



Hornsea Project Four

G1.45 Overarching Glossary List (Tracked)

Deadline: 07, Date: 10 August 2022

Document Reference: G1.45

Revision: 03

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Revision Summary

<i>Rev</i>	<i>Date</i>	<i>Prepared by</i>	<i>Checked by</i>	<i>Approved by</i>
01	08/03/2022	Faye McGinn, Orsted	Kaitlin Eames, Orsted	Hannah Towner-Roethe, Orsted
02	21/03/2022	Kaitlin Eames, Orsted	Faye McGinn, Orsted	Hannah Towner-Roethe, Orsted
03	10/08/2022	Kaitlin Eames, Orsted	Faye McGinn, Orsted	Hannah Towner-Roethe, Orsted

Revision Change Log

<i>Rev</i>	<i>Page</i>	<i>Section</i>	<i>Description</i>
1	-	-	Submitted at Deadline 1
02			Updated for Deadline 3
03	Throughout	Throughout	Updated from Deadline 7

Glossary

Term	Definition
Agreement for Lease (AfL)	An agreement for lease (AfL) is a non-binding agreement between a landlord and prospective tenant to grant and/or to accept a lease in the future. The AfL only gives the option to investigate a site for potential development. There is no obligation on the developer to execute a lease if they do not wish to.
Allision	The act of striking or collision of a moving vessel against a stationary object.
Amphidrome	A nodal point with minimal tidal range.
Annex I Habitat	Natural Habitat types of community interest whose conservation requires the designation of Special Area of Conservation.
Annex II Species	Animal and plant species of community interest whose conservation requires the designation of Special Areas of Conservation.
Appropriate Assessment (AA)	An assessment to determine the implications of a plan or project on a European site in view of the site's Conservation Objectives. An AA forms part of the Habitats Regulations Assessment and is required when a plan or project is likely to have a significant effect on a European site.
Archaeological Exclusion Zone	Areas where archaeological receptors are present and should be avoided during project works.
Area(s) of Search	Areas of search relating to mineral extraction areas where knowledge of mineral resources may be less certain but within an area where planning permission for extraction may be granted.
Array cables (inter-array cables)	Cables which connect the wind turbines to each other and to the offshore substation(s).
Attenuation feature(s)	Attenuation feature: area within which SuDS measures are to be adopted to facilitate attenuation and/or storage of surface water drainage. Measures can be, but are not limited to, the use of filter drains, swales, attenuation and flow control structures.
Auto-correlation	Data containing systemic variation; for example, spatial variation and is seen by sites close to each other having more similar values.
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 metres (m) length are required to carry AIS.
Bankfull	The water level, or stage, at which a stream, river or lake is at the top of its banks and any further rise would result in water moving into the flood plain.
Barrier Effect	The potential for birds to fly around an array of turbines causing an increase in the overall distance flown than would otherwise have been the case if the wind turbines had not been present.

Base Case	The assessment of risk based on current shipping densities and traffic types as well as the marine environment.
Beam trawlers	A method of bottom trawling with a net that is held open by a beam, which is generally 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.
Benthic ecology	Benthic ecology encompasses the study of the organisms living in and on the sea floor, the interactions between them and impacts on the surrounding environment.
Biodiversity Net Gain	An approach to development that leaves biodiversity in a better state than before. Where a development has an impact on biodiversity, developers are encouraged to provide an increase in appropriate natural habitat and ecological features over and above that being affected to ensure that the current loss of biodiversity through development will be halted and ecological networks can be restored.
Bio-season	Bird behaviour and abundance is recognised to differ across a calendar year, with particular months recognised as being part of different seasons. The biologically defined minimum population scales (BDMPS) bio-seasons used in this report are based on those in Furness (2015), hereafter referred to as bio-seasons. Separate bio-seasons are recognised in this technical report in order to establish the level of importance any seabird species has within the study area during any particular period of time.
Biotope	A region of habitat associated with a particular ecological community.
Birds Directive	Directive 2009/147/EC of the European Parliament and of the Council of 30th November 2009 on the Conservation of Wild Birds.
Black-legged kittiwake biogeographic population	The east Atlantic breeding population of kittiwake which includes individuals from the Flamborough and Filey Coast SPA (Stroud et al., 2016). Proposed compensation measures will be undertaken within this populations breeding and migratory range.
Bootstrapping	Tests that use random sampling with replacement to assign measures of accuracy to sample estimates.
BRAG Assessment	<p>An assessment based on quantitative assessment and expert judgement. The ranking is defined as:</p> <ul style="list-style-type: none"> • Black: Potential showstopper to development; • Red: High potential to constrain development; • Amber: Intermediate potential to constrain development; and • Green: Low potential to constrain development. <p>Black and red constraints are critical in determining features that should be avoided wherever possible to avoid consenting risk, reduce EIA complexity and reduce the cost of mitigation. Amber and green constraints are those that may be more readily minimised or managed by employing appropriate mitigation measures.</p>

