

Oriel Wind Farm Project Environmental Impact Assessment Report Volume 2B



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ORIEL WIND FARM PROJECT

**Environmental Impact Assessment Report
Volume 2B: Glossary of Terms, Acronyms and Units**

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GLOSSARY

Project Terminology

Term	Meaning
Applicant	Oriel Windfarm Limited
Baseline	The existing conditions as represented by the latest available survey and other data which is used as a benchmark for making comparisons to assess the impact of the Project.
Catchment	An area of land contributing to a river, lake or other water body.
Cumulative impacts	Impacts that result from incremental changes caused by other reasonably foreseeable actions alongside the project in question. This includes the impact of all other developments that were not present at the time of data collection.
"Do Nothing" Scenario	The environment as it would be in the future should the proposed project not be developed.
"Do Something" Scenario	The environment should the proposed project be developed.
Environmental Impact Assessment	A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the EIA Directive 2011/92/EU as amended by EIA Directive 2014/52/EU and European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018), including the publication of an Environmental Impact Assessment (EIA) Report.
Foreshore	The area of the land and seabed between the high-water mark of ordinary or medium tides and the 12 nautical mile limit.
Habitat	The natural home or environment of an animal, plant, or other organism.
Horizontal Directional Drilling (HDD)	A method of installing underground cables via directional drilling that does not require digging trenches.
Inter-array cables	Cables which connect the wind turbines to each other and to the offshore substation.
Intertidal	An area of a seashore that is covered at high tide and uncovered at low tide.
Joint bay	These are concrete lined chambers, that provide a clean and dry environment for jointing the sections of underground cables together. Link boxes and communication chambers will also be required along the onshore cable route adjacent to each joint bay.
Landfall	The area in which the offshore export cable makes landfall. It is the transitional area between the offshore cable and the onshore cables. The landfall is proposed 700 m south of Dunany Point.
Magnitude	Size, extent and duration of an impact.
Measures included in the Project	The Project design includes a number of designed-in measures and management measures (or controls) which are committed to be delivered by the Applicant as part of the Project. These measures are standard measures applied to offshore wind development, including lighting and marking of the Project, use of 'soft-starts' for piling operations etc, to reduce the potential for impacts. These measures are integrated into the description of the development and have therefore been considered in the assessments in the EIAR.
Mitigation measure	Measure which would avoid, reduce, or remediate an impact.
Monopile	The cylindrical foundations in the seafloor used to support the wind turbines and OSS.
Nacelle	The housing of the generator components located at the height of the rotor hub.
National grid	Electricity transmission system.
Non-statutory stakeholder	Organisations with whom the regulatory authorities may choose to engage who are not designated in law but are likely to have an interest in a proposed development.
Offshore cable (or export cable)	The offshore cable (or export cable) will be installed in the offshore cable corridor. This cable will connect the offshore wind farm with the onshore cables at the landfall.
Offshore cable corridor	The corridor between the offshore wind farm area and the landfall in which the offshore export cable will be located.

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Term	Meaning
Offshore substation (OSS)	An offshore substation is a pre-fabricated offshore structure housing electrical equipment to provide a range of functions, such as changing the voltage.
Offshore wind farm area	This is where the offshore wind farm components will be located, which will include offshore foundations, the wind turbines, inter-array cables and offshore substation as well as a short section of the offshore export cable.
Onshore cable route	The route of the proposed underground electrical cables between the proposed landfall site and the proposed onshore substation site.
Onshore cables	Cables that transfer power from the Transition Joint Bay to the onshore substation. The onshore cables will be installed within a single trench of approximately 1 m in width, along an onshore cable route that connects the TJB to the substation site at Stickillin, east of Ardee on the N33.
Onshore components	The onshore substation, onshore cables, joint bays including link boxes and communication chambers, communication cables, Transition Joint Bay and other ancillary onshore electrical components.
Onshore substation	A site containing the equipment required to filter, monitor and control electricity received from the offshore wind farm and transmit it to the existing electricity Transmission System (National Grid). This includes gas insulated switchgear (GIS) located inside a building; and outdoor air insulated switchgear (AIS).
Onshore substation site	The site location of the proposed onshore substation.
Passing bay	Temporary passing bays will be installed adjacent to joint bays to enable through traffic during the construction of the onshore cable.
Prescribed bodies	Organisations that are required to be consulted by the Regulatory Authorities, and who also have a duty to respond to that consultation within a set deadline. This includes consultees that the Applicant is required to consult with. Not all consultees will be statutory consultees.
Project	The Oriel Wind Farm Project. The Project includes the construction, operation and maintenance, and decommissioning of offshore and onshore infrastructure.
Project design parameters	These are the design details and measurements of the Project infrastructure that are used to inform the assessment of the likely significant effects of the Project on the environment. These also include details on the Project construction, operation and maintenance and decommissioning phase activities. Where design flexibility applies under Section 287B of the Planning and Development Act 2000 as amended, the project design parameters include a description of the parameters or options e.g. the wind turbine hub height will vary within the range 145-152 metres above Lowest Astronomical Tide (maLAT).
Residual effects	Residual effects are the final effects that occur after the proposed mitigation measures have been put into place, as planned.
Scour protection	A solution for preventing scour around subsea structures, typically comprised of rock or concrete mattresses.
Sensitive receptor	Physical or natural resource, special interest or viewer group that will experience an impact.
Sensitivity	Vulnerability of a sensitive receptor to change.
Subtidal	Area extending seaward of low tide to the edge of the continental shelf.
Transition joint bay (TJB)	An underground chamber located close to the landfall and above the HWM that connects the offshore export cable to the onshore export cables.
Wind Turbine Generator (WTG)	All of the components of a wind turbine, including the tower, nacelle, blades and rotor.
Unexploded Ordnance (UXO)	Explosive weapons that did not explode when they were employed and still pose a risk of detonation.
Zone of Influence (Zoi)	The Zoi (or 'spatial extent of the impact' as described in Annex III(3) of the EIA Directive) is the area which may be subject to significant impacts as a result of the proposed development and associated activities.
Zone of Theoretical Visibility (ZTV)	A mapped visualisation of the areas over which a development could theoretically be seen, based on a Digital Terrain Model (DTM). The ZTV presents a 'bare earth' scenario (i.e. a landscape without screening structures or vegetation) (NatureScot, 2012).

