercial properties from flooding

Table 10.25 Criteria for Rating Site Attributes (National Roads Authority, 2009)



Importance	Criteria	Typical Examples
		Nationally important amenity site for wide range of leisure activities
High	Attribute has a high quality or value on a local scale	Salmon fishery Locally important potable water source supplying >1000 homes Quality Class B (Biotic Index Q3-4) Flood plain protecting between 5 and 50 residential or commercial properties from flooding Locally important amenity site for wide range of leisure activities
Medium	Attribute has a medium quality or value on a local scale	Coarse fishery Local potable water source supplying >50 homes Quality Class C (Biotic Index Q3, Q2-3) Flood plain protecting between 1 and 5 residential or commercial properties from flooding
Low	Attribute has a low quality or value on a local scale	Locally important amenity site for small range of leisure activities Local potable water source supplying <50 homes Quality Class D (Biotic Index Q2, Q1) Flood plain protecting 1 residential or commercial property from flooding Amenity site used by small numbers of local people

Source: Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (National Roads Authority, 2009)

Table 10.26 Reference Values for Q Value/WFD Status (Riverine only)

Q Value*	WFD Status	Pollution Status	Condition**
Q5, Q4-5	High	Unpolluted	Satisfactory
Q4	Good	Unpolluted	Satisfactory
Q3-4	Moderate	Slightly polluted	Unsatisfactory
Q3, Q2-3	Poor	Moderately polluted	Unsatisfactory
Q2, Q1-2, Q1	Bad	Seriously polluted	Unsatisfactory

Source: Environmental Protection Agency Ireland (epa.ie) Notes:



\* These Values are based primarily on the relative proportions of pollution sensitive to tolerant macroinvertebrates (the young stages of insects primarily but also snails, worms, shrimps etc.) resident at a river site.

\*\* "Condition" refers to the likelihood of interference with beneficial or potential beneficial uses.

Magnitude of Impact	Criteria	Typical Examples
Large Adverse	Results in loss of attribute and /or quality and integrity of attribute	Loss or extensive change to a waterbody or water dependent habitat Increase in predicted peak flood level >100mm Extensive loss of fishery Calculated risk of serious pollution incident >2% annually <sup>41</sup> Extensive reduction in amenity value
Moderate Adverse	Results in impact on integrity of attribute or loss of part of attribute	Increase in predicted peak flood level >50mm Partial loss of fishery Calculated risk of serious pollution incident >1% annually Partial reduction in amenity value
Small Adverse	Results in minor impact on integrity of attribute or loss of small part of attribute	Increase in predicted peak flood level >10mm Minor loss of fishery Calculated risk of serious pollution incident >0.5% annually Slight reduction in amenity value

<sup>&</sup>lt;sup>41</sup> Refer to Annex 1 of HA216/06 Highways Agency (2006) Road Drainage and the Water Environment (HA216/06), Design Manual for Roads and Bridges (DMRB). The UK DMRB suggests that where the probability of a serious pollution incident is greater than1%/year, spill-containment measures should be considered. It also suggests that, in particularly sensitive waters, areas at lower risk of serious pollution may also warrant special measures. The formula is however tailored for road developments where increasing traffic densities and higher proportions of heavy goods vehicles (HGVs) are likely to lead to an increased risk of accidents that could give rise to hazardous spills. While the calculation is not appropriate for use on this project, having regard to the characteristics of the proposals as detailed in Section 7.4, regard has been had to the proposed mitigation as appropriate.



Magnitude of Impact	Criteria	Typical Examples
Negligible	Results in an impact on attribute but of insufficient magnitude to affect either use or integrity	Negligible change in predicted peak flood level Calculated risk of serious pollution incident <0.5% annually
Minor Beneficial	Results in minor improvement of attribute quality	Reduction in predicted peak flood level >10mm Calculated reduction in pollution risk of 50% or more where existing risk is <1% annually
Moderate Beneficial	Results in moderate improvement of attribute quality	Reduction in predicted peak flood level >50mm Calculated reduction in pollution risk of 50% or more where existing risk is >1% annually
Major Beneficial	Results in major improvement of attribute quality	Reduction in predicted peak flood level >100mm

Source: Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (National

Roads Authority, 2009)

#### Table 10.28 Rating of Significant Environmental Impacts

Importance of Attribute	Magnitude of Impact			
	Negligible	Small	Moderate	Large
Extremely High	Imperceptible	Significant	Profound	Profound
Very High	Imperceptible	Significant / Moderate	Profound / Significant	Profound
High	Imperceptible	Moderate / Slight	Significant / Moderate	Severe / Significant
Medium	Imperceptible	Slight	Moderate	Significant
Low	Imperceptible	Imperceptible	Slight	Slight / Moderate

Source: Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (National Roads Authority, 2009)



#### **10.4.4** Receiving Environment

- 1443 The Potential Onshore Infrastructure Zone is located within the WFD catchment of Lee, Cork Harbour and Youghal Bay and is bordered to the northeast by the Blackwater (Munster) catchment.
- 1444 It is anticipated that The Proposed Development may require a number of watercourse crossings. Information on watercourses to be crossed by The Proposed Development will be provided in the EIAR once the location of The Potential Onshore Infrastructure Zone is refined.
- 1445 It is further anticipated that a number of water supply and wastewater (sewage/stormwater) drainage networks, and other utilities, will be located in proximity to, and/or will be required to be crossed by The Proposed Development. The locations of these are not yet known.
- 1446 **Figure 10.2** illustrates the rivers and lakes within the Potential Onshore Infrastructure Zone. River waterbodies within the Potential Onshore Infrastructure Zone include:
  - Owenacurra;
  - Dungourney;
  - Dissour;
  - Womanagh; and
  - Tourig.
- 1447 The Proposed Development will aim to avoid European protected sites and other protected sites.



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#### **10.4.5** Potential Impacts

1448 A range of potential impacts on Surface Water, including Flood Risk have been identified which may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development. These potential impacts include those issues identified as requiring consideration in accordance with the guidance documents listed in **Section 10.4.2**.

# 10.4.5.1 Potential Impacts during Construction

- 1449 Given the nature of The Proposed Development, the potential for impacts on the surface water environment are for the most part associated with the Construction Phase and are similar to any civil engineering project. The following potential impacts will be assessed in the future EIAR:
  - Impacts to surface water quality from sediment runoff, spillages, discharges or physical modification;
  - Impacts on drainage patterns from working in or near watercourses;
  - Impacts on water supply and drainage infrastructure; and
  - Impacts on flood risk.

### 10.4.5.1.1 Surface Water Quality

- 1450 Excavation works (including dewatering), the storage of excavated material, vegetation clearance, crossing of watercourses and infilling of trenches can pose a risk to surface water quality through surface water run-off and the release of sediment to watercourses. Ground damage from construction vehicles and machinery can also cause rutting and increased erosion of soils. Access tracks used during construction may affect surface run-off patterns, creating alternative flow paths, promoting erosion and localised flooding.
- 1451 Elevated levels of sediment in watercourses has the potential to impact on fish, including key life stages such as spawning through mechanisms including the sedimentation of spawning gravels, clogging and/or abrasion of fish gills and reduction in dissolved oxygen.
- 1452 Accidental release of potentially polluting substances, such as cement and oils (hydrocarbons), lubricants, bentonite (potentially used in Horizontal Directional Drilling (HDD) operations), and other liquids stored at Construction Compounds can result in significant impacts on the aquatic environment.
- 1453 The release of hydrocarbons can impact water dependant species resulting in disruption to neurosensors, abnormal behaviour and development issues as well as direct impacts on fertility. Oil spills can smother aquatic habitats, reduce the capacity of a waterbody to exchange oxygen as well as result in oil coating the gills of aquatic species causing lesions on respiratory surfaces. This can result in significant respiratory difficulties for aquatic organisms and other toxic effects.



Benthic invertebrates can be adversely affected if fractions of hydrocarbons settle and accumulate in sediments. This can result in the mortality of populations and prevent future colonisation.

- 1454 Concrete and cement are highly alkali and fresh concrete has corrosive properties. Concrete wash water is a particularly severe pollutant, as it typically has a high pH (11-12) coupled with extremely high suspended sediment content. In the freshwater environment, pH levels which are elevated beyond natural conditions can have significant adverse impacts on water bodies.
- 1455 Schedule 5 of SI 272 of 2009 (European Communities Environmental Objectives (Surface Waters) Regulations 2009) includes the following (WFD) pH limits for rivers and lakes:
  - Soft water 4.5< pH < 9.0, where soft water is ≤100 mg/1 CaCO<sub>3</sub>; and
  - Hard water 6.0< pH < 9.0, where hard water is > 100 mg/l CaCO<sub>3</sub>.
- 1456 The sensitivity of the receiving surface water environment within the Potential Onshore Infrastructure zone is expected to range from low to very high.

# 10.4.5.1.2 Hydromorphology

- 1457 A number of watercourses may be crossed to facilitate The Proposed Development. The drainage patterns associated with watercourses confined to existing culverts are unlikely to be impacted significantly as a result of The Proposed Development.
- 1458 The existence of a temporary impermeable barrier to facilitate open cut trenching (if used) will have a direct impact on the cross section of the channel and is expected to give rise to localised, but temporary, changes in water depth, velocities and sediment erosion/deposition.
- 1459 The Proposed Development could result in localised changes to surface water drainage patterns and restrictions to infiltration of rainfall in soils. Given the largely rural locations within the Potential Onshore Infrastructure Zone, existing field drains are expected to be available and any disturbance is expected to be localised and temporary in duration. Surface water contributions are expected to remain unchanged and are likely to discharge to the same catchment.

# 10.4.5.1.3 Water Supply and Drainage infrastructure

1460 All reasonable measures will be taken to avoid unplanned disruptions to any services during the Construction Phase. This will include thorough investigations to identify and reconfirm the location of all utility infrastructure which could potentially be affected by Construction Phase activities, and the implementation of procedures to be agreed with utility providers when undertaking works around known infrastructure services. Service disruptions impacting surrounding residential, social and commercial properties will be kept to a minimum, only



occurring where unavoidable. Prior notification of disruptions will be given to all impacted properties. This will include information on when disruptions are scheduled to occur and the duration of the disruption. Consultation with relevant neighbouring parties will be undertaken prior to any proposed disruptions. While there is potential for disruption to services during construction works, it is expected that any such impacts would be localised and brief in duration.

1461 During the Construction Phase, temporary construction compounds will be required. Welfare facilities will be provided at these locations and any associated discharges will be connected to a sealed holding tank to be emptied and disposed of off-site by a licenced contractor to an approved licenced facility. Water will be tankered onto construction sites and compounds as required.

### 10.4.5.1.4 Flood Risk

- 1462 Watercourse crossings may be required to facilitate The Proposed Development. In general, these are expected to be directional drilled under watercourses and would therefore not influence flood risk. For some minor watercourses, where HDD techniques will not potentially be utilised, temporary excavations may be required during construction which could increase flood risk elsewhere, however, these would be of short duration and managed so that excavations would not occur during high flows, thereby minimising the flood risk.
- 1463 During construction, there may be construction work activities within flood zones. These will be managed so that they will not increase flood risk elsewhere by minimising plant and materials within flood zones and removing potential obstructions in the event of an adverse weather warning from Met Éireann.

# 10.4.5.2 Potential Impacts during Operation and Maintenance

- 1464 As detailed previously in this chapter, given the nature of The Proposed Development, the potential for impacts on the water environment are for the most part associated with the Construction Phase. However, for completeness, Operation and Maintenance Phase effects to be assessed in the EIAR will include:
  - Impacts to surface water quality from sediment runoff, spillages, discharges or physical modification;
  - Impacts on drainage patterns from working in or near watercourses;
  - Impacts on water supply and drainage infrastructure; and
  - Impacts on flood risk.



### 10.4.5.2.1 Surface Water Quality

- 1465 As the Onshore Cables will be of the solid insulation type, there are no sources of pollution and as they will be buried, they will not offer a pathway to any surface water receptors.
- 1466 Similarly, the potential new solid (and painted) Overhead Line steel structures associated with the loop-in option will not be a source of pollution.
- 1467 Maintenance activities, including access to Overhead Line structures and Joint Bays, has potential to cause pollution.

### 10.4.5.2.2 Hydromorphology

1468 Site restoration works will be carried out following completion of water crossings, in agreement with Inland Fisheries Ireland (IFI), where required. In all cases, the crossing site will be restored post installation.

### 10.4.5.2.3 Water Supply and Drainage infrastructure

- 1469 The increase in impermeable surfaces due to the Proposed Development's infrastructure (for example at the Proposed Onshore Substation(s)) will result in a corresponding increase in surface water runoff and potential alteration of existing drainage patterns.
- 1470 A storm water drainage system incorporating SuDS (Sustainable Drainage System) features will be constructed where appropriate (for example at the Proposed Onshore Substation(s)) to manage the quantity and quality of runoff during rainfall events. Discharges will be restricted to predevelopment 'greenfield' runoff rates in line with the recommendations of the Greater Dublin Strategic Drainage Study (GDSDS Vol. 2 – New Development) which have generally been adopted by Local Authorities across Ireland.
- 1471 Foul water discharges, if required, are anticipated to be either via a proprietary system or onsite containment for subsequent removal and tankering off-site to an authorised facility or via a main sewer to an authorised facility, subject to location and ground conditions.

# 10.4.5.2.4 Flood Risk

1472 Developments that need to be in Flood Zones A or B for reasons of proper planning and sustainable development require a Justification Test. If required a Justification Test will support the Development Permission application.



### 10.4.5.3 Potential Impacts during Decommissioning

- 1473 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 1474 The scope of the Decommissioning works cannot be defined at this early stage.
- 1475 Decommissioning activities have the potential to impact Surface Water, including Flood Risk i.e. by the removal of the infrastructure. Any potential impacts arising from Decommissioning are likely to be comparable to, or less than, those identified for the Construction Phase and will be assessed as part of the future EIAR.

#### **10.4.6 Potential Cumulative Effects**

- 1476 There may be potential for cumulative effects to occur in relation to Surface Water, including Flood Risk as a result of other activities.
- 1477 The Cumulative Impact Assessment (CIA) for Surface Water, including Flood Risk will be based on a Zone of Influence identified during The Proposed Development-alone impact assessment, which will define the geographical extent to which effects of The Proposed Development are expected.
- 1478 The potential impacts considered in the CIA as part of EIAR will be in line with those described for The Proposed Development-alone impact assessment, though it is possible that some will be screened out on the basis that the impacts are highly localised (i.e. the Zone of Influence is anticipated to be limited) or where there are management measures in place to robustly reduce the risk of impacts occurring.
- 1479 The CIA will consider cumulative impacts with any other projects and/or developments within the Zone of Influence in line with the approach set out in **Section 7.5.10** of **Volume A Chapter 7** Environmental Impact Assessment Methodology of this EIAR Scoping Report.

# 10.4.6.1 Intra-Project

1480 In line with the most recent EPA guidance on EIARs (EPA, 2022), the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.



1481 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared Zone of Influence of The Proposed Development (for which Development Permission is sought).

### 10.4.6.2 Other Developments

1482 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative impacts are minimized.

### **10.4.7** Potential Transboundary Effects

1483 All onshore elements of The Proposed Development are found in County Cork, Ireland. No international boundaries will be crossed by the works and no pathways exist for effects to occur in other jurisdictions. It is therefore concluded that no transboundary effects are likely to occur in relation to Surface Water, including Flood Risk and it is proposed transboundary effects are scoped out of the future EIAR.

### **10.4.8** Summary of Potential Impacts

**Table 10.29** outlines the anticipated impacts for Surface Water, including Flood Risk which are proposed to be scoped into and/or out of the future EIAR. These may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available. These may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.

Potential Impacts	Construction	Operation and Maintenance	Decommissioning
Impacts to surface water quality from sediment runoff, spillages, discharges or physical modification	V	~	V
Impacts on drainage patterns from working in or near watercourses.	$\checkmark$	$\checkmark$	V
Impacts on water supply and drainage infrastructure.	$\checkmark$	~	V
Flood risk	~	$\checkmark$	$\checkmark$
Cumulative effects	~	$\checkmark$	$\checkmark$

Table 10.29 Summary of Potential Impacts Relating to Surface Water, including Flood Risk. Topics proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR



Potential Impacts	Construction	Operation and Maintenance	Decommissioning
Transboundary effects	х	Х	x

# **10.4.9 EIAR Scoping Consultation Questions**

- 1485 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Surface Water, including Flood Risk chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Surface Water, including Flood Risk chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Surface Water, including Flood Risk Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?
  - What other data sources, if any, should The Applicant have regard to in the preparation of the Surface Water, including Flood Risk chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Surface Water, including Flood Risk chapter of the EIAR for The Proposed Development?
  - Are you satisfied with the approach to impact assessment proposed for the Surface Water, including Flood Risk chapter of the EIAR for The Proposed Development?
  - Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Surface Water, including Flood Risk chapter of the EIAR for The Proposed Development?

# 10.4.10 Technical Consultation

- 1486 This chapter has considered the potential impacts of The Proposed Development on Surface Water, including Flood Risk. **Table 10.30** sets out a series of areas for discussion which The Applicant would appreciate targeted feedback on.
- 1487 Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 10.30** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.



Table 10.30: Summary of Proposed Key Technical Stakeholders Surface Water, including Flood Risk.

Proposed Key Technical Stakeholder	Objective of Engagement
	To discuss and agree the Topic-specific Study Area in relation to Surface Water, including Flood Risk.
IFI	To gather available information in relation to the fisheries value of watercourses within the Surface Water, including Flood Risk Topic-specific Study Area.
	To discuss and agree approach to impact assessment and potential mitigation measures in the future EIAR
	To gather information in relation to flood risk assessments carried out within the Surface Water, including Flood Risk Topic-specific Study Area.
OPW	To gather information in relation to drainage infrastructure within the Surface Water, including Flood Risk Topic-specific Study Area.
	To discuss and agree approach to impact assessment and potential mitigation measures in the future EIAR
	To discuss and agree the Topic-specific Study Area in relation to Surface Water, including Flood Risk.
Cork County	To gather information in relation to flood risk assessments carried out within the Surface Water, including Flood Risk Topic-specific Study Area.
Council	To gather information in relation to drainage infrastructure within the Surface Water, including Flood Risk Topic-specific Study Area.
	To discuss and agree approach to impact assessment and potential mitigation measures in the future EIAR.
Irish Water	To consult on approaches to potential infrastructure crossing methods for Irish Water assets (if required).
	To consult on potential Irish Water projects in the Potential Onshore Infrastructure Zone.

#### 10.4.11 References

CIRIA, (2001) Control of Water Pollution from Construction Sites - Guide to Good Practice (C532).

DIRECTIVE 2014/52/EU. Official Journal of the European Union L 124/1 (European Union, 2014).

EirGrid's Ecology Guidelines for Electricity Transmission Projects EirGrid, (2022).

Environmental Protection Agency EPA (2022), Guidelines on the Information to be Contained in https://www.epa.ie/pubs/advice/ea/EPA%20EIAR%20Guidelines.pdf.

EPA (Water Framework Ireland Map viewer) databases available at www.epa.ie.



European Commission, 2017, Environmental Impact Assessment of Projects. Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU).

European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003), which gave legal effects to the WFD in Ireland.

Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009)

Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2009).

Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (Inland Fisheries Ireland, 2016).

Planning for Watercourses in the Urban Environment: A Guide to the Protection of Watercourses (Inland Fisheries Ireland, 2020).