Bridge Link	A bridge link can be used for interconnection between any combination of permanent offshore installation assets (e.g. Offshore Substation (OSS) and accommodation platform). It is a steel truss structure installed 20-25m above sea level, with provision for overhead clearance for personnel, lighting fixtures and ancillary cabling.
Carbon Dioxide Equivalent (CO ₂ e)	Carbon dioxide equivalent is a term for describing different greenhouse gases in a common unit. The unit takes the different global warming potentials of greenhouses gases into account. CO ₂ e is signifies the amount of CO ₂ which would have the equivalent global warming impact.
Clutter	Clutter is the term used for unwanted echoes in electronic systems, particularly in reference to radars. Such echoes are typically returned from ground, sea, rain, animals/insects, chaff and atmospheric turbulences, and can cause serious performance issues with radar systems.
Code of Construction Practice (CoCP)	A document detailing the overarching principles of construction, contractor protocols, construction-related environmental management measures, pollution prevention measures, the selection of appropriate construction techniques and monitoring processes
Collision	The act or process of colliding (crashing) between two moving objects.
Collision Risk	A potential risk that birds collide with wind turbine or its blades.
Collision Risk Model (CRM)	General term to describe the method of estimating the collision risk of seabirds (estimated mortality) to operational turbines, which could be either deterministic or stochastic.
Commitment	<p>A term used interchangeably with mitigation and enhancement measures. Commitments are Embedded Mitigation Measures. The purpose of Commitments is to reduce and/or eliminate Likely Significant Effects (LSEs), in EIA terms.</p> <p>Primary (Design) or Tertiary (Inherent) are both embedded within the assessment at the relevant point in the EIA (e.g. at Scoping, Preliminary Environmental Information Report (PEIR) or ES).</p> <p>Secondary commitments are incorporated to reduce LSE to environmentally acceptable levels following initial assessment i.e. so that residual effects are acceptable.</p>
Common guillemot biogeographic population	The north east Atlantic breeding population of guillemot which includes the <i>Uria aalge albionis</i> and <i>Uria aalge aalge</i> subspecies and includes individuals from the Flamborough and Filey Coast SPA (Stroud et al., 2016). Proposed compensation measures will be undertaken within this populations breeding and migratory range.
Compensation / Compensatory Measures	If an Adverse Effect on the Integrity on a designated site is determined during the Secretary of State's Appropriate Assessment, compensatory measures for the impacted site (and relevant features) will be required. The term compensatory measures is not defined in the Habitats Regulations. Compensatory measures are however,

	considered to comprise those measures which are independent of the project, including any associated mitigation measures, and are intended to offset the negative effects of the plan or project so that the overall ecological coherence of the national site network is maintained.
Compensation Commitment Register	An Excel spreadsheet which identifies all of the commitments identified for consideration when assessing/ implementing the proposed compensation measures. The compensation commitments relate to both onshore and offshore, and includes the construction, operation and decommissioning phases of development for the proposed Compensation Measures. Document reference: Volume A4, Annex 6.4: Compensation Commitments Register .
Compensation Impacts Register	An Excel spreadsheet which identifies all of the potential effects that the project team have identified that could possibly result from the construction, operation and decommissioning of the considered compensation measures for Hornsea Four, relating to each technical topic under consideration in the EIA process. Document reference: Volume A4, Annex 6.3 Compensation Impacts Register .
Confidence intervals	Range of values that with a specified certainty contains the true mean of the population that a sample was taken from. For example, 95% confidence intervals states a range of values with a 95% certainty those values contain the population mean.
Contracts for Difference (CfD)	The Contracts for Difference (CfD) scheme is the government's main mechanism for supporting low-carbon electricity generation. CfDs incentivise investment in renewable energy by providing developers of projects with high upfront costs and long lifetimes with direct protection from volatile wholesale prices, and they protect consumers from paying increased support costs when electricity prices are high.
Cooperative Maritime Etaploise (C.M.E.) Producer Organisation	A French producer organization representing 45% of French landings, representing 44 active vessels including their owners, skippers, crew and ancillary services.
Cradle-to-factory or cradle to (factory) gate	A term which includes the extraction, manufacture and production of materials to the point at which they leave the factory gate of the final processing location
Crustacea	Arthropod of the large, mainly aquatic group Crustacea, such as a crab, lobster, shrimp, or barnacle
Cumulative effects	The combined effect of Hornsea Four in combination with the effects from a number of different projects, on the same single receptor/resource. Cumulative impacts are those that result from changes caused by other past, present or reasonably foreseeable actions together with Hornsea Project Four.
Cumulative Effect	Impacts that result from changes caused by other past, present or reasonably foreseeable actions together with Hornsea Four.

Danish Fishermen's Producer Organisation	A Danish producer organisation representing 95% of Danish vessels, equating to approximately 650 vessels including their owners, skippers, crew and ancillary services.
Demersal	Relating to the seabed and area close to it. Demersal spawning species are those which deposit eggs onto the seabed.
Demersal trawl	A fishing net used by towing the trawl along or close to the seabed.
Design Envelope	A description of the range of possible elements that make up the Hornsea Project Four design options under consideration, as set out in detail in the project description. This envelope is used to define Hornsea Project Four for Environmental Impact Assessment (EIA) purposes when the exact engineering parameters are not yet known. This is also often referred to as the "Rochdale Envelope" approach.
Design Vision	The Design Vision Statement for Hornsea Four captures project commitments, enhancement, mitigation, net gain and approaches that aim to influence the future development of all on-shore infrastructure.
Developable Area Approach (DAA)	Hornsea Four internal process for consideration of Physical, Biological and Human constraints in refining the Agreement for Lease (AfL) area. The consideration balances consenting and commercial considerations with technical feasibility for construction. The output of the DAA gives due consideration to the size and location of the Final Project that will be taken forward to consent application.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Projects (NSIP).
Displacement	The potential for birds and other animals to avoid an area due to the presence of the wind turbines or from vessel activity.
Doppler signature	Doppler signature is the parameter used by Doppler enabled radars to produce velocity data about objects at a distance. It does this by bouncing a microwave signal off a desired target and analysing how the object's motion has altered the frequency of the returned signal. This variation gives direct and highly accurate measurements of the radial component of a target's velocity relative to the radar.
Drill arisings	All material (solids and liquids) produced from the activity of drilling into the seabed.
Drill cuttings	Larger sized clasts produced from drilling that are likely to settle to the seabed (part of the drill arisings).
Drop Down Video (DDV)	A survey method in which imagery of habitat is collected, used predominantly to survey marine environments
Effect	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of the impact with the importance, or sensitivity, of the receptor or resource in accordance with defined significance criteria.
EIA Directive	European Union Directive 85/337/EEC, as amended by Directives 97/11/EC, 2003/35/EC and 2009/31/EC and then codified by

