

Environmental Impact  
Assessment Report

**NISA**  
*North Irish Sea Array*

Volume 11  
Preface



## **Preface Contents**

Table of Contents: Volume 11	1
Overview of the Environmental Impact Assessment Report	2
List of Figures included in the EIAR	7
Glossary of Terminology, Abbreviations and Acronyms	13

## **Table of Contents: Volume 11**

Appendix 29.1 - Visual Impact Assessment at Representative Viewpoint Locations	1
Appendix 29.2 - Cumulative Visual Impact Assessment at Representative Viewpoint Locations	37
Appendix 31.1 - Legislation, Policy and Guidelines	50
Appendix 31.2 - List of Waste Codes	64
Appendix 32.1 - EMF Assessment	70
Appendix 35.1 - Rockabill Lighthouse, Boat-based and Headland Offshore Bat Monitoring Results Report 2022	84
Appendix 35.2 - Rockabill Island and Headland Offshore Bat Monitoring 2023	104

# Overview of the Environmental Impact Assessment Report

EIAR Volume/Chapter/Appendix	Title
<b>Volume 1: Non-Technical Summary</b>	
NTS	Non-Technical Summary
<b>Volume 2: Introductory Chapters</b>	
Chapter 1	Introduction
Chapter 2	EIA and Methodology for the preparation of an EIAR
Chapter 3	Legal and Policy Framework
Chapter 4	Need for the Proposed Development
Chapter 5	Consideration of Alternatives
Chapter 6	Description of the Proposed Development - Offshore
Chapter 7	Description of the Proposed Development - Onshore
Chapter 8	Construction Strategy - Offshore
Chapter 9	Construction Strategy - Onshore
<b>Volume 3: Offshore Chapters</b>	
<b>Book 1 of 2 for Volume 3</b>	
Chapter 10	Marine Geology, Oceanography and Physical Processes
Chapter 11	Marine Water and Sediment Quality
Chapter 12	Benthic Subtidal and Intertidal Ecology
Chapter 13	Fish and Shellfish Ecology
Chapter 14	Marine Mammal Ecology
<b>Book 2 of 2 for Volume 3</b>	
Chapter 15	Offshore Ornithology
Chapter 16	Commercial Fisheries
Chapter 17	Shipping and Navigation
Chapter 18	Offshore Archaeology and Cultural Heritage
Chapter 19	Aviation and Radar
Chapter 20	Infrastructure and Other Users

<b>EIAR Volume/Chapter/Appendix</b>	<b>Title</b>
<b>Volume 4: Onshore Chapters</b>	
Chapter 21	Land and Soils (includes soils, geology and hydrogeology)
Chapter 22	Water (includes hydrology, surface water quality and flooding)
Chapter 23	Biodiversity
Chapter 24	Traffic and Transportation
Chapter 25	Onshore Archaeology, Architectural and Cultural Heritage
Chapter 26	Material Assets
<b>Volume 5: Wider Scheme Chapters</b>	
Chapter 27	Air Quality
Chapter 28	Climate
Chapter 29	Seascape, Landscape and Visual
Chapter 30	Noise and Vibration
Chapter 31	Resource and Waste Management
Chapter 32	Population and Human Health
Chapter 33	Socio-Economic, Tourism and Recreation
Chapter 34	Major Accidents and Disasters
Chapter 35	Offshore Bats
<b>Volume 6: Summary Chapters</b>	
Chapter 36	Mitigation and Monitoring and Likely Significant Residual Effects
Chapter 37	Transboundary Effects
Chapter 38	Cumulative and Inter-Related Effects
<b>Volume 7A: Figures</b>	
Figures	Figures
<b>Volume 7B1 Photomontages (offshore wind farm)</b>	
Photomontages	Offshore wind farm montages
<b>Volume 7B2 Photomontages (Grid Facility)</b>	
Photomontages	Grid Facility montages
<b>Volume 8: Appendices (Introductory)</b>	
<b>Volume 8: Book 1 of 2</b>	
Appendix 1.1	Competent Experts

<b>EIAR Volume/Chapter/Appendix</b>	<b>Title</b>
Appendix 1.2	Consultation Report
Appendix 2.1	EIAR Scoping Report
Appendix 2.2	Information provided under S287 pre-application
Appendix 2.3	Information provided under S287A pre-application
Appendix 2.4	Design Flexibility Opinion
Appendix 3.1	National Marine Planning Framework Compliance Report
Appendix 5.1	Malahide Community Forum Offline Option
Appendix 6.1	Offshore Environmental Management Plan
Appendix 6.2	Rehabilitation Schedule
Appendix 9.1	Onshore Construction Environmental Management Plan
<b>Volume 8: Book 2 of 2</b>	
Appendix 7.1	Planning Drawings
<b>Volume 9: Appendices (Offshore)</b>	
<b>Volume 9: Book 1 of 3</b>	
Appendix 10.1	Marine Processes Review of Project Options
Appendix 10.2	Marine Physical Processes Numerical Modelling
Appendix 10.3	Assessment of Spoil Mounds
Appendix 11.1	Offshore Water Framework Directive Compliance Report
Appendix 12.1	Array Area Benthic Survey Report
Appendix 12.2	Cable Route Benthic Survey Report
Appendix 13.1	Fish and Shellfish Ecology Baseline Characterisations
Appendix 14.1	Underwater Noise Modelling Report
Appendix 14.2	Marine Mammal Baseline Characterisation
Appendix 14.3	Marine Mammal Uncertainties and Limitations
Appendix 14.4	Marine Mammal Mitigation Protocol
Appendix 14.5	Environmental Vessel Management Plan
Appendix 14.6	East Coast Phase One Irish Offshore Wind Farms: Cumulative iPCoD Modelling
<b>Volume 9: Book 2 of 3</b>	
Appendix 15.1	Offshore and Intertidal Ornithology Technical Baseline
Appendix 15.2	MRSea Modelling for Offshore Ornithology

<b>EIAR Volume/Chapter/Appendix</b>	<b>Title</b>
Appendix 15.3	Offshore and Intertidal Ornithology Collision Risk Modelling Assessment
Appendix 15.4	Offshore and Intertidal Ornithology Migratory Collision Risk Modelling
Appendix 15.5	Offshore and Intertidal Ornithology Displacement Analysis
Appendix 15.6	Offshore and Intertidal Ornithology Population Viability Analysis
Appendix 15.7	Method Statement – Offshore Wind Ornithology Assessment for East Coast Phase One Projects
Appendix 15.8	NPWS Review of Method Statement
Appendix 15.9	Method Statement Review Consultation and Justification Log
Appendix 16.1	Commercial Fisheries Technical Report
Appendix 16.2	Fisheries Management and Mitigation Strategy
<b>Volume 9: Book 3 of 3</b>	
Appendix 17.1	Navigational Risk Assessment
Appendix 17.2	Vessel Management Plan
Appendix 17.3	Lighting and Marking Plan
Appendix 18.1	Palaeogeographical Investigation
Appendix 18.2	Wreck Sheets
Appendix 18.3	Maritime and Aviation Archaeology Baseline
Appendix 18.4	Intertidal Archaeology Baseline
Appendix 18.5	Recorded Losses
Appendix 19.1	Airspace Analysis and Radar Modelling
<b>Volume 10: Appendices (Onshore)</b>	
<b>Volume 10: Book 1 of 2</b>	
Appendix 21.1	Project Specific Surveys
<b>Volume 10: Book 2 of 2</b>	
Appendix 21.2	Conceptual Ground Model
Appendix 22.1	Flood Risk Assessment
Appendix 22.2	Onshore Water Framework Directive Compliance Report
Appendix 23.1	Breeding Birds Surveys – Survey Effort
Appendix 23.2	Wintering Waterbird Surveys – Survey Effort
Appendix 23.3	Desktop Results
Appendix 23.4	List of Terrestrial Non-native Invasive Species