S.I. No. 272 of 2009: European Communities Environmental Objectives (Surface Waters) Regulations 2009 (as amended by S.I. No. 296/2009; S.I. No. 386/2015; S.I. No. 327/2012; and S.I. No. 77/2019

The Planning System and Flood Risk Management, Guidelines for Planning Authorities (OPW, 2009)

Water Quality in Ireland 2013-2018 (EPA, 2019)



#### **10.5 CHAPTER 5 BIODIVERSITY**

#### 10.5.1 Introduction

- 1488 This chapter of the EIAR Scoping Report considers the potential impacts of the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on Biodiversity and sets out the methodology and approach to be taken to assessing these potential impacts within the future EIAR.
- 1489 The Biodiversity Topic-specific Study Area in this EIAR Scoping Report comprises the Potential Onshore Infrastructure Zone. The receiving environment is described having regard to the Biodiversity Topic-specific Study Area.
- 1490 The Biodiversity Topic-specific Study Area assessed in the future EIAR will comprise all waters and lands located within the Zone of Influence (Zol) of the onshore elements of The Proposed Development. The current guidance on ecological assessments (CIEEM, 2018, updated in 2019) states that:

"The 'zone of influence' for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries" and that "the zone of influence will vary for different ecological features depending on their sensitivity to an environmental change."

- 1491 The Zol will vary depending on the construction and operational activity and the sensitivity of the receptor (e.g., flora, birds, terrestrial mammals) to the particular impact.
- 1492 The expected approximate ZoI for the various ecological receptors is outlined below:
  - 100 m either side of the cable route midline for breeding passerines (Whitfield et al. (2008);
  - 150 m -250 m for terrestrial mammals (excluding bats) dependant on species (National Roads Authority, 2006 and 2009)
  - 200 m either side of the cable route midline for terrestrial habitats as this is the likely worst case estimated zone for physical and dust effects associated with the works;
  - 250 m for Groundwater Dependant Terrestrial Ecosystems;
  - Up to 500 m for visual disturbance to wetland birds;
  - Up to 1 km for certain breeding birds (birds of prey);
  - Up to 2 km for bat species (considering roosting, commuting and feeding);
  - Catchment wide ZoI for surface waterbodies; and



• The ZoI for noise disturbance effects will depend on the installation technique and will be subject to the noise impact assessment of same.

#### **10.5.2** Policy and Guidance

- 1493 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context applicable to The Proposed Development. Policies and guidance documents of particular relevance to the Biodiversity topic are set out in this section.
- 1494 These policy and guidance documents will be used to inform the Biodiversity chapter of the future EIAR.

### Policies

- EU Biodiversity Strategy for 2030 (EU, 2020);
- EU Strategy on Green Infrastructure (EU, 2013);
- National Biodiversity Action Plan for 2017-2021 (Department of Culture. Heritage and the Gaeltacht, 2017);
- National Parks and Wildlife Service (NPWS) Threat Response Plans (NPWS, Various);
- Cork County Development Plan 2022-2028;
- Local Area Plans for the municipal districts of East Cork, Cobh and Carrigaline, as appropriate; and
- Draft Waterford City and County Development Plan 2022 2028.

# Guidance

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017);
- Good Practice Guidance for Habitats and Species. Version 3 [Chartered Institute of Ecology and Environmental Management (CIEEM), 2021];
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI, 2016);
- Environmental Impact Assessment of National Road Schemes A Practical Guide (National Roads Authority, 2009);
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009);
- Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (National Roads Authority, 2009);
- A Guide to Habitats in Ireland (Fossitt, 2000);



- Guidance on EIS and NIS Preparation for Offshore Renewable Energy Projects. (Department of Communications, Climate Action and Environment, 2017);
- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018);
- Ecology Guidelines for Electricity Transmission Projects, A Standard Approach to Ecological Impact Assessment of High Voltage Transmission Projects (EirGrid, 2020); and
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI, 2016).

# 10.5.3 Methodology

# 10.5.3.1 Approach to Data Collection

1495 The following information and data sources (**Table 10.31**) have been identified during the production of this EIAR Scoping Report and will be reviewed within the future EIAR.

Table 10.31 Data Sources used to inform the Biodiversity chapter of this EIAR Scoping Report and that will be considered further within the EIAR

Data source	Date	Data contents	
Backing Documents and Maps prepared in accordance with Article 17 of the Habitats Directive	2019	Habitat and species status	
European site documentation including detailed mapping in relation to Conservation Objectives	Various	Conservation status, objectives, mapping	
NPWS Site Synopses and, Natura Standard Data Forms	Various	Site information, species and habitats information	
Existing relevant mapping and databases e.g. waterbody status, species and habitat distribution etc. (sourced from the Environmental Protection Agency - <u>http://gis.epa.ie</u> )	Various	Mapping of waterbodies	
National Biodiversity Data Centre - http://maps.biodiversityireland.ie	Various	Species data	
Rare and Protected species data supplied by NPWS	Various	Rare and protected species data	
Saltmarsh monitoring project	2006-2008 Saltmarsh distribution, threats and pressures		



Data source	Date	Data contents	
Inventory of coastal lagoons	2011, updated 2012	Distribution of coastal lagoons	
National seacliff survey	2009-2011	Distribution of seacliffs	
National survey of native woodland	2003-2008	Distribution and classification of native woodland	
Ancient and long-established woodlands	2012	Distribution of ancient woodland	
Coastal monitoring project	2004-2006	Distribution of coastal habitats	
Margaritifera sensitive areas map	2017	Mapping of freshwater pearl mussel sensitive areas	
Irish semi natural grassland survey	2013-2015	Distribution and classification of semi-natural grasslands	
Hen harrier data	2014	Mapping of hen harrier habitat	
Sand dune monitoring project	2011	Monitoring data for sand dunes	
Kingfisher survey	2010	Distribution of kingfisher	
National frog survey of Ireland	2010-2011	Distribution of frogs	
NPWS pine marten database	2017	Distribution of pine marten	
Badger and habitats survey of Ireland	1989-1995	Distribution of badger and habitat	
Hare survey of Ireland	2006-2007	Distribution of hare	
Otter survey of Ireland	1982; 2004- 2005; 2010-2011	Distribution of otter	
Seabird foraging radii project	2021	Estimated foraging ranges of the breeding seabirds of Ireland's marine Special Protected Area network	



# 10.5.3.2 Potential Additional Data and Proposed Surveys

- 1496 The data sources listed above are those identified to date which have been used to inform this EIAR Scoping Report and which will potentially be used to inform the wider assessment in the future EIAR.
- 1497 It should be noted that the list of data sources is not exhaustive and may be added to as the works connected to the future EIAR progress.
- 1498 In addition to this, project-specific surveys are proposed to be undertaken to provide additional data to inform the assessment. With respect to Biodiversity, the surveys set out in **Table 10.32** will be undertaken to inform the EIAR. More specific survey methods may need to be applied. The EIAR Team will seek to agree survey methodologies with key technical stakeholders where possible.

Surveys	Study Area Buffer Beyond Development Footprint	Guideline reference for Zol	Field Survey Methods and Guidance
Habitat surveys	200 m either side of the cable route midline	Whitfield et al. (2008) National Roads Authority (2011)	Fossitt (2000) and Heritage Council (2011) Annex I (and priority Annex I <sup>42</sup> ) habitats designated under the EU Habitats Directive 92/43/EEC
Botanical surveys	200 m either side of the cable route midline	Whitfield et al. (2008)	TII/ National Roads Authority (2009); CIEEM (2021)
Non-volant (i.e. non flying) terrestrial mammal surveys	Badgers (150 m) Otter (200 m)	National Roads Authority (2006)	Scottish Badgers (2018); Mammal Society (1989); National Roads Authority (2006)
Bat surveys	Up to 2km to include for roosting, commuting and feeding	Bat Conservation Trust (2016)	Bat Conservation Trust (2016) Kelleher and Marnell (2006)

#### Table 10.32 Proposed baseline surveys to inform the EIAR

<sup>&</sup>lt;sup>42</sup> Priority Annex I habitats are those in danger of disappearance.


DP ENERGY A IBERDROLA

Surveys	Study Area Buffer Beyond Development Footprint	Guideline reference for Zol	Field Survey Methods and Guidance
Aquatic surveys	Upstream and downstream of works on notable watercourses. The extent is dependent on habitat and species yet to be surveyed	Not applicable	Champ et al. (2009); Cen (2005); Kennedy (1984); O'Connor & Kennedy (2002); Feeley et al. (2020); Environment Agency (2003)
Bird surveys (wintering and breeding)	Up to 500m (wintering birds) Up to 1km (breeding birds)	Whitfield et al. (2008)	Lewis and Tierney (2014); BTO (2019); Gilbert et al. (1998); Bibby et al. (2000)

# 10.5.3.3 Approach to Impact Assessment

1499 The impact assessment methodology will be based on that described in EIAR Scoping Report, Volume A Chapter 7 Environmental Impact Assessment Methodology as adapted to make it applicable to assessment of Biodiversity receptors.

# 10.5.3.3.1 Zone of Influence

1500 The assessment within the EIAR will aim to determine if The Proposed Development area contains a habitat used by a species listed as a qualifying interest / Special Conservation Interest of a European Site, or a habitat supporting a species upon which the qualifying interest depends. For example, The Proposed Development area may contain a habitat used for foraging by a specific bird species listed as a Special Conservation Interest of a nearby Special Protection Area (SPA).

# 10.5.3.3.2 Desktop Study

1501 The desktop assessment will be informed by an examination of aerial imagery and other available datasets to investigate the potential for connectivity to designated and ecologically sensitive areas, as well as a review of available literature as detailed in **Table 10.31**.



### 10.5.3.3.3 Records of Protected Species and Habitats

1502 The NBDC records for protected species will be searched to identify protected species within the ZoI of The Proposed Development.

## Historic Karstic Wetland Features

1503 The Geological Survey of Ireland (GSI) retains records of mapped karst features identified throughout Ireland <sup>43</sup>. Such locations in proximity to The Proposed Development will be considered.

## Birds

- 1504 Annex I of the Birds Directive lists species which are:
  - In danger of extinction;
  - Vulnerable to change in their habitat;
  - Considered rare due to small population sizes or a restricted local distribution; and
  - Require attention due to the nature of their habitat.
- 1505 The NBDC contains records of bird species recorded in 10 km grid squares and these will be reviewed to inform the EIAR.
- 1506 Records of rare and protected species will be obtained from the NPWS, once details of The Proposed Development are refined.
- 1507 Habitats within and/ or immediately adjacent to The Proposed Development that may be subject to potential impacts by The Proposed Development will be identified and their suitability to support sensitive, rare and/or protected species will be assessed (having regard to the typical ranges of species known to occur in the locality and the Zol of The Proposed Development).

# 10.5.3.3.4 Valuation of Ecological Features and Approach to Impact Assessment

- 1508 Species and habitats with protection under both national and international legislation including the following, will be considered:
  - Wildlife Act 1976 (as amended) ('The Wildlife Acts');
  - Flora (Protection) Order, 2022;
  - Marnell, F., Looney, D. & Lawton, C. (2019) Ireland Red List No. 12: Terrestrial Mammals;

<sup>&</sup>lt;sup>43</sup> https://www.gsi.ie/en-ie/data-and-maps/Pages/Geohazards.aspx#



- Wyse Jackson, M, FitzPatrick, Ú, Cole, E, Jebb, M., McFerran, D, Sheehy Skeffington, M & Wright. M (2016) Ireland Red List No.10: Vascular Plants;
- King, J.L.; Marnell, F.; Kingston, N.; Rosell, R.; Boylan, P.; Caffrey, J.M.; FitzPatrick, Ú.; Gargan, P.G.; Kelly, F.L.; O'Grady, M.F.; Poole, R.; Roche, W.K.; Cassidy, D (2011) Ireland Red List No. 5: Amphibians, Reptiles & Freshwater Fish;
- Gilbert G, Stanbury A and Lewis L (2021), "Birds of Conservation Concern in Ireland 2020 –2026". Irish Birds 9: 523–544;
- EC Birds and Natural Habitats EC (Birds and Natural Habitats) Regulations 2011 S.I. 477/2011 as amended ('the Birds and Habitats Regulations'); 2011-2015;
- EU Birds Directive 2009/147/EC; and
- EU Habitats Directive 92/43/EC ('the Habitats Directive').
- 1509 Sensitive Ecological Receptors (SERs) will be valued using a geographic frame of reference as follows:
  - International importance;
  - National importance;
  - County importance; or
  - Local importance (higher value).
- 1510 The assessment will identify ecological receptors and implement a systematic approach to understand the level and significance of impact based on the following elements:
  - Sensitivity of a receptor to the impact mechanism;
  - Magnitude of effect on the feature;
  - Likelihood of occurrence of impact; and
  - Significance of impact (identified at the geographic frame of reference above).
- 1511 The assessment of fisheries habitat will use the Life Cycle Unit method scoring system which rates habitat quality as outlined below:
  - Poor
  - Moderate
  - Good
  - Excellent



## 10.5.3.3.5 Surveys

- 1512 Field surveys within the Potential Onshore Infrastructure Zone will be carried out as details of The Proposed Development are refined, subject to landowner agreement.
- 1513 All surveys will have regard to relevant guidance as outlined in Table 10.32 and below for biodiversity groups as relevant.

## Habitat

- 1514 Once the Potential Onshore Infrastructure Zone has been suitably refined a series of targeted and specific surveys will be undertaken from the potential Cable Landfall(s) to the potential Connection Point(s). Initially, it is proposed that a walkover terrestrial habitat survey of the refined Potential Onshore Infrastructure Zone will be undertaken. Habitats will be classified in accordance with Fossitt (2000). During this survey, particular attention will be paid to the possible occurrence of:
  - Protected plant species listed in the 2022 Flora (Protection) Order S.I. No. 235 of 2022;
  - Flowering plants of conservation concern in the Ireland Red List (No. 10): Vascular Plants (Wyse Jackson et al., 2016);
  - Potentially suitable habitat for red listed bryophytes (Lockhart et al., 2008);
  - Invasive plant species scheduled to the Birds and Natural Habitats Regulations 2011 (as amended); and
  - Species and habitats of special conservation significance within County Cork identified in the <u>County Cork Biodiversity Action Plan (BAP) 2009-2014</u><sup>44</sup> [not updated at time of publication of this EIAR Scoping Report].

#### Non-volant Mammals (i.e. non-flying mammals)

- 1515 Survey for badger (*Meles meles*) will be carried out during the walkover surveys. These surveys will follow Surveying Badgers guidance (Harris et al., 1989). Where landowner access can be agreed, the extent of the survey area will be defined, having regard to Guidelines for the Treatment of Badgers during the Construction of National Road Schemes (NRA, 2006).
- 1516 Otter surveys will be carried out along watercourses for a minimum distance of 150m upstream and downstream of where the Proposed Development crosses or impinges upon the watercourse. Signs of otter such as spraints, couches and holts will be searched for in accordance with NRA (2008)

<sup>&</sup>lt;sup>44</sup> Layout 1 (corkcoco.ie)



- 1517 Incidental sightings of other mammals will be recorded during site walkovers e.g. hare, pine marten, shrew and stoat.
- 1518 The use of camera traps is likely to be required to confirm activity and resting places for protected mammals.

Bats

- 1519 Visual assessments will be undertaken during surveys to identify potential suitability of vegetated features for bats. In terms of commuting and foraging, hedgerows and treelines provide habitat for bats.
- 1520 A visual inspection of trees with potential suitability for roosting bats will be conducted in daylight hours during the site walkovers to identify potential roost features and any potential bat entry/exit points. Where access can be agreed with landowners, the survey will include large mature trees which may potentially require felling or limb lopping due to The Proposed Development.
- 1521 Trees will be examined from the ground for potential features which may support bat roosts within the trees. Such as cracks and splits within the stems or branches, knot holes, cavities within the tree, significant ivy growth.
- 1522 Trees and structures will be graded as having Negligible, Low, Moderate, or High suitability for roosting bats having regard for the Bat Conservation Trust's (BCT) *Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016)*.
- 1523 Bat activity surveys are also planned to be carried out at various locations within the Potential Onshore Infrastructure Zone. Bat surveys will include detailed visual assessment of natural habitats (for example any areas of mature woodland) and anthropogenic features (for example ruined buildings). To monitor activity, passive detectors will be deployed and left in situ for a minimum of one to two weeks in summer and autumn. The data collection will involve processing of the acoustic data for both bats and incidental recordings of bird/mammal calls. Detailed visual assessments will occur on single / multi-day site visits, in both spring and autumn.

# Structures and Karst features

1524 The visual inspection will include safely accessible structures and karst features, where identified, that may be potentially impacted by The Proposed Development.



#### Aquatic Surveys

- 1525 Aquatic surveys of watercourses within the footprint of The Proposed Development will be undertaken to determine fisheries value. A broad aquatic habitat assessment will be conducted at each site utilising elements of the methodology given in the Environment Agency's 'River Habitat Survey in Britain and Ireland Field Survey Guidance Manual 2003 (Environment Agency, 2003) ' and the Irish Heritage Council's 'A Guide to Habitats in Ireland' (Fossitt, 2000).
- 1526 Fisheries habitat for salmonids will be assessed using the Life Cycle Unit method (Kennedy (1984) and O'Connor and Kennedy (2002)) to map survey sites as nursery, spawning and/or holding water, by assigning quality scores to each type of habitat. Those habitats with poor quality substrata, shallow depth and a poorly defined river profile will receive a higher score. Higher scores in the Life Cycle Unit method of fisheries quantification are representative of poorer value, with lower scores being more optimal, despite this appearing counter intuitive. Overall scores will be calculated as a simple function of the sum of individual habitat scores.
- 1527 Lamprey habitat evaluation for each survey site will be undertaken using the Lamprey Habitat Quality Index (LHQI) scoring system, as devised by Macklin *et al.* (2018). The LHQI broadly follows a similar rationale as the Life Cycle Unit score for salmonids. Those habitats with a lack of soft, largely organic sediment areas for ammocoete burrowing, shallow sediment depth (<10cm) or compacted sediment nature will receive a higher score. Higher scores in this index are thus of poorer value (in a similar fashion to the salmonid Life Cycle Unit Index), with lower scores being more optimal. Overall scores will be calculated as a simple function of the sum of individual habitat scores.
- 1528 Larval lamprey habitat quality as well as the suitability of adult spawning habitat will be assessed based on the information provided in Maitland (2003) and other relevant literature (e.g. Gardiner, 2003). Unlike the salmonid Life Cycle Unit index, holding habitat for adult lamprey will not be assessed owing to their different migratory and life history strategies, and that electro-fishing surveys routinely only sample larval lamprey.
- 1529 Biological water quality will also be assessed using a standard kick sampling hand net (250mm width, 500µm mesh size) to sweep macrophytes and to capture macroinvertebrates. The net will also be moved along the benthos to collect epibenthic and epiphytic invertebrates from the substratum. A 3-minute sampling period will be divided amongst the range of meso-habitats present to get a representative sample for sub-habitats. Q values will be derived based on the sample of macroinvertebrates.
- 1530 A strict biosecurity protocol following the Check-Clean-Dry approach will be employed during the survey. Equipment and personal protective equipment used will be disinfected between survey sites to prevent the transfer of pathogens and/or invasive species between survey areas. Where



feasible, equipment will also be thoroughly dried (through UV exposure) between survey areas. As per best practice, surveys will be undertaken at sites in a downstream order (i.e. uppermost site surveyed first etc.) to prevent the upstream mobilisation of invasive propagules and pathogens. Any invasive species recorded within or adjoining the survey area will be recorded.

## Bird Surveys

- 1531 Vantage point surveys and targeted low-water/high-water surveys are currently being undertaken at various coastal locations within the Potential Onshore Infrastructure Zone. The presence of birds in these areas is being recorded to assess usage by passerines, waders/waterbirds and incidental records of birds in the nearshore.
- 1532 Wintering and breeding bird surveys will be undertaken at other locations within the Potential Onshore Infrastructure Zone as details of The Proposed Development are refined, subject to landowner agreement. Wintering bird surveys (dependent on suitable habitat) may consist of:
  - Wetland bird surveys;
  - Marine bird surveys;
  - Line-transect surveys; and
  - Winter raptor roost surveys.
- 1533 Breeding bird surveys will be undertaken during the period April July and the presence of passerines will be undertaken during walkover surveys and vantage point surveys.
- 1534 The methods that will be appropriate depend to some extent on the nature of the habitats present and will be informed by desktop study and examination of the aerial mapping and GIS data.