	Directive 2011/92/EU of 13 December 2011 (as amended in 2014 by Directive 2014/52/EU).
EIA Regulations	The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.
Elasmobranchs	Cartilaginous fishes such as sharks, rays, and skates.
Electrical Infrastructure Study Area (EISA)	The study area between the onshore substation and offshore array area
Energy balancing infrastructure (EBI)	The onshore substation includes energy balancing Infrastructure. These provide valuable services to the electrical grid, such as storing energy to meet periods of peak demand and improving overall reliability.
Environmental Impact Assessment (EIA)	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 and EIA Regulations, including the publication of an Environmental Statement (ES).
Environmental Statement (ES)	A document reporting the findings of the EIA and produced in accordance with the EIA Directive as transposed into UK law by the EIA Regulations.
EUNIS habitat classification	A pan-European system which facilitates the harmonised description and classification of all types of habitat, through the use of criteria for habitat identification.
European Market Observatory for Fisheries and Aquaculture Products	An online database that enables direct monitoring of the weight, value and price of fishery and aquaculture products, from the first sale to retail stage, for EU countries, Norway and Iceland.
European site	A Special Area of Conservation (SAC) or candidate SAC (cSAC), a Special Protection Area (SPA) or potential SPA (pSPA), a site listed as a Site of Community Importance (SCI) or a Ramsar site.
European Union Data Collection Framework	An EU framework for the collection and management of fisheries data.
Export Cable Corridor (ECC)	The specific corridor of seabed (seaward of Mean High Water Springs (MHWS)) and land (landward of MHWS) from the Hornsea Project Four array area to the Creyke Beck National Grid substation, within which the export cables will be located.
Export cable corridor (ECC) search area	The broad offshore corridor of seabed (seaward of the MHWS) and land (landward of MHWS) from the Hornsea Project Four array area to the Creyke Beck National Grid substation considered within the Scoping Report, within which the refined ECR corridor will be located.
Export cables	Cables that transfer power from the offshore substation(s) or the converter station(s) to shore.
Far-field	An area remote from the near-field which is connected by a pathway.
First sales value	The value obtained for fish or shellfish when it is sold for the first time.

Fish larvae	The developmental stage of fish which have hatched from the egg and receive nutrients from the yolk sac until the yolk is completely absorbed.
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.
Fishing mortality	Mortality due to fishing; death or removal of fish from a population due to fishing.
Fleet	A physical group of vessels sharing similar characteristics (e.g. nationality).
Fly shooting	A fishing net consisting of a conical net with two long wings with a bag where the fish collect. Drag lines extend from the wings, and are long so they can surround an area. A seine boat drags the net in a circle around the fish, the motion of the drag lines herds the fish into the central net.
Formal Safety Assessment (FSA)	A structured and systematic process for assessing the risks and costs (if applicable) associated with shipping activity.
From Nord	A French non-cooperative producer organization, legally in the form of an association, representing 40% of all French quotas (on average across all species) and specifically 61% of sole (<i>Solea solea</i>) quota.
Full-Time Equivalent Jobs (FTE Jobs)	The total number of jobs after converting jobs with less than full-time hours and jobs with more than full-time hours into full-time hour jobs. Full-time hours are assumed to be 37.5 hours per week (e.g. a job with 18.75 hours per week would be 0.5 Full-Time Equivalent jobs).
Future Case	The assessment of risk based on the predicted growth in future shipping densities and traffic types as well as foreseeable changes in the marine environment.
Gear type	The method/equipment used for fishing.
"Generalised Additive Model" framework	Statistical models to predict relationships between individual predictors and dependent variable following smooth patterns that can be linear or nonlinear.
Geophysical	Relating to the physics of the earth
Global Maritime Distress and Safety System (GMDSS) Sea Area	GMDSS sea areas serve two purposes: to describe areas where GMDSS services are available, and to define what radio equipment GMDSS ships must carry (carriage requirements).
Global Warming Potential (GWP)	Global Warming Potential of a greenhouse gas (GHG) is a measure of how much heat is trapped by a certain amount of gas in the atmosphere relative to carbon dioxide.
Greenhouse gas (GHG)	A greenhouse gas is a gas that traps heat in the atmosphere and causes the greenhouse effect.
Grid Connection	Where the Hornsea Four connects to the existing Creyke Beck 400kV substation