EIAR Volume/Chapter/Appendix	Title
Appendix 23.5	Annex 1 Habitat Quadrat and Assessment Sheets
Appendix 23.6	List of Potential Roost Features for Bats
Appendix 23.7	Breeding Bird Survey Results 2021, 2022 and 2023
Appendix 23.8	Wintering Waterbird Survey Results 2021-2022
Appendix 23.9	Water Quality Fisheries Assessment at Watercourse Crossings
Appendix 23.10	Habitat and Species Management Plan
Appendix 23.11	Baseline Tree Survey Report
Appendix 24.1	Full and Partial Road Closure Diversion Routes
Appendix 25.1	Detailed Field Inspection
Appendix 25.2	Geophysical Survey Report
Appendix 25.3	Archaeological Assessment at Bremore, County Dublin
Appendix 25.4	Draft Cultural Heritage and Mitigation Strategy
<b>Volume 11: Appendices (Wider Scheme)</b>	
Appendix 29.1	Visual Impact Assessment at Representative Viewpoint Locations
Appendix 29.2	Cumulative Visual Impact Assessment at Representative Viewpoint Locations
Appendix 31.1	Legislation, Policy and Guidelines
Appendix 31.2	List of Waste Codes
Appendix 32.1	Electromagnetic Field (EMF) Assessment
Appendix 35.1	Rockabill Lighthouse, Boat-based & Headland Offshore Bat Monitoring Results Report 2022
Appendix 35.2	Rockabill Island and Headland Offshore Bat Monitoring 2023
<b>Volume 12: Appendices (Summary)</b>	
Appendix 38.1	Stage 1 and Stage 2 CEA (Onshore and Wider Scheme)
Appendix 38.2	Stage 1 and Stage 2 CEA (Offshore)



## List of Figures included in the EIAR

Figure number	Figure Title
<b>Chapter 1: Introduction Figures</b>	
1.1	Proposed Development Location
<b>Chapter 5: Consideration of Alternatives Figures</b>	
5.1	Alternative Onshore Route Options
<b>Chapter 6: Description of the Proposed Development – Offshore Figures</b>	
6.1	Proposed Layout - Project Option 1 (49 Wind Turbine Generators)
6.2	Proposed Layout - Project Option 2 (35 Wind Turbine Generators)
<b>Chapter 7: Description of the Proposed Development – Onshore Figures</b>	
7.1	Proposed Development - Overview of Onshore Infrastructure
7.2	Onshore Infrastructure at Landfall Site and Grid Facility
7.3	Onshore Infrastructure Along Onshore Cable Route
<b>Chapter 10: Marine Geology, Oceanography and Physical Processes Figures</b>	
10.1	Study Area and Key Receptors for Marine Processes
10.2	Notable Geological Features within the Study Area
10.3	Depth to Rockhead across the Array Area
10.4	Bathymetry across the Array Area and along the ECC
10.5	Regional Description of Surficial Sediment
10.6	Local Description of Surficial Sediment
10.7	Metocean Data Sites
10.8	Generalised pattern of net sediment transport across the Irish Sea (Coughlan, 2015).
10.9	Monthly Mean Sea Surface SPM for January, based on Data from Cefas (2016)

Figure number	Figure Title
10.10	Water Body Characterisation across the Irish Sea (JNCC, 2004)
10.11	Seabed Levelling Sediment Plumes
10.12	Seabed Levelling Deposition
10.13	Foundation Drilling Sediment Plumes
10.14	Foundation Drilling Deposition
10.15	Array Cabling Sediment Plumes
10.16	Array Cabling Sediment Deposition
10.17	ECC Cabling Sediment Plumes
10.18	ECC Cabling Sediment Deposition
10.19	HDD Exit Pits Sediment Plumes
10.20	HDD Exit Pits Sediment Deposition
10.21	Bentonite Plumes
10.22	Bentonite Deposition
10.23	Wave Height Reduction from East-North-East
10.24	Wave Height Reduction from South-South-East
10.25	Tidal Modifications - Change in Peak Flood Flow Speed on Spring Tide
10.26	Tidal Modifications - Change in Peak Flood Flow Direction on Spring Tide
10.27	Tidal Modifications - Change in Surface Elevation at Peak Flood on Spring Tide
<b>Chapter 11: Marine Water and Sediment Quality Figures</b>	
11.1	Overview of the Study Area for Marine Water and Sediment Quality
11.2	Seabed Substrate Classification, Folk 5, from EMODnet Data
11.3	Depth of Unit 1 (Unconsolidated, Fine-grained Holocene Clays and Silts) within the Array Area (source: Figure8-26 from Statkraft Geophysical Interpretation Report 2020)

Figure number	Figure Title
11.4	Location of Sediment Samples within the Array Area
11.5	Suspended Particulate Matter Levels, as derived from Satellite Data, for the Period 1998 to 2015, throughout the Year
11.6	Spatial Representation of Temperature, Salinity, and Dissolved Oxygen Characteristics for CTD Samples taken from across the Array Area over Four Research Cruises (Source: Marine Institute)
11.7	Spatial Location of those Sediment Samples that Exceeded Irish Action Levels
11.8	Water Quality Status (Source: Environmental Protection Agency)
11.9	Designated Water Framework Directive and Marine Strategy Framework Directive Designated Water Bodies
11.10	Predicted Sediment Plumes arising from ECC Installation Jetting Activities
11.11	Predicted Sediment Plumes arising from HDD Exit Pit
11.12	Predicted Bentonite Plumes resulting from HDD Punch-Out
11.13	Location of Other Plans and Projects included in the MW&SQ Assessment
<b>Chapter 12: Benthic Subtidal and Intertidal Ecology Figures</b>	
12.1	Benthic Ecology Study Area
12.2	Subtidal Sampling Regime
12.3	Site Specific Benthic Subtidal and Intertidal Survey Campaigns
12.4	Folk Classification (Natural Power, 2022 & 2023)
12.5	Subtidal Biotopes (Natural Power, 2022 & 2023)
12.6	Intertidal Biotopes (Natural Power, 2023)
12.7	Conservation Designations
<b>Chapter 13: Fish and Shellfish Ecology Figures</b>	
13.1	Study Area for Fish and Shellfish Ecology Baseline
13.2	Seabed Substrates and Biotopes within the Array and ECC

Figure number	Figure Title
13.3	Spawning Grounds for Plaice, Sole, Lemon Sole, Whiting, Sprat, Cod and Haddock (Coull et al., 1998; Ellis et al., 2012; Marine Institute, 2016)
13.4	Spawning grounds for Mackerel, Horse Mackerel, Ling and Hake (Ellis et al., 2012)
13.5	Sandeel and Herring Spawning Grounds (Coull et al., 1998; Ellis et al., 2012)
13.6	Larval Data (AEPM, 2000) with Spawning and Nursery Grounds (Coull et al., 1998)
13.7	Nursery Grounds for Herring, Sandeel, Plaice, Anglerfish, Sole, Lemon Sole, Cod and Haddock (Coull et al., 1998; Ellis et al., 2012; Marine Institute, 2016)
13.8	Nusery Grounds for Whiting, Hake, Horse Mackerel, Mackerel, Spiny Dogfish, Tope, Thornback Ray and Spotted Ray (Coull et al., 1998; Ellis et al., 2012; Marine Institute, 2016)
13.9	Seabed Substrate and Sandeel Habitat Suitability. Based on EUSeaMap Broadscale Habitats and Sediment Data sourced from INFOMAR and Site-Specific Grab Sampling
13.10	Seabed Substrate and Herring Habitat Suitability. Based on EUSeaMap Broadscale Habitats and Sediment Data sourced from INFOMAR and Site-Specific Grab Sampling
13.11	Inshore Fishing Grounds Targeted by Dredging and Potting (Marine Institute, 2016)
13.12	Designated Natura Sites for Migratory Fish Relative to the offshore development area
13.13	Predicted maximum impact ranges for stationary receptors from piling of monopile foundations within the array area (5,500 kJ)
13.14	Predicted maximum impact ranges for stationary receptors from sequential piling of jacket foundations within the array area (3,000 kJ)
13.15	Predicted maximum impact ranges for fleeing receptors from piling of monopile foundations within the array area (5,500 kJ)
13.16	Predicted maximum impact ranges for fleeing receptors from sequential piling of jacket foundations within the array area (3,000 kJ)
<b>Chapter 14: Marine Mammal Ecology Figures</b>	

Figure number	Figure Title
14.1	Marine Mammal Management Units
14.2	Maximum SELcum PTS contours for each marine mammal hearing group for piling of a single monopile
14.3	Maximum SELcum PTS contours for each marine mammal hearing group for piling of 2 sequential pin piles
14.4	Harbour porpoise disturbance contours for piling of monopiles at the Southeast modelling location
14.5	Bottlenose dolphin disturbance contours for piling at the Southeast modelling location
14.6	Common dolphin disturbance contours for piling of a monopile at the Southeast modelling location
14.7	Minke whale disturbance contours for piling of monopiles at the Southeast modelling location
14.8	Harbour seal disturbance contours for piling of monopiles at the Northwest modelling location
14.9	Grey seal disturbance contours for piling of monopiles at the Southeast modelling location
<b>Chapter 15: Offshore Ornithology Figures</b>	
15.1	Ornithology Study Area
<b>Chapter 16: Commercial Fisheries Figures</b>	
16.1	Commercial Fisheries Study Area
<b>Chapter 17: Shipping and Navigation Figures</b>	
17.1	Shipping and Navigation Study Area
17.2	Key Navigational Features
17.3	RNLI Incidents by Incident Type (2021 - 2022)
17.4	14-Day Vessel Traffic Survey Data by Vessel Type (December 2023)
17.5	14-Day Vessel Traffic Survey Data by Vessel Type (July 2022)
17.6	Pre-Wind Farm Main Commercial Routes and 90th Percentiles
17.7	Layout for Shipping and Navigation (Project Option 1)
17.8	Structure Exclusion Zone