#### Observations

1535 During walkover surveys within the ZoI the potential will be noted for habitats of other protected species in addition to the potential for (unprotected) species of conservation concern to occur, as identified in NPWS red lists, and the County Cork BAP.



#### **10.5.4 Receiving Environment**

# 10.5.4.1 Designated Sites

## 10.5.4.1.1 Sites of International Importance

# Special Protection Areas (SPAs) and Special Areas of Conservation (SACs)<sup>45</sup>

- 1536 The Birds Directive (2009/147/EC) and the Habitats Directive (92/42/EEC) put an obligation on EU Member States to establish the Natura 2000 network. The Natura 2000 network comprises sites of the highest biodiversity importance for rare and threatened habitats and species across the EU. In Ireland, the Natura 2000 network of European sites comprises Special Areas of Conservation (SAC) and SPA. SACs are selected for the conservation of Annex I habitats which are in danger of disappearance) and Annex II species (other than birds). SPAs are selected for the conservation of Annex I birds and other regularly occurring migratory birds and their habitats.
- 1537 **Figure 10.3** presents European sites in relation to the Potential Onshore Infrastructure Zone.
- 1538 The location of these European sites in relation to the works, and their connectivity to The Proposed Development, will be presented in the EIAR.
- 1539 Given the scale and nature of The Proposed Development it is anticipated that both a Screening Statement for Appropriate Assessment and a Natura Impact Statement will support the Development Permission application for The Proposed Development, which will consider potential adverse effects on Qualifying Interests (QIs) and Sites of Community Importance (SCIs) of European sites where they may have connectivity with The Proposed Development.
- 1540 European sites could be connected hydrologically, for example downstream hydrological connectivity via watercourses or QIs associated with SACs may occur outside of the European Site boundary in proximity to The Proposed Development.
- 1541 There is also the potential for underground karst systems to offer connectivity to European sites.
- 1542 Important ex situ areas may occur for wintering and breeding birds (Special Conservation Interest) of SPA sites.

<sup>&</sup>lt;sup>45</sup> SPA includes SPAs and proposed SPAs (pSPAs) and SAC includes SACs, and candidate SACs (cSACs)



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### **Ramsar Sites**

- 1543 Ramsar sites are wetland sites designated to be of international importance under the Ramsar Convention. The Ramsar Convention is an intergovernmental environmental treaty which was established in 1971 by UNESCO and came into force in 1975.
- 10.5.4.1.2 Sites of National Importance

# Natural Heritage Areas

1544 The basic designation for areas of ecological importance in Ireland is the Natural Heritage Area (NHA). These sites comprise areas which are considered important for the habitats, or species of plants and animals whose habitat needs protection. Under the Wildlife Acts, NHAs are legally protected from damage from the date they are formally proposed for designation.

## Proposed Natural Heritage Areas

- 1545 Proposed NHAs (pNHAs) are sites which were published on a non-statutory basis in 1995 (and again in the 2010s) but have not since been statutorily proposed or designated. These sites are of significance for wildlife and habitats. Prior to statutory designation, pNHAs are still subject to limited protection, in the form of:
  - Agri-environmental farm planning schemes support the objective of maintaining and enhancing the conservation status of pNHAs;
  - There is a requirement for the Forest Service to gain NPWS approval before they will pay afforestation grants on pNHA lands; and,
  - A recognition of the ecological value of pNHAs by Planning and Licencing Authorities.
- 1546 **Figure 10.4** presents pNHAs in relation to the Potential Onshore Infrastructure Zone.



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#### Nature Reserves

1547 A Nature Reserve is an area of importance to wildlife, which is protected under Ministerial order. Most Nature Reserves are owned by the State.

#### **Refuges for Fauna**

- 1548 The objective of this designation is the protection of a named species of wild animal (vertebrate or invertebrate).
- 1549 Refuges for Fauna are designated by Ministerial order under Section 17 of the Wildlife Act 1976 as amended by Section 28 of the Wildlife (Amendment) Act 2000.
- 1550 The designation's main use in Ireland has been in protecting breeding bird species on marine cliffs and small islands where there is no threat of potentially damaging activities due to these site's inaccessibility. The designation is in effect a compulsory management agreement for which compensation is provided.
- 1551 SACs and SPAs (European Sites), Ramsar sites and pNHAs located within the Potential Onshore Infrastructure Zone are detailed in **Table 10.33.** There are no NHAs within the Potential Onshore Infrastructure Zone.

Site Type	Code	Name
SAC	1058	Great Island Channel SAC
SAC	0077	Ballymacoda (Clonpriest and Pillmore) SAC
SPA	004030	Cork Harbour SPA
SPA	004022	Ballycotton Bay SPA
SPA	004023	Ballymacoda Bay SPA
pNHA	001058	Great Island Channel
pNHA	001076	Rostellan Lough, Aghada Shore and Poulnabibe Inlet
pNHA	001408	Carrigacrump Caves
pNHA	000076	Ballycotton, Ballynamona and Shanagarry
pNHA	000083	Capel Island And Knocadoon Head
pNHA	000077	Ballymacoda (Clonpriest and Pillmore)
pNHA	000078	Ballyvergan Marsh
pNHA	001235	Ballyquirk Pond
pNHA	001183	Clasharinka Pond
pNHA	000446	Loughs Aderry And Ballybutler

Table 10.33: Nature Conservation Sites within the Potential Onshore Infrastructure Zone



Site Type	Code	Name
pNHA	001042	Carrigshane Hill
pNHA	001064	Leamlara Wood
pNHA	000099	Ballynaclashy House, North of Midleton
pNHA	001066	Lough Beg (Cork)
Ramsar Site	837	Cork Harbour
Nature reserve		Capel Is & Knockadoon Nature Reserve

## Habitats and Flora

- 1552 Based on a preliminary desk-based review, the majority of the coastline within the Biodiversity Topic-specific Study Area is dominated by sloping sea cliffs (sedimentary sea cliff and rocky sea cliff). At a finer spatial scale, the coastline contains areas of flatter beach with adjacent farmland, scrub and several patches of small wetland habitat. The eastern part of the Biodiversity Topicspecific Study Area is flatter compared to the west. The eastern periphery of the Biodiversity Topic-specific Study Area contains areas of flat sand/ gravel shoreline often with a narrow dune system located behind.
- 1553 Further inland from the coast, the Biodiversity Topic-specific Study Area is dominated by improved farmland principally managed for tillage and livestock farming. Field boundaries consist of hedgerow and/or treeline. Areas of commercial plantation woodland are rare in the Biodiversity Topic-specific Study Area. Relatively steep river valleys with semi natural woodland are noteworthy and occur locally in the area. Areas of non-designated noteworthy woodland include Pigeon Wood (near Castlemartyr, Co. Cork), Ballyedmond wood (north of Midleton, Co. Cork) and Ballyannan Wood (west Ballynacurra).
- 1554 Numerous records of invasive species (listed on Third Schedule of S.I No. 477 of 2011, European Communities (Birds and Natural Habitats) Regulations 2011) occur in the Biodiversity Topic-specific Study Area including Japanese Knotweed *Reynoutria japonica*.
- 1555 Protected (Flora (Protection) Order 2022), rare and threatened flora species have been recorded in various coastal and inland sections of the Biodiversity Topic-specific Study Area.
- 1556 The above in relation to habitats and flora is not exhaustive. Further desk-based assessments, consultations and field surveys will be carried out to build upon existing knowledge of the Receiving Environment.



## Aquatic

- 1557 Several rivers occur within the Potential Onshore Infrastructure Zone that are important for salmonids, lamprey species and / or floating river vegetation. Rivers of note further inland include Womanagh, Dissour, and Dungourney. Many of the rivers near the coast within the Biodiversity Topic-specific Study Area are very small streams/ drains with relatively small catchments on sloping ground. Details of the proposed assessment of potential impacts of the offshore elements of The Proposed Development on diadromous (migratory) fish please refer to Volume C, Chapter 9.8.
- 1558 Small lakes within the Biodiversity Topic-specific Study Area are rare. Of note are a cluster of lakes between Midleton, Co. Cork and Castlemartyr, Co. Cork that are pNHA (Lough Aderry and Ballybutler)
- 1559 The above in relation to freshwater aquatic ecology is not exhaustive. Further desk-based assessments, consultations and field surveys will be carried out to build upon existing knowledge of the Receiving Environment.

## Non-volant mammals

- 1560 Badgers are common and widespread in within the Biodiversity Topic-specific Study Area. Breeding sites are typically located in field boundaries and woodlands. Overgrown areas of sea cliff are also used in some cases.
- 1561 Otter are common and widespread along the coastal margins and near larger rivers (Smiddy 1993). In particular less disturbed parts of Cork Harbour are important foraging and breeding areas for otter.
- 1562 The above list of mammals is not exhaustive. Further desk-based assessments (including review of available records within the Atlas of Mammals in Ireland 2010-2015; Mammals of Ireland 2016-2025; Badger Setts of Ireland and Hedgehogs of Ireland datasets), consultations and field survey will be carried out to build upon existing knowledge of the Receiving Environment.

#### Bats

- 1563 Lundy et al. (2011) examined the relative importance of landscape and habitat associations for bats across Ireland, the output of which is a national 'habitat suitability' index map for bats. The landscape within the Biodiversity Topic-specific Study Area (open farmland with hedgerows) is characterised (Lundy et al., 2011) mainly as being of moderate (yellow) for bats, with the Ringaskiddy area noteworthy as orange.
- 1564 Most Irish bat species are relatively common and widespread within the Biodiversity Topicspecific Study Area. Species like Daubentons bat (*Myotis daubentonii*) are rarer nearer the coast.



Roost sites (breeding areas) are typically focussed on building features and to a lesser extent in mature trees. Lesser Horseshoe bat (Annex IV Habitat Directive listed species) have not been recorded.

- 1565 Potential migratory impacts associated with the offshore elements of The Proposed Development are discussed in **Volume C, Chapter 6** Offshore Ornithology.
- 1566 The above in relation to bats is not exhaustive. Further desk-based assessments, consultations and field surveys will be carried out to build upon existing knowledge of the Receiving Environment.

#### Birds

- 1567 Many of the important coastal areas where wintering birds (waterfowl) concentrate are designated as SPA's. These include, but are not limited to, Cork Harbour, Ballycotton Bay, and Ballymacoda Bay. The wider coastal area also supports wintering waterfowl. No significant coastal breeding sites for marine birds occur though small numbers of Northern Fulmar *Fulmarus glacialis*, Chough *Pyrrhocorax pyrrhocorax* and Cormorant *Phalacrocorax carbo* breed sporadically along the coastline of the Biodiversity Topic-specific Study Area. Important coastal wetlands for wintering hen harrier *Circus cyaneus* (Nationally Important) and migrating hirundine species occur at Ballyvergan Marsh (near Youghal, Co. Cork).
- 1568 Lough Beg pNHA (near Ringaskiddy, Co. Cork) is an important area for wintering waterfowl in particular during autumn migration. It is used by high numbers of post breeding tern species (Common tern *Sterna hirundo* and Sandwich tern *Sterna sandvicensis*) and is of significant importance in particular during August, September and the winter period.
- 1569 Most inland areas of the Biodiversity Topic-specific Study Area are intensively managed farmland supporting relatively low diversity of species of conservation concern. Breeding species of note that have been recorded within Biodiversity Topic-specific Study Area include barn owl *Tyto alba*, yellowhammer *Emberiza citrinella*, tree sparrow *Passer montanus* and kestrel *Falco tinnunculus*.
- 1570 The above in relation to birds is not exhaustive. Further desk-based assessments, consultations and field surveys will be carried out to build upon existing knowledge of the Receiving Environment.

# **10.5.5** Potential Impacts

1571 A range of potential impacts on Biodiversity have been identified which may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development. These potential impacts include those issues identified as requiring consideration in accordance with the guidance documents listed in **Section 10.5.2.** 



## 10.5.5.1 Potential Impacts during Construction

- 1572 Construction Phase activities associated with The Proposed Development have potential for direct and indirect damage and disturbance of species, noise related emissions, and surface water quality impacts, including during storage of soil and materials, degradation to watercourses, damage to habitats and species therein, and downstream mobilisation of surface water pollutants which may affect European or nationally designated sites.
- 1573 Certain elements of The Proposed Development have potential for permanent loss of habitats within the footprint of the works and collision risk, for example, the proposed Connection Point(s), Onshore Project Substation(s) / potential BESS, permanent access tracks to joint bays, new Overhead Line structures associated with the loop-in option.

## 10.5.5.2 Potential Impacts during Operation and Maintenance

- 1574 Drainage and foul water discharges have potential to impact on water quality.
- 1575 Increased outdoor lighting and disturbance associated with elements of The Proposed Development may result in potential impacts on a variety of species, including foraging bats.
- 1576 Certain elements of The Proposed Development have potential for collision risk, for example, the proposed Onshore Project Substation(s) / BESS and new Overhead Line structures associated with the loop-in option.

#### 10.5.5.3 Potential Impacts during Decommissioning

- 1577 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and shall reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 1578 The scope of the Decommissioning works cannot be defined at this early stage.
- 1579 Decommissioning activities have the potential to impact Biodiversity i.e. by the removal of the infrastructure. Any potential impacts arising from Decommissioning are likely to be comparable to, or less than, those identified for the Construction Phase and will be assessed as part of the future EIAR.

#### **10.5.6 Potential Cumulative Effects**

1580 There may be potential for cumulative effects to occur in relation to Biodiversity as a result of other activities.



- 1581 The CIA for Biodiversity will be based on a ZoI identified during The Proposed Development-alone impact assessment, which will define the geographical extent to which effects of The Proposed Development are expected.
- 1582 The potential impacts considered in the CIA as part of EIAR will be in line with those described for The Proposed Development-alone impact assessment, though it is possible that some will be screened out on the basis that the impacts are highly localised (i.e. the ZoI is anticipated to be limited) or where there are management measures in place to robustly reduce the risk of impacts occurring.
- 1583 The CIA will consider cumulative impacts with any other projects and / or developments within the ZoI in line with the approach set out in **Section 7.5.10** of **Volume A Chapter 7** Environmental Impact Assessment Methodology of this EIAR Scoping Report.

# 10.5.6.1 Intra-Project

- 1584 In line with the most recent EPA guidance on EIARs (EPA, 2022) the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 1585 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared ZoI of The Proposed Development (for which Development Permission is sought).

# 10.5.6.2 Other Developments

1586 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative impacts are minimized.

# 10.5.7 Potential Transboundary Effects

1587 Given the location of potential effects that may arise as a result of The Proposed Development and the distance to other jurisdictions, it is not expected that significant transboundary effects will be identified with respect to Biodiversity in the future EIAR. Species may however cross international boundaries. While it is anticipated that significant transboundary effects are not likely, the future EIAR will consider whether or not significant effects to species that cross international boundaries are likely as a result of The Proposed Development.



### **10.5.8 Summary of Potential Impacts**

**Table 10.34** outlines the potential impacts for Biodiversity which are proposed to be scoped into and/or out of the future EIAR. These may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available. These may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.

*Table 10.34 Summary of Potential Impacts Relating to Biodiversity.* Topics Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR

Potential Impacts	Construction	Operation and Maintenance	Decommissioning
Temporary and permanent loss of habitats within the footprint of the works	~	√	~
Direct and indirect damage and disturbance of species	~	~	$\checkmark$
Collision risk with regard to onshore Biodiversity	~	~	$\checkmark$
Surface water quality impacts	~	~	✓
Degradation to watercourses	~	~	$\checkmark$
Downstream mobilisation of surface water and/or groundwater pollutants which may affect European or nationally designated sites	~	✓	√
Cumulative effects	~	~	$\checkmark$
Transboundary effects	~	~	$\checkmark$

#### **10.5.9 EIAR Scoping Consultation Questions**

- 1589 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Biodiversity chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Biodiversity chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Biodiversity Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?
  - What other data sources, if any, should The Applicant have regard to in the preparation of the Biodiversity chapter of the EIAR for The Proposed Development?



- What additional guidance and policy should The Applicant have regard to in the preparation of the Biodiversity chapter of the EIAR for The Proposed Development?
- Are you satisfied with the approach to impact assessment proposed for the Biodiversity chapter of the EIAR for The Proposed Development?
- Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Biodiversity chapter of the EIAR for The Proposed Development?

# 10.5.10 Technical Consultation

- 1590 This chapter has considered the potential impacts of The Proposed Development on Biodiversity.**Table 10.35** sets out a series of areas for discussion which The Applicant would appreciate targeted feedback on.
- 1591 Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 10.35** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.

Proposed Key Technical Stakeholder	Objective of Engagement
	<ol> <li>To discuss and agree the Topic-specific Study Area in relation to Biodiversity.</li> </ol>
National Darks and Wildlife Services	<ol><li>To discuss and agree the approach to Biodiversity impact assessment for the future EIAR.</li></ol>
(NPWS)	<ol><li>To gather information in relation to local Biodiversity and relevant information sources.</li></ol>
	<ol> <li>To discuss potential embedded and additional mitigation measures and any future monitoring requirements to ensure Biodiversity receptors are protected and impacts minimised.</li> </ol>
Inland Fisheries Ireland (IFI)	1. To gather available information in relation to the fisheries value of watercourses within the Biodiversity Topic-specific Study Area.
Cork County Council (Heritage/Biodiversity Officer)	1. To discuss and agree the approach to Biodiversity impact assessment.

Table 10.35: Summary of Proposed Key Technical Stakeholders Biodiversity.



Proposed Key Technical Stakeholder	Objective of Engagement		
Waterford City and County Council (Heritage/Biodiversity Officer)	<ol> <li>To gather information in relation to local Biodiversity and relevant information sources.</li> <li>To discuss potential embedded and additional mitigation measures and any future monitoring requirements to ensure Biodiversity receptors are protected and impacts minimised.</li> </ol>		
BirdWatch Ireland (including Cork branch)			
Bat Conservation Ireland			
Bat Conservation Ireland			
(including Cork Branch)			
Butterfly Conservation Ireland	1. To discuss and agree the approach to the Biodiversity impact		
An Taisce			
Irish Raptor Study Group			
Irish Wildlife Trust			
Botanical Society of Britain and Ireland			

### 10.5.11 References

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#### 10.6 CHAPTER 6 ARCHAEOLOGY AND CULTURAL HERITAGE

#### 10.6.1 Introduction

- 1592 This chapter of the EIAR Scoping Report considers the potential impacts of the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on Archaeology and Cultural Heritage and sets out the methodology and approach to be taken to assessing these potential impacts within the future EIAR.
- 1593 The Archaeology and Cultural Heritage Topic-specific Study Area in this EIAR Scoping Report comprises the Potential Onshore Infrastructure Zone. The receiving environment is described having regard to the Archaeology and Cultural Heritage Topic-specific Study Area and is shown in **Figure 10.5**.
- 1594 The Archaeology and Cultural Heritage Topic-specific Study Area will be refined for the future EIAR and will be defined in respect of two factors:
  - The ability of sites/information sources to provide information pertaining to the archaeological potential of The Proposed Development site, and
  - The potential physical impact, as well as impact on setting, that The Proposed Development may have on sites of cultural heritage significance.
- 1595 Taking these factors into account, it is anticipated that the Archaeology and Cultural Heritage Topic-specific Study Area will be defined as outlined in **Table 10.36**.

Subject	Study Area
National Monuments and Recorded archaeological monuments	Within 250 m of The Proposed Development
Protected Structures and / or their curtilage	Within 250 m of The Proposed Development
Architectural Conservation Areas (ACAS)	Within 250 m of The Proposed Development
Structures recorded in the NIAH	Within 250 m of The Proposed Development
Unregistered features of cultural heritage	Along any route option for The Proposed Development
Townland boundaries	Traversed by The Proposed Development
Areas of archaeological potential	Along any route option for The Proposed Development
Previous Excavations	Within any townland traversed by The Proposed Development
Topographical files	Within any townland traversed by The Proposed Development

Table 10.36: Dimensions of the Archaeology and Cultural Heritage Topic-specific Study Area



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### **10.6.2** Policy and Guidance

- 1596 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context applicable to The Proposed Development. Policies and guidance documents of particular relevance to the Archaeology and Cultural Heritage topic are set out in this section.
- 1597 These policy and guidance documents will be used to inform the Archaeology and Cultural Heritage chapter of the future EIAR.