Gross Value Added (GVA)	The measure of the value of goods and services produced in an area, industry or sector of an economy. At the level of a firm, it is broadly equivalent to employment costs plus a measure of profit.
Habitats Directive	European Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora
Habitats of principal importance	Habitats of principal importance (Section 41 of the 2006 Natural Environmental and Rural Communities (NERC) Act)
Habitats Regulations	The Conservation of Habitats and Species Regulations 2017 and the Conservation of Offshore Marine Habitats and Species Regulations 2017
Habitats Regulations Assessment (HRA)	A process which helps determine likely significant effects and (where appropriate) assesses adverse impacts on the integrity of European conservation sites and Ramsar sites. The process consists of up to four stages of assessment: screening, appropriate assessment, assessment of alternative solutions and assessment of imperative reasons of overriding public interest (IROPI).
Haul Road	The track along the onshore ECC which the construction traffic would use to access work fronts.
Helicopter Main Route (HMR)	HMRs are routes typically and routinely flown by helicopters operating to and from offshore destinations and are promulgated for the purpose of signposting concentrations of helicopter traffic to other airspace users. HMR promulgation does not predicate the flow of helicopter traffic. Whilst HMRs have no airspace status and assume the background airspace classification within which they lie (in the case of the southern North Sea, Class G), they are used by the air navigation service provider and helicopter operators for flight planning and management purposes.
High Voltage Alternating Current (HVAC)	High voltage alternating current is the bulk transmission of electricity by alternating current (AC), whereby the flow of electric charge periodically reverses direction.
High Voltage Direct Current (HVDC)	High voltage direct current is the bulk transmission of electricity by direct current (DC), whereby the flow of electric charge is in one direction.
Hornsea Project Four Offshore Wind Farm	The term covers all elements of the project (i.e. both the offshore and onshore). Hornsea Four infrastructure will include offshore generating stations (wind turbines), electrical export cables to landfall, and connection to the electricity transmission network. Hereafter referred to as Hornsea Four.
Hornsea Zone	The former Hornsea Zone was one of nine offshore wind generation zones around the UK coast identified by TCE during its third round of offshore wind licensing. In March 2016, the Hornsea Zone Development Agreement was terminated and project specific agreements, AfLs, were agreed with TCE for Hornsea Project One, Hornsea Project Two, Hornsea Three and Hornsea Four. The Hornsea Zone has therefore been dissolved and is referred to throughout the ES as the former Hornsea Zone.

HRA Derogation Provisions	Provisions set out under Regulations 64 and 68 of the Conservation of Habitats and Species Regulations 2017 and Regulations 29 and 36 of the Conservation of Offshore Marine Habitats and Species Regulations 2017 that permit a plan or project with AEOI on a European site(s) to be consented provided the tests derived from Article 6(4) are met i.e. there are no alternative solutions, there are imperative reasons of overriding public interest and that necessary compensation measures are secured.
HVAC booster station(s)	Offshore HVAC booster station(s) are required in HVAC transmission systems only; they are not required in HVDC transmission systems. If required for Hornsea Four, they would be located entirely offshore.
ICES statistical rectangles	Defined areas, 1 degree longitude x 0.5 degree latitude equalling approximately 30 x 30 NM used for fisheries statistics.
Impact	Change that is caused by an action; for example, land clearing (action) during construction which results in habitat loss (impact).
Impacts Register	An Excel spreadsheet which identifies all of the potential effects that the project team have identified that could possibly result from the construction, operation and decommissioning of Hornsea Four, relating to each technical topic under consideration in the EIA process
In-Combination Effect	The combined action of different environmental topic-specific impacts on the same resource/receptor.
Indirect Employment and Gross Value Added	Employment and Gross Value Added which is associated with the suppliers of companies that supply goods and services as part of the supply chain of Hornsea Four.
Industrial fishery	Highly mechanised commercial fishing operations whose ultimate products are principally fishmeal and fish oil.
Inshore	Between the nearshore and offshore. Generally, an area with more shelter than the offshore and where some coastal influences can still be expected.
Instrument Meteorological Conditions (IMC)	Weather conditions which would preclude flight by the Visual Flight Rules, i.e. conditions where the aircraft is in or close to cloud or flying in visibility less than a specified minimum.
Inter Related Effect (or Inter-Relationships)	The likely effects of multiple impacts from the proposed development on one receptor. For example, noise and air quality together could have a greater effect on a residential receptor than each impact considered separately.
Interconnector cables	Cables that may be required to interconnect the offshore substations in order to provide redundancy in the case of cable failure elsewhere, or to connect to the offshore accommodation platforms in order to provide power for operation
International Maritime Organization (IMO) Routeing	Predetermined shipping routes established by the IMO.
Intertidal	The area of the shoreline which is covered at high tide and uncovered at low tide.
Isobath	A seabed depth contour commonly referenced to chart datum.

Key Heritage Asset	These are heritage assets identified through the baseline data collation which are considered sensitive to an impact arising from the construction, operation and maintenance or decommissioning of Hornsea Four.
Kyoto Protocol	The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change, which commits its parties to reducing greenhouse gas emissions by setting internationally binding emission reduction targets, implemented primarily through national measures but also via wider market-based mechanisms.
Landfall	The generic term applied to the entire landfall area between Mean Low Water Spring (MLWS) tide and the Transition Joint Bay (TJB) inclusive of all construction works, including the offshore and onshore ECC, intertidal working area and landfall compound. Where the offshore cables come ashore east of Fraisthorpe.
Landfall compound	Compound at landfall within which HDD or other trenchless techniques would take place
Landings	Quantitative description of amount of fish returned to port for sale, in terms of value or weight.
Landscape character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.
Landscape effects	Effects on the landscape as a resource in its own right.
Layout Principles	A set of rules relating to the final array layout designed to ensure that post consent the array layout chosen for Hornsea Four satisfactorily meets both navigational and Search and Rescue (SAR) requirements (see Volume A4, Annex 4.7: Layout Principles).
Light Vehicles	The term 'Light Vehicles' is used to describe a range of vehicles (such as cars, vans, pickups, minibuses, etc.) that do not constitute a HGV (i.e. all vehicles with a gross weight less than 3.5 tonnes). These vehicles would be predominantly associated with the movement of employees and incidental deliveries for Hornsea Four.
Link boxes	The underground metal box placed within a plastic or concrete pit where the metal sheaths between adjacent export cable sections are connected and earthed installed within a ground level manhole or inspection chamber to allow access to the link box for regular maintenance or fault-finding purposes.
Local Authority	The Local Authority is a body empowered by law to exercise various statutory functions for a particular area of the United Kingdom. This includes County Councils, District Councils and the Broads Authority, as set out in Section 43 of the Planning Act 2008. East Riding of Yorkshire Council (ERYC) is the Local Authority for the entirety of the onshore project footprint.
Local Enterprise Partnership (LEP)	Voluntary partnerships between local authorities and businesses set up in 2011 by the Department for Business, Innovation and Skills to