Figure number	Figure Title
<b>Chapter 18: Offshore Archaeology and Cultural Heritage Figures</b>	
18.1	Offshore Archaeology and Cultural Heritage Study Area
18.2	Seabed Prehistory Receptors Within Array Area and Offshore Export Cable Corridor
18.3	Maritime And Aviation Receptors Within Array Area and Offshore Export Cable Corridor
18.4	Intertidal Receptors to MHWS
18.5	AeZs Within The Array Area And Offshore Export Cable Corridor
<b>Chapter 19: Aviation and Radar Figures</b>	
19.1	Aviation Study Area
19.2	FIR Boundary and Dublin Control Areas
19.3	Dublin ATCSMAC Sectors
19.4	Gormanston Danger Area
<b>Chapter 20: Infrastructure and Other Users Figures</b>	
20.1	Infrastructure and Other Users Study Area
20.2	Subsea Cables and Pipelines
20.3	Dredging and DAS Sites
20.4	Proximity to Military Danger Areas
20.5	Other Irish OWF developments
20.6	Marine Recreational Activities
20.7	Marine Aggregate Deposits
<b>Chapter 21: Land and Soils Figures (includes soils, geology and hydrogeology)</b>	
21.1	Regional Geomorphology
21.2	Regional Soils
21.3	Regional Subsoils
21.4	Regional Bedrock Geology
21.5	Regional Geological Heritage Sites
21.6	Regional Groundwater Aquifers
21.7	Regional Groundwater Vulnerability
21.8	Regional Groundwater Recharge

Figure number	Figure Title
21.9	Regional Groundwater Resources
21.10	Regional NPWS Designated Sites
21.11	Geomorphology & Topography
21.12	Soil Deposits
21.13	Subsoil Deposits
21.14	Bedrock Geology
21.15	Geological Features
21.16	Granular Aggregate Potential
21.17	Crushed Rock Aggregate Potential
21.18	Groundwater Aquifers
21.19	Groundwater Vulnerability
21.20	Groundwater Recharge
21.21	Groundwater Resources
21.22	Hydro-Ecology Designated Sites
<b>Chapter 22: Water Figures (includes hydrology, surface water quality and flooding)</b>	
22.1	Water Assessment: Overview
22.2	Water Assessment: Local Features and Water Crossings
22.3	Flood Risk Assessment: Fluvial Flood Extents
<b>Chapter 23: Biodiversity Figures</b>	
23.1	Ecology Study Area - section 1
23.2	Ecology Study Area - section 2
23.3	Ecology Study Area - section 3
23.4	Ecology Study Area - section 4
23.5	Aquatic & Fisheries Assessment Study Area - section 1
23.6	Aquatic & Fisheries Assessment Study Area - section 2
23.7	Aquatic & Fisheries Assessment Study Area - section 3
23.8	Aquatic & Fisheries Assessment Study Area - section 4

Figure number	Figure Title
23.9	Bat transect route and static detectors locations Landfall site and Grid Facility
23.10	Bat static detectors locations Blakes Cross South including Wx12 (Deanestown Stream) and Wx13 (Ballyboghil Stream) and Belcamp substation
23.11	European Designated Sites (SACs) within 15km of the Proposed Development - northern section
23.12	European Designated Sites (SACs) within 15km of the Proposed Development - southern section
23.13	European designated sites (SPAs) within 15km of the Proposed Development - northern section
23.14	European designated sites (SPAs) within 15km of the Proposed Development - southern section
23.15	Nationally designated sites within 15km of the Proposed Development - northern section
23.16	Nationally designated sites within 15km of the Proposed Development - southern section
23.17	Landfall site and Grid Facility Habitat types
23.18	Wx09 (Oberstown Stream) and Wx10 (Aldrumman Stream) habitat types
23.19	Blakes Cross North including Wx11 (Ballough Stream) habitat types and IAS
23.20	Blakes Cross South including Wx12 (Deanestown Stream) and Wx13 (Ballyboghil Stream) Habitat types
23.21	M1 crossing habitat types
23.22	Wx20 (Gaybrook Stream) Habitat types
23.23	Wx22 (Sluice Stream) Habitat types
23.24	Belcamp substation habitat types
23.25	Coastal cliff extent with EU Annex I Habitats and rare plant species Landfall site
23.26	Badger setts at Blakes Cross South including Wx12 (Deanestown Stream) and Wx13 (Ballyboghil Stream) and Belcamp substation
23.27	Breeding birds 2021-2022 Red listed species Landfall site and Grid Facility

Figure number	Figure Title
23.28	Breeding birds 2021-2022 Amber listed species Landfall site and Grid Facility
23.29	Breeding birds 2021-2022-2023 Red and Amber listed species Wx09 (Oberstown Stream) and Wx10 (Aldrumman Stream)
23.30	Breeding birds 2021-2022 Red and Amber listed species Blakes Cross North including Wx11 (Ballough Stream)
23.31	Breeding birds 2021-2022-2023 Red and Amber listed species Blakes Cross South including Wx12 (Deanestown Stream) and Wx13 (Ballyboghill Stream)
23.32	Breeding birds 2021-2022-2023 Red and Amber listed species M1 Crossing
23.33	Breeding birds 2021-2022 Red listed species Malahide Estuary
23.34	Breeding birds 2021-2022 Amber listed species Malahide Estuary
23.35	Breeding birds 2021-2022 Red and Amber listed species Belcamp substation
23.36	Winter Waterbirds 2021-2022 Red listed species Landfall site, Grid facility and extended north to the Delvin
23.37	Winter Waterbirds 2021-2022 Red listed species Landfall site, Grid facility and extended south to Balbriggan Beach
23.38	Winter Waterbirds 2021-2022 Amber listed species Landfall site, Grid facility and extended north to the Delvin
23.39	Winter Waterbirds 2021-2022 Amber listed species Landfall site, Grid facility and extended south to Balbriggan Beach
23.40	Winter Waterbirds 2021-2022 Red listed species Malahide Estuary - western section
23.41	Winter Waterbirds 2021-2022 Red listed species Malahide Estuary - eastern section
23.42	Winter Waterbirds 2021-2022 Amber listed species Malahide Estuary - western section
23.43	Winter Waterbirds 2021-2022 Amber listed species Malahide Estuary - eastern section
23.44	Bat Potential Roost Feature (PRF) Landfall site and Grid Facility
23.45	Bat Potential Roost Feature (PRF) Wx9 (Oberstown Stream) and Wx10 (Aldrumman Stream)

Figure number	Figure Title
23.46	Bat Potential Roost Feature (PRF) Blakes Cross North including Wx11 (Ballough Stream)
23.47	Bat Potential Roost Feature (PRF) Blakes Cross South including Wx12 (Deanestown Stream) and Wx13 (Ballyboghill Stream)
23.48	Bat Potential Roost Feature (PRF) M1 crossing
23.49	Bat Potential Roost Feature (PRF) Wx20 (Gaybrook Stream)
23.50	Bat Potential Roost Feature (PRF) Wx22 (Sluice Stream)
23.51	Bat Potential Roost Feature (PRF) Belcamp substation
23.52	Bat transect results 03/08/2022 Landfall site and Grid Facility
<b>Chapter 24: Traffic and Transportation Figures</b>	
24.1	Route sections and traffic survey locations
24.2	Compound access points and construction traffic routes
<b>Chapter 25: Onshore Archaeology, Architectural and Cultural Heritage Figures</b>	
25.1	Proposed development and cultural heritage sites (Bremore/Tankardstown)
25.2	Proposed development and cultural heritage sites (Folkstown Great/ Stephenstown/ Balrothery)
25.3	Proposed development and cultural heritage sites (Balrothery/ Courtlough)
25.4	Proposed development and cultural heritage sites (Courtlough/ Hedgestown/ Jordanstown)
25.5	Proposed development and cultural heritage sites (Jordanstown/ Oberstown/ Ballogh)
25.6	Proposed development and cultural heritage sites (Newtowncorduff)
25.7	Proposed development and cultural heritage sites (Coldwinters/ Turvey)
25.8	Proposed development and cultural heritage sites (Lissenhall)
25.9	Proposed development and cultural heritage sites (Seatown West/ East)