#### Policies

- The National Monuments Acts 1930 to 2004 (as amended);
- Legislation for the protection of archaeological heritage in Ireland is based on the National Monuments Acts 1930 and amendments of 1954, 1987, 1994 and 2004;
- Cork County Development Plan 2022-2028;
- Local Area Plans for the municipal districts of East Cork, Cobh and Carrigaline, as appropriate; and
- Draft Waterford City and County Draft Development Plan 2022 2028.

#### Guidance

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017);
- Cultural Heritage Guidelines for Electricity Transmission Projects. A standard approach to archaeological, architectural and cultural heritage impact assessment of high voltage transmission projects (EirGrid, (2015);
- Frameworks and Principles for the Protection of the Archaeological Heritage [Department of Arts, Heritage, Gaeltacht and the Islands (DAHGI, 1999);
- Architectural Heritage Guidelines (Department of the Environment, Heritage and Local Government, 2004);
- Guidelines for the Assessment of Architectural Heritage Impacts of National Road Schemes (National Roads Authority, 2005); and
- Guidelines for the Assessment of Archaeological Heritage Impacts of National Road Schemes (National Roads Authority, 2005).



# 10.6.3 Methodology

# 10.6.3.1 Approach to Data Collection

1598 The following information and data sources (**Table 10.37**) have been considered during the production of this EIAR Scoping Report and will be considered further within the future EIAR where relevant matters are scoped into the EIAR process.

Table 10.37: Data Sources used to inform the Archaeology and Cultural Heritage chapter of this EIAR Scoping Report and that will be considered further within the EIAR

Data source	Date	Data contents
Sites and Monuments Record (SMR) and Record of Monuments and Places (RMP) for County Cork	Various	Recorded cultural heritage sites
Various editions of the Ordnance Survey of Ireland maps	Various	Recorded cultural heritage sites
Archaeological Inventory for County Cork – Volume 1 (Power et al. 1992)	1992	Recorded cultural heritage sites
National Inventory of Architectural Heritage	Various	Recorded cultural heritage sites
Excavation Bulletins Database (www.excavations.ie)	Various	Recorded cultural heritage sites
Cork County Development Plan 2022 - 2028	Various	Recorded cultural heritage sites
Various published sources for local history	Various	Cultural heritage value
Ordnance Survey Namebooks and Letters	Various	Cultural heritage value
Excavations Bulletin	Various	Cultural heritage value
Aerial Photographs	Various	Cultural heritage value
Cartographic Sources	Various	Cultural heritage value



## 10.6.3.2 Potential Additional Data and Proposed Surveys

- 1599 The data sources listed above are those identified to date which have been used to inform this EIAR Scoping Report and which will potentially be used to inform the assessment process in the future EIAR.
- 1600 It should be noted that the list of data sources is not exhaustive and will be added to as the works connected to the future EIAR progress.
- 1601 In addition to this, project-specific surveys may be undertaken to further provide data to inform the assessment. With respect to Archaeology and Cultural Heritage, it is anticipated that a photographic survey and walkover surveys of the ZoI of The Proposed Development area will be undertaken, subject to landowner agreement.

# 10.6.3.3 Approach to Impact Assessment

- 1602 The impact assessment methodology for the EIAR will be based on that described in EIAR Scoping Report, **Volume A Chapter 7** Environmental Impact Assessment Methodology adapted to make it applicable to assessment of Archaeology and Cultural Heritage receptors.
- 1603 This Archaeology and Cultural Heritage assessment methodology will be based on a desktop study of a number of documentary and cartographic sources, as detailed in **Table 10.37**. The desktop study will be further augmented by an examination of aerial photography as well as a targeted field survey. The desktop study will consider the following:

#### 10.6.3.3.1 Toponomy of Townlands

- 1604 The Irish landscape is divided into approximately 60,000 townlands and the system of landholding is unique in Western Europe for its scale and antiquity. Research into the names (toponomy) of these land units frequently provides information relating to the townland's archaeology, history, folklore, ownership, topography or land use. Most placenames (including townland names) were anglicised by the time the Ordnance Survey began in the 1830s. However, despite some inaccuracies in translation, the Gaelic, Viking, Anglo-Norman and English origins of place names are generally recognisable. A study of the townland names can provide information on aspects of cultural heritage including descriptions of the use of the landscape by man and the potential presence of archaeological or cultural heritage sites or features.
- 1605 The townlands crossed by The Proposed Development will be appraised to inform the cultural heritage impact assessment.
- 1606 The Excavations Bulletin is an annual account of all excavations carried out under license. The database is available online at www.excavations.ie and includes excavations from 1985 to 2019.



This database will be consulted as part of the desktop research for the EIAR to establish if any archaeological investigations had been carried out within the townlands to be traversed by The Proposed Development.

# 10.6.3.3.2 Designated Archaeological Sites

## **Record of Monuments and Places (RMPs)**

1607 Section 12 (1) of the National Monuments Act 1994 made provision for the establishment and maintenance of a RMP. Under this Act, each site recorded in the Record of Monuments and Places is granted statutory protection.

## National Monuments

1608 National monuments are broken into two categories; National Monuments in the ownership or guardianship of the state and National Monuments in the ownership or guardianship of a local authority. Section 8 of the National Monuments (Amendment) Act 1954 provides for the publication of a list of monuments, the preservation, of which, are considered to be of national importance.

# Sites with Preservation Orders

1609 The National Monuments Act 1930-2004 provide for the making of Preservation Orders and Temporary Preservation Orders in respect of National Monuments. Under Section 8 of the National Monument Act 1930 (as amended) the Minister for Housing, Local Government and Heritage, can place a Preservation Order on a monument if, in the Ministers' opinion, it is a National Monument in danger of being or is actually being destroyed, injured or removed or is falling into decay through neglect. The Preservation Order ensures that the monument will be safeguarded from destruction, alteration, injury, or removal, by any person or persons without the written consent of the Minister.

# 10.6.3.3.3 Designated Architectural Heritage Sites

# **Protected Structures**

1610 Protected Structures are buildings that a planning authority considers to be of special interest from an architectural, historical, archaeological, artistic, cultural, scientific, social, and/or technical point of view. Protected Structures receive statutory protection from injury or demolition under Section 57 (1) of the Planning and Development Act 2000 (as amended).



Protected structure status does not exclude development or alteration but requires The Applicant to consult with the relevant planning authority to ensure that elements which make the structure significant are not lost during development.

# Architectural Conservation Areas

1611 The stated objective of Architectural Conservation Areas is to conserve and enhance the special character of the area, including traditional building stock and material finishes, spaces, streetscapes, landscape and setting.

# National Inventory of Architectural Heritage (NIAH)

1612 The National Inventory of Architectural Heritage (hereinafter the 'NIAH') is a state initiative under the administration of the Department of Culture, Heritage and the Gaeltacht and was established on a statutory basis under the provisions of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999. Its purpose is to identify, record and evaluate the post-1700 architectural heritage of Ireland, uniformly and consistently, as an aid in the protection and conservation of the built heritage. NIAH surveys provide the basis for the recommendations of the Minister for Arts, Heritage and the Gaeltacht to the planning authorities for the inclusion of particular structures in their Record of Protected Structures (RPS).

# Undesignated cultural heritage sites

1613 This section deals with sites that are considered to be of cultural heritage value but which do not fall within the above categories as they are not registered. Such sites may include lime kilns, dwellings/outhouses, trackways or townland boundaries etc. identifiable on the 1st edition 6inch/25-inch OS maps. Aerial photography from the 1995, 2000, and 2005 fly-overs, the latest OSI images, Google Earth and Bing Maps satellite imagery, and publicly available LiDAR data published by TII and OPW will also be consulted to identify the potential for such sites.

### **Townland boundaries**

1614 A townland is the smallest official land unit in the country. Ireland is made up of approximately 60,000 townlands. As a result, townland boundaries are ubiquitous in the Irish countryside, and have been incorporated into the modern agricultural landscape. Many townlands predate the arrival of the Anglo Normans, and Irish historical documents consistently use townland names throughout the historic period to describe areas and locate events accurately in their geographical context. This suggests that many the boundaries of many of these territorial units preserve landscape divisions from the medieval period and perhaps earlier. The townland names and



boundaries were standardised in the nineteenth century when the Ordnance Survey began to produce large-scale maps of the country. Research into the name of these land units frequently provides information relating to its archaeology, history, folklore, ownership, topography or land use.

## 10.6.3.3.4 Areas of Archaeological Potential

1615 Areas of archaeological potential (AAPs) are areas or locations whose characteristics present a higher potential than non - AAPs for unknown archaeological features to be present. These will be identified once further detail of The Proposed Development locations are available further to a review of the data sources detailed in **Table 10.37**.

## 10.6.3.3.5 Methodology used for Assessing Baseline Value of Sites

- 1616 In order to categorise the baseline environment in a systemised manner, 'baseline values' will be assigned to each identified site of cultural heritage significance and/or potential within the Archaeology and Cultural Heritage Topic-specific Study Area. The baseline value of a site will be determined with reference to the 'importance' and 'sensitivity' of the site.
- 1617 In accordance with National Roads Authority Guidelines, the importance of a site is determined based on the following criteria: legal status, condition, historical associations, amenity value, ritual value, specimen value, group value and rarity. The sensitivity of a site is determined based on its susceptibility to physical impact, as well as susceptibility to impact on setting.
- 1618 It should be noted that the National Monuments Act 1930-2004 does not differentiate between recorded archaeological sites on the basis of relative importance or sensitivity. In addition, the Planning and Development Act 2000 (as amended) does not differentiate between Protected Structures or Areas of Architectural Conservation on the basis of relative importance or sensitivity either. Consequently, professional judgement will be exercised to rate these features based on their perceived importance and sensitivity in relation to physical impacts and impacts on setting.
- 1619 Taking the above factors into consideration, the criteria that have been defined are provided in **Table 10.38** below.

Table 10.38 Baseline values of sites

Subject	Baseline Value
Recorded Archaeological Monuments	
Protected Structures	Von High
Architectural Conservation Areas (ACAs)	very nigh
Shipwrecks known to be more than 100 years old or whose date is uncertain	


Subject	Baseline Value
Sites listed in the NIAH that are not Protected Structures Shipwrecks that are known to be less than 100 years old. Unregistered built heritage sites that comprise extant remains which are in good condition and/or which are regarded as constituting significant cultural heritage features Unrecorded features of archaeological potential	High
Unregistered built heritage sites that comprise extant remains which are in poor condition Unregistered cultural heritage sites (not including built heritage sites) that comprise extant remains Townland boundaries that comprise extant remains Marshy/wetland areas	Medium/High
Unregistered cultural heritage sites for which there are no extant remains but where there is potential for associated subsurface evidence Townland boundaries for which there are no extant remains	Medium/Low
Unregistered cultural heritage sites for which there are no extant remains and where there is little or no potential for associated subsurface evidence	Low

Note: 'All other areas' collectively refers to the areas within The Proposed Development site that do not contain or comprise features of cultural heritage significance.

# 10.6.3.3.6 Types of Impact

# **Table 10.39** lists the type of impacts that The Proposed Development may have on the cultural heritage resource:

Table 10.39 Types of Impact

Types of Impact	Definition
Direct	Direct impacts arise where an archaeological, architectural and/or cultural heritage feature or site is physically located within the footprint of The Proposed Development, or its associated physical impact zone, whereby the removal of part, or all of the feature or site is thus required.
Indirect	Indirect impacts arise when an archaeological, architectural or cultural heritage feature is not located within the footprint of The Proposed Development, or its associated physical impact zone, and thus is not impacted directly. Such an impact could include impact on setting or impact on the zone of archaeological potential of site whereby the actual site itself is not physically affected.
Cumulative	The addition of many impacts to create a large, significant impact.
Undeterminable	Whereby the full consequence that The Proposed Development may have on the cultural heritage resource is not known



Types of Impact	Definition
Residual	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.

## 10.6.3.3.7 Assessing physical impacts

1621 The methodology that will be used to assess the magnitude of potential pre-mitigation impacts, as well as residual impacts, of The Proposed Development on the baseline environment is presented in **Table 10.40** below.

#### Table 10.40: Criteria used for rating magnitude of impacts

Impact Magnitude	Criteria
	Applies where mitigation would be unlikely to remove adverse effects. Reserved for adverse, negative effects only. These effects arise where an archaeology site is completely and irreversibly destroyed.
Severe	An impact that obliterates the architectural heritage of a structure or feature of national or international importance. These effects arise where an architectural structure or feature is completely and irreversibly destroyed by The Proposed Development. Mitigation is unlikely to remove adverse effects.
	An impact which, by its magnitude, duration or intensity, alters an important aspect of the environment. An impact like this would be where part of a site would be permanently impacted upon, leading to a loss of character, integrity and data about an archaeological feature/site.
Major	An impact that by its magnitude, duration or intensity alters the character and/or the setting of the architectural heritage. These effects arise where an aspect or aspects of the architectural heritage is/are permanently impacted upon leading to a loss of character and integrity in the architectural structure or feature. Appropriate mitigate is likely to reduce the impact
	A beneficial or positive effect that permanently enhances or restores the character and/or setting of a feature of archaeological or cultural heritage significance in a clearly noticeable manner.
Moderate	A medium impact arises where a change to a site/monument is proposed which though noticeable, is not such that the archaeological integrity of the site is compromised and which is reversible. This arises where an archaeological feature can be incorporated into a modern day development without damage and that all procedures used to facilitate this are reversible.
	A medium impact to a site/monument may also arise when a site is fully or partly excavated under license and all recovered data is preserved by record.



Impact Magnitude	Criteria
	An impact that results in a change to the architectural heritage which, although noticeable is not such that alters the integrity of the heritage. The change is likely to be consistent with existing and emerging trends. Impacts are probably reversible and may be of relatively short duration. Appropriate mitigation is very likely to reduce the impact. A beneficial or positive effect that results in partial or temporary enhancement of the character and/or setting of a feature of archaeological or cultural heritage significance in a clearly noticeable manner.
Minor	An impact which causes changes in the character of the environment, such as visual impact, which are not high or very high and do not directly impact or affect an archaeological feature or monument. An impact that causes some minor change in the character of architectural heritage of local or regional importance without affecting its integrity or sensitivities. Although noticeable, the effects do not directly impact on the architectural structure or feature. Impacts are reversible and of relatively short duration. Appropriate mitigation will reduce the impact. A beneficial or positive effect that causes some minor or temporary enhancement of the character of an architectural heritage significance which, although positive, is unlikely to be readily noticeable.
Negligible	<ul> <li>An impact on archaeological features or monument capable of measurement but without noticeable consequences.</li> <li>An impact on architectural heritage of local importance that is capable of measure merit but without noticeable consequences.</li> <li>A beneficial or positive effect on architectural heritage of local importance that is capable of measurement but without noticeable consequences.</li> </ul>

#### 10.6.3.3.8 Assessing Impacts on Setting

- 1622 There is considerable debate over definitions of setting and approaches to the assessment of setting impacts, with no standardised industry-wide approach. The proposed assessment methodology outlined below has been developed in house by the onshore cultural heritage specialists for this project, Rubicon Heritage Services Ltd.
- 1623 The definition of setting will follow the guidance set by English Heritage as they have developed a range of comprehensive guidance on this subject specific to heritage assets (English Heritage 2005; 2008), as recognised professional best practice in the EIAR. Hence setting is not simply the visual envelope of the asset in question. Rather, it is those parts of the asset's surroundings that are relevant to the significance of the asset and the appreciation thereof.
- 1624 In most instances setting will relate to the historical value of the asset, where an appreciable relationship between the asset and an element of its surroundings helps the visitor understand



and appreciate the asset. This may be in terms of a physical relationship, such as between a castle and the natural rise that it occupies, or a more distant visual relationship, such as a designed vista or the view from, for example, one ringfort to another. The former is referred to as immediate setting and the latter as landscape setting. Many assets will only have an immediate setting. Some assets will have aesthetic value that relates to the surrounding landscape, such as in the case of a designed view incorporating a distant hill, or that relates to the contribution the asset makes to the local landscape, for example a church spire providing a focal point in a view down a valley.

1625 English Heritage has provided a list of factors to be considered when assessing impacts upon setting. These are broad factors and will be taken into consideration when assessing magnitude of impact and sensitivity. They are summarised in **Table 10.41**.

Factor	Discussion		
Visual dominance	Where an historic feature (such as a hilltop monument or fortification, a church spire, or a plantation belonging to a designed landscape) is the most visually dominant feature in the surrounding landscape, adjacent construction of The Proposed Development may be inappropriate.		
Scale	The extent of a Proposed Development and the number, density and disposition of its associated elements will also contribute to its visual impact.		
Intervisibility	Certain archaeological or historic landscape features were intended to be seen from other historic sites. Construction of a Proposed Development should respect this intervisibility.		
Vistas and sight- lines	Designed landscapes invariably involve key vistas, prospects, panoramas and sight-lines, or the use of topography to add drama. Location of a Proposed Development within key views, which may often extend beyond any designated area, should be avoided.		
Movement, sound or light impacts	The movement associated with a Proposed Development may be a significant issue in certain historic settings. Adequate distance should always be provided between important historic sites and Proposed Developments to avoid the site being overshadowed or affected by noise.		
Unaltered settings	The setting of some historic sites may be little changed from the period when the site was first constructed, used or abandoned. Largely unaltered settings for certain types of sites, particularly more ancient sites, may be rare survivals and especially vulnerable to modern intrusions such as wind turbines. This may be a particular issue in certain upland areas.		

Table 10.41 Factors to be considered when assessing impacts upon setting (after English Heritage 2005)

1626 The following are guides to the assessment of magnitude of impact on setting (after English Heritage 2005; 2008):



- Obstruction of or distraction from key views. Some assets have been sited or designed with specific views in mind, such as the view from a country house with designed vistas. The obstruction or cluttering of such views would reduce the extent to which the asset could be understood and appreciated by the visitor. Developments outside key views may distract from them and make them difficult to appreciate on account of their prominence and movement. In such instances the magnitude is likely to be greatest where views have a particular focus or a strong aesthetic character. Sympathetic development may improve key views by removing features that obstruct or distract from key views and hence preserve or enhance the importance of the asset.
- Changes in prominence. Some assets are deliberately placed in prominent locations in order to be prominent in the surrounding landscape, for example prehistoric cairns are often placed to be silhouetted against the sky and churches in some areas are deliberately placed on ridges in order to be highly visible. Developments can reduce such prominence and therefore reduce the extent to which such sites can be appreciated or the contribution that they make to the local landscape. Similarly, sympathetic development can enhance the setting of such sites by, for example, removing modern forestry that would otherwise compromise the setting of a cairn that had been placed on a skyline.
- Changes in landscape character. A particular land use regime may be essential to the appreciation of an asset's function, for instance the fields surrounding an Improvement period farmstead are inextricably linked to its appreciation. Changes in land use can leave the asset isolated and reduce its value. In some instances, assets will have aesthetic value or a sense of place that is tied to the surrounding landscape character. Conversely, sympathetic development may restore or preserve the relevant land use and hence preserve or enhance the relevant value of the asset.
- *Duration of impact*. Impacts that are long term or permanent are generally of greater magnitude than those that are short term.
- 1627 Readily reversible impacts are generally of lesser magnitude than those that cannot be reversed. Impacts upon the defined setting will be of greater magnitude than those that affect unrelated elements of the asset's surroundings or incidental views to or from an asset that are unrelated to the appreciation of its value. The magnitude of impacts can be rated from Negligible to Major using a similar scale to that for physical impacts.