Chapter 7: Marine Processes

Term	Meaning
Bathymetry	The measurement of water depth in oceans, seas and lakes.
Ebb tide	Changing of the tides from high to low.
Flood tide	Changing of the tides from low to high.
High Water Mark	The most inshore location reached by the sea during mean high water spring tide. This is defined as the average throughout the year, of two successive high waters, during a 24-hour period in each month when the range of the tide is at its greatest.
Intertidal	An area of a seashore that is covered at high tide and uncovered at low tide.
Littoral current	Flow derived from tide and wave climate.
Low Water Mark	The most offshore location reached by the sea during low water spring tide. This is defined as the average throughout the year, of two successive low waters, during a 24-hour period in each month when the range of the tide is at its greatest.
Residual current	The resulting flow over the course of a tidal cycle.
Significant wave height	Mean wave height (trough to crest) of the highest third of the waves.
Spring tide	Tide that occurs when the sun and moon are directly in line with the Earth and their gravitational pulls reinforce each other resulting in the greatest difference between high and low tide water level.
Subtidal	Area extending seaward of low tide to the edge of the continental shelf.
Tidal Excursion	The horizontal distance over which a water particle may move during one cycle of flood and ebb.

Chapter 8: Benthic Subtidal and Intertidal Ecology

Term	Meaning
Amphipod	An order of crustaceans.
Anthozoan	A class of marine invertebrates including sea anemones and corals.
Assemblage	The collection of populations of species within an area (similar to 'community').
Benthic ecology	Benthic ecology encompasses the study of the organisms living in and on the sea floor.
Benthic fish	Fish that live on or near the sea bottom, irrespective of the depth of the sea. Many benthic species have modified fins, enabling them to crawl over the bottom; others have flattened bodies and can lie on the sand; others live among weed beds, rocky outcrops, and coral reefs.
Biogenic	Produced or brought about by living organisms.
Biotope	The combination of physical environment (habitat) and its distinctive assemblage of conspicuous species.
Bivalve	A class of marine and freshwater molluscs that have laterally compressed bodies enclosed by a shell consisting of two hinged parts.
Chelicerata	A classification of Arthropods, containing sea spiders.
Circalittoral	The subzone of the rocky sublittoral deeper than that dominated by algae (i.e. the infralittoral) and dominated by animals.
Community (ecological)	The collection of populations of species within an area (similar to 'assemblage').
Crustacean	An invertebrate belonging to the subphylum of Crustacea, of the phylum Arthropoda. Includes crabs, lobsters, shrimps, barnacles and sand hoppers.
Demersal	Living on or near the seabed.
Echinoderms	An invertebrate animal belonging to the phylum Echinodermata that includes sea stars, brittle stars, feather stars, sea urchins and sea cucumbers.
Epifauna	Animals living on the surface of the seabed.
Eulittoral	The landward section of a body of water between the High Water Mark to where the shoreline is permanently submerged.
Fucoid	A brown seaweed to which bladderwrack belongs.
Habitat	The natural home or environment of an animal, plant, or other organism.

ORIEL WIND FARM PROJECT - GLOSSARY OF TERMS, ACRONYMS AND UNITS

Term	Meaning
Hydroids	Any of numerous, usually colonial marine cnidarians, having a polyp rather than a medusoid form as the dominant stage of the life cycle.
Infauna	Animals living within the sediments of the seabed.
Intertidal	An area of a seashore that is covered at high tide and uncovered at low tide.
Invasive and non-indigenous species	Species that are introduced, intentionally or unintentionally, outside of their natural geographic range, causing environmental, social and/or economic impacts.
Littoral	The region between high and low tide.
Macrofauna	Animals that are greater than one or two millimetres in size.
Magnitude	Size, extent and duration of an impact.
Megafauna	Large animals.
Mollusc	Invertebrate animal belonging to the phylum Mollusca that includes the snails, clams, chitons, tooth shells, and octopi.
Polychaetes	A class of segmented worms often known as bristle worms.
Quadrat	A portable 1 m ² frame used to quantify abundances of animals or plants during ecological surveys.
Ramsar	International convention on wetlands of international importance.
SACFOR Scale	Abundance scale used to classify quantity of animals and plants (i.e. Superabundant Abundant Common Frequent Occasional Rare).
Species	A group of closely related organisms that are very similar to each other and are usually capable of interbreeding and producing fertile offspring.
Sublittoral/subtidal	Area extending seaward of low tide to the edge of the continental shelf.
Substrate	The surface or material on or from which an organism lives.
Tidal excursion	The horizontal distance over which a water particle may move during one cycle of flood and ebb.
van Veen grab	An instrument to sample sediment in water environments. Usually it is a clamshell bucket made of stainless steel.