	help determine local economic priorities and lead economic growth and job creation within the local area.
Locally listed building	These are buildings which are considered of local heritage significance, but do not meet the criteria for being nationally listed. They are taken account of during any planning process.
Location Quotient (LQ)	The proportion of employment in a sector/industry in the local economic development study area divided by that of the UK.
Longshore drift	Movement of (beach) sediments approximately parallel to the coastline, a process driven by the oblique approach of waves.
Long-term	Of several years or decades, accounting for year to year variations.
Made Ground	Land where natural and undisturbed soils have largely been replaced by man-made or artificial materials
Main Rivers	Main Rivers are usually large rivers or streams that are designated under the Water Resources Act (1991) and are shown on the statutory Main River Map. They are managed by the Environment Agency, who carry out construction, maintenance and improvement works to manage flood risk.
Main Route	Defined transit route (mean position) of commercial vessels identified within the specified shipping and navigation study area.
Maintain	Includes inspect, upkeep, repair, adjust, and alter and further includes remove, reconstruct and replace, to the extent assessed in the environmental statement; and "maintenance" must be construed accordingly.
Marine Guidance Note (MGN)	A system of guidance notes issued by the Maritime and Coastguard Agency (MCA) which provide significant advice relating to the improvement of the safety of shipping and of life at sea, and to prevent or minimise pollution from shipping.
Marine Heritage Receptors	Physical resources such as shipwrecks, aviation remains, archaeological sites, archaeological finds and material including pre-historic deposits as well as archival documents and oral accounts recognised as of historical/ archaeological or cultural significance.
Marine Mammal Mitigation Protocol	A document detailing the protocol to be implemented in the event that driven or part-driven pile foundations are proposed to be used. The protocol identifies the methods for detection, potential mitigation and monitoring/reporting protocols for marine mammals.
Marine Management Organisation	A UK government department that license regulate and plan commercial fisheries activities in the seas around England, with jurisdiction from 0 to 12 NM.
Marine Renewables Strategic environmental assessment (MRSea)	Statistical package to model spatial count data and predict spatial densities / abundances; developed by the Centre for Research into Ecological and Environmental Modelling (CREEM) specifically for dealing with data collected for offshore wind farm projects.
Maximum Design Scenario (MDS)	The maximum design parameters of each Hornsea Four asset (both on and offshore) considered to be a worst case for any given assessment.
Mean High Water Springs (MHWS)	The height of mean high water during spring tides in a year.

Mean Low Water Springs (MLWS)	The height of mean low water during spring tides in a year.
Mean Max Foraging Range	The mean max foraging range is calculated as the maximum reported range that a species for each colony is known to have foraged, averaged across all colonies from the literature review undertaken by Woodward et al. (2019).
Megafauna	Large animals of a particular region, habitat or geological period.
Megaripples	Bedform features commonly formed of sands with crest to crest wavelengths between 0.5 to 25 m.
Mineral Safeguarding Area	Mineral Safeguarding Areas are areas that contain known mineral resources that warrant protection due to their economic value. Mineral safeguarding is a process to prevent non-mineral development unnecessarily sterilising mineral resources deemed as being of local and national importance.
Mini-hamon grab	Comprises of a stainless-steel box shaped sampling scoop mounted in a triangular frame, ideal for sampling seabed sediments, as well as sampling for benthic macrofauna.
Mitigation	A term used interchangeably with Commitment(s) by the Applicant. Mitigation measures (Commitments) are embedded within the assessment at the relevant point in the EIA (e.g. at Scoping, PEIR or ES).
Mixed layer depth	Depth of surface mixed layer above density stratification formed by thermocline or halocline, if present.
Model Clauses	Guidance issued by The Crown Estate; Model Clauses for Archaeological Written Schemes of Investigation: Offshore Renewables Projects.
Mollusca	Phylum of invertebrates which have a soft unsegmented body, commonly protected by a calcareous shell.
National Federation of Fishermen's Organisations	A UK organisation comprised of members from Producers' Organisations, fishermen's groups and individuals, representing fishermen in England, Wales, Northern Ireland and the Channel Islands.
National Grid Electricity Transmission (NGET) substation	The grid connection location for Hornsea Four at Creyke Beck.
National Policy Statement (NPS)	A document setting out national policy against which proposals for NSIPs will be assessed and decided upon.
National Site Network	The network of sites in the United Kingdom's territory consisting of such sites that formed part of Natura 2000 and are European sites or European offshore marine sites for the purposes of the Conservation of Habitats and Species Regulations 2017 and/or the Conservation of Offshore Marine Habitats and Species Regulations 2017.
Nationally Significant Infrastructure Project (NSIP)	Large scale development including power generating stations which requires development consent under the Planning Act 2008. An offshore wind farm project with a capacity of more than 100 MW constitutes an NSIP.