## 10.6.3.3.9 Methodology used for assessing significance level of impacts

1628 The significance level of a construction or operation impact on a feature is assessed by combining the magnitude of the impact and baseline value of the feature. The matrix in **Table 10.42** provides a guide to decision-making, but it is not a substitute for professional judgement and



interpretation, particularly where the baseline value or impact magnitude levels are not clear or are borderline between categories. The permanence of the effects will also be taken into account, with irreversible effects being more significant while temporary or reversible changes are likely to be less significant.

Magnitude	Baseline Value				
of Impact	Very High	High	Medium / High	Medium / Low	Low
Severe	Very significant	Very significant	Significant	Moderate	Slight
Major	Significant	Significant	Moderate	Slight	Slight
Moderate	Moderate	Moderate	Slight	Slight	Negligible
Minor	Moderate	Slight	Slight	Negligible	Negligible
Negligible	Slight	Slight	Negligible	Negligible	Negligible

Table 10.42 Criteria for assessing significance level of impacts

#### **10.6.4** Receiving Environment

#### 10.6.4.1 Archaeological and historical context

#### 10.6.4.1.1 Prehistoric period

- 1629 There is abundant evidence for prehistoric settlement in County Cork. Although very recent discoveries may push back the date of human activity by a number of millennia (Dowd and Carden, 2016), the Mesolithic period is the earliest time for which there is clear evidence for prehistoric activity in Ireland. During this period people hunted, foraged and gathered food and appear to have had led a primarily, but not exclusively, mobile lifestyle. The presence of Mesolithic communities is most commonly evidenced by scatters of worked flint material, a by-product from the production of flint implements.
- 1630 The current archaeological evidence suggests that the environs around Cork Harbour and the coastline of East Cork were first inhabited towards the later part of this period.
- 1631 During the Neolithic period, communities generally became less mobile and their economy became based on the rearing of stock and cereal cultivation. The transition to the Neolithic was marked by major social change. Communities had expanded and moved further inland to more permanent settlements. This afforded the development of agriculture which demanded an altering of the physical landscape. Forests were rapidly cleared, and field boundaries constructed. Pottery was also being produced, possibly for the first time.



- 1632 There is some evidence for activity during this period, with two stone axe-heads found in Carrigaline townland (NMI IA/9/74 & 1931:321) on the eastern side of Cork Harbour. The period is most commonly characterised by its impressive megalithic tombs. At Rostellan on the eastern side of Cork Harbour a sizeable portal tomb (CO088-010) is located on the southern shoreline of Poulnalibe creek, just below high tide level
- 1633 The Bronze Age was marked by the widespread use of metal for the first time in Ireland. As with the transition from Mesolithic to Neolithic, the transition into the early Bronze Age was accompanied by changes in society. The construction of megalithic tombs went into decline and the burial of the individual became typical. Cremated or inhumed bodies were often placed in a cist, which is a stone-lined grave, usually built of slabs set upright to form a box-like construction and capped by a large slab or several smaller lintels (Buckley & Sweetman, 1991). Barrows and pit burials are also funerary monuments associated with this period.
- 1634 Standing stones may have been erected as boundary markers or indicators of routeways dating back to the Bronze or Iron Ages. Two standing stones are noted in the vicinity of Knockraha; CO064-027 is located in the townland of Kilquane, while CO064-066, known as 'Ban na gCloch field of the pillar-stones is located in the townland of Ballynanelagh.
- 1635 Another site type thought to reveal of glimpse of domestic life at this time is the burnt mound and fulacht fiadh. A common site within the archaeological record, they are normally interpreted as temporary cooking sites but may have been used for other industrial or even recreational functions. They survive as low mounds of charcoal-enriched soil mixed with an abundance of heat-shattered stones. They are usually horseshoe shaped and located in low-lying areas near a water source and are often found in clusters. Even when levelled by an activity such as ploughing, they are identifiable as burnt spreads in the landscape (Brindley & Lanting, 1990).
- 1636 Fulachtaí Fia are numerous in the Cork harbour and East Cork region. They are the most numerous prehistoric sites in Ireland, with over 4,500 known examples, some 2,000 of these in County Cork (Power 1990, 13–17).
- 1637 A series of excavations associated with the Curraleigh West to Midleton gas pipeline identified a concentration of Middle to Late Bronze Age settlement activity to the east and south of Midleton and north-east of Cork Harbour (Cleary 2015, 49). At Ballyvergan West in 2001 in advance of the construction of the N25 Youghal Bypass revealed an unenclosed area (10m x 10m) that contained a large number of pits, post-holes and stake-holes which, apart from one or two possible structures, were difficult to classify. These possible structures were constructed mainly of stakes that were replaced by a subsequent phase of construction comprising two other possible structures. Three external hearths were identified, along with a number of large refuse pits which produced coarseware pottery, whetstones, rubbing stones, fragments of saddle querns, burnt



bone and burnt hazelnut shells. Many of the features in the area were covered by extensive spreads of charcoal-rich material that may have represented the destruction phase of one or both of the structures. Samples taken from three of the pits were radiocarbon dated to 1450-1190 cal. BC, 1450-1110 cal. BC, and 1210-920 cal. BC (Kehoe and Noonan 2001).

## 10.6.4.1.2 Medieval period (AD 400-1540)

- 1638 The early medieval documentary sources indicate a complex secular social system based on clientship during this period. Landowning commoners such as ócaire and bóaire were obligated to wealthy landowners (mruigfer), lords (flaith) and the king of a region with commoners (betaghs) bonded freemen (fuidirs) and slaves (cumal) lower down the scale but still required to pay tributes. The social system was dependant on clientelism with rents and what amounted to taxes being paid with labour, food and other commodities to the upper echelons and also to the church (Kelly 2000, 447). By the twelfth century the distinction between ócaire and bóaire diminished suggesting a change in the social order (Kelly 2000, 428). The betagh class came to refer to a servile tenant (Kelly 2000, 428). Many of these wealthy landowners and landowning commoners inhabited ringforts
- 1639 Ringforts are undoubtedly the most widespread and characteristic archaeological field monument in the Irish countryside. They are usually known by the names ráth or lios, forming some of the most common placename elements in the countryside. The ringfort is basically a circular or roughly circular area enclosed by an earthen bank formed of material thrown up from concentric fosse (ditch) on its outside. (Power 1992, 131).
- 1640 Archaeological excavation has shown that the majority of ringforts were enclosed farmsteads, built in the early medieval period. Though not forts in the military sense, the earthworks acted as a defence against natural predators like wolves, as well as human predators. Local warfare and cattle raiding were commonplace at this time. The construction of so many throughout the country, in a relatively short period (400–500 years), reflects on the stability and wealth of society at the time, and also its homogeneity. As well as farming-related activities like corn-grinding and animal husbandry, the ringfort was home to a wide variety of craft industries, including spinning, weaving, metal- and glass-working. Dwellings and outhouses were built on timber posts, with walls of wattle, mud or sods, which usually leave no trace above ground today. Excavation can trace the remains of these structures by revealing features like post-holes, stake-holes and sunken hearths (Power 1992, 131).
- 1641 Two ringfort sites with no above surface remains situated on a southeast-facing slope, overlooking White Bay. It was depicted as circular enclosure (c. 30m) on 1842 OS 6-inch map.
- 1642 Several levelled ringforts are noted in the vicinity of Knockraha. In the townland of Ballincohig CO064-013 comprises as circular enclosure (c. 40m) known from the 1842 OS 6-inch map, now



levelled with no visible surface trace. In the townland of Knockraha East, ringforts CO064-028 and CO064-029 are both known from the 1842 OS 6-inch map. Both are now levelled with no visible surface trace. In the townland of Blossomgrove three levelled ringforts are known (CO064-061; CO064-062; CO064-063). In the townland of Gogganstown CO064-064 represents another levelled ringfort (c. 20m) marked on the 1842 OS 6-inch map. In the townland of Ballynanelagh ringfort CO064-065 has also been levelled. While in the townland of Killeena ringforts CO064-073 and CO064-074 are known from the 1842 OS 6-inch map.

- 1643 This period also saw the arrival of Christianity into Ireland. While some of the church sites within the Potential Onshore Infrastructure Zone may be relatively late foundations it is likely that that the church sites at Kilquane townland near Knockraha (CO064-026003) and Ballymacoda townland (CO078-004002) could be an early foundation. Examples of other ritual sites from this period include holy wells such as the one at Seafield (CO067-049) and Knocknacally (CO067-023) and at Kilquane (CO064-025).
- 1644 The later medieval periods were characterised by political unrest that originated from the death of Brian Borumha in 1014. In 1171 AD, Dublin was besieged and taken by Diarmait MacMurchada and his Leinster forces supported by a force of Anglo-Norman knights led by Strongbow (Richard Fitz-Gilbert de Clare) and Raymond le Gros. Diarmait MacMurchada, deposed King of Leinster, sought the support of mercenaries from England, Wales and Flanders to assist him in his challenge for kingship. Norman involvement in Ireland began in 1169 AD, when Richard de Clare and his followers landed in Wexford to support MacMurchada. Two years later de Clare (Strongbow) inherited the Kingdom of Leinster and by the end of the 12th century the Normans had succeeded in conquering much of the country (Stout & Stout, 1997). The initial stage of the invasion of the country was marked by the construction of motte and bailey castles, which were later replaced with stone fortifications. Youghal received its charter of incorporation in 1209.
- 1645 CO078-005 represents a moated site situated in pasture atop hill overlooking Youghal Bay. This earth and timber settlement type was typical of the 13th century resettlement of the landscape following the arrival of the Anglo-Normans. Stone fortifications replaced earlier earth and timber settlements.

## 10.6.4.1.3 Post-medieval period (1540–1900)

1646 By the 17th century the main village settlements in East Cork were Youghal, Killeagh, Carrigtwohill, Castlemartyr and Cloyne. Both Midleton and Castlemartyr were newly established centres in the 17<sup>th</sup> century. Castlemartyr was formally incorporated in 1663 centred on the newly designed village settlement (Lee 2014, 73). The lands of Castlemartyr had been bought by Richard Boyle, first Earl of Cork at the start of the 17th century and remained in the control of the Boyle family (subsequently Earls of Shannon) into the 19th century. Richard Boyle probably built the 17th



century manor house (CO077-0050025-) to supplant the earlier Geraldine tower house. This was in turn replaced in the early 18th century when Henry Boyle constructed the twenty-five-bay, twostorey Castlemartyr House located west of it (RMP CO077-005001-; NIAH 20825002). Lewis' Topographical Dictionary of Ireland (1837) lists Castlemartyr village as having 129 houses and describes it as having 'a very cheerful appearance'.

- 1647 The strategic importance of Cork Harbour has defined much of its post-medieval development, particularly as military and naval place of importance. Ringaskiddy Martello tower is located on the west shoreline of Cork Harbour. Constructed in 1813 (National Inventory of Architectural Heritage) it is part of the second wave of tower building that took place between 1810 and 1815 (the initial Irish towers having been built between 1804 and 1806) and which ultimately saw c.50 towers constructed around the country (Kerrigan 1995, 168-9). It is described in the archaeological inventory as a well-preserved circular tower 15.3m in diameter with a flattened profile to the north-east and south-west. The building is faced on the outside with coursed limestone ashlar and on the inside with brick. The door is at first floor level on the eastern side.
- 1648 Fort Davis (Carlisle Fort), to the south of Whitegate Oil Refinery, occupies the high ground sloping steeply downward on the eastern side. It is one of three such forts within Cork Harbour. Fortification, 'begun sometime after 1552' (Gowen 1979, 232), suggesting it is possibly the 'earliest bastioned fort in Ireland' (Kerrigan 1980, 13).
- 1649 Handed over to Irish government in 1938 and renamed Dúnan Dáibhisigh (Davis Fort), it is now owned by Department of Defence and used as army training camp.

#### 10.6.4.1.4 War of Independence (1919–1921) (after Shiels 2014)

- 1650 The area around the village of Knockraha became deeply involved in the War of Independence, a subject which has been the focus of local history groups and academics. Knockraha was never the scene of major engagements with Crown forces during the War of Independence. Its position as a 'quiet' area was far from accidental. Rather it was part of an intentional strategy to avoid suspicion falling on the locality, allowing it to be utilised as a logistical base for the Brigade (Borgonovo 2010, 214).
- 1651 There is ample documentary evidence to suggest Knockraha's key importance for operations in Cork City and East Cork. Apart from the Ballynanelagh bomb factory it was also the location of a Brigade bomb factory. This was operated by Seamus Fitzgerald (WS 1737 of Seamus Fitzgerald).
- 1652 Perhaps Knockraha's most famous connection with the War of Independence was its use as the prison of Cork No. 1 Brigade and as a place where suspected spies, informers and British military were executed (Borgonovo 2010, 213). That the prison was run by the Brigade as opposed to Martin Corry and the local company is confirmed in the pension file of the Governor of Sing-Sing,



Edward Moloney, who stated that he would not give the key to Corry even if he wanted it (Edward Moloney Pension Application). The fact that Knockraha was used as place of imprisonment and execution is apparent in a number of Witness Statements (WS 1479 of Sean Healy; WS 1675 of Jos. O'Shea; WS 1643 of Sean Healy).

1653 The burial of those killed at the prison has garnered much attention in recent years, particularly with the publication of the Year of Disappearances: Political Killings in Cork, 1920-1921 by Gerard Murphy in 2010 and The Graves of the Disappeared television series broadcast by TV3 in 2012, both of which reference the burial of individuals in Knockraha. There is no doubt that such burials did occur, most notably in a boggy area of upland known locally as 'The Rea.'

## **10.6.5** Potential Impacts

- 1654 A range of potential impacts on Archaeology and Cultural Heritage have been identified which may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development. These potential impacts include those issues identified as requiring consideration in accordance with the guidance documents listed in **Section 10.6.2** and are considered under the following headings, as appropriate.
  - Connection Point(s);
  - Onshore Cable;
  - Onshore Project Substation(s) and BESS and Loop-in options;
  - Transition Joint Bay; and
  - Construction Compounds and Passing Bays / Joint Bays and compounds

## 10.6.5.1 Potential Impacts during Construction

- 1655 *Direct Impacts*: Most impacts during construction phase are likely to be direct impacts as a result of sub-surface disturbance or construction works. All impacts at this phase will be considered to be negative and permanent.
- 1656 *Indirect Impacts*: It is not proposed to consider any impacts on setting for any sites within the Archaeology and Cultural Heritage Topic-specific Study Area during the construction phase, as construction works constitute a short-term alteration to the landscape.

#### 10.6.5.1.1 Connection Point(s)

1657 Excavation groundworks will be required and these could expose sub-surface archaeological features or deposits or archaeological features or deposits.



#### 10.6.5.1.2 Onshore Cables

- 1658 It is not considered that in-road Onshore Cable options will have any impact on townland boundaries where the townland boundary has already been transected by the existing roadway (and the route of The Proposed Development will be within that existing break) or where the existing roadway demarcates the current townland boundary. Direct impacts to townland boundaries will only be identified where The Proposed Development requires a new break or the removal of a section of extant townland boundary.
- 1659 While it is expected that the installation of Onshore Cable in existing roads would reduce the potential for sub-surface archaeological material to be present, it would not eliminate it. Excavation of the cable trench and Joint Bays could expose sub-surface archaeological features or deposits.
- 1660 Excavation of open cut trench crossing and cross-county trenches could expose sub-surface archaeological features or deposits or archaeological features or deposits.
- 10.6.5.1.3 Onshore Project Substation(s) and Battery Energy Storage System and Loop-ins
- 1661 Excavation groundworks for new foundations could expose sub-surface archaeological features or deposits.

#### 10.6.5.1.4 Transition Joint Bay

1662 Excavation groundworks required for construction could expose sub-surface archaeological features or deposits as well as buried peat deposits.

#### 10.6.5.1.5 Construction Compounds, Passing Bays and Compounds

- 1663 To facilitate traffic management at locations where joint (bays) chambers are located within the carriageway, the use of temporary passing bays is proposed. This would entail removing the top layer of ground to the side of the carriageway and temporarily storing it for reinstatement following the works.
- 1664 Temporary Construction Compounds (with access roads) will be positioned at various locations along The Proposed Development. If existing hardstanding is not available, engineering stone fill will be laid and compacted and maintained as required for the duration of the works. Once the works are completed, the engineered stone fill will be removed and the land will be reinstated to its original condition. Where an access road is required, engineering stone fill will be laid and compacted and maintained as required for the duration of the works. Once the works are completed, the engineered stone fill will be removed and the land will be reinstated to its original condition.



1665 Any removal to topsoil or ground reduction required to facilitate any of these temporary works could expose sub-surface archaeological features or deposits. Compaction impacts to sub-surface archaeological features or deposits are also a possibility from the introduction of hard-standing onto greenfield sites.

## 10.6.5.2 Potential Impacts during Operation and Maintenance

- 1666 *Direct Impacts*: No direct impacts on archaeological, architectural or cultural heritage sites are expected during the Operation and Maintenance Phase.
- 1667 *Indirect Impacts*: Indirect impacts during the Operation and Maintenance Phase would largely occur as a result of impacts on the setting of site (notably visual impacts) and on the integrity and character.

#### 10.6.5.3 Potential Impacts during Decommissioning

- 1668 A Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and will reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission require to permit Decommissioning.
- 1669 The scope of the Decommissioning works cannot be defined at this early stage.
- 1670 Decommissioning activities have the potential to impact Archaeology and Cultural Heritage i.e. by the removal of the infrastructure. Any potential impacts arising from Decommissioning are likely to be comparable to, or less than, those identified for the Construction Phase and will be assessed as part of the future EIAR.

#### **10.6.6 Potential Cumulative Effects**

- 1671 There may be potential for cumulative effects to occur in relation to Archaeology and Cultural Heritage as a result of other activities.
- 1672 The CIA for Archaeology and Cultural Heritage will be based on a ZoI identified during The Proposed Development-alone impact assessment, which will define the geographical extent to which effects of The Proposed Development are expected.
- 1673 The potential impacts considered in the CIA as part of EIAR will be in line with those described for The Proposed Development-alone impact assessment, though it is possible that some will be screened out on the basis that the impacts are highly localised (i.e. the ZoI is anticipated to be



limited) or where there are management measures in place to robustly reduce the risk of impacts occurring.

1674 The CIA will consider cumulative impacts with any other projects and / or developments within the ZoI in line with the approach set out in **Section 7.5.10** of **Volume A Chapter 7** Environmental Impact Assessment Methodology of this EIAR Scoping Report.

# 10.6.6.1 Intra-Project

- 1675 In line with the most recent EPA guidance on EIARs (EPA, 2022) the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 1676 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared ZoI of The Proposed Development (for which Development Permission is sought).

## 10.6.6.2 Other Developments

1677 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative impacts are minimized.

## **10.6.7** Potential Transboundary Effects

1678 Given the location of potential effects to arise as a result of The Proposed Development, and the distance to other jurisdictions, there is no pathway for transboundary effects to occur. It is not expected that transboundary effects will be identified with respect to Archaeology and Cultural Heritage in the future EIAR.

## **10.6.8 Summary of Potential Impacts**

1679 **Table 10.43** outlines the anticipated impacts for Archaeology and Cultural Heritage which are proposed to be scoped into and/or out of the future EIAR. These may be refined through the EIAR Process based on consultation with stakeholders and as additional information and data become available. These may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.