Figure number	Figure Title
25.10	Proposed development and cultural heritage sites (Yellow Walls/ Auburn)
25.11	Proposed development and cultural heritage sites (Kinsaley / Portmarnock)
25.12	Proposed development and cultural heritage sites (Saintdoolaghs/ Snugborough)
25.13	Proposed development and cultural heritage sites (Grange)
25.14	Proposed development and cultural heritage sites (Belcamp)
25.15	Location of the CHVP within the 60km study area of the offshore turbines
25.15a	Location of the CHVP within the 60km study area of the offshore turbines - North
25.15b	Location of the CHVP within the 60km study area of the offshore turbines - South
<b>Chapter 26: Material Assets Figures</b>	
26.1	Land Use Zoning
<b>Chapter 27: Air Quality Figures</b>	
27.1	Air Quality Study Area
<b>Chapter 29: Seascape Landscape and Visual Figures</b>	
29.1	Study Area - NISA Offshore Array Area
29.2a	Study Area - Onshore
29.2b	Study Area - Onshore & Landscape Character Areas
29.3	Seascape Character Areas and Types

Figure number	Figure Title
29.4	Landscape Character Areas & ZTV (Bare-ground)
29.5a	Project Option 1 ZTV (Bare-ground) - Tip Height (290m)
29.5b	Project Option 2 ZTV (Bare-ground) - Tip Height (316m)
29.5c	Project Option 1 ZTV (DSM) - Tip Height (290m)
29.6	Comparative ZTV (Bare-ground) - Tip and Hub Height
29.7a	Viewpoint Location Map
29.7b	Viewpoint Locations for the Grid Facility
29.8	Cumulative ZTV (Bare-ground)
29.9	Grid Facility ZTV (Bare-ground)
29.10	Grid Facility ZTV (DSM)
29.11	Scenic Designations & ZTV (Bare-ground)
29.12	Comparative ZTV – Project Option 1 vs Project Option 2
<b>Chapter 30: Noise and Vibration Figures</b>	
30.1	Noise Study Area
<b>Chapter 35: Offshore Bats Figures</b>	
35.1	Study Area and ZoI
35.2	Bat Conservation Ireland (BCI) Record Locations

# Glossary of Terminology, Abbreviations and Acronyms

Term, Abbreviation or Acronym	Description
µg / m <sup>3</sup>	Micrograms per cubic metre
AA	Appropriate Assessment
AADT	Annual average daily traffic
ABP	An Bord Pleanála
AC	Alternating current
ACA	Architectural Conservation Areas
AcEsk	Eskers comprised of gravels of acidic reaction
AD	Anno domini
ADD	Acoustic Deterrent Devices
ADCP	Acoustic doppler current profiler; a device that uses sound waves to determine the speed and direction of currents throughout the water column
AEP	Annual exceedance probability
AEZ	Archaeological Exclusion Zone
AHV	Anchor handling vessels
AIP	Aeronautical information publication
AIS	Automatic identification system
ALAN	Artificial light at night
ALARP	As low as reasonably practicable
ALM	Aerodrome licensing Memorandum
AlluvMin	Alluvial (min)
AminDW	Deep well drained mineral soil (mainly acidic)
AminPD	Mineral poorly drained (mainly acidic)
AminPDPT	Peaty gleys acidic
AminSP	Surface water gleys / Ground water gleys shallow
AminSRPT	Shallow rocky peaty, non-peaty mineral complexes (mainly acidic)
AminSW	Shallow well drained mineral soil (mainly acidic)
An Bord Pleanála	The competent authority under the Planning Acts to determine the planning application, and carry out the EIA and AA of the proposed development.
Annex I Habitats	Habitat types, listed in Annex 1 of the Habitats Directive (Directive 92/43/EEC), whose conservation requires the

Term, Abbreviation or Acronym	Description
	designation of Special Areas of Conservation. Priority habitats, which are in danger of disappearing within the EU territory, are highlighted with an asterisk in Annex I.
Annex I Species	Annex I of the Birds Directive (Directive 2009/147/EC) lists 193 bird species and sub-species which are: i) in danger of extinction, ii) vulnerable to specific changes in their habitat, iii) considered rare because of small populations or restricted local distribution and / or iv) require particular attention for reasons of the specific nature of habitat.
Annex II Species	Animal and plant species, listed in Annex II of the Habitats Directive, whose conservation requires the designation of Special Areas of Conservation.
Annex IV	Animal and plant species, listed in Annex IV of the Habitats Directive, in need of strict protection.
Annex V	Animal and plant species, listed in Annex V of the Habitats Directive, whose taking in the wild and exploitation may be subject to management measures.
ANSP	Air navigation service provider
ANSI	American National Standards Institute
Appropriate Assessment (AA)	The statutory process as set out in Article 6 of the Habitats Directive
AQG	Air quality guidance
ARPA	Automatic radar plotting aid
Arup	Ove Arup & Partners Ireland Ltd
Array Area	The area within the offshore development area within which the WTGs, the OSP and inter-array cable(s) will be located
As	Alluvium (sandy)
ASAM	Aeronautical services advisory memorandum
ASR	Air sensitive receptor
ATC	Air traffic control
ATCs	Automatic traffic counts
ATCSMAC	ATC Surveillance Minimum Altitude Chart
AtoN	Aids to Navigation
ATS	Air Traffic Service
AWB	Artificial surface waterbodies
AWQR	Annual water quality rating
BAC	Biological assessment criteria
BAP	Biodiversity Action Plan
BC	Benthic community



Term, Abbreviation or Acronym	Description
BCI	Bat Conservation Ireland
BCT	Bat Conservation Trust
Belcamp substation	The existing operational substation where the 220kV underground onshore cable will connect to the national high voltage electricity transmission system
Benthic	Relating to or occurring on the seabed.
Birds Directive	The Birds Directive (formally known as Council Directive 2009/147/EC on the conservation of wild birds) is a European Union directive adopted in 2009. It aims to protect all European wild birds and the habitats of listed species, in particular through the requirement for member states to designate of Special Protection Areas.
Birds of Conservation Concern in Ireland	BirdWatch Ireland and the Royal Society for the Protection of Birds (RSPB) in Northern Ireland provided a list of priority bird species for conservation action on the island of Ireland. These Birds of Conservation Concern in Ireland are published in a list known as the BoCCI List. In this BoCCI List, birds which breed and / or winter in Ireland are classified into three separate lists (Red, Amber and Green), based on the conservation status of the bird and hence conservation priority.
BktPt	Blanket peat
BminDW	Deep well drained mineral soil (mainly basic)
BminPD	Mineral poorly drained (mainly basic)
BminPDPT	Peaty gleys basic parent materials basic
BminSP	Surface water gleys / groundwater gleys shallow
BminSPPT	Peaty gleys shallow
BminSRPT	Lithosols peats
BminSW	Renzinas / Lithosols
BMW	Biodegradable municipal waste
BoCCI	Birds of conservation concern in Ireland
Bony fish	Any species with skeletons primarily composed of bone tissue; comprises fishes of the superclass Osteichthyes.
Bq / m <sup>3</sup>	Becquerel per cubic metre
BRE	Building Research Establishment Group
Bremore Substation	The new 220 kV substation to be constructed as part of the proposed development located adjacent to the compensation substation. Bremore substation will be connected to the compensation 220kV substation and the Belcamp substation by means of the onshore cables.
BS	British Standard
BSBI	Botanical Society of Britain and Ireland
BSI	British Standard Institute

Term, Abbreviation or Acronym	Description
BTH	Built heritage
BTO	British Trust for Ornithology
CA	Conservation area
Cable Contractor Compound	2 No. cable contractor compounds (referred to as the Bremore cable contractor compound within the landfall site and the Blakes Cross cable contractor compound at Blakes Cross South) will be set up along the onshore cable route which will facilitate the cable laying activities throughout the onshore elements of the proposed development.
Cable Duct	The cable ducts will be durable plastic conduits into which the cables will be installed.
CaCO <sub>3</sub>	Calcium carbonate
CAP	Climate Action Plan
CARO	Climate Action Regional Office
Cartilaginous fish	Any species with skeletons primarily composed of cartilage; comprises chimaeras and all elasmobranchs.
Catchment	The area of land bounded by watersheds draining into a river, basin or reservoir.
CBA	Cost benefit analysis
CBD	Convention on Biological Diversity
CBF	Community benefit fund
CBGM	Cement bound granular mixture
CBRA	Cable burial risk assessment
CCAP	Climate Change Action Plan
CCTV	Close-circuit television
CCUS	Carbon capture, utilisation and storage
CD	Chart datum
Cefas	Centre for Environment, Fisheries and Aquaculture
CEMP	Construction environmental management plan
CESSM	Civil engineering standard method of measurement
CFE	Controlled flow excavation
CFP	Common fisheries policy
CGS	County Geological Sites
CH <sub>4</sub>	Methane
CIE	Córas Iompair Éireann