Chapter 9: Fish And Shellfish Ecology

Term	Meaning
Benthic fish	Fish that live on or near the sea bottom, irrespective of the depth of the sea. Many benthic species have modified fins, enabling them to crawl over the bottom; others have flattened bodies and can lie on the sand; others live among weed beds, rocky outcrops, and coral reefs.
Benthopelagic fish	Benthopelagic fish usually float in the water column just above the sea floor and can occupy either shallow coastal waters or deep waters offshore. Examples of benthopelagic species in Irish waters include dogfish, cod, haddock, whiting, monkfish, and saithe.
Berried	Egg bearing individual whereby eggs are attached to its tail or some other exterior part.
Demersal fish	Fish species that live close to the sea floor and are bottom feeders. There are two types: benthic fish which rest on the sea floor (e.g. flatfish, dragonets, skates and rays) or benthopelagic fish (see above).
Diadromous	Fish species that regularly migrate between marine and freshwater systems.
Elasmobranch	The term refers to cartilaginous fishes which include the sharks, rays, and skates.
Gadoid	A family of fish that includes cod, haddock, and pollock.
Masking	Masking occurs when noise emissions interfere with a marine animal's ability to hear a sound of interest.
Nursery habitat	A habitat where juveniles of a species regularly occur as a population.
Pelagic fish	Pelagic fish are species which live and feed within the water column.
Shellfish	For the purposes of this assessment, shellfish is considered a generic term to define molluscs and crustaceans.
Spawning grounds	Spawning grounds are the areas of water or seabed where fish spawn or produce their eggs.

Chapter 10: Marine Mammals and Megafauna

Term	Meaning
Acoustic Deterrent Device (ADD)	These are devices used to discourage marine mammals from approaching an area where noise may cause injury.
Annex II Species	Animal or plant species of community interest, defined in Annex II of the Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora (Habitats Directive). The designation of Special Areas of Conservation (SAC) is required in Ireland to ensure the conservation of these species.
Average hammer energy	A conservative hammer energy which reflects the upper estimate of the average hammer energy expected to be achieved across all piling activity for each foundation type.
Cetacean	The order Cetacea includes whales, dolphins and porpoises and is collectively known as cetaceans.
C-POD	Hydrophones that passively monitor acoustics in the water. They are used to record the presence of toothed cetaceans in a periphery of 200-400 meters from the device location.
Dose response	The dose–response relationship, or exposure–response relationship, describes the magnitude of the response of an organism (e.g. marine mammal), as a function of exposure (or doses) to a stimulus or stressor (e.g. noise).
Electromagnetic Field (EMF)	An electric and magnetic force field that surrounds a moving electrical charge.
Ensonification	To fill an area with sound.
Ensonify	Used in sidescan sonar meaning ‘fill with sound’ – the seabed is flooded with an acoustic source and the intensity of the returning sound waves measured.
Haul-out	A behaviour associated with pinnipeds temporarily leaving the water, typically occurs between periods of foraging activity, for reasons such as reproduction and rest.
Marine megafauna	This is a collective term for marine mammals (e.g. whales, dolphins, porpoises and seals) and megafauna (e.g. basking shark and sea turtles).
Marine Mammal Observer (MMO)	A professional in environmental consulting who specialises in cetaceans and pinnipeds. An MMO’s role is to conduct marine mammal monitoring and identification in order to implement mitigation measures related to reducing the risk of impacts to marine mammals from harmful activities.
Mysticete	Are a parvorder of carnivorous marine mammals of the infraorder Cetacea which use keratinaceous baleen plates (or "whalebone") in their mouths to sieve planktonic creatures from the water. Minke whale <i>Balaenoptera acutorostrata</i> is an example of a mysticete.
ObSERVE surveys	Broad-scale aerial surveys conducted in Irish waters over 2015 and 2016 with the aim of investigating the occurrence, distribution and abundance of key marine species, with an emphasis on seabirds and marine mammals.
Odontocete	Odontocetes (toothed-whales) form a suborder of the order cetacea (cetaceans). This suborder is characterised by the presence of teeth, rather than the baleen of other whales and includes sperm whales, beaked whales and dolphins.
Passive Acoustic Monitoring (PAM)	Refers to the use of underwater microphones (hydrophones) to detect, monitor and, in some cases localise, vocalising marine mammals. Passive refers to the fact that noise is not put into the environment, it is only received.
Permanent Threshold Shift (PTS)	Following a marine mammal’s exposure to high noise levels, if a threshold shift occurs and does not return to normal after several weeks then a Permanent Threshold Shift (PTS) has occurred. This results in a permanent auditory injury to the marine mammal.
Pinniped	Fin-footed group of marine mammals which are semi-aquatic. Pinnipeds comprise of the following families: Odobenidae (walrus); Otariidae (eared seals, sea lions, and fur seals); and Phocidae (earless seals). Pinnipeds are more broadly known as “seals”.
Small Cetacean Abundance in the North Sea and Adjacent Waters (SCANS)	Large scale surveys aimed at estimating the abundance of porpoises and other cetaceans in order to assess the impacts of by-catch. SCANS (1994) and SCANS II (2005) have been completed, some outputs from SCANS III were published in 2017.
Soft-start	The term ‘soft-start’ is applied to the gradual, or incremental, increase in hammer blow energy from the initiation of piling activity until required blow energy is reached for installation of each pile, usually over a period of 30 minutes (not less than 20 minutes). Maximum hammer blow energy may not be required to complete pile installation.
Temporary Threshold Shift (TTS)	A temporary change in the hearing threshold of marine mammals following noise exposure. Hearing loss in this case is not permanent.