*Table 10.43: Summary of Potential Impacts Relating to Archaeology and Cultural Heritage.* Topics Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR (x)

Potential Impacts	Construction	Operation and Maintenance	Decommissioning
Direct impacts as a result of sub-surface disturbance or construction works	✓	√	✓
Indirect impacts on the setting for cultural heritage sites	~	$\checkmark$	$\checkmark$
Cumulative effects	$\checkmark$	$\checkmark$	$\checkmark$
Transboundary effects			

#### **10.6.9 EIAR Scoping Consultation Questions**

- 1680 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Archaeology and Cultural Heritage chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Archaeology and Cultural Heritage chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Archaeology and Cultural Heritage Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?
  - What other data sources, if any, should The Applicant have regard to in the preparation of the Archaeology and Cultural Heritage chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Archaeology and Cultural Heritage chapter of the EIAR for The Proposed Development?
  - Are you satisfied with the approach to impact assessment proposed for the Archaeological, Architectural and Cultural Heritage chapter of the EIAR for The Proposed Development?
  - Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Architectural and Cultural Heritage chapter of the EIAR for The Proposed Development?

#### **10.6.10 Technical Consultation**

1681 This chapter has considered the potential impacts of The Proposed Development on Archaeology and Cultural Heritage. **Table 10.44** sets out a series of areas for discussion which The Applicant would appreciate targeted feedback on.



1682 Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 10.44** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.

Table 10.44: Summary of Proposed Key Technical Stakeholders Archaeology and Cultural Heritage.

Proposed Key Technical Stakeholder	Objective of Engagement
National	<ol> <li>To discuss and agree the Topic-specific Study Area in relation to Archaeology and Cultural Heritage.</li> <li>To gather information in relation to Archaeology and Cultural Heritage within the</li> </ol>
Monuments Service	Archaeology and Cultural Heritage Topic-specific Study Area.
	<ol> <li>To discuss and agree approach to impact assessment and potential mitigation measures in the future EIAR.</li> </ol>
	<ol> <li>To discuss and agree the Topic-specific Study Area in relation to Archaeology and Cultural Heritage.</li> </ol>
Cork County Council	<ol> <li>To gather information in relation to Archaeology and Cultural Heritage within the Archaeology and Cultural Heritage Risk Topic-specific Study Area</li> </ol>
	3. To discuss and agree approach to impact assessment and potential mitigation measures in the future EIAR.
Waterford City and	<ol> <li>To discuss and agree the Topic-specific Study Area in relation to Archaeology and Cultural Heritage.</li> </ol>
County Council	<ol> <li>To discuss and agree approach to impact assessment and potential mitigation measures in the future EIAR.</li> </ol>

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#### **10.7** CHAPTER **7** ROADS AND TRAFFIC

#### 10.7.1 Introduction

- 1683 This chapter of the EIAR Scoping Report considers the potential impacts of the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on Roads and Traffic and sets out the methodology and approach to be taken to assessing these potential impacts within the future EIAR.
- 1684 The Roads and Traffic Topic-specific Study Area in this EIAR Scoping Report comprises the Potential Onshore Infrastructure Zone and likely haul roads. The receiving environment is described having regard to the Roads and Traffic Topic-specific Study Area. The Roads and Traffic Topic-specific Study Area will be refined for the future EIAR based on positioning of onshore infrastructure elements and locations of construction activities.

#### **10.7.2** Policy and Guidance

1685 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context applicable to The Proposed Development. Policies and guidance documents of particular relevance the Roads and Traffic topic are set out in this section. These policy and guidance documents will be used to inform the Roads and Traffic chapter of the future EIAR.

#### Policies

- Cork County Development Plan 2022-2028; and
- Local Area Plans for the municipal districts of East Cork, Cobh and Carrigaline, as appropriate.

#### Guidance

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017);
- Traffic and Transport Assessment Guidelines, Transport Infrastructure Ireland (TII, 2014)
- Guidelines for the Environmental Assessment of Road Traffic (IEMA, 1993);
- Guidelines for Classification and Scheduling of Roads in Ireland (Department of Transport Tourism and Sport, 2013);
- Guidance DN-GEO-03031 'Rural Road Link Design' (TII, June 2017); and
- The UK Design Manual for Roads and Bridges (DMRB), (UK National Highways, various dates).



#### 10.7.3 Methodology

## 10.7.3.1 Approach to Data Collection

# 1686 The following information and data sources (**Table 10.45**) have been considered as part of the preparation of this EIAR Scoping Report and will be considered further within the future EIAR.

Table 10.45: Data Sources used to inform the Roads and Traffic chapter of this EIAR Scoping Report and that will be considered further within the EIAR

Data source	Date	Data contents
Cork County Council;	Various	Recorded Personal Injury Collision (PIC) data
TII Online Data Portal	Various	Traffic data
EIAR and TA documents from other developments, accessed via the Cork County Council Planning Portal, the Department of Housing, Local Government and Heritage's EIA Portal and the Environmental Planning Agency Website; and	Various	Traffic data
National Transport Model (NToM) Update, Travel Demand Forecasting Report, NToM Volume 3, December 2019, TII, AECOM.	2019	Traffic data

#### 10.7.3.2 Potential Additional Data

- 1687 The data sources listed in **Table 10.45** have been used to inform this EIAR Scoping Report and which will be used to inform the wider assessment process in the future EIAR.
- 1688 It should be noted that the list of data sources is not exhaustive and may be added to as the works connected to the future EIAR progress. The Roads and Traffic assessment will be informed by further acquisition of spatial data as well as through further consultations with industry groups, governing bodies, interest groups and local communities.

#### 10.7.3.3 Approach to Impact Assessment

1689 The impact assessment methodology in the future EIAR will be based on that described in EIAR Scoping Report, **Volume A Chapter 7** Environmental Impact Assessment Methodology as adapted to make it applicable to assessment of Roads and Traffic receptors.



- 1690 The Roads and Traffic impact assessment methodology will be in accordance with the Guidelines for the Environmental Assessment of Road Traffic (IEMA, 1993)
- 1691 The assessment will be undertaken combining desktop study and current policy advice and best practice in line with consultation with statutory agencies. Predicted construction vehicle movement volumes will be compared to baseline traffic flows to identify if there are likely to be periods where the increase in traffic, either all traffic or specifically Heavy Goods Vehicle (HGV) traffic, exceeds standard thresholds. The potential for this additional traffic to cause effects, for example, on driver delay, road safety or community, will be identified and their significance assessed.
- 1692 The IEMA Guidelines (IEMA 1993) infer two-fold rules that can be used to determine both the scale and extent of the assessment of road traffic as a screening process:
  - Rule 1 Include highway links where traffic flows would increase by more than 30% (or the number of HGVs would increase by more than 30%).
  - Rule 2 Include any other specifically sensitive areas where traffic flows would increase by 10% or more.
- 1693 It is acknowledged by the IEMA guidelines that daily variation can vary +/- 10%. As such, it will be assumed that projected changes in traffic below 10% means no discernible environmental impact.
- 1694 Where the predicted increase in traffic volume (whether general, or HGV) falls short of these thresholds, the significance of the effects can be termed as not significant. This means that further assessment is not warranted. Consequently, where the predicted traffic flow increase exceeds thresholds, the effects will be considered to be potentially significant and accordingly, will be fully assessed.
- 1695 The future EIAR will clearly identify transport routes which are to be used in connection with The Proposed Development. Quantitative assessments will be undertaken alongside the application of professional judgement to determine whether or not the effects are considered to be of significance. Based on the Rule 1 and 2 of the IEMA Guidelines (IEMA, 1993), the predicted significance of the effect will be determined considering both the sensitivity of the receiving environment and the magnitude of change against the baseline. As a guide to inform the assessment, but not as a substitute for professional judgement, criteria for determining the significance of traffic related effects are set out in **Table 10.46**.
- 1696 The Potential Onshore Infrastructure Zone encompasses a predominantly rural area; as such, all routes are expected to be treated as 'sensitive' and therefore the 10% significance threshold is expected to be applied in view of Rule 2 of the IEMA Guidelines (IEMA, 1993), thereby ensuring a robust assessment.



1697 During the Operation and Maintenance Phase of The Proposed Development negligible volumes of traffic generation are anticipated. Considering this, the assessment is expected to primarily focus on the Construction Phase traffic and transport impacts, with a qualitative summary of the traffic and transport impact during the Operation and Maintenance Phase and the Decommissioning Phase. The need or otherwise for a more detailed assessment of Operation and Maintenance Phase impacts will however be revisited once further details of The Proposed Development are available.

Table 10.46: Effect Significance Matrix

Significance of Effect	% Increase in general traffic (HGV + LGV) volume % Increase in HGV traffic volume	
Major (Significant)	Greater than or equal to 60%	
Moderate (Significant)	Greater than or equal to 10% and less than 60%	
Minor (Not Significant)	Greater than or equal to 5% and less than 10%	
None (Not Significant)	Less than 5%	

- Source: IEMA
- 1698 The thresholds shown in **Table 10.46** have been developed based upon the Rule 2 criteria above as well as the consideration that 'Major' and 'Moderate' effects are significant in the context of EPA Guidelines (2022).
- 1699 The guidance above does not give thresholds to determine significance associated with driver delay; as such, professional judgement will be applied. For driver delay, using terminology outlined for effect significance in **Table 10.46**, a similar rationale will be used, with thresholds having been determined and applied as shown below in **Table 10.47**.

Table 10.47: Driver Delay Effect Significance Matrix

Significance of Effect	Increase in Journey Time
Major (Significant)	31 – 40 minutes
Moderate (Significant)	21 – 30 minutes
Minor (Not Significant)	11 – 20 minutes
None (Not Significant)	0 – 10 minutes

Source: Mott MacDonald



1700 The significance of all effects under consideration will be linked to the volume of traffic generated by The Proposed Development, therefore it is deemed appropriate to link significance criteria with the scale of the forecast traffic increase. The IEMA Guidelines (IEMA, 1993), also state that:

"For many effects there are no simple rules or formulae which define the thresholds of significance and there is, therefore, a need for interpretation and judgement on the part of the assessor, backed-up by data or quantified information wherever possible."

- 1701 As such, professional judgement (led by good practice guidance) will also be applied in the assessment of effects so as to provide more meaningful conclusions in particular where it is not quantifiable by set rules or formulae, particularly in relation to driver delay caused by temporary full or partial road closure and resultant traffic diversion, the assessment of community (pedestrian delay, pedestrian amenity / fear and intimidation) and road safety effects. Information of this nature, gathered from desktop research, where available, in addition to technical knowledge from the wider technical team will also be used.
- 1702 Furthermore, where baseline traffic flows are very low, it is possible to derive unrealistic determinations of significance when considered against purely numerical assessment criteria. For example, when traffic flow is very low, it is possible to show relatively large traffic increases and for the road to operate well below capacity. Under the numerical criteria defined above, a 60% increase in traffic volume would represent a major effect, but in reality, the effect is likely to be less significant, given the residual capacity of the road.
- 1703 Effects associated with works which might physically restrict usable road space, thus resulting in localised temporary road or lane closure will also be assessed; considering requirements for diversion and / or journey time delay to traffic by road section.
- 1704 The following effect classifications will be considered having regard to IEMA Guidelines (1993);
  - Driver Delay;
  - Accidents and Safety; and
  - Community Effects (
    - For example severance, pedestrian delay, pedestrian and cycle amenity; and fear and intimidation).
- 1705 The IEMA Guidelines (1993) also require the consideration of Noise, Visual Impact and Air Quality which will be considered having regard to **Volume B Chapter 2** Seascape, Landscape and Visual Impacts, **Volume D Chapter 1** Air Quality and **Volume D Chapter 2** Noise and Vibration of the EIAR.



- 1706 The predicted significance of any potential Roads and Traffic impacts will be determined by considering both the sensitivity of the receiving environment and the magnitude of change against the baseline.
- 1707 The likely duration of an effect will also be a relevant consideration. Potentially of relevance, in respect of The Proposed Development, the categories will include:
  - Brief Effects = Effects lasting less than a day
  - Temporary Effects = Effects lasting less than a year
  - Short-term Effects = Effects lasting one to seven years

#### 10.7.3.3.1 Sensitivity

- 1708 In accordance with guidelines from IEMA, road links may be highlighted as 'specifically sensitive'. In other words, these portions of road are considered to be more vulnerable to changes in either the profile or volume of flows of traffic.
- 1709 Within the context of The Proposed Development, and using the IEMA Guidelines for reference, the receptors of sensitivity will be defined as follows, for various roads links.

Receptor Sensitivity / Importance	Description
High	Urban/residential roads without pedestrian / cycle facilities that are used by pedestrians
Medium	Main vehicular route with pedestrian/cycle facilities provided in a built-up area Congested Junctions, roads with degree of active frontage
Low	National roads or 'N' class roads constructed to accommodate significant HGV volumes Strategic vehicular route, such as Regional Roads, in a rural setting with pedestrian/cycle facilities provided Urban road with limited active frontage and pedestrian/cycle facilities provided
Negligible	Roads with no significant settlements including new strategic national roads or motorways Rural road with no/pedestrian cycle facilities provided

Table 10.48 Receptor Sensitivity

Source:: IEMA / Mott MacDonald



## 10.7.3.3.2 Magnitude

- 1710 The magnitude of change will be calculated as the proportional change in traffic flow anticipated on each public road section within the Roads and Traffic Topic-specific Study Area. This calculation will compare the forecast development traffic generation against the baseline traffic during the Construction Phase. Professional judgment will be applied in tandem with the criteria stated above; particularly when considering numerical changes in traffic volume.
- 1711 Given the predominantly rural nature of the receiving environment, the rural roads are likely to have small flows. Where baseline traffic flows are very low, it is possible to derive unrealistic determinations of significance when considered against purely numerical assessment criteria. As such, further qualitative criteria will be employed when assessing magnitude, details of which are provided in the **Table 10.49**. This is of particular importance when considering Community Effects.

Magnitude	Impact
High / Major (Significant)	Where The Proposed Development could be expected to have a considerable effect (either positive or negative) on receptors
Medium / Moderate (Significant)	Where The Proposed Development could be expected to have a noticeable effect (either positive or negative) on receptors
Low / Minor (Not Significant)	Where The Proposed Development could be expected to result in a small, barely noticeable effect (either positive or negative) on receptors
Negligible (Not Significant)	Where no discernible effect is expected as a result of The Proposed Development on receptors (i.e. the effect is insignificant)

Table 10.49: Magnitude Criteria

Source: IEMA

1712 As a guide to inform the assessment, but not as a substitute for professional judgement, criteria for determining the significance of traffic-related effects are set out in **Table 10.50** and are based on combining the magnitude of the effect with the receptor sensitivity.

Table 10.50 Significance Assessment Matrix

Magnitude of	Sensitivity of Receptor			
Change	High	Medium	Low	Negligible
High / Major (Significant)	Substantial Adverse	Substantial Adverse	Moderate Adverse	Minor Adverse



Magnitude of Change	Sensitivity of Receptor			
	High	Medium	Low	Negligible
Medium / Moderate (Significant)	Substantial Adverse	Moderate Adverse	Minor Adverse	Minor Adverse
Low / Minor (Not Significant)	Moderate Adverse	Minor Adverse	Minor Adverse	Negligible
Negligible (Not Significant)	Minor Adverse	Minor Adverse	Negligible	Negligible

Source: IEMA

1713 Significance is categorised as Substantial Adverse, Moderate Adverse, Minor Adverse or Negligible. Effects deemed to be Substantial Adverse or Moderate Adverse will be considered to be Significant and effects that are judged to be Minor Adverse or Negligible will be considered Not Significant. The same criteria will also apply to positive/beneficial impacts.

# 10.7.3.3.3 Traffic Forecasting

- 1714 Road capacities relating to national, regional and local roads will be determined using a combination of data sources. For national and regional roads in the Roads and Traffic Topic-Specific Study Area, professional judgement will be applied in determining vehicles per hour (vph) by reviewing road characteristics on Google Street View and referring to road classification descriptors provided in TII Guidance DN-GEO-03031 'Rural Road Link Design' (June 2017). These will then be compared to those outlined in DMRB Guidance Volume 5, Part 3 TA 79/99 to determine an equivalent on the basis of said road characteristics.
- 1715 After assignment of a road classification comparing these two sets of guidance, the relevant road capacity (busiest directional flow in vph) will be noted. For the majority of local roads, it will be assumed that, given the rural nature of the Roads and Traffic Topic-Specific Study Area and associated small traffic flows, the local roads be classed as 'minor', and as such hold an Annual Average Daily Traffic (AADT) flow of 1000 or fewer, with reference to Temporary Traffic Management Design Guidance (Department of Transport, Tourism and Sport August 2019).
- 1716 It will also be assumed that for the majority of local roads, the capacity percentage of HGVs will be 10%. Further to this it will be assumed that, unless otherwise stated, local roads have a default speed limit of 80kph, with reference to Guidelines for Classification and Scheduling of Roads in Ireland (2013).



- 1717 For the purposes of assessment only data relating to 'fatal, 'serious' and 'minor' classified collisions will be included within this study. Collisions resulting in material damage only will be excluded from the assessment.
- 1718 As required, abnormal load studies will be carried out to determine capacity and whether or not relocation or temporary removal of street furniture would be required to safely accommodate abnormal load deliveries.

#### **10.7.4** Receiving Environment

#### 10.7.4.1 Road Network and Route Profiles

- 1719 The majority of the Roads and Traffic Topic-Specific Study Area is rural in nature with a local road network. National roads within the Potential Onshore Infrastructure Zone include
  - The N28 (which runs between the Port of Cork and the village of Ringaskiddy and the N40 South Ring Road in Cork City). The N28 is the subject of an upgrade as part of the M28 Cork to Ringaskiddy Project.
  - The N25, the main route from Cork to Rosslare
- 1720 The road network to be assessed in the EIAR will be determined on the basis of likely construction routes, which will be confirmed in agreement with Cork County Council /TII as an integral part of the Traffic Management Plan (TMP), to be included in the CEMP and adopted by appointed contractor(s).

## 10.7.4.2 Tourist and Leisure Use

- 1721 Within the Potential Onshore Infrastructure Zone there are a number of local communities and residential clusters, including farm buildings and hamlets.
- 1722 Seasonal tourism in the summer months is serviced by some of these areas and increased traffic due to this is anticipated to be generated on the local road network.
- 1723 Beaches tend to be used year-round by walkers etc.
- 1724 A number of events are held in the Potential Onshore Infrastructure Zone, including the Ironman Triathlon, and includes multiple locations for both tourism and leisure activities, including recreational routes for cycling and walking.

#### 10.7.4.3 Public Transport

1725 There are several bus routes and a railway line within the Potential Onshore Infrastructure Zone.



# 10.7.4.4 Future Baseline Traffic Flow

- 1726 The National Transport Model Update, Travel Demand Forecasting Report, NTpM Volume 3, TII, AECOM, December 2019 will be used to predict local road network traffic flows, excluding traffic associated with The Proposed Development.
- 1727 Low growth of traffic will be assumed for sparsely populated areas. The likelihood of high or medium levels of traffic growth will be used where a very large increase in car ownership and population in the area during or prior to the construction of The Proposed Development, is foreseen.

# **10.7.5** Potential Impacts

1728 A range of potential impacts on Roads and Traffic have been identified which may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development. These potential impacts include those issues identified as requiring consideration in accordance with the guidance documents listed in **Section 10.7.2** 

# 10.7.5.1 Potential Impacts during Construction

- 1729 It is anticipated that potentially significant roads and traffic impacts will typically be limited to the Construction Phase. Potential impacts from The Proposed Development can be summarised as follows:
  - Driver delay: disruption and delay to users of roads from (a) cable installation work in road corridors and (b) as a result of the additional traffic movements that will be generated by The Proposed Development;
  - Community Effects: Disruption and delay of users of footpaths and cycle paths from cable installation work in or adjacent to active travel infrastructure; and
  - Accidents and Safety: Detrimental impact on road safety as a result of the additional traffic movements that will be generated by The Proposed Development.
- 1730 Temporary road diversions may be required for vehicular traffic due to road closures associated with cable route sections.
- 1731 The IEMA Guidelines define severance as 'the perceived division that can occur within a community when it becomes separated by a major traffic artery'.
- 1732 Severance may result from a road carrying large traffic flows or a physical barrier created by the road itself, and the IEMA guidelines suggest that consideration is given to the severity of existing severance and how this might be exacerbated by proposed construction traffic generated by a development.