Nature Directives	The EU Habitats Directive (European Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora) and EU Wild Birds Directive (79/409/EEC amended in 2009 to become Directive 2009/147/EC)
Near-field	The area immediately associated with a source of change, such as around the base of a wind turbine foundation.
Nearshore	Generally, a shallow water area closer to the coast than the inshore.
Net zero by 2050 commitment	The UK governments legally binding target of achieving net zero greenhouse gas emissions by 2050 as set out in the Climate Change Act 2008 (2050 Target Amendment) Order 2019
Non-statutory consultee	Organisations that the Local Planning Authorities and/or PINS may choose to engage (if, for example, there are planning policy reasons to do so) who are not designated in law but are likely to have an interest in a proposed development.
North Eastern Inshore Fisheries and Conservation Authority	A UK authority that license, regulate and plan commercial fisheries activities in the seas around England, with jurisdiction from 0 to 6 NM.
Northern gannet biogeographic population	The east Atlantic breeding population of gannet which includes individuals from the Flamborough and Filey Coast SPA (Stroud et al., 2016). Proposed compensation measures will be undertaken within this populations breeding and migratory range.
Norwegian Directorate of Fisheries	A Norwegian government agency responsible for Norwegian fisheries.
Not Under Command (NUC)	Under Part A of the International Regulations for Preventing Collisions at Sea (COLREGS), the term “vessel not under command” means a vessel which through some exceptional circumstance is unable to manoeuvre as required by these Rules and is therefore unable to keep out of the way of another vessel.
Nursery habitat	Habitats where high numbers of juveniles of a species occur, having a greater level of productivity per unit area than other juvenile habitats.
Offshore accommodation platform(s)	Used to accommodate multiple O&M staff for a number of weeks at a time and to allow spares and tools to be stored within the array area.
Offshore Ornithology Engagement Group (OOEG)	The Hornsea Four Offshore Ornithology Engagement Group means the group that will assist, through consultation the undertaker in relation to the delivery of each compensation measures as identified in the gannet and kittiwake compensation plan and the gannet razorbill and guillemot compensation plan. Matters to be consulted upon to be determined by the Applicant and will include site selection, project/study design, methodology for implementing the measure, monitoring, and adaptive management options as set out in the gannet and kittiwake compensation plan and the gannet razorbill and guillemot compensation plan.
Offshore Renewable Energy Infrastructure (OREI)	As defined by Marine Guidance Note 654 (Merchant and Fishing) Safety of Navigation: Offshore Renewable Energy Installations (OREIs) – Guidance on UK Navigational Practice, Safety and Emergency Response (MCA 2021). For the purpose of this report and

	in keeping with the consistency of the EIA, OREI can mean offshore Wind Turbine Generators (WTG) and the associated electrical infrastructure such as offshore transformer substations, offshore High Voltage Direct Current (HVDC) converter substations, accommodation platforms and High Voltage Alternating Current (HVAC) booster stations.
Offshore substation(s)	One or more offshore substations to convert the power to higher voltages and/or to HVDC and transmit this power to shore.
Onshore substation (OnSS)	Comprises a compound containing the electrical components for transforming the power supplied from Hornsea Project Four to 400 kV and to adjust the power quality and power factor, as required to meet the UK Grid Code for supply to the National Grid. If a HVDC system is used the OnSS will also house equipment to convert the power from HVDC to HVAC.
Orbis Energy Limited	Energy consultant that engaged in pre-application consultation with oil and gas stakeholders for the Applicant.
Order Limits	The onshore limits within which Hornsea Project Four (the 'authorised project') may be carried out.
Ordinary watercourses	Ordinary watercourses are watercourses that are not designated as Main Rivers under the Water Resources Act (1991). Responsibility for their maintenance with regards to flood risk lies with the Lead Local Flood Authority, or an Internal Drainage Board for some watercourses within an Internal Drainage District.
Orsted Hornsea Project Four Ltd.	The Applicant for the proposed Hornsea Project Four Offshore Wind Farm Development Consent Order (DCO)
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 of 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.
Outline Marine Written Scheme of Investigation (WSI)	Project specific document forming the agreement between the Applicant, the appointed archaeologists, contractors and the relevant stakeholders seaward of Mean High Water Springs (MHWS). The document sets out the methods to mitigate the effects on all the known and potential archaeological receptors within the Hornsea Four offshore Order Limits.
Outline Onshore Written Scheme of Investigation (WSI)	Project specific document forming the agreement between the Applicant, the appointed archaeologists, contractors and the relevant stakeholders landward of MHWS. The document sets out the methods to mitigate the effects on all the known and potential archaeological receptors within the Hornsea Four onshore Order Limits.
Pelagic	Any part of the water column (i.e. the sea from surface to bottom sediments) that is not close to the seabed. Pelagic spawning species release their eggs into the upper layers of the sea.

Pelagic trawl	A net used to target fish species in the mid water column.
Permanent Threshold Shift (PTS)	A total or partial permanent loss of hearing at a particular frequency caused by some kind of acoustic trauma. PTS results in irreversible damage to the sensory hair cells of the ear, and thus a permanent reduction of hearing acuity at that frequency.
Person Years of Employment	The annual average number of employees multiplied by the number of years in the period. (e.g. 10 employees working for a build period of 2 years would equate to 20 person years of employment)
Planning Inspectorate (PINS)	The agency responsible for operating the planning process for Nationally Significant Infrastructure Projects (NSIPs).
Pollutant Objectives	The target date on which the pollutant Standards must be achieved.
Pollutant Standards	Concentrations of pollutants recorded over given time periods which are considered to be acceptable in relation to the effects of that pollutant on human health and the environment.
Preferred Search Area	Preferred areas contain known mineral resources where planning permission for mineral extraction may reasonably be anticipated.
Preliminary Environmental Information Report	Defined in the EIA regulations as information referred to in part 1, Schedule 4 information for inclusion in environmental statements which has been compiled by the applicant and is reasonably required to assess the environmental effects of the development.
Project Description	A summary of the engineering design elements of Hornsea Four.
P-value	A p-value is a measure of the probability that an observed difference could have occurred just by random chance.
Radar Cross Section (RCS)	RCS is the measure of a target's ability to reflect radar signals in the direction of the radar receiver. An object reflects a limited amount of radar energy back to the source. A larger RCS indicates that an object is more easily detected.
Radar returns	The electromagnetic signal that has been reflected back to the radar antenna. Such reflections contain information about the location and distance of the reflecting object.
Radar Shadow	Radar shadow is the region whereby the radar beam is unable to fully illuminate a region due to blockage from terrain or structures within the area of coverage. Radar shadowing causes objects within the shadow region to produce reduced radar returns which can affect the radar's ability to detect such objects.
Radio Detection and Ranging (Radar)	An object-detection system which uses radio waves to determine the range, altitude, direction or speed of objects.
Ramsar Site	Wetlands of international importance, designated under the Ramsar Convention.
Razorbill biogeographic population	The breeding population of razorbill which includes <i>Alca torda islandica</i> and includes individuals from the Flamborough and Filey Coast SPA (Stroud <i>et al.</i> , 2016). Proposed compensation measures will be undertaken within this populations breeding and migratory range.