Chapter 11: Offshore Ornithology

Term	Meaning
Birds Directive	European Parliament and Council Directive 2009/147/EC on the conservation of wild birds, a key legislative measure for the protection of birds in the European Union.
Displacement	In relation to offshore wind farm development, displacement refers to a reduced number of birds occurring within or immediately adjacent to an offshore wind farm.
Disturbance	Disturbance occurs when a bird's normal pattern of activity is interrupted by an anthropogenic activity. Individuals may choose to avoid sources of disturbance (e.g. swimming or flying away) and may not return until sometime later.
Habitat	The natural home or environment of an animal, plant, or other organism.
Migration	The regular seasonal movement, often north and south along a flyway, between breeding and wintering grounds.
On transect	On transect records refer to records of birds made perpendicular to the direction of travel on one side of the boat, out to 300 m. A scan surveys an arc of 90° from directly in front to one side of the vessel, recording all birds within a quadrat with sides 300 m to the front and side of the observer. Also, a "snapshot" was used for flying birds, whereby all birds in flight were recorded every minute within the 300 m quadrat, along with their estimated flight height and direction.
Ornithology	Ornithology is a branch of zoology that concerns the study of birds.
Outside transect	'All Records' which includes all birds observed (whether present on the transect or recorded incidentally) throughout the Survey Area.
Ramsar	International convention on wetlands of international importance.
Sensitive Receptor	Physical or natural resource, special interest or viewer group that will experience an impact.
Special Protection Area	A designation under the European Union Directive on the Conservation of Wild Birds. Under this Directive, Member States of the European Union (EU) have a duty to safeguard the habitats of migratory birds and threatened birds.

Chapter 12: Commercial Fisheries

Term	Meaning
Automatic Identification System (AIS)	A system by which vessels automatically broadcast their identity, key statistics including location, destination, length, speed and current status (e.g. under power). Most commercial vessels and European Union (EU) fishing vessels over 15 m length are required to carry AIS.
Beam trawlers	A method of bottom trawling with a net that is held open by a beam (a heavy steel tube supported by steel trawl heads at each end). Tickler chains or chain mats, attached between the beam and the ground rope of the net, are used to disturb fish and crustaceans that rise up and fall back into the attached net.
Bord Iascaigh Mhara	Bord Iascaigh Mhara is the agency of the Irish state with responsibility for developing the Irish marine fishing and aquaculture industries.
Creel	Traps set on the seabed for catching species such as lobster, crab, and prawns.
Demersal	Living on or near the seabed.
Demersal trawl	A fishing net used by towing the trawl along or close to the seabed.
Dredger	These are gears which are dragged along the bottom to catch shellfish. They consist of a mouth frame to which a holding bag, constructed of metal rings or meshes, is attached.
Drift Nets	A net deployed that drifts with the current, in general near the surface or in mid-water.
European Union Data Collection Framework (EU DCF)	An EU framework for the collection and management of fisheries data.
Fish stock	Any natural population of fish which is an isolated and self-perpetuating group of the same species.
Fishery	A group of vessel voyages which target the same species or use the same gear.
Fishing ground	An area of water or seabed targeted by fishing activity.
Fleet	A physical group of vessels sharing similar characteristics (e.g. nationality, gear type etc.).
Gear type	The method/equipment used for fishing.

ORIEL WIND FARM PROJECT - GLOSSARY OF TERMS, ACRONYMS AND UNITS

Term	Meaning
Gill net	Fishing net set vertically in the water so that fish swimming into it are entangled in its mesh by their gills.
ICES statistical rectangles	Defined areas, 1-degree longitude x 0.5 degree latitude equalling approximately 30 x 30 nautical miles (nm) used for fisheries statistics by ICES.
Inland Fisheries Ireland	Inland Fisheries Ireland is a state agency responsible for fisheries management of freshwater fish and coastal fish within 12 nm of the Republic of Ireland.
Inshore	At sea but close to the shore.
International Council for the Exploration of the Sea (ICES)	Marine science organisation, meeting societal needs for impartial evidence on the state and sustainable use of our seas and oceans.
Landings	Quantitative description of the amount of fish returned to port for sale, in terms of value or weight.
Longline	A type of fishing utilising a longline with many hooks spaced along it.
Marine Management Organisation (MMO)	A UK government department that license, regulate and plan commercial fisheries activities in the UK marine area.
Otter trawl	A net with large rectangular boards (otter boards) which are used to keep the mouth of the trawl net open. Otter boards are made from timber or steel and are positioned in such a way that the hydrodynamic forces, acting on them when the net is towed along the seabed, pushes them outwards and prevents the mouth of the net from closing.
Pelagic	Of or relating to the water column.
Pelagic trawl	A net used to target fish species in the water column.
Pots	A baited trap, installed on the seabed.
Scallop dredge	A method to catch scallop using steel dredges with a leading bar fitted with a set of spring loaded, downward pointing teeth. Behind this toothed bar (sword), a matt of steel rings is fitted. A heavy net cover (back) is laced to the frame, sides and after end of the mat to form a bag.
Seines	A very long net, with or without a bag in the centre, which are set either from the shore or from a boat for surrounding a certain area and is operated with two (long) ropes fixed to its ends (for hauling and herding the fish).
Spawning	The act of releasing or depositing eggs (fish).
Trammel nets	A type of fishing net made up of three layers of netting that can catch a broader range of species and sizes than gill nets.
Vessel Monitoring System	A system used in commercial fishing to allow environmental and fisheries regulatory organisations to monitor, minimally, the position, time at a position, and course and speed of fishing vessels.