Term, Abbreviation or Acronym	Description
CIEEM	Chartered Institute of Ecology and Environmental Management
Cifa	Chartered Institute for Archaeologists
CIL	Commissioners of Irish Lights
CIP	Copenhagen Infrastructure Partners P/S (The Developer is a 50/50 joint venture between Statkraft Ireland Ltd and Copenhagen Infrastructure Partners P/S)
CIRIA	Construction Industry Research and Information Association
CIV	Cable installation vessel
CLO	Community liaison officer
CLS	Community liaison strategy
CNL	Construction noise levels
CNOSSOS	Common noise assessment methods in Europe
CNT	Construction noise threshold
CMS	The Convention on the Conservation of Migratory Species
CO	Carbon monoxide
CO <sub>2</sub> eq	Carbon dioxide equivalent
COMAH	Control of Major Accident Hazards Involving Dangerous Substances
Contractor Compounds	The following terms are used to identify the various relevant contractor compounds: HDD contractor compound(s) Substation contractor compound Cable contractor compound(s)
Construction Phase	The processes and activities on or off site that contribute or are instrumental to the construction of the proposed development towards, and finally to, the Operational Phase.
Compensation substation	The compensation substation is situated within the grid facility and will be connected to the Bremore substation by means of a 220 kV underground cable. This is the substation which will receive the onshore export cables from the landfall site.
CORINE	Co-ordinated information on the environment
CP	Cathodic protection
CPA	Coastal Planning Authorities. The functional area of the CPA as set out in the MAP Act includes the nearshore area of that CPA. Dublin City Council, Fingal County Council, Meath County Council and Louth County Council are the relevant CPAs for the proposed development
CPS	Cable protection system
CPUE	Catch per unit effort

Term, Abbreviation or Acronym	Description
CPT	Cone penetration test. This is a tool used for geotechnical surveys to determine the engineering properties of soil or seabed sediment.
CRM	Collision risk modelling
CRTN	Calculation of road traffic noise
CRU	Commission for Regulation of Utilities
cSAC	Candidate Special Area of Conservation
CSIP	Cable specification and installation plan
CSM	Conceptual site model
CSMMP	Construction stage mobility management plan
cSPA	Candidate Special Protection Area
CSO	Central Statistics Office
CSTP	Celtic Sea Trout Project
CSZ	Core sustenance zone
CTA	Dublin Control Area (air traffic control)
CTD profiler	Conductivity, temperature, depth profiler; a device used to detect how the conductivity and temperature of the water column changes relative to depth
CTMP	Construction traffic management plan
CTV	Crew transfer vessels
Cumulative Effects Assessment (CEA)	The assessment of potential cumulative effects that may arise from certain impacts from the proposed development acting cumulatively with impacts from other projects considered in the assessment.
Cut	Cut over raised peat
CWMP	Construction waste management plan
DAFM	Department of Agriculture, Food and the Marine
DAHG	Department of Arts, Heritage and the Gaeltacht
DAHGI	Department of Arts, Heritage, Gaeltacht and the Islands
DART	Dublin Area Rapid Transport
DAU	Development Applications Unit (of the Department of Housing, Local Government and Heritage)
dB	Decibel. Between the quietest audible sound and the loudest tolerable sound there is a million to one ratio in sound pressure (measured in Pascal (Pa)). Because of this wide range, a level scale called the decibel (dB) scale, based on a logarithmic ratio, is used in sound measurement. Audibility of sound covers a range of approximately 0-140dB.

Term, Abbreviation or Acronym	Description
dBA	The human ear system does not respond uniformly to sound across the detectable frequency range and consequently instrumentation used to measure sound is weighted to represent the performance of the ear. This is known as the ‘A weighting’ and is written as ‘dBA’.
DC	Direct current
DCC	Dublin City Council
DCCAIE	Department of Communications, Climate Action and Environment
DCDP	Dublin City Development Plan 2022-2028
DCENR	Department of Communications, Energy and Natural Resources
DCF	Data collection framework
DCHG	Department of Culture, Heritage and the Gaeltacht
DCIHR	Dublin City Industrial Heritage Record
DDD	Drive drill drive
DDV	Drop down video
Decapod crustacean	Crustaceans of the order Decapoda, which includes crabs, lobsters, shrimp and prawns.
DECC	Department of the Environment, Climate and Communications
DECLG	Department of the Environment, Community and Local Government
DEFRA	Department of Environment, Food and Rural Affairs (UK)
DEHLG	Department of the Environment, Health and Local Government.
Demersal	Living and feeding on or near the seabed.
Design Flexibility Opinion (DF Opinion)	The Developer sought an opinion from An Bord Pleanála on design flexibility under section 287A of the Planning Acts. In 2024, An Bord Pleanála issued its opinion on design flexibility, (the “DF Opinion”). Full detail regarding the DF Opinion and how this is reflected in the EIAR is provided in Sections 2.7 and 2.8 of Chapter 2 (EIA and Methodology for the preparation of an EIAR).
Designated sites	Selected sites designated with the aim to conserve habitats and species of conservation concern.
Developer	North Irish Sea Array Windfarm Limited (Ltd). The Developer is a 50/50 joint venture between Statkraft Ireland Ltd and Copenhagen Infrastructure Partners P/S.
Development area	The area within which the proposed development will be located (includes onshore and offshore aspects) and is defined by the planning boundary (shown as “red line” on planning drawings)

Term, Abbreviation or Acronym	Description
Development Permission	Development Permission” has the meaning ascribed to it in the Planning Acts, and, where the context requires, means any development permission granted for the Permitted Maritime Usage.
DHLGH	The Department of Housing, Local Government and Heritage
Diadromous	Migrating between fresh and saltwater habitats.
DMRB	Design Manual for Roads and Bridges
DME	Distance measuring equipment
DoD	Department of Defence
Do Nothing Scenario	The environment as it would be in the future should the proposed development not be developed
DP	Dynamic positioning
DREMP	Dublin Region Energy Master Plan
DS	Do something
DSO	Distribution System Operator – the role fulfilled by ESB to operate the electrical network of overhead lines, cables and substations at distribution voltage levels in the Republic of Ireland.
DTTAS	Department of Transport, Tourism and Sport
EAP	Environmental Action Programme
ECMG	East Coast Monitoring Group
EC	European Commission
ECC	Offshore export cable corridor which is the area within which the offshore export cables will travel from the offshore substation platform (OSP) to the landfall.
EcoServe	Ecological Consultancy Services Limited
EcIA	Ecological impact assessment
ED	Electoral district
EEA States	Countries within the European Economic Area
EFLA	European Foundation of Landscape Architecture
EFT	Emission factor toolkit
EIA	Environmental impact assessment – refers to the assessment process and the assessment that An Bord Pleanála will carry out.
EIA Directive	Environmental Impact Assessment Directive. This refers to Directive 2011/92/EU as amended by Directive 2014/52/EU on the assessment of the effects of certain public and private projects on the environment

Term, Abbreviation or Acronym	Description
EIA Regulations	European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296/2018)
EIS	Environmental Impact Statement
EirGrid Group	Transmission system operator on the Island of Ireland and transmission asset owner for offshore electrical infrastructure at transmission voltage levels in Ireland. Referred to as EirGrid.
EL	Exploration Licence
Elasmobranch	Cartilaginous fish of the subclass Elasmobranchii; comprises sharks, rays and skates.
Electro-sensitive	Ability to sense electric fields.
EMC	Electromagnetic compatibility
EMF	Electromagnetic Field
EMP	Environmental Management Plan
EMRA	Eastern and Midlands Regional Assembly
EMSA	European Maritime Safety Agency
EMWR	Eastern-Midlands Waste Region
Environmental Impact Assessment Report (EIAR)	A report of the effects, if any, which proposed development, if carried out, would have on the environment and shall include the information specified in Annex IV of the Environmental Impact Assessment Directive
EPA	Environmental Protection Agency
Epibenthic	Living on the seafloor.
Equivalent continuous sound pressure level of LAeq,T	An index used internationally for the assessment of environmental sound impacts. It is defined as the notional unchanging level that would, over a given period of time (T), deliver the same sound energy as the actual time-varying sound over the same period. Hence fluctuating sound levels can be described in terms of an equivalent single figure value.
EQS	Environmental quality standard
ERBD	Eastern River Basin District
ERCoP	Emergency Response Cooperation Plan
ERM	East regional model
ERP	Economic recovery plan
ESB	Electricity Supply Board (Ireland's DSO)
ESBN	Electricity Supply Board Network
ETS	Emission trading scheme
EU	European Union