Reach	A section of a watercourse, typically defined according to its predominant flow or geomorphological characteristics.
Receptor	A distinct part of the environment on which effects could occur and can be the subject of specific assessments. Examples of receptors include species (or groups) of animals or plants, people (often categorised further such as 'residential' or those using areas for amenity or recreation), watercourses etc.
Rederscentrale	The only Belgian producer organization, an umbrella organization led by a Board of Directors, representing Belgian vessel owners and members.
Regular Operator	Commercial operator whose vessel(s) are observed to transit through a particular region on a regular basis.
Report to Inform Appropriate Assessment	A process which helps determine likely significant effects and (where appropriate) assesses adverse impacts on the integrity of European conservation sites and Ramsar sites. The process consists of up to four stages of assessment: screening, appropriate assessment, assessment of alternative solutions and assessment of imperative reasons of overriding public interest (IROPI) and compensatory measures.
Resilience Measures	The measure designed to support the ecological system and increase the resilience of the compensation measures. As proposed by the Applicant pursuant to the HRA Derogation Provisions 'without prejudice' to the Applicants position of no Adverse Effect on Site Integrity at the Flamborough and Filey Coast in respect of the qualifying features. The Compensation Measure considered is fish habitat enhancement (seagrass).
Rochdale Envelope	Provides flexibility in design options where details of the whole project are not available when the application is submitted, while ensuring the impacts of the final development are fully assessed during the Environmental Impact Assessment (EIA).
Runs Test	A statistical procedure that examines whether a string of data is occurring randomly from a specific distribution.
SACFOR	An abundance scale used for both littoral and sublittoral taxa from 1990 onwards.
Safety Zone	A marine zone demarcated for the purposes of safety around a possibly hazardous installation or works/construction area under the Energy Act 2004.
Sandwave	A bedform feature commonly formed of sands, defined here with a crest to crest wavelength greater than 25 m, often superimposed with megaripples.
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.
Scoping	An early part of the EIA process by which the key potential significant impacts of the project are identified, and methodologies identified for

	how these should be assessed. This process gives the regulator and key consultees opportunity to comment and define the full extent of the final EIA – which can also then be tailored through the consultation process.
Scour and cable protection	In order to prevent seabed scour around foundation structures and cables, cable protection may be placed on the seabed to protect from current and wave action.
Scour protection	Protective materials to avoid sediment being eroded away from the base of the offshore foundations as a result of the flow of water.
Sea room	The unfettered space needed to safely operate which has to include space for manoeuvring, space for anchors to clear pathways to stand by and drift off positions and space for additional associated vessels (e.g. tugs and/or anchor handlers).
SeaMaST	Seabird densities from the predicted density maps and the underlying dataset of the SeaMaST project (Seabird Mapping and Sensitivity Tool) described in Bradbury et al. (2014) was identified by Natural England, through the Evidence Plan Process, as the most appropriate data set for the purpose of estimating the density and abundances of red-throated divers within the ECC. The SeaMaST data were compiled from offshore boat and aerial observer surveys spanning the period 1979–2012.
Seascape	Landscapes with views of the coast or seas, and coasts and adjacent marine environments with cultural, historical and archaeological links with each other.
Section 47 consultee	Consultees identified in the Hornsea Four Statement of Community Consultation (SoCC), including the local community. Once the SoCC is finalised, the Applicant has a duty under Section 47 of the Planning Act 2008 to carry out the consultation in accordance with that document.
Semi-pelagic (or benthopelagic)	Partially living their life on the seabed (benthic) and partially living their life in the water column above (pelagic).
Short-term	A sub-set of a repeating cycle, e.g. likely to be a few days, weeks or months but much less than a year.
Side Scan Sonar (SSS)	Side-imaging sonar used to create an image of the seafloor
Single-beam and multibeam echo sounders (SBES and MBES)	A type of sonar which transmits soundwaves, using the time taken between emission and return to establish a depth. This can be done using singular or multiple beams
Sites of Community Importance	Sites that have been adopted by the European Commission in accordance with the Habitats Directives but not yet formally designated by the government of each country.
Sound Exposure Level (SEL)	The constant sound level acting for one second, which has the same amount of acoustic energy, as indicated by the square of the sound pressure, as the original sound. It is the time-integrated, sound-pressure-squared level. SEL is typically used to compare transient