Chapter 13: Shipping and Navigation

Term	Meaning
Automatic Identification System (AIS)	A system by which vessels automatically broadcast their identity, key statistics including location, destination, length, speed and current status (e.g. under power). Most commercial vessels and European Union (EU) fishing vessels over 15 m length are required to carry AIS.
Collision	The act or process of colliding (crashing) between two moving objects.
Formal Safety Assessment (FSA)	A structured and systematic process for assessing the risks and costs (if applicable) associated with shipping activity.
International Maritime Organisation (IMO) Routeing Measure	Predetermined shipping routes established by the IMO.
Marine Guidance Note (MGN)	A system of guidance notes issued by the UK Maritime and Coastguard Agency (MCA) which provide significant advice relating to the improvement of the safety of shipping at sea, and to prevent or minimise pollution from shipping.
Marshalling harbour	The onshore storage, assembly, and staging area for offshore wind turbines.
Metocean conditions	Meteorological and physical oceanographic (e.g. tides and waves) conditions
Navigational Risk Assessment (NRA)	A document which assesses the overall impact to shipping and navigation of a proposed Offshore Renewable Energy Installation (OREI) based upon FSA.

ORIEL WIND FARM PROJECT - GLOSSARY OF TERMS, ACRONYMS AND UNITS

Term	Meaning
Offshore Renewable Energy Installation (OREI)	As defined by Marine Guidance Note 543 (Merchant and Fishing) Safety of Navigation: OREIs – Guidance on UK Navigational Practice, Safety and Emergency Response (MCA, 2016).
Pilotage	The use of pilots with specialised local knowledge for navigating vessels into port or wherever specialised local knowledge is required for navigation.
Traffic Separation Scheme (TSS)	A traffic management route system ruled by the International Maritime Organization (IMO). The traffic lanes (or clearways) indicate the general direction of the vessels in that zone; vessels navigating within a TSS all sail in the same direction or they cross the lane at an angle as close to 90 degrees (°) as possible.

Chapter 14: Aviation, Military and Communications

Term	Meaning
Above Mean Sea Level	The elevation or altitude (in the air) of an object, relative to the average sea level datum.
Aerodrome	An small airport or airfield.
Flight level	A standard nominal altitude of an aircraft, in hundreds of feet, based upon a standardised air pressure at sea level.
Instrument Flight Rules (IFR)	The set of rules that govern aircraft flying in cloud or in low visibility.
Lowest Astronomical Tide	The lowest tide level which can occur under normal conditions.
Minimum Safe Altitude (MSA)	The lowest altitude which will provide a minimum clearance of 305 m (1,000 ft) above all objects located within a defined sector of airspace.
Point-to-point / wireless communication links	Used to transmit information between two antennae via radio waves within a particular frequency band, including Very High Frequency (30 to 300 MHz), Ultra High Frequency (300 to 3,000 MHz) (International Telecommunication Union, 2015) and microwave (typically 1 GHz to 100 GHz).
Safeguarding	The process established to ensure that all appropriate measures are taken to secure the safety of aircraft when taking off, landing or flying within the vicinity of an airport.
Uncontrolled airspace	Uncontrolled airspace is airspace of defined dimensions within which pilots are not required to request Air Traffic Control (ATC) services.
Visual Flight Rules (VFR)	The set of rules that govern aircraft flying clear of cloud and in good visibility.

Chapter 15: Marine Archaeology

Term	Meaning
Anthropogenic	An adjective used to refer to human-generated things.
Bathymetry	The measurement of water depth in oceans, seas and lakes.
Before present	An archaeological dating convention – the present presumed in this report is 1950 (based on uncalibrated radiocarbon dates).
Heritage	According to The Heritage Act 1995 Ireland's heritage includes monuments, archaeological objects, heritage objects, architectural heritage, landscapes, seascapes, wrecks etc.
Heritage asset	Heritage Assets are a building, monument, site, place, area or landscape positively identified as having a degree of importance meriting consideration in planning decisions.
Marine archaeology	The physical remains of boats and ships that have been wrecked, sunk or have foundered, and may also be those artefacts which rest upon the seabed as the result of being jettisoned or lost overboard (for example, anchors, cannon or fishing gear).
Mesolithic	An archaeological period following the palaeolithic and preceding the neolithic.
National Monument	Defined in Section 2 of the National Monuments Act 1930 to mean a monument 'the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic or archaeological interest attaching thereto...'
Neolithic	An archaeological period following the Mesolithic and preceding the Bronze Age, characterised by a transition towards agriculture.
Palaeolithic	The earliest stone age archaeological period that lasted from the development of stone tools and preceded the Mesolithic.
Pleistocene	A geological epoch, defined by periods of glaciation, that ended 11,700 years ago.

ORIEL WIND FARM PROJECT - GLOSSARY OF TERMS, ACRONYMS AND UNITS

Term	Meaning
Prehistoric archaeology	The period from the earliest hominin occupation around 300,000 years Before Present (BP) to the end of the Iron Age around 400 AD.
Side scan sonar	A sonar system that is used for mapping and imaging the seafloor and objects on the seafloor.

Chapter 16: Infrastructure, Marine Recreation and Other Users

Term	Meaning
Block	A sub-division forming part of a quadrant used by the Petroleum Affairs Division (PAD) for delineating licence agreements to the oil and gas industry.
Carbon capture and storage	Carbon capture and storage is a process whereby carbon dioxide produced by industry is stored underground to reduce atmospheric emissions.
Marine aggregate	Marine dredged sand and/or gravel.