Term, Abbreviation or Acronym	Description
EUPHA	European Public Health Association
EUROBATS	The Agreement on the Conservation of Populations of European Bats
EVMP	Environmental Vessel Management Plan (Volume 9, Appendix 14.5 of EIAR)
EWIC	East West Interconnector (HVDC electricity interconnector)
FCC	Fingal County Council
FenPT	Fenpeat
Flatfishes	Bony fish of the order Pleuronectiformes; includes plaice, soles, flounders, turbot and their relatives.
Flat formation	A method of arranging electrical cable ducts
FLiDAR	Floating light detecting and ranging
FLO	Fisheries liaison officer
FLOWW	Fisheries disruption settlements and community funds
FMMS	Fisheries management and mitigation strategy (Volume 9, Appendix 16.2 of EIAR)
FPV	Fall pipe vessels
FRA	Flood Risk Assessment
FRM	Flood risk management
FSA	Formal safety assessment
FTE	Full time equivalent
GAA	Gaelic Athletic Association
Gadoid	Bony fish of the order Gadiformes; includes cod, haddock, hake and their relatives.
GCA	Grid connection assessment
GCh	Gravels derived from chert
GDA	Greater Dublin Area
GDRCoP	Greater Dublin Regional Code of Practice
GSDSDS	Greater Dublin Strategic Drainage Study
GEIA	Guidelines for planning authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (published by Department of Housing, Local Government and Heritage in 2018)
GEP	Good ecological potential
GES	Good ecological status
GGBFS	Ground granulated blast-furnace slag



Term, Abbreviation or Acronym	Description
GGr	Gravels derived from granite
GHG	Greenhouse gas
GI	Ground investigation
GIS	Geographic information system
GIS	Gas insulated switchgear
GIS building(s)	Gas insulated switchgear (GIS) buildings will be located in each substation compound in the grid facility. The purpose of these buildings is to house electrical infrastructure used to switch, separate, transform, measure and distribute electricity.
GLC	Ground level concentrations
GLPSsS	Gravels derived from Lower Palaeozoic sandstones and shales
GLs	Gravel derived from limestone
GLVIA	Guidelines for Landscape and Visual Impact Assessment
GMp	Gravels derived from metamorphic rocks
GNI	Gas Networks Ireland
GPR	Ground penetrating radar
GPS	Global positioning system
Grid Connection Point	The point where the onshore 220kV underground cable connects to the existing transmission system – at the existing Belcamp substation and the consented Belcamp extension project (F23A/0040)
Grid Facility	The grid facility comprises of the compensation substation and the Bremore substation together with ancillary infrastructure.
GSI	Geological Survey Ireland
GT	Gross tonnage
GVA	Gross value added
GW	Gigawatt. 1GW is equivalent to 1,000MW
GWB	Groundwater bodies
GWP	Global warming potential
ha	Hectares
HA	Hydrometric area
Habitats Directive	EU Directive on the conservation of natural habitats, wild fauna and flora (92/43/EEC), commonly known as “the Habitats Directive”, was adopted in 1992, came into force in 1994 and was transposed into Irish law in 1997.
HAT	Highest astronomical tide
HCA	UK Homes and Communities Agency

Term, Abbreviation or Acronym	Description
HDD	Horizontal directional drilling
HDD Contractor Compound	HDD contractor compounds will be required at various locations to facilitate HDD activities including the landfall site, railway crossing, M1 crossing and various watercourse crossings where either an offline or inline HDD option is selected.
HDPE	High density polyethylene
HDV	Heavy duty vehicle
HEV	Historic environment viewer
HF	High frequency
HGV	Heavy goods vehicle
HIA	Health impact assessment
HLC	Historic landscape character
HLV	Heavy lift vessel
HMWB	Highly modified water bodies
HP	High pressure gas pipeline
hPa	Hectopascals
HSA	Health and Safety Authority
HSE	Health Service Executive
HV	High voltage
HVAC	High voltage alternating current
HVDC	High voltage direct current
HWM	High water mark as shown on the Ordnance Survey Ireland Historic 1888 -1913 25-inch mapping
Hydromorphology	Hydromorphology is a term used in river basin management to describe the hydrological (water flow, energy etc.) and geomorphological (surface features) processes and attributes of rivers, lakes, estuaries and coastal waters.
Hz	Hertz
IAA	Irish Aviation Authority
IAIA	International Association for Impact Assessment
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IAQM	Institute of Air Quality Management
IC	Impressed current
ICAO	International Civil Aviation Organization

Term, Abbreviation or Acronym	Description
ICES	International Council for the Exploration of the Sea
ICCP	Impressed current cathodic protection
ICOMOS	International Council of Monuments and Sites
IC1	Interconnector 1 Scotland to Ireland (natural gas)
IC2	Interconnector 2 Scotland to Ireland (natural gas)
IEL	Industrial emissions licence
IEMA	Institute of Environmental Management and Assessment
IES	Institute of Environmental Sciences
IFI	Inland Fisheries Ireland
IFP	Instrument Flight Procedure
IFR	Instrument flight rules
IGI	Institute of Geologists of Ireland
INDCs	Intended nationally determined contributions
Indirect Effect	Indirect Effects (a.k.a. Secondary or Off-site Effects) are effects 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 (EPA 2022).
Inter-array cables (IAC)	These are the subsea electrical cables that will link the wind turbine generators to each other and link the wind turbine generators to the offshore substation platform.
Invasive species	An invasive species is a plant, fungus, or animal species that is not native to a specific location.
IMO	International Maritime Organization
INDCs	Intended nationally determined contributions
INFOMAR	INFOMAR is a DECC funded joint programme between the Geological Survey Ireland and the Marine Institute, which surveys Irish marine territory and a creates a range of integrated mapping products of the physical, chemical and biological features of the seabed.
IOA	Institute of Acoustics
IOF	Ornithological features
IOM	Isle of Man
IPC	Integrated pollution control
IPCC	Intergovernmental Panel on Climate Change
IPHI	Institute of Public Health in Ireland
IPI	Irish Planning Institute
IRCG	Irish Coast Guard

Term, Abbreviation or Acronym	Description
IrSTCSsS	Irish sea till derived from Cambrian sandstones and shales
IrSTLPSsS	Irish Sea Till derived from Lower Palaeozoic sandstones and shales
IrSTLs	Irish sea till derived from limestones
ISMA	Irish Sea Marine Assessment
ISMP	Invasive species management plan
ISO	International Organization for Standardization
ITM	Irish Transverse Mercator
I&OU	Infrastructure and Other Users
Joint Bay	A joint bay is an underground chamber which facilitates the pulling-through of cables through pre-installed cable ducts. These chambers will “joint” consecutive lengths of cables into one continuous overall circuit within a controlled environment.
JTCs	Junction turning counts
JUV	Jack-up vessels
KER	Key ecological receptors – Ecological receptors include any living organisms (other than humans), the habitat which supports such organisms, or natural resources which could be adversely affected by the proposed development
kHz	Kilohertz
KIS-ORCA	Offshore renewable & cable awareness
km	Kilometre
kt	Kilotonnes
kV	Kilovolt
kJ	Kilojoules
kW	Kilowatt (equivalent to 1,000 watts)
LA10	LA10 is the A-weighted sound pressure level obtained by using the fast time- weighting (F) that is exceeded for 10% of the time interval considered (denoted by T). It is generally used to describe road traffic noise.
LA90	LA90 is a parameter that is widely used to quantify background noise and generally reflects the soundscape in the lulls between individual events. It is the A-weighted sound pressure level that is exceeded for 90% of a given time interval.
Lac	Lacustrine sediments
LAeq	A-weighted equivalent continuous sound level
LAM	Local area model

Term, Abbreviation or Acronym	Description
Land Use	The use and management of the natural, semi-natural and built environment.
Landfall site	The landfall site includes all infrastructure from where the offshore export cable comes onshore to where it connects to the compensation substation. This includes the area from where the offshore export cables are brought onshore, the relevant construction compound(s), TJB, HDD under the Irish Rail line, and where the onshore export cable connects to the compensation substation.
Landscape Character Area	Distinct types of landscape which are generic in character in that they may occur in different parts of the country, but wherever they are they share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement pattern.
LAP	Local area plan
LAT	Lowest astronomical tide
LCC	Louth County Council
LEBM	Low energy bound mix
LED	Light emitting diode
LEVs	Low emission vehicles
LF	Low frequency
LGV	Light goods vehicle
LP	Low pressure gas pipeline
LNG	Liquified natural gas
LMP	Lighting and marking plan (Volume 9, Appendix 17.3 of EIAR)
LOA	Length overall
LoD	Limits of deviation
LoLo	Lift-on/Lift-off
LoW	List of waste
LV	Low voltage
LWM	Low water mark
m	Metres
MAC	Maritime Area Consent, the right to occupy a part of the maritime area for the permitted maritime use.
made	Made ground
Mag	Magnetometer which is an instrument used to measure magnetic fields at a particular location.
Magneto-sensitive	Ability to sense magnetic fields.