	sound events having different time durations, pressure levels, and temporal characteristics.
Sound Pressure Level (SPL)	The sound pressure level or SPL is an expression of the sound pressure using the decibel (dB) scale and the standard reference pressures of 1 μ Pa for water and biological tissues, and 20 μ Pa for air and other gases.
Spawning	The release or deposition of eggs and sperm, usually into water, by aquatic animals.
Special Area of Conservation (SAC)	Strictly protected sites designated pursuant to Article 3 of the Habitats Directive (via the Habitats Regulations) for habitats listed on Annex I and species listed on Annex II of the directive.
Special Protection Area (SPA)	Strictly protected sites designated pursuant to Article 4 of the Birds Directive (via the Habitats Regulations) for species listed on Annex I of the Directive and for regularly occurring migratory species.
Statutory consultee	Organisations that are required to be consulted by the Local Planning Authorities and/or PINs, and who also have with a duty to respond to that consultation within a set deadline. This includes consultees that the Applicant is required to consult with, under Section 42 of the Planning Act 2008. Not all consultees will be statutory consultees (see non-statutory consultee definition below).
Statutory Nature Conservation Bodies (SNCBs)	Comprised of JNCC, Natural Resources Wales, Department of Agriculture, Environment and Rural Affairs/Northern Ireland Environment Agency, Natural England and Scottish Natural Heritage, these agencies provide advice in relation to nature conservation to government.
Stochastic Collision Risk Model (sCRM)	A program used to assess the collision risk (estimated mortality) of seabirds to operational turbines of offshore wind farms. A stochastic CRM is used to account for uncertainty around input variables.
String	A series of static fishing gear (pots) joined together to form a single deployable linear line of pots.
Subtidal	The region of shallow waters which are below the level of low tide.
Surface watercourses	Generic term for all surface watercourses, including Main Rivers and all types of Ordinary Watercourses.
Target detection	A radar's ability to distinguish between radar returns from wanted targets and returns from clutter and/or the system's noise level.
Target tracking	This refers to the radar's ability to continually detect the target. Target tracking is a component of a radar system, or an associated command and control system, that associates consecutive radar observations of the same target into tracks. Radar tracking uses software algorithms to track objects and compensate for momentary loss of detection without losing the track.
Temporary Threshold Shift (TTS)	Temporary loss of hearing at a particular frequency as a result of exposure to sound over time. The mechanisms underlying TTS are not well understood, but there may be some temporary damage to the

	<p>sensory cells. The duration of TTS varies depending on the nature of the stimulus, but there is generally recovery of full hearing over time.</p>
The Hornsea Four Offshore Ornithology Engagement Group	<p>The Hornsea Four Offshore Ornithology Engagement Group means the group that will assist, through consultation the undertaker in relation to each compensation measure, site selection, project/study design, methodology for implementing the measure, monitoring, and adaptive management options as identified in the gannet and kittiwake compensation plan and the gannet-razorbill and guillemot compensation plan.</p>
The Secretary of State for Business, Energy and Industrial Strategy	<p>The ultimate decision maker with regards to Hornsea Four's application for Development Consent.</p>
Threshold	<p>The threshold generally represents the lowest signal level an animal will detect in some statistically predetermined percent of presentations of a signal.</p>
Total Allowable Catches	<p>Total Allowable Catches (TACs) are catch limits, expressed in tonnes or numbers that are set for some commercial fish stocks.</p>
Traffic and Transport Study Area	<p>Area within which environmental impacts on traffic and transport receptors may occur.</p>
Traffic Separation Scheme (TSS)	<p>A traffic-management route-system ruled by the 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 in an angle as close to 90 degrees (°) as possible.</p>
Transboundary	<p>Crossing into other European Economic Area (EEA) states.</p>
Transboundary Impacts	<p>Transboundary effects arise when impacts from the development within one European Economic Area (EEA) state affects the environment of another EEA state(s).</p>
Transition Joint Bay (TJBs)	<p>TJBs are pits dug and lined with concrete, in which the jointing of the offshore and onshore export cables takes place.</p>
Trenchless Techniques	<p>Also referred to as trenchless crossing techniques or trenchless methods. These techniques include Horizontal Directional Drilling (HDD), thrust boring, auger boring, and pipe ramming, which allow ducts to be installed under an obstruction without breaking open the ground and digging a trench</p>
Two-way movement	<p>A movement is the process of transporting goods from a source location to a predefined destination. A two-way movement represents the inbound (laden trip from source) and the outbound unladen trip (back to source). For example, 20 two-way movements comprise 10 laden trips from source and 10 outbound unladen trips back to source.</p>
Unique Vessel	<p>An individual vessel identified on any particular calendar day, irrespective of how many tracks were recorded for that vessel on that day. This prevents vessels being over counted. Individual vessels are identified using their Maritime Mobile Service Identity (MMSI).</p>
Unweighted sound level	<p>Sound levels which are 'raw' or have not been adjusted in any way, for example to account for the hearing ability of a species.</p>

Vessel Monitoring System	A system used in commercial fishing to allow environmental and fisheries regulatory organizations to monitor, minimally, the position, time at a position, and course and speed of fishing vessels.
VisNed	(Coöperatie Kottervisserij Nederland u.a.) a Dutch umbrella organisation of producer organisations, representing 75% of the Dutch Demersal Fishing interest.
Visual amenity	The overall pleasantness of the views people enjoy within their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating or travelling through an area.
Visual effects	Effects on specific views and on the general visual amenity experienced by people.
Visual Flight Rules (VFR)	The rules governing flight conducted visually i.e. with the crew maintaining separation from obstacles, terrain and other aircraft visually.
Water body	Unit of surface water (river, lake, estuary or coastal waters) or groundwater defined under the Water Framework Directive in a River Basin Management Plan.
Weighted sound level	A sound level which has been adjusted with respect to a 'weighting envelope' in the frequency domain, typically to make an unweighted level relevant to a particular species. The overall sound level has been adjusted to account for the hearing ability of marine mammals.
Wind turbine	All of the components of a wind turbine, including the tower, nacelle, and rotor
Wind turbine foundation	The wind turbines are attached to the seabed with a foundation structure typically fabricated from steel or concrete.
Wind turbine generator	All the components of a wind turbine, including the tower, nacelle, and rotor.
Zero-inflated data	Count data with excess of zeros.