ACRONYMS

Term	Meaning
AA	Appropriate Assessment
AAP	Area of Archaeological Potential
ABM	Agent Based Model
ABP	An Bord Pleanála
AC	Alternating Current
AD	Air Defence
ADCO	The Archaeological Diving Company Ltd
ADD	Acoustic Deterrent Device
AEWA	African-Eurasian Waterbird Agreement
AEZ	Archaeological Exclusion Zone
AIC	Aeronautical Information Circulars
AIS	Automatic Identification System
ALARP	As Low as Reasonably Practicable
AMSL	Above Mean Sea Level
ANIFPO	Anglo-North Irish Fish Producers' Organisation
AOD	Above Ordnance Datum
AR	Avoidance Rate
ASAM	Aeronautical Services Advisory Memorandum
ASSI	Area of Special Scientific Interest
ASSIs	Areas of Special Scientific Interest
ATC	Air Traffic Control
AtoN	Aids to Navigation
ATS	Air Traffic Services
B	Magnetic Field
BAP	Biodiversity Action Plan
BDMPS	Biologically Defined Minimum Population Scales
BERR	Department for Business Enterprise and Regulatory Reform (UK)
BIM	Bord Iascaigh Mhara
BoCCI	Birds of Conservation Concern in Ireland
BODC	British Oceanographic Data Centre
BP	Before Present
BTO	British Trust for Ornithology
C14	Radio Carbon dating
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication
CCS	Carbon Capture and Storage
CCTV	Closed Circuit Television

ORIEL WIND FARM PROJECT - GLOSSARY OF TERMS, ACRONYMS AND UNITS

Term	Meaning
CD	Chart Datum (generally defined as LAT)
CDP	County Development Plan
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CF	Conversion Factor
CFP	Common Fisheries Policy
CGS	County Geological Site
CI	Confidence Interval
CIA	Cumulative Impact Assessment
CIEEM	Chartered Institute of Ecology and Environmental Management
CIL	Commissioner of Irish Lights
CMRC	Coastal and Marine Resources Centre
CNS	Communication, Navigation and Surveillance
COLREGs	International Regulations for Preventing Collisions at Sea
COWRIE	Collaborative Offshore Wind Research into the Environment
C-POD	Cetacean and Porpoise Detectors
CRM	Collision Risk Modelling
cSAC	Candidate Special Area of Conservation
CSIP	Cetaceans Strandings Investigation Programme
cSPA	Candidate Special Protection Area
CTA	Control Area
CTV	Crew Transport Vessel
CV	Coefficient of Variance
DAERA	The Department of Agriculture, Environment and Rural Affairs
DAFM	Department of Agriculture, Food and the Marine
DAHG	Department of Arts, Heritage and the Gaeltacht (now known as DTCAGSM)
DAHGI	Department of Arts, Heritage and the Gaeltacht (now known as DTCAGSM)
DAS	Digital Aerial Survey
DC	Direct Current
DCA	Dublin Controlled Airspace
DCCAIE	Department of Communications, Climate Action and Environment (now DECC)
DCENR	Department of Communications, Energy and Natural Resources
DCF	Data Collection Framework
DCHG	Department of Culture, Heritage and the Gaeltacht
DEARA	Department of Environment, Agriculture and Rural Affairs
DECC	Department of Environment, Climate and Communications (previously DCCAIE)
DECLG	Department of Environment, Community and Local Government
DEFRA	Department for Environment, Food and Rural Affairs
DHI	Danish Hydraulic Institute
DHLGH	Department of Housing, Local Government and Heritage

ORIEL WIND FARM PROJECT - GLOSSARY OF TERMS, ACRONYMS AND UNITS

Term	Meaning
DHPLG	Department of Housing, Planning and Local Government
DMAP	Designated Maritime Area Plan
DMRB	Design Manual for Roads and Bridges
DoD	Department of Defence
DP	Dynamic Positioning
DSC	Digital Selective Calling
DTCAGSM	Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media
DTI	Department of Trade and Industry
DTTAS	Department of Transport, Tourism and Sport
EF	Electrical Field
EBA	European Boating Association
EC	European Commission
ECHA	East Canadian High Arctic
EclA	Ecological Impact Assessment
ECMWF	European Centre for Medium-Range Weather Forecasts
EEA	European Economic Area
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
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
EPS	European Protected Species
ERCoP	Emergency Response Cooperation Plan
ERFB	Eastern Regional Fisheries Board
ESAS	European Seabirds at Sea
ESRI	Economic and Social Research Institute
EU	European Union
EUNIS	European Nature Information System
FCS	Favourable Conservation Status
FIR	Flight Information Region
FL	Flight Level
FLO	Fisheries Liaison Officer
FLOWW	Fishing Liaison with Offshore Wind and Wet Renewables Group
FMMS	Fisheries Management and Mitigation Strategy
FSA	Formal Safety Assessment
FSC	Field Studies Council