Term, Abbreviation or Acronym	Description
Magnitude	The size, extent and duration of an impact
MAP	Maritime area planning
MAP Act	Maritime Area Planning Act
MARA	Maritime Area Regulatory Authority
MarESA	Marine evidence based sensitivity assessment
Marine Processes	Relates to the EIA topic of Marine Geology, Oceanography and Physical Processes
Maritime Area Consent Boundary	The MAC boundary is the boundary of the offshore area which the holder of the MAC has the right to occupy
MarLIN	The Marine Life Information Network
MarSands	Marine sands and gravels
MarSed	Marine / estuarine sediments
MASP	Metropolitan area strategic plan
MBBS	Multibeam backscatter
MBES	Multi-beam echo sounder, an acoustic marine survey tool used to map the seabed.
mBGL	Metres below ground level
Mbs	Marine beach sands
MCA	Multi-criteria analysis
MCIB	Marine Casualty Investigation Board
MDS	Maximum design scenario
MCC	Meath County Council
Mesc	Estuarine silts and clays
MFE	Mass flow excavation
mg / m <sup>3</sup>	Milligrams per cubic metre
MGN	Marine guidance note
MHWN	Mean high water neap (tides)
MHWS	Mean high water spring (tides)
MI	Marine Institute
MINNS	Marine invasive non-native species
Mitigation Measure	Measure which would avoid, reduce, or remediate an impact.
MLWN	Mean low water neap (tides)
MLWS	Mean low water spring (tides)

Term, Abbreviation or Acronym	Description
MMMP	Marine Mammal Mitigation Protocol (Appendix 14.4 of Volume 9 of EIAR)
MMO	Marine Management Organisation
MMO	Marine Mammal Observer
MMO/PAM operator	Marine Mammal Observer/Passive Acoustic Monitoring operator
MNR	Mean neap (tide) range
mOD	Metres above ordnance datum Malin Head
MP	Medium pressure gas pipeline
MPA	Marine Protected Areas
MPCP	Marine Pollution Contingency Procedure
MPDM	Maritime Planning and Development Management Act.
MRF	Materials recovery facility
MSA	Million standard axles
MSFD	Marine Strategy Framework Directive (Directive 2008/56/EC)
MSL	Mean sea level
MSO	Marine Survey Office
MSR	Mean spring (tide) range
MSW	Municipal solid waste
Multi-beam echo sounder (MBES)	MBES is an acoustic marine survey tool used to map the seabed.
MV	Medium voltage
MW	Megawatt (equivalent to 1,000KW)
N2O	Nitrous oxide
NAF	National adaptation framework
NAS	Noise Abatement System
Natura 2000 sites or European Sites	Sites designated under the Habitats and Birds Directives (includes SACs and SPAs)
Natura Impact Statement (NIS)	A statement, for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own or in combination with other plans or projects, for one or more than one European site, in view of the conservation objectives of the site or sites
NBAP	National Biodiversity Action Plan
NBDC	National Biodiversity Data Centre
NDB	Non-directional beacon

Term, Abbreviation or Acronym	Description
NDC	National determined contributions
NDP	National Development Plan
NECP	National Energy and Climate Plan
NETN	National Electricity Transmission Network
NFGWS	National Federation of Group Water Schemes
NH3	Ammonia
NHA	Natural Heritage Area
NIAH	National Inventory of Architectural Heritage
NIEA	Northern Ireland Environment Agency
NISA	North Irish Sea Array
nm	Nautical mile
NMPF	National Marine Planning Framework
NMS	National Monuments Service
NMVOC	Non-methane volatile organic compounds
NO	Nitric oxide
NO2	Nitrogen dioxide
North Irish Sea Array (NISA) Offshore Wind Farm	The North Irish Sea Array (NISA) Offshore Wind Farm is an offshore wind farm located off the east coast of Ireland, off counties Dublin, Meath, and Louth. The proposed development is comprised of onshore and offshore infrastructure.
North Irish Sea Array Windfarm Limited (Ltd)	North Irish Sea Array Windfarm Limited (Ltd) is the Developer. The Developer is a 50/50 joint venture between Statkraft Ireland Ltd and Copenhagen Infrastructure Partners P/S.
north, south, east, west, etc.	Lower case. Compound directions take hyphens, e.g. north-west.
NOx	Nitrogen oxides
NOAA	National oceanic and atmospheric administration
NOTAM	Notice to airmen
NPF	National Planning Framework
NPWS	National Parks and Wildlife Services
NRA	Navigational risk assessment
NRW	Natural Resources Wales
NSLs	Noise sensitive locations
NSTA	North Sea Transition Authority



Term, Abbreviation or Acronym	Description
NTA	National Transport Authority
NtMs	Notice to mariners
NUC	Not under command
Nursery grounds	Areas important for the development of juvenile fish and shellfish.
NWIS cSPA	North west Irish Sea candidate Special Protection Area
O3	Ozone
OD	Outside diameter
Offshore EMP	Offshore environmental management plan (EMP) (Appendix 9.1 of Volume 9)
Offshore export cable corridor	The specific corridor of seabed (seaward of high water mark) from the array area to the landfall site, in which the offshore export cable route will be located. Referred to as the ECC.
Offshore export cable(s)	Comprises of 2 No. subsea 220kV HVAC cables linking the offshore substation platform to the transition joint bay (TJB) within the landfall site.
Offshore infrastructure	This relates to the aspects of the proposed development located seaward of the HWM
Offshore development area	That area within the proposed development boundary located seaward of the HWM
Offshore substation platform (OSP)	The OSP is the offshore electrical structure which contains the equipment needed to connect the WTGs to the offshore export cables.
Onshore CEMP	Onshore construction environment management plan (Appendix 9.1 of Volume 9)
Onshore cable route	This is the route taken by the onshore cable(s) which links the Bremore 220kV substation to the existing Belcamp 220kV substation.
Onshore cable(s)	The onshore underground 220kV HVAC cables will connect Bremore substation to the existing Belcamp substation. This will comprise of up to 6 No. power cables and 2 No. fibre optic cables.
Onshore export cable(s)	Comprises onshore underground 220kV HVAC cables which will be routed from the transition joint bay at the landfall site connecting to the grid facility.
Onshore development area	That area within the proposed development boundary located landward of the HWM
Onshore infrastructure	This relates to the aspects of the proposed development located landward of the HWM
OPC	Ordinary Portland cement
OPERA	Operational Programme for the Exchange of Weather Radar Information

Term, Abbreviation or Acronym	Description
Operation and Maintenance Facility (OMF)	The location from where the daily operations and normal repairs, replacement of parts and structural components, and other activities needed to operate and maintain the proposed development will be performed during its lifetime.
Operational Phase	This phase refers to the processes and activities implemented following the Construction Phase
OPW	Office of Public Works
ORE	Offshore renewable energy
ORESS 1	ORESS 1 Offshore Renewable Energy Support Scheme - the first Offshore Auction run under the Government of Ireland's Renewable Electricity Support Scheme and is a pivotal component of the Programme for Government and the Climate Action Plan 2024.
OREDP	Offshore Renewable Energy Development Plan
OREDP II	Offshore Renewable Energy Development Plan II
OREI	Offshore renewable energy installations
OS	Ordnance survey
OSI	Ordnance Survey Ireland
OSPAR	Oslo/Paris Convention (for the Protection of the Marine Environment of the North-East Atlantic)
OSV	Offshore supply vessels
OWF	Offshore wind farm
OSV	Offshore supply vessels
O&M	Operation and maintenance
Ovigerous	Carrying or bearing eggs.
PAM	Passive Acoustic Monitoring
Pb	Lead
PC	Process contribution
PCBs	Polychlorinated biphenyls
PEC	Predicted environmental concentration
PEIR	Preliminary environmental information report
PEL	Probable effects level
Pelagic	Living and feeding in the water column.
PfG	Programme for Government
Phase One Projects	The Phase One Projects refer to the five east coast offshore wind projects that participated in the ORESS 1 auction in 2023. These projects are: Dublin Array, Codling Wind Park,