- 1733 The IEMA Guidelines further suggest that 'a tentative threshold for judging the significance of changes in pedestrian amenity would be where traffic flows (or its lorry component) is halved or doubled'.
- 1734 These aspects will be considered further as the design of the Proposed Development is refined and will be assessed in the future EIAR.

## 10.7.5.2 Potential Impacts during Operation and Maintenance

1735 It is anticipated that there will be no discernible change to traffic flows arising from the Operation and Maintenance Phase of The Proposed Development.

## 10.7.5.3 Potential Impacts during Decommissioning

- 1736 A detailed Decommissioning/Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning/Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and will reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 1737 The scope of the Decommissioning works cannot be defined at this early stage.
- 1738 Decommissioning activities have the potential to impact Roads and Traffic i.e. by the removal of the infrastructure. Any potential impacts arising from Decommissioning are likely to be comparable to, or less than, those identified for the Construction Phase and will be assessed as part of the future EIAR.

## **10.7.6** Potential Cumulative Effects

- 1739 There may be potential for cumulative effects to occur in relation to Roads and Traffic as a result of other activities.
- 1740 The CIA for Roads and Traffic will be based on a ZoI identified during The Proposed Developmentalone impact assessment, which will define the geographical extent to which effects of The Proposed Development are expected.
- 1741 The potential impacts considered in the CIA as part of EIAR will be in line with those described for The Proposed Development-alone impact assessment, though it is possible that some will be screened out on the basis that the impacts are highly localised (i.e. the ZoI is anticipated to be limited) or where there are management measures in place to robustly reduce the risk of impacts occurring.



1742 The CIA will consider cumulative impacts with any other projects and / or developments within the ZoI in line with the approach set out in **Section 7.5.10** of **Volume A Chapter 7** Environmental Impact Assessment Methodology of this EIAR Scoping Report.

## 10.7.6.1 Intra-Project

- 1743 In line with the most recent EPA guidance on EIARs (EPA, 2022) the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 1744 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared ZoI of The Proposed Development (for which Development Permission is sought).

## 10.7.6.2 Other Developments

1745 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative impacts are minimized.

#### 10.7.7 Potential Transboundary Effects

1746 Given the location of potential effects that may arise as a result of The Proposed Development, and the distance to other jurisdictions, there is no pathway for transboundary effects to occur. As such, it is proposed to scope transboundary effects with respect to Roads and Traffic out of consideration for the future EIAR.

## 10.7.8 Summary of Potential Impacts

1747 **Table 10.51** outlines the anticipated impacts for Roads and Traffic which are proposed to be scoped into and/or out of the future EIAR. These may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available. These may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.



Table 10.51 Summary of Potential Impacts Relating to Roads and Traffic. Topics Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR

Potential Impacts	Construction	Operation and Maintenance	Decommissioning
Driver delay: disruption and delay to users of roads from (a) cable installation work in road corridors and (b) as a result of the additional traffic movements that will be generated by The Proposed Development.;	~	X	~
Community Effects: Disruption (for example diversions and car parking) and delay of users of footpaths and cycle paths from cable installation work in or adjacent to active travel infrastructure.	V	Х	V
Accidents and Safety: Detrimental impact on road safety as a result of the additional traffic movements that will be generated by The Proposed Development.	✓	Х	√

## **10.7.9 EIAR Scoping Consultation Questions**

- 1748 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Roads and Traffic chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Roads and Traffic chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Roads and Traffic Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?
  - What other data sources, if any, should The Applicant have regard to in the preparation of the Roads and Traffic chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Roads and Traffic chapter of the EIAR for The Proposed Development?
  - Are you satisfied with the approach to impact assessment proposed for the Roads and Traffic chapter of the EIAR for The Proposed Development?
  - Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Roads and Traffic chapter of the EIAR for The Proposed Development?



#### **10.7.10 Technical Consultation**

- 1749 This chapter has considered the potential impacts of The Proposed Development on Roads and Traffic. **Table 10.52** sets out a series of areas for discussion which The Applicant would appreciate targeted feedback on.
- 1750 Whilst welcoming input from all interested parties. The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 10.52** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.

Proposed Key Technical Stakeholder	Objective of Engagement
Transport Infrastructure Ireland (TII)	<ol> <li>To discuss and agree the Topic-specific Study Area in relation to Roads and Traffic.</li> <li>To gather information in relation to Roads and Traffic within the Roads and Traffic Topic-specific Study Area</li> <li>To discuss and agree approach to roads and traffic assessment and to inform the scope of the Roads and Traffic assessment of the EIAR.</li> <li>To consult on approaches to potential infrastructure crossing / installation methods for existing and / or potential / proposed motorways and national roads.</li> <li>To discuss potential mitigation measures to be incorporated into the design or traffic management plan.</li> </ol>
Cork County Council Road Design Office / Cork County Council Area Engineers	<ol> <li>To discuss and agree the Topic-specific Study Area in relation to Roads and Traffic.</li> <li>To gather information in relation to Roads and Traffic within the Roads and Traffic Topic-specific Study Area</li> <li>To discuss and agree approach to Roads and Traffic assessment and to inform the scope of the Roads and Traffic assessment of the EIAR.</li> <li>To consult on approaches to potential infrastructure crossing / installation methods for local roads.</li> <li>To discuss potential mitigation measures to be incorporated into the design or Traffic Management Plan.</li> </ol>
Irish Rail	<ol> <li>To consult on approaches to potential infrastructure crossing methods for Irish Rail assets (if required).</li> </ol>

Table 10.52: Summary of Proposed Key Technical Stakeholders Roads and Traffic.



Proposed Key Technical Stakeholder	Objective of Engagement
Córas lompair Éireann	1. To discuss potential mitigation measures to be incorporated into the design or Traffic Management Plan.
Relevant Port Authorities	1. To discuss and agree approach to roads and traffic assessment and to inform the scope of the Roads and Traffic assessment of the EIAR.

## 10.7.11 References

Cork County Development Plan 2022–2028. Available at:

https://www.corkcoco.ie/en/resident/planning-and-development/cork-county-development-plan-2022-2028

Ballincollig Carrigaline Municipal District Local Area Plan (2017). Available at: <a href="http://corklocalareaplans.com/ballincollig-carrigaline-municipal-district/">http://corklocalareaplans.com/ballincollig-carrigaline-municipal-district/</a>

Cobh Municipal District Local Area Plan (2017). Available at: <u>http://corklocalareaplans.com/cobh-</u> <u>municipal-district/</u>

Cork County Council Planning Portal. Available at: <u>https://www.corkcoco.ie/en/planning/planning-enquiry-online-submissions</u>

Cork Metropolitan Area Transport Strategy 2040. Available at: <u>https://www.nationaltransport.ie/wp-</u>content/uploads/2020/04/Cork\_Met\_Area\_Transport\_Stategy\_web.pdf

Department of Housing, Local Government and Heritage's EIA Portal (2017 – 2022). Available at: <u>https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=d7d5a3d48f104ecbb206e7e</u> <u>5f84b71f1</u>

Department of Transport, Tourism and Sport (2019), Traffic Management Design Guidance September. Available at: <u>https://assets.gov.ie/30277/e3faaeaef9f74832947150bd6de1fae2.pdf</u>

East Cork Municipal District Local Area Plan (2017). Available at: <u>http://corklocalareaplans.com/east-</u> cork-municipal-district/

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Environmental Planning Agency (2022), Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. Available at:

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Department of Communications, Climate Action and Environment (2017), Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects. Available at:

https://cieem.net/resource/guidance-on-eis-and-nis-preparation-for-offshore-renewable-energy-projects/

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http://www.rmo.ie/uploads/8/2/1/0/821068/guidelines\_for\_classification\_and\_scheduling\_of\_roads\_in \_ireland.pdf

Irish Rail (2021). Available at: https://www.irishrail.ie/ Prime2 data (Ordnance Survey Ireland (OSI)).

The Institute of Environmental Management and Assessment (1993), Guidelines for the Environmental Assessment of Road Traffic.

AECOM (December 2019), The National Transport Model Update, Travel Demand Forecasting Report, NTpM Volume 3, TII,. Available at: <u>https://www.tii.ie/tii-library/strategic-planning/national-transport-model/NTpM-Vol3-Travel-Demand-Forcasting-Report.pdf</u>

The UK Design Manual for Roads and Bridges (DMRB) Road design Standards Series. Available at: <u>https://www.standardsforhighways.co.uk/dmrb/</u>

Transport Infrastructure Ireland (2016), Project Appraisal Guidelines for National Roads: Estimating AADT on National Roads. Available at: <u>https://www.tii.ie/tii-library/strategic-planning/project-appraisal-guidelines/Unit-16.1-Estimating-AADT-on-National-Roads.pdf</u>

Transport Infrastructure Ireland (2014), Traffic and Transport Assessment Guidelines. Available at: <u>https://www.tiipublications.ie/library/PE-PDV-02045-01.pdf</u>

Transport Infrastructure Ireland Data Portal. Available at: https://data.tii.ie/

Transport Infrastructure Ireland (2017), DN-GEO-03031 'Rural Road Link Design'. Available at: https://www.tiipublications.ie/library/DN-GEO-03031-11.pdf

Waterford City and County Draft Development Plan 2022 – 2028. Available at: <u>https://waterfordcouncil.ie/media/plans\_strategies/development-plan/index.htm</u>



#### **10.8 CHAPTER 8 MATERIAL ASSETS**

#### 10.8.1 Introduction

- 1751 This chapter of the EIAR Scoping Report considers the potential impacts of the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development on Material Assets and sets out the methodology and approach to be taken to assessing these potential impacts within the future EIAR.
- 1752 The Material Assets Topic-specific Study Area in this EIAR Scoping Report comprises the Potential Onshore Infrastructure Zone. The receiving environment is described having regard to the Onshore Material Assets Topic-specific Study Area. The Material Assets Topic-specific Study Area for the assessment in the future EIAR will be defined by the potential physical impact that The Proposed Development may have on the built environment (excluding direct impacts on roads and traffic but including utility crossings). Potential impacts in terms of resources and waste management are also considered.

#### 10.8.2 Policy and Guidance

- 1753 **Volume A Chapter 4** Policy, Planning and Legislative Context of this EIAR Scoping Report describes the wider policy and legislative context applicable to The Proposed Development. Policies and guidance documents of particular relevance to the Material Assets topic are set out in this section.
- 1754 These policy and guidance documents will be used to inform the Material Assets chapter of the future EIAR.

#### Policies

- Cork County Development Plan 2022-2028;
- Local Area Plans for the municipal districts of East Cork, Cobh and Carrigaline, as appropriate; and
- Waterford City and County Draft Development Plan 2022 2028.

#### Guidance

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017);
- Guidance on Waste Acceptance Criteria at authorised Soil Recovery Facilities (EPA. 2020);
- Best practice guidelines for the preparation of resource & waste management plans for construction & demolition projects (EPA, 2021); and


• Design Out Waste: A design team guide to waste reduction in construction and demolition projects (EPA, 2015).

## 10.8.3 Methodology

## 10.8.3.1 Approach to Data Collection

1755 The following information and data sources (**Table 10.53**) have been considered during the production of this EIAR Scoping Report and will be considered further within the future EIAR where relevant matters are scoped into the EIAR process.

Table 10.53: Data Sources used to inform the Material Assets chapter of this EIAR Scoping Report and that will be considered further within the EIAR

Data source	Date	Data contents
Publicly available datasets (Cork County Council) and mapping, consultation with utility providers and targeted investigations	Various	Identification of utility services
Design details (IEMEP)	Various	Utility crossings and waste

# 10.8.3.2 Potential Additional Data

- 1756 The data sources listed above are those identified to date which have been used to inform this EIAR Scoping Report and which will potentially be used to inform the wider assessment process in the future EIAR.
- 1757 It should be noted that the list of data sources is not exhaustive and will be added to as the works connected to the future EIAR progress. The Material Assets assessment will be informed by further acquisition of spatial data as well as through further consultations with industry groups, governing bodies, interest groups and local communities.

# 10.8.3.3 Approach to Impact Assessment

1758 The impact assessment methodology will be based on that described in EIAR Scoping Report, Volume A Chapter 7 Environmental Impact Assessment Methodology adapted to make it applicable to assessment of Material Assets (utilities and waste management).



#### **10.8.4 Receiving Environment**

1759 Existing utility services (for example water, rail, telecommunications, etc) of varying types, sizes and burial depths may be located along the Onshore Cable routes and some may be required to be crossed. These crossings will be facilitated by either open cut trenching or by use of Horizontal Directional Drilling (HDD).

#### 10.8.5 Potential Impacts

1760 A range of potential impacts on Material Assets have been identified which may occur during the Construction, Operation and Maintenance, and Decommissioning Phases of The Proposed Development. These potential impacts include those issues identified as requiring consideration in accordance with the guidance documents listed in **Section 10.8.2** 

### 10.8.5.1 Potential Impacts during Construction

#### 10.8.5.1.1 Utility Services

- 1761 Where existing utilities / services are found, the Onshore Cables will be diverted around or below the service / utility depending on the degree of complexity found.
- 1762 In some cases, an existing utility service may be relocated to facilitate the installation of the Onshore Cables. The works required to do so will be coordinated with the service / utility provider and a coordinated methodology will be mutually agreed between all parties prior to commencement of any diversions taking place. All proposed work methodologies will aim to prevent any outages or loss of service. If the outages or loss of service cannot be avoided, prearranged agreements will be set in place prior to works commencement.
- 1763 A clean water supply for both fire-fighting and welfare purposes (i.e. hand-washing, toilet flushing etc.) may be required. Permission will be sought from Irish Water for a new connection and a preconnection enquiry will be submitted to Irish Water in this regard at Pre-Application Phase.

### 10.8.5.1.2 Utility Use

1764 During the Construction Phase temporary Construction Compounds will be required along the Onshore Cable route. Welfare facilities will be provided at these locations and any discharges will be connected to a sealed holding tank to be emptied and disposed of off-site by a licenced contractor to an approved licenced facility. Water will be tankered onto site as required or may be provided by connection to the Irish Water network.



### 10.8.5.1.3 Waste Management

1765 The Southern Region Waste Management Plan 2015-2021, which includes County Cork, outlines the strategy for waste management in the southern region. The Plan notes the following:

"To date the European Commission has not developed specific regulations governing the end of waste criteria for C&D waste, therefore the EPA is allowed to decide on a case by case basis.

Given the sharp decrease in the number of operational landfills nationally, which have been a significant outlet for C&D waste in the past, alternative recovery options will be required in future years.

The Waste Framework Directive 2008/98/EC defines waste as any substance or object that the holder discards or intends to or is required to discard."

- 1766 The Waste Hierarchy described in the framework prioritises prevention over re-use, recycling recovery and disposal, as illustrated in **Plate 10.1.**
- 1767 The framework also provides a target of 70% of non-hazardous, non-soil and stone construction and demolition (C&D) waste to be recovered, reused or recycled by 2020. According to the EPA press release in September 2020 (reference year 2018), Ireland achieved 77% material recovery in 2018.
- 1768 96% of C&D waste underwent final treatment in Ireland in 2018; only 4% was exported abroad for final treatment. Most of the C&D waste finally treated in Ireland (89%) was backfilled in 2018, while only 9% of all C&D waste was recycled. Recycling was the main treatment operation for the smaller fractions of metal, plastic, glass and wood.
- 1769 Prior to commencement of the development, the appointed Contractor will implement the Construction Resource Waste Management Plan (CRWMP) (to be included with the Development Consent application) which will ensure that optimum levels of waste prevention, reduction, reuse, recycling, and recovery are achieved throughout the duration of The Proposed Development.
- 1770 The CRWMP will be prepared in accordance with waste management guidance and principles as outlined in Best practice guidelines for the preparation of resource & waste management plans for construction & demolition projects (EPA, 2021) and Design Out Waste: A design team guide to waste reduction in construction and demolition projects (EPA, 2015).
- 1771 Waste will be managed in accordance with the Waste Management Hierarchy and Guidance on Waste Acceptance Criteria at authorised Soil Recovery Facilities (EPA. 2020) and the Waste Management Act 1996, and associated Regulations.



Source: OLCreate: UrbanSanWaste 1.0 Study Session 1 Introduction to Sanitation and Waste Management: Figure 1.4 The waste hierarchy. (open.edu)

# 10.8.5.2 Potential Impacts during Operation and Maintenance

### 10.8.5.2.1 Utility Services

- 1772 Should maintenance measures necessitate it, service disruptions impacting surrounding residential, social and commercial properties will be kept to a minimum, only occurring where unavoidable. Prior notification of disruptions will be given to all impacted properties. This will include information on when disruptions are scheduled to occur and the duration of the disruption. Consultation with relevant neighbouring parties will be undertaken prior to any proposed disruptions.
- 1773 In relation to the Onshore Project Substation(s) and BESS, a storm water drainage system incorporating SuDS (sustainable drainage systems) features will be constructed to manage the quantity and quality of runoff during rainfall events.
- 1774 Discharges will be restricted to pre-development 'greenfield' runoff rates in line with the recommendations of the Greater Dublin Strategic Drainage Study (GDSDS Vol. 2 New Development) which have generally been adopted by Local Authorities across the country.



1775 Foul water discharges, if required, will be via foul drainage infrastructure designed to appropriate loading capacities. The foul drainage system will undergo regular maintenance and servicing in line with the manufacturer's specifications.

## 10.8.5.2.2 Waste Management

1776 All waste generated during the Operation and Maintenance Phase will be managed in accordance with the relevant provisions of the Waste Management Act 1996 and associated amendments and regulations, particularly with regard to the use of appropriately permitted waste contractors and appropriately authorised destinations for waste materials.

# 10.8.5.3 Potential Impacts during Decommissioning

- 1777 A detailed Decommissioning / Rehabilitation Plan will be developed and agreed with the relevant authorities in accordance with the requirements of those authorities. This Decommissioning / Rehabilitation Plan will be updated throughout the lifetime of The Proposed Development and will reflect the available technology, techniques and statutory requirements at the time as well as any conditions of the Development Permission specific to Decommissioning.
- 1778 The scope of the Decommissioning works cannot be defined at this early stage.
- 1779 Decommissioning activities have the potential to impact Material Assets i.e. by the removal of the infrastructure. Any potential impacts arising from Decommissioning are likely to be comparable to, or less than, those identified for the Construction Phase and will be assessed as part of the future EIAR.

### **10.8.6 Potential Cumulative Effects**

- 1780 There may be potential for cumulative effects to occur in relation to Material Assets as a result of other activities.
- 1781 The CIA for Material Assets will be based on a ZoI identified during The Proposed Developmentalone impact assessment which will define the geographical extent to which effects of The Proposed Development are expected.
- 1782 The potential impacts considered in the CIA as part of future EIAR will be in line with those described for The Proposed Development-alone impact assessment, though it is possible that some will be screened out on the basis that the impacts are highly localised (i.e. the ZoI is anticipated to be limited) or where there are management measures in place to robustly reduce the risk of impacts occurring.



1783 The CIA will consider cumulative impacts with any other projects and / or developments within the ZoI in line with the approach set out in **Section 7.5.10** of **Volume A Chapter 7** Environmental Impact Assessment Methodology of this EIAR Scoping Report.

## 10.8.6.1 Intra-Project

- 1784 In line with the most recent EPA guidance on EIARs (EPA, 2022) the importance of assessing the interactions between impacts on different environmental receptors is recognised. The impacts and effects of The Proposed Development 'as a whole' will be considered as part of the EIAR. This assessment brings together the offshore and onshore elements of The Proposed Development.
- 1785 Potential effects will be assessed where there is potential for other elements of IEMEP that do not form part of the Development Permission application to occur within the shared ZoI of The Proposed Development (for which Development Permission is sought).

## 10.8.6.2 Other Developments

1786 The Applicant is committed to seek to engage with the proponents of other projects and developments and obtain up to date information and as far as reasonably possible to ensure plans can be co-ordinated and cumulative impacts are minimized.