ORIEL WIND FARM PROJECT - GLOSSARY OF TERMS, ACRONYMS AND UNITS

Term	Meaning
FU	Functional Unit
FUA	Flexible Use of Airspace
GES	Good Environmental Status
GHA	Geological Heritage Area
GI	Ground Investigation
GIS	Geographic Information System
GPS	Global Positioning System
GSI	Geological Survey of Ireland
GSM	Global System for Mobile Communications
GW	Gigawatt; unit of power equal to one billion watts, or a thousand megawatts (MW)
HDD	Horizontal Directional Drilling
HF	High Frequency
HMCG	Her Majesty's Coast Guard
HVAC	High Voltage Alternating Current
HVDC	High-Voltage Direct Current
HWM	High water mark
IAA	Irish Aviation Authority
IAIP	Integrated Aeronautical Information Package
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IAMMWG	Inter-Agency Marine Mammal Working Group
ICAN	International Coastal Atlas Network
ICAO	International Civil Aviation Organisation
ICC	Irish Cruising Club
ICES	International Council for the Exploration of the Sea
IEF	Important Ecological Feature
IEFs	Important Ecological Features
IFI	Inland Fisheries Ireland
IFO	Intermediate Fuel Oil
IFP	Instrument Flight Procedure
IFR	Instrument Flight Rules
IHPA	Irish Hang Gliding and Paragliding Association
IMC	Instrument Meteorological Conditions
IMO	International Maritime Organisation
IMSRR	Irish Maritime Search and Rescue Region
INFOMAR	Integrated Mapping for the Sustainable Development of Ireland's Marine Resource
INIS	Invasive and Non-Indigenous Species
IPCC	Intergovernmental Panel on Climate Change
IPPHA	Irish Powered Paragliding and Hang Gliding Association
IRCG	Irish Coast Guard

ORIEL WIND FARM PROJECT - GLOSSARY OF TERMS, ACRONYMS AND UNITS

Term	Meaning
ISA	Irish Sailing Association
IUCN	International Union for Conservation of Nature
IWC	International Whaling Commission
IWDG	Irish Whale and Dolphin Group
I-WeBS	Irish Wetland Bird Survey
JNCC	Joint Nature Conservation Committee
KERs	Key Ecological Receptors
KISCA	Kingfisher Information Services Cable Awareness
KIS-ORCA	Kingfisher Information Services Offshore Renewable Cable Awareness
LAT	Lowest Astronomical Tide
LCC	Louth County Council
LCDP	Louth County Development Plan
LF	Low Frequency
LID	Lynn and Inner Dowsing
LiDAR	Light Detection and Ranging
LMP	Lighting and Marking Plan
LOA	Length Overall
Lo-Lo	Load on - Load Off
LoS	Line of Sight
LSE	Likely Significant Events
LV	Low Voltage Electricity Cables
LWM	Low Water Mark
MAC	Maritime Area Consent
MAGIC	Multi-Agency Geographic Information for the Countryside
MarESA	Marine Evidence Based Sensitivity Assessment
MarLIN	Marine Life Information Network
MBA	Marine Biological Association
MBES	Multibeam Echo Sounder
mbgl	Metres below ground level
MCA	Maritime and Coast Guard Agency
MEDIN	Marine Environmental Data and Information Network
META	Marine Energy Test Area
MF	Mid Frequency
MGN	Marine Guidance Note
MGO	Marine Gas Oil
MHWS	Mean High Water Springs
MMMP	Marine Mammal Mitigation Plan
MMOs	Marine Mammal Observers
MMO	Marine Management Organisation

ORIEL WIND FARM PROJECT - GLOSSARY OF TERMS, ACRONYMS AND UNITS

Term	Meaning
MOD	Ministry of Defence (UK)
MOU	Memorandum of Understanding
MPA	Marine Protected Area
MPCP	Marine Pollution Contingency Plan
MRSea	Marine Renewables Strategic Environmental Assessment
MSA	Minimum Safe Altitude
MSC	Marine Stewardship Council
MSC	Maritime Safety Council
MSFD	Marine Strategy Framework Directive
MSI	Maritime Safety Information
MSL	Mean sea level
MSO	Marine Survey Office
MSPD	Maritime Spatial Planning Directive (2014/89/EU)
MU	Management Unit
MV	Medium Voltage Electricity Cables
NATS	National Air Traffic Services
NAVAIDS	Navigation Aids
NBDC	National Biodiversity Data Centre
NE	Natural England
NGO	Non-Governmental Organisation
NHA	Natural Heritage Area
NHAs	Natural Heritage Areas
NI	Northern Ireland
NIEA	Northern Ireland Environment Agency
NIFPO	Northern Ireland Fish Producers' Organisation
NIS	Natura Impact Statement
NISA	North Irish Sea Array
NM	National Monument
NMA	National Monuments Act
NMFS	National Marine Fisheries Service (US)
NMPF	National Marine Planning Framework
NMS	National Monument Service
NOAA	National Oceanic and Atmospheric Administration
NPF	National Planning Framework
NPWS	National Parks and Wildlife Service
NRA	Navigation Risk Assessment
NRW	Natural Resources Wales
NSMS	Navigation Safety Management System
NUC	Not Under Command

ORIEL WIND FARM PROJECT - GLOSSARY OF TERMS, ACRONYMS AND UNITS

Term	Meaning
O&M	Operations and Maintenance
OAM	Operations Advisory Memorandum
OD	Ordnance Datum
OPW	Office of Public Works
ORE	Offshore Renewable Energy
OREDP	Offshore Renewable Energy Development Plan
OREI	Offshore Renewable Energy Installations
ORJIP	Offshore Renewables Joint Industry Programme
OSI	Ordnance Survey Ireland
OSP	Offshore Substation Platform
OSPAR	The Oslo-Paris Convention for the Protection of the Marine Environment of the North-East Atlantic
OSS	Offshore Substation
OUV	Outstanding Universal Value
PAD	Petroleum Affairs Division
PAH	Polycyclic Aromatic Hydrocarbon
PAHs	Polycyclic Aromatic Hydrocarbons
PAM	Passive Acoustic Monitoring
PAR	Precision Approach Radar
PCH	Potential Collision Height
PEIR	Preliminary Environmental Information Report
PEXA	Practice and Exercise Areas
pNHA	Proposed Natural Heritage Area
PSA	Particle Size Analysis
PSR	Primary Surveillance Radar
PTS	Permanent Threshold Shift
PVA	Population Viability Analysis
PW	Phocid pinnipeds in water
QI	Qualifying Interest
QIs	Qualifying Interests
RMP	Record of Monuments and Places
RMS	Root Mean Square
RNLI	Royal National Lifeboat Institution
ROI	Republic of Ireland
Ro-Ro	Roll on – Roll off
ROV	Remotely Operated Vehicle
RSIS	Ramsar Sites Information Service
RSPB	Royal Society of the Protection of Birds
RYA	Royal Yachting Association
S.I.	Statutory Instrument