Term, Abbreviation or Acronym	Description
	Oriel Windfarm, Arklow Bank, and the North Irish Sea Array (the proposed development).
Physical connection to transmission system	Construction of the cable run-in and tie-in to the existing Belcamp substation.
Planning Acts	Planning and Development Act 2000, as amended
Planning boundary	The boundary for planning purposes of the proposed development, i.e. the red line boundary – shown on the planning drawings. All of the proposed development is located within the planning boundary
PLL	Potential loss of life
PM	Particulate matter
PM10	Particulate matter of less than 10 microns
PM2.5	Particulate matter of less than 2.5 microns
pNHA	Proposed natural heritage area
PPV	Peak particle velocity
Pre-lay grapnel run (PLGR)	A PLGR is a pre-construction operation for the offshore components of the proposed development. PLGR will remove any obstacles that could obstruct the cable plough during offshore export cable installation.
PRFs	Potential roost features
Project Option 1	Project Option 1 consists of 49 WTGs with 250m rotor diameter
Project Option 2	Project Option 2 consists of 35 WTGs with 276m rotor diameter
ProPG	Professional Practice Guidance on Planning and Noise
Proposed development	This refers to the overall Offshore Wind Farm project, which is the subject of the planning application, and which includes all offshore and onshore infrastructure
Proposed development boundary	This is the development or red line boundary within which all of the proposed development is located.
PSA	Particle size analysis
PSAC	Portmarnock Sub Aqua Club
PSO	Public service obligation
PSR	Primary surveillance radar
PSZ	Public safety zone
PTS	Permanent Threshold Shift
PVA	Population viability analysis
QI	Qualifying interest
QoS	Quality of service

Term, Abbreviation or Acronym	Description
RAF	Royal Air Force (UK)
RAM	Restricted in ability to manoeuvre
RBD	River basin district
RBMP	River Basin Management Plan
rBWD	Revised Bathing Water Directive (Directive 2006/7/EC)
Rck	Bedrock outcrop or subcrop
Receiving/Baseline Environment	This is the term used for the baseline environment against which the impacts from the project are assessed.
Receptor	Something that could be affected by the proposed development, such as people, an ecological system, property, or a water body. Receptors should be identified and illustrated in a map/figure where discussed in your assessment.
RES-E	Electricity generated from renewable energy sources
RESS	Renewable Electricity Support Scheme
RFC	Royal Flying Corps (UK)
RLB	Red line boundary
RLoS	Radar line of sight
RNAS	Royal Navy Air Service (UK)
RNLI	Royal National Lifeboat Institution (UK)
RMP	Record of Monuments and Places
RoRo	Roll-on/Roll-off
ROV	Remotely operated vehicles
RPA	Root protection area
RPO	Regional policy objectives
RPS	Record of protected structures
RSA	Road Safety Authority
RSES	Regional Spatial and Economic Strategy
RSL	Relative sea level
SAC	Special Area of Conservation
Salmonid	Any species of the family (Salmonidae) of elongate bony fishes (such as a salmon or trout) that have the last three vertebrae upturned (i.e. ray-finned fish).
SAR	Search and rescue
SBP	Acoustic sub-bottom profilers (SBP) are marine survey tools used to determine physical properties of the sea floor and gather geological information a few metres below the sea floor.

Term, Abbreviation or Acronym	Description
SCADA	Supervisory control and data acquisition
SCI	Special conservation interest
SDG	Sustainable development goal
SDR	Standardised death rate
SDZ	Strategic development zone
SEA	Strategic environmental assessment
SEAI	Sustainable Energy Authority of Ireland
SEL	Sound exposure level
SELcum	Cumulative sound exposure level
Sensitive Receptor	Physical or natural resource, special interest or viewer group that may experience an impact
Sensitivity	Vulnerability of a sensitive receptor to change
SFC	Sustainable fisheries community
SFPA	Sea Fisheries Protection Authority
SHD	Strategic housing development
Shellfish	Shell-bearing aquatic invertebrates used as food; includes various species of crustaceans, bivalves, and gastropods.
Side Scan Sonar (SSS)	This is a marine survey method used to create an image of large areas of the sea floor.
SISAA	Supporting Information for Screening for Appropriate Assessment
SLoO	Single line of orientation
SMR	Sites and Monuments Record
SNCB	Statutory nature conservation body
SO <sub>2</sub>	Sulphur dioxide
SO <sub>x</sub>	Sulphur oxides
SOLAS	Safety of life at sea
Sound power level	The sound power level (L <sub>w</sub> ) of a source is a measurement of the total acoustic power it radiates. The sound power level is an intrinsic characteristic of a source (analogous to its volume or mass), which is not affected by the environment within which the source is located.
SOV	Service operation vessels
SPA	Special protection area
Spawning grounds	Areas where fish and shellfish aggregate to release their gametes for fertilisation or locations where egg cases are deposited.

Term, Abbreviation or Acronym	Description
SPL	Sound pressure level
SPL <sub>peak</sub>	Peak sound pressure level
SPM	Suspended particulate matter
SPS	Subsea protection systems
SPZ	Source protection zone
Study area	The area which is characterised and assessed for individual receptors in each EIAR chapter
Substation construction compound	One substation construction compound will be established in the grid facility site and will facilitate the construction of the compensation substation and the Bremore substation.
SSC	Suspended sediment concentration
SSR	Secondary surveillance radar
STECF	Scientific, Technical and Economic Committee for Fisheries
SUA	Special use airspace
SuDS	Sustainable Drainage Systems
Sulphur Hexafluoride (SF <sub>6</sub> )	SF <sub>6</sub> is used as an electrical insulating material within electrical infrastructure such as breakers and transformers.
SVC	Static VAR compensator
Swim bladder	Gas-filled organ of many bony fish; used to control buoyancy.
SWO	Storm water overflow
TAC	Total allowable catch
TCA	Townscape character assessment
TCSsS	Till derived from Cambrian sandstones and shales
TdIMr	Tidal marsh
TDP	Transmission development plan
TEL	Threshold effect level
TGr	Till derived from granites
TICCIH	The International Committee for the Conservation of the Industrial Heritage
TII	Transport Infrastructure Ireland
Transition Joint Bay (TJB)	infrastructure to facilitate the transition from offshore export cables to onshore export cables at the landfall site
TLPSsS	Till derived from Lower Palaeozoic sandstones and shales
TLs	Till derived from limestones
TMp	Till derived from metamorphic rock

Term, Abbreviation or Acronym	Description
Transmission System	The electrical network of overhead lines, cables and substations operated by EirGrid Group at transmission voltage levels on the Island of Ireland
Trefoil formation	A method of arranging electrical cable ducts
TP	Transition piece
TPO	Tree preservation order
TQz	Till derived from quartzites
TSHD	Trailer suction hopper dredger
TSS	Traffic separation scheme
TTS	Temporary threshold shift
UCC	University College Cork
Uisce Éireann	Irish Water
UKHO	United Kingdom Hydrographic Office
UKFEN	United Kingdom Fisheries Economic Network
UKCS	United Kingdom Continental Shelf
UNCLOS	United Nations Convention on the Law of the Sea
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UPS	Uninterruptible power supply
Urban	Urban (ground made)
UV	Ultraviolet
UWWT	Urban waste-water treatment
UXO	Unexploded ordinance. Typically, shells or bombs from World War I or World War II, which did not explode when deployed.
VDV	Vibration dose value
VER	Valuable ecological receptor
VFR	Visual flight rules
VHF	Very high frequency
VOCs	Volatile organic compound
VMP	Vessel management plan
VMS	Vessel monitoring system

Term, Abbreviation or Acronym	Description
VRDP	Visual representation of development proposals
VSLs	Vibration sensitive locations
WADT	Weekly average daily traffic
Water Body	A surface water body as defined under the Water Framework Directive (WFD) i.e. a river/stream, lake, transitional, coastal, or groundwater body.
WCP	Waste collection permit
WEEE	Waste electrical and electronic equipment
WFD	Water Framework Directive (Directive 2000/60/EC)
WHO	World Health Organization
WTG	Wind turbine generator
Wx	Abbreviation used throughout the EIAR to identify watercourse crossings within the proposed development.
ZAP	Zone of archaeological potential
Zone of Influence (ZoI)	An area within which environmental impact arising from a certain activity may occur.