### 10.8.7 Potential Transboundary Effects

1787 Given the location of potential effects that may arise as a result of The Proposed Development, and the distance to other jurisdictions, there is no pathway for transboundary effects to occur. As such, it is not proposed to scope transboundary effects with respect to utilities and other users in for consideration in the future EIAR.

### 10.8.8 Summary of Potential Impacts

**Table 10.54** outlines the anticipated impacts for Material Assets which are proposed to be scoped into and/or out of the future EIAR. These may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available. These may be refined through the EIAR process based on consultation with stakeholders and as additional information and data become available.

*Table 10.54 Summary of Potential Impacts Relating to Material Assets.* Topics Proposed to be Scoped In ( $\checkmark$ ) and Out (x) of future EIAR

Potential Impacts	Construction	Operation and Maintenance	Decommissioning
Outages or loss of service.	$\checkmark$	$\checkmark$	$\checkmark$



Potential Impacts	Construction	Operation and Maintenance	Decommissioning
Impacts associated with resource use and waste management	$\checkmark$	$\checkmark$	~
Cumulative effects	$\checkmark$	$\checkmark$	~
Transboundary effects	x	x	x

# **10.8.9 EIAR Scoping Consultation Questions**

- 1789 The following questions are designed to assist the respondent in providing feedback to The Applicant on the Material Assets chapter as part of this EIAR Scoping Report:
  - Are you satisfied with the scope proposed for the Material Assets chapter of the EIAR for The Proposed Development?
  - Are you satisfied the proposed Material Assets Topic-specific Study Area is suitable for the purpose of the EIAR for The Proposed Development?
  - What other data sources, if any, should The Applicant have regard to in the preparation of the Material Assets chapter of the EIAR for The Proposed Development?
  - What additional guidance and policy should The Applicant have regard to in the preparation of the Material Assets chapter of the EIAR for The Proposed Development?
  - Are there any other potential impacts you believe could result in significant effects which you wish to see assessed in the Material Assets chapter of the EIAR for The Proposed Development?

### **10.8.10 Technical Consultation**

- 1790 This chapter has considered the potential impacts of The Proposed Development on Material Assets. **Table 10.55** sets out a series of areas for discussion which The Applicant would appreciate targeted feedback on.
- 1791 Whilst welcoming input from all interested parties, The Applicant recognises that certain governmental agencies and other bodies have particular technical expertise and statutory responsibility with respect to the formal consideration of the final EIAR and Development Permission application for The Proposed Development. These key technical stakeholders are listed in **Table 10.55.** along with a number of key points that are proposed to be consulted upon. It is proposed that engagement with key technical stakeholders will be progressed in the form of a series of topic-specific technical meetings over the EIAR process, up to the point of submission of the Development Permission application.



1792 The Proposed Development is at an early stage, and the Potential Onshore Infrastructure Zone presented within this EIAR Scoping Report is extensive. It is recognised that once the Onshore Cable route(s) are refined that detailed consultation will need to be undertaken with; Irish Rail; relevant utility companies (including Irish Water, ESBN, EirGrid and Gas Networks Ireland) as well as relevant telecom and data service providers.

Proposed Key Technical Stakeholder	Objective of Engagement
Cork County Council Road Design Office / Cork County Council Area Engineers	<ol> <li>To discuss and agree the Topic-specific Study Area in relation to Material Assets.</li> <li>To discuss and agree approach to Material Assets assessment and to inform the scope of the Material Assets assessment of the EIAR.</li> <li>To consult on approaches to potential infrastructure crossing / installation methods.</li> </ol>

## 10.8.11 References

Best practice guidelines for the preparation of resource & waste management plans for construction & demolition projects (EPA, 2021)

Design Out Waste: A design team guide to waste reduction in construction and demolition projects (EPA, 2015).

DIRECTIVE 2014/52/EU. Official Journal of the European Union L 124/1 (European Union, 2014)

Environmental Impact Assessment of Projects. Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU) (European Commission, 2017)

European Commission (2011), The assessment of the effects of certain public and private projects on the environment; Directive 2011/92/EU Available from: http://www.legislation.gov.uk/eudr/2011/92/contents

Greater Dublin Strategic Drainage Study (2005) (GDSDS Vol. 2 – New Development

Guidance on EIS and NIS Preparations for Offshore Renewable Energy Projects (DCCAE, 2017)

Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities (EPA. 2020);

Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. Available at: <u>https://www.epa.ie/pubs/advice/ea/EPA%20EIAR%20Guidelines.pdf</u> (EPA, 2022).



# 11 VOLUME E INTERACTION OF EFFECTS AND SUMMARY OF CUMULATIVE AND TRANSBOUNDARY

# **EFFECTS AND MONITORING AND MITIGATION MEASURES**

### **11.1 INTRODUCTION**

- 1793 This section of the EIAR Scoping Report presents an overview of the proposed approach to be taken in the preparation of the EIAR that will support the Development Permission application in relation to the following:
  - Interaction of Effects
  - Summary of Cumulative and Transboundary Effects; and
  - Monitoring and Mitigation Measures
- 1794 The chapters will be informed by the assessments presented in the following volume of the EIAR and summarise information presented having regard to the wider scheme (onshore and offshore) aspects, both alone and cumulatively.
  - Volume B EIAR Wider Scheme Aspect Chapters;
  - Volume C EIAR Offshore Topic-specific Chapters; and
  - Volume D EIAR Onshore Topic-specific Chapters ;

# **11.2 CHAPTER 1 INTERACTION OF EFFECTS**

- 1795 This chapter will outline the interactions between the various impacts of The Proposed Development identified in the EIAR, both onshore and offshore and cumulatively.
- 1796 Aspects of the existing environment likely to be affected by The Proposed Development, during both the Construction, Operation and Maintenance and Decommissioning Phases, will be considered in detail in the relevant chapters of the EIAR.
- 1797 A matrix will be developed to identify interactions and indirect impacts between environmental topics. The nature of the environment is such that interactions between all environmental topics within their ZoI are potentially possible and / or may occur to a certain extent for most projects. The purpose of the matrices will therefore be to highlight key interactions that are recognised to be specific to The Proposed Development and warranting special consideration.

# 11.3 CHAPTER 2 SUMMARY OF CUMULATIVE EFFECTS

1798 Cumulative Effects considers the interaction of similar impacts from different projects or sources to have an additive impact to the total effect experienced by the receptor. In this way several



minor or insignificant impacts can act cumulatively on a receptor to create larger, more significant effects.

- 1799 As detailed in EIAR Scoping Report, **Volume A Chapter 7** Environmental Impact Assessment Methodology, Intra-Project effects refer to the combined impacts of The Proposed Development and other elements of Inis Ealga Marine Energy Park.
- 1800 Once the intra project assessment is complete a consideration of the likely known and reasonably foreseeable developments which could contribute to a cumulative impact and effect when considered together with The Proposed Development will be identified and assessed.
- 1801 All activities associated with the Construction, Operation and Maintenance and Decommissioning of The Proposed Development will be assessed for the likely significant cumulative effects within Topic-specific Zol. Where likely significant cumulative effects are identified, discussion will be provided on the contribution of The Proposed Development to that cumulative effect and potential further mitigation measures will be considered.
- 1802 Information on the Cumulative Effects of The Proposed Development with Other Developments as detailed in the preceding Cumulative Effects sections of the EIAR will be summarised in this chapter of the EIAR.

# **11.4 CHAPTER 3 SUMMARY OF TRANSBOUNDARY EFFECTS**

- 1803 Certain environmental effects of a proposed development have the potential to cross state boundaries and have a 'transboundary effect'. Under the amended EIA Directive, the likely significant transboundary effects of a proposed development must be described.
- 1804 All activities (onshore and offshore and cumulatively) associated with the Construction, Operation and Maintenance and Decommissioning of The Proposed Development will be assessed for likely significant transboundary effects, and these will be detailed.

# 11.5 CHAPTER 4 SUMMARY OF MONITORING AND MITIGATION MEASURES

- 1805 A summary of mitigation controls and other best practice measures identified in relation to The Proposed Development, and the means by which those controls and measures will be secured, will be summarised.
- 1806 The details will be provided as follows in the preceding sections of the EIAR and summarised in turn for Chapters included in **Volume B, Volume C** and **Volume D** of the future EIAR.
- 1807 The following will be provided:
  - A unique reference number for each item;



- The Volume and section of the EIAR where the mitigation and monitoring measure is referenced; and
- The monitoring and mitigation measures, as set out in the EIAR.



# **APPENDIX 1 TECHNICAL STAKEHOLDERS**

Table A1 lists those stakeholders who will be consulted with on the EIAR Scoping Report.

TableA.1 Inis Ealga Marine Energy Park: EIAR Scoping Report - Consultees

Consultee
Aeronautical Search and Rescue (SAR)
An Chomhairle Ealaíon (Arts Council)
An Taisce (the National Trust for Ireland)
Armateurs de France
Bantry Bay Port
Bat Conservation Ireland
Biodiversity Ireland
Birdwatch Ireland
Bord Gais Energy
Bord lascaigh Mhara
Botanical Society of Britain and Ireland
Brittany Ferries
Broadcasting Authority of Ireland
Butterfly Conservation Ireland
Chamber of Commerce Cork
CHC Helicoptors
CME Organisation de Producteur
Coastwatch Ireland
Cobh and Harbour chamber of commerce
Commission for Communication Regulations
Commission for Railway Regulation
Commission for Regulation of Utilities
Commissioners of Irish Lights



Consultee
Coras lompair Eireann (CIE)
Cork Airport
Cork County Council
Cork Environmental Forum
Cork Nature Network
CRPMEM Nord
Department for Business, Energy and Industrial Strategy
Department of Agriculture, Food and the Marine
Department of Agriculture, Food and the Marine (Aquaculture and Foreshore Management Division)
Department of Defence - Naval and Air Corps
Department of Environment, Food and Agriculture (Isle of Man)
Department of Housing, Local Government and Heritage
Department of Infrastructure (Isle of Man)
Department of Justice
Department of the Environment, Climate and Communication
Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media
Department of Transport
Doyle Shipping Group - Cork Dockyard
Eir
Eircom Ltd
EirGrid
Energy Ireland
Enet Telecommunications Networks Limited
Environmental Protection Agency
Environmental Sciences Association of Ireland
ESB



Consultee
Failte Ireland
Fédération Nationale de la Pêche
Forestry Service
FROM Nord
Gas Networks Ireland
Geographical Society of Ireland
Geological Survey of Ireland
Health & Safety Authority
Health and Safety Authority
Health Service Executive
larnród Éireann
Imagine Networks Services Ltd
Industrial Development Agency of Ireland (IDA)
Irish Air Corps
Irish Aviation Authority
Irish Basking Shark Group
Irish Chamber of Shipping
Irish Coastguard
Irish Farmers' Association
Irish Ferries
Irish Maritime Development Office (IMDO)
Irish Maritime Operations Centre of the Irish Coast Guard Marine Rescue
Irish Naval Association
Irish Peatland Conservation Council
Irish Rail
Irish Raptor Study Group



Consultee
Irish Sailing Association
Irish Seal Sanctuary
Irish Water
Irish Whale and Dolphin Group
Irish Wildlife Trust
Joint Nature Conservation Committee
Kinsale Energy
NatureScot
Marine and Renewable Energy Institute - Research Centre for Energy Climate and Marine
Marine Institute
Marine Management Organisation
Marine Scotland
Marine Survey Office
Maritime and Coastguard Agency
Maritime Safety Directorate
Met Eireann
Meteor Mobile Communications Limited (Eir)
Ministère des Affaires étrangères
National Maritime College of Ireland
National Monuments (Underwater Archaeology Unit)
National Monuments Service
National Parks and Wildlife Service (Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media)
National Transport Authority
Natural England
Natural Resource Wales



Consultee
New Ross Port
Nova Networks Ltd
Ocean Research and Conservation Ireland
Office of Public Works (OPW)
Port of Cork
Port of Waterford
Préfecture Maritime de la Manche et de la Mer du Nord
Railway Procurement Agency
Railway Safety Commission
Ripple Communications Ltd
Rosslare Eurport
RTE Transmission Network Ltd
RTÉ/Saorview
Sea Fisheries Protection Authority
Seal Rescue Ireland
Secrétariat Général de la Mer
Shannon Foynes Port Company
Southern and Eastern Regional Assembly
Stena Line
Sustainable Energy Authority of Ireland
Teagasc
Telecommunications Section, An Garda Siochána
The Commission for Energy Regulation
The Economic and Social Research Institute
The Heritage Council
The Irish Tourist Industry Confederation



Consultee
Three Ireland (Hutchison) Limited
Transport Infrastructure Ireland
Viatel Ireland Ltd
Virgin Media Ireland Ltd (PP)
Vodafone Ireland Ltd
Waterford Airport
Waterford County Council
Waterways Ireland



# APPENDIX 2 AIR QUALITY

# **CONSTRUCTION DUST ASSESSMENT**

A1: Determination	of	Dust	Raising	Magnitude
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Source	Large	Medium	Small
Demolition	Total building volume > 50,000 m3, potentially dusty construction material (e.g. concrete), on site crushing and screening, demolition activities > 20 m above ground	Total building volume 20,000 m3 - 50,000 m3, potentially dusty construction material, demolition activities 10-20 m above ground level	Total building volume <20,000 m3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10 m above ground, demolition during wetter months
Earthworks	Total site area >10,000 m2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry to due small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >8m in height, total material moved >100,000 tonnes	Total site area 2,500 m2 – 10,000 m2, moderately dusty soil type (e.g. silt), 5- 10 heavy earth moving vehicles active at any one time, formation of bunds 4m – 8m in height, total material moved 20,000 tonne – 100,000 tonne	Total site area <2,500 m2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4 m in height, total material moved <10,000 tonne, earthworks during wetter months
Construction	Total building volume >100,000 m3, piling, on site concrete batching; sandblasting	Total building volume 25,000 m3 – 100,000 m3, potentially dusty construction material (e.g. concrete), piling, on site concrete batching	Total building volume <25,000 m3, construction material with low potential for dust release (e.g. metal cladding or timber)
Track out	>100 HDV (>3.5t) trips in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100 m	25-100 HDV (>3.5t) trips in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m	<25 HDV (>3.5t) trips in any one day, surface material with low potential for dust release, unpaved road length <50 m

Source: IAQM



#### A2: Receptor Sensitivity

Source	High	Medium	Low
Sensitivities of people to dust soiling effects	Users can reasonably expect an enjoyment of a high level of amenity; or The appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. Indicative examples include dwellings, museums and other culturally important collections, medium and long term car parks (See note B) and car showrooms.	Users would expect a to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or The appearance, aesthetics or value of their property could be diminished by soiling; or The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. Indicative examples include parks and places of work.	The enjoyment of amenity would not reasonably be expected (See note A); or Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or There is transient exposure, where the people or Property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. Indicative examples include playing fields, farmland (unless commercially- sensitive horticultural), footpaths, short term car parks (See note B) and roads.
Sensitivities of people to the health effects of PM10	Locations where members of the public are exposed over a time period relevant to the Air Quality objective for PM10 (in the case of the 24- hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day - See note C) Indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.	Locations where the people exposed are workers (See note D), and exposure is over a time period relevant to the Air Quality objective for PM10 (in the case of the 24- hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). Indicative examples include office and shop workers, but will generally not include workers occupationally exposed to PM10, as protection is covered by Health and Safety at Work legislation.	Locations where human exposure is transient (See note E) Indicative examples include public footpaths, playing fields, parks and shopping streets.





Source	High	Medium	Low
Sensitivities of receptors to ecological effects (See note F)	Locations with an Intranational or national designation and the designated features may be affected by dust soiling; or Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain (See note G). Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or • Locations with a national designation where the features may be affected by dust deposition. • Indicative example is a Site of Special Scientific Intraest (SSSI) with dust sensitive features.	Locations with a local designation where the features may be affected by dust deposition. Indicative example is a local Nature Reserve with dust sensitive features.

A The expectations of the public will vary depending on the existing dust deposition in the area

B Car parks can have a range of sensitivities depending on the duration and frequency that people would be expected to park their cars there, and the level of amenity they could reasonably expect whilst doing so. Car parks associated with work place or residential parking might have a high level of sensitivity compared to car parks used less frequently and for shorter durations, such as those associated with shopping. Cases should be examined on their own merits.

- C This follows Defra guidance as set out in LAQM.TG(16).
- D Notwithstanding the fact that the Air Quality objectives and limit values do not apply to people in the workplace, such people can be affected to exposure of PM10. However, they are considered to be less sensitive than the general public as a whole because those most sensitive to the effects of air pollution, such as young children are not normally workers. For this reason workers have been included in the medium sensitivity category.
- E There are no standards that apply to short-term exposure, e.g. one or two hours, but there is still a risk of health effects, albeit less certain.
- F A Nature Impact Statement may be required.
- G Cheffing C. M. & Farrell L. (Editors) (2005), The Vascular Plant. Red Data List for Great Britain, Joint Nature Conservation Committee.

#### A3 Sensitivity of the area to dust soiling effects on people and property

Receptor Sensitivity	Number of Receptors	Distance from the source (m)			
Receptor Schältwity		<20	<50	<100	<350
High	>100	High	High	Medium	Low



Recentor Sensitivity	Number of Pecentors	Distance from the source (m)			
Receptor Sensitivity	Number of Receptors	<20	<50	<100	<350
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

A4: Sensitivity of the area to human health effects

Receptor Sensitivity	Annual Mean	Annual Mean Number of	Distance from the source (m)				
	Concentration	Receptors	<20	<50	<100	<200	<350
		>100	High	High	High	Medium	Low
	>32 µg/m3	10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
		>100	High	High	Medium	Low	Low
	28-32 μg/m3	10-100	High	Medium	Low	Low	Low
High		1-10	High	Medium	Low	Low	Low
TIIGH		>100	High	Medium	Low	Low	Low
24-2	24-28 μg/m3	10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
		>100	Medium	Low	Low	Low	Low
	<24µg/m3	10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	>32 µg/m3	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
Medium	28-32 ug/m3	>10	Medium	Low	Low	Low	Low
	20-32 µg/1113	1-10	Low	Low	Low	Low	Low
	24-28 μg/m3	>10	Low	Low	Low	Low	Low



Receptor Sensitivity Con	Annual Mean	Number of	Distance from the source (m)				
	Concentration	Receptors	<20	<50	<100	<200	<350
		1-10	Low	Low	Low	Low	Low
	(2) Aug (m)	>10	Low	Low	Low	Low	Low
	<24μg/115	1-10	Low	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

## A5: Sensitivity of the area to ecological effects

Recentor Sensitivity	Distance from the source (m)		
	<20	<50	
High	High	Medium	
Medium	Medium	Low	
Low	Low	Low	

A6 Risk of Dust Effects – Demolition

Sensitivity of Area	Dust Emissions Magnitude			
	Large	Medium	Small	
High	High Risk	Medium Risk	Medium Risk	
Medium	High Risk	Medium Risk	Low Risk	
Low	Medium Risk	Low Risk	Low Risk	

A7 Risk of Dust Effects - Earthworks

Sensitivity of Area	Dust Emissions Magnitude			
	Large	Medium	Small	
High	High Risk	Medium Risk	Medium Risk	
Medium	High Risk	Medium Risk	Low Risk	
Low	Medium Risk	Low Risk	Low Risk	



#### A8 Risk of Dust Effects - Construction

Sansitivity of Area	Dust Emissions Magnitude			
	Large	Medium	Small	
High	High Risk	Medium Risk	Medium Risk	
Medium	High Risk	Medium Risk	Low Risk	
Low	Medium Risk	Low Risk	Low Risk	

A9 Risk of Dust Effects – Trackout

Sensitivity of Area	Dust Emissions Magnitude			
	Large	Medium	Small	
High	High Risk	Medium Risk	Medium Risk	
Medium	High Risk	Medium Risk	Low Risk	
Low	Medium Risk	Low Risk	Low Risk	