ORIEL WIND FARM PROJECT - GLOSSARY OF TERMS, ACRONYMS AND UNITS

Term	Meaning
SAC	Special Area of Conservation
SAM	Static Acoustic Monitoring
SAR	Search and Rescue
SBP	Sub-bottom Profiler
SCANS	Small Cetaceans in European Atlantic waters and the North Sea
SCI	Special Conservation Interests (applies to SPAs)
SCOS	Special Committee on Seals
sCRM	Stochastic Collision Risk Modelling
SD	Standard Deviation
SEA	Strategic Environmental Assessment
SEAI	Sustainable Energy Authority of Ireland
SEL	Sound Exposure Level
SFPA	Sea-Fisheries Protection Authority
SI	Serious Injury
SI	Site Investigation
SID	Strategic Infrastructure Development
SIMPER	Similarity Percentage Analysis
SMP	Seabird Monitoring Programme
SMR	Sites and Monuments Record
SMRU	Sea Mammal Research Unit
SMRZ	Sites and Monuments Record Zone of Notification
SNCB	Statutory Nature Conservation Bodies
SNH	Scottish Natural Heritage
SOLAS	Safety of Life at Sea
SOPEP	Shipboard Oil Pollution Emergency Plan
SPA	Special Protection Area
SPL	Sound Pressure Level
SPLs	Sound Pressure Levels
SPM	Suspended Particulate Matter
SRR	Search and Rescue Region
SSC	Suspended Sediment Concentration
SSR	Secondary Surveillance Radar
SSS	Side Scan Sonar
SSSI	Site of Special Scientific Interest
SST	Sea Surface Temperatures
TAC	Total Allowable Catches
TTS	Temporary Threshold Shift
TV	Television
UCC	University College Cork

ORIEL WIND FARM PROJECT - GLOSSARY OF TERMS, ACRONYMS AND UNITS

Term	Meaning
UHF	Ultra High Frequency
UHRS	Ultra-High Resolution Seismic
UK	United Kingdom
UKC	Under Keel Clearance
UKFEN	UK Fisheries Economist Network
UKHO	UK Hydrographic Office
UKLFS	UK Low Flying System
UKMMASS	UK Marine Monitoring and Assessment Strategy
UNCLOS	United Nations Convention on the Law of the Sea
US	United States
UXO	Unexploded Ordnance
VFR	Visual Flight Rules
VHF	Very High Frequency
VMS	Vessel Monitoring System
VP	Vantage Point
WDC	Whale and Dolphin Conservation
WFD	Water Framework Directive
WIID	Wreck Inventory of Ireland Database
WSDOT	Washington State Department Of Transport
WTG	Wind Turbine Generator
Zol	Zone of Influence

UNITS

Term	Meaning
£	British Pound
€	Euro
°	Degrees
°C	Degrees Celsius
μ	micro
μPa	Micropascal
μPa ² s	Square micropascals per second
μT	Micro tesla
μV/m	Microvolts per metre
cm	Centimetre
dB	Decibel (unit used to measure the intensity of sound)
dB re 1 μPa @ 1 m	Acoustic pressure in micropascals at 1 metre from the source
dB re 1 μPa ² .s @ 1 m	Acoustic pressure in square micropascals per second at 1 metre from the source
dB(A)	Noise measurements made with A-weighted scale; follows the frequency sensitivity of the human ear at low levels
dwt	Dead weight tonnes
ft	Feet
GHz	Gigahertz
GW	Gigawatt (power; equal to one thousand megawatts)
ha	Hectare (area)
Hz	Hertz
kg	kilograms
kHz	Kilohertz
kJ	Kilojoules
km	Kilometre
km ²	Square kilometre
kph	Kilometres per hour (speed)
kt	Knot
kV	Kilovolt (electrical potential)
kW	Kilowatt (power)
m	Metre
m/s	Metres per second (speed)
m ²	Square metre
m ³	Cubic metre
mG	Milligauss
mg/l	Milligrams per litre (suspended sediment concentration)
MHz	Megahertz
MLA	Members of the Legislative Assembly
mm	millimetres
mm/s	Millimetres per second (speed)
ms ⁻¹	Metres per second
mV/m	Millivolts per metre
MW	Megawatt (power; equal to one million watts)
nm	Nautical mile
Pa	Pascal
T	Tonnes
TD	Teachta Dála
V/m	Volts per metre

ORIEL WIND FARM PROJECT - GLOSSARY OF TERMS, ACRONYMS AND UNITS

Term	Meaning
μPa	Micropascal
$\mu\text{Pa}^2\text{s}$	Pascal squared second
μT	Micro tesla
$\mu\text{V}/\text{cm}$	Microvolts per centimetre
$\mu\text{V}/\text{m}$	Microvolts per metre
