



Buchan Offshore Wind

Additional Environmental Information

Report

Overarching Glossary

Terminology	Definition
τ_{mix}	Mixing Timescale
τ_{adv}	Advective Timescale – The time required for water to be transported across a defined distance by currents
Aberdeenshire Council	Aberdeenshire Council is the elected local planning authority for the Aberdeenshire council area
Additional Environmental Information Report (AEIR)	Supplementary report providing additional environmental information in response to regulator requests
Advection	The horizontal transport of water masses and their properties by currents
Advective timescale (τ_{adv})	The time required for water to be transported across a defined distance by currents
Adverse Effect on Site Integrity (AEOSI)	Conclusion of Habitats Regulations Assessment indicating a project adversely affects the integrity of a protected site
Agreement for Lease (AfL)	Legal agreement with Crown Estate Scotland (CES) providing an option over an area of seabed whilst the applications for the necessary statutory consents are prepared and submitted
The Applicant	Buchan Offshore Wind Limited
Application	The following consents are being applied for by the Applicant and together comprise the Application; a Section 36 consent under the Electricity Act 1989; marine licences under the Marine and Coastal Access Act 2009 and under the Marine (Scotland) Act 2010
Appropriate Assessment	An Appropriate Assessment forms part of the Habitats Regulations Appraisal (HRA) and is required when a plan or project is likely to have a significant effect on a European site (in view of that site's conservation objectives), either alone or in combination with other projects or plans
Array Area	Defined area within which wind turbines and associated infrastructure are located
Artificial Nesting Structure (ANS)	Man-made nesting habitat proposed for seabirds
Baseline	The conditions represented by the latest available survey and desk based information sources that reflect the existing environment and can be used as the basis for assessment of the potential impact of a proposed development
Baseline Study	Initial data collection used to inform impact assessment and monitoring
Bed stress	Shear stress exerted by flowing water on the seabed, a major source of turbulence
Bedform	A seabed feature (e.g. sandwave) formed by sediment transport processes
Benthic	On, or relating to, the seabed
Buchan Offshore Wind Limited	A joint venture between BayWa r.e, Elicio and BW Ideol (the Applicant, for the purposes of this application)

Terminology	Definition
Buoyancy forcing	Changes in density driven by surface heating, cooling, or freshwater input
Collision Risk Modelling (CRM)	Modelling approach to estimate bird collision risk with turbines
Compensation Evidence Plan	Document outlining evidence supporting proposed compensation measures
Conservation Objectives	List of site-specific objectives aimed to define favourable conservation condition for a particular habitat or species at that site. The UK's statutory nature conservation bodies (SNCBs) are responsible for setting conservation objectives and assessing condition of the habitats and species features of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). This is carried out through Common Standards Monitoring.
Cumulative Effect Assessment (CEA)	Assessment of likely significant effects as a result of the incremental change caused by other past, present and reasonably foreseeable activities together with a development
Cumulative Effects	The effects of the combined impacts from the Proposed Development along with other plans and projects on the same receptor
Cumulative Impact	The total impact on the Baseline environment arising from the Project, other activities and other background pressures and trends
Decibel (dB)	A customary scale commonly used (in various ways) for reporting levels of sound. The dB represents a ratio/comparison of a sound measurement (e.g., sound pressure) over a fixed reference level. The dB symbol is followed by a reference value (e.g., re 1 μ Pa)
Demersal	Organisms that live, feed, and occur on or near the bottom of a body of water
Density front	A boundary between water masses of different density
Density gradient	The rate of change of density with depth, controlling water-column stability
Derogation Case	Justification under Habitats Regulations allowing impacts with compensatory measures
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 2011/92/EU of 13 December 2011 (as amended in 2014 by Directive 2014/52/EU)
Embedded Mitigation	Mitigation measures to avoid or reduce environmental effects that are directly incorporated into the design and execution of a development
Environmental Impact Assessment (EIA)	A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. Involves the collection and consideration of environmental

Terminology	Definition
	information, which fulfils the assessment requirements of the EIA Directive, including the publication of an Environmental Statement
Environmental Impact Assessment Report (EIAR)	A document reporting the findings of the EIA and produced in accordance with the EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU) as transposed into UK law by the EIA Regulations
European sites	A Special Area of Conservation (SAC) or candidate SAC, a Special Protection Area (SPA) or potential SPA, a site listed as a Site of Community Importance (SCI), a possible SAC (pSAC) or potential SPA (pSPA) or a Ramsar site which form part of the National Site Network
Export Cable Corridor (ECC)	The specific corridor of seabed (seaward of Mean High Water Springs (MHWS)) connecting the Array Area to the Landfall Area within which the marine export cables will be located. The final ECC will be located within the ECC search area and will be finalised via a site selection process considering technical, physical and environmental constraints
Export Cable Corridor search area	The broad offshore area of seabed (seaward of MHWS) from the Array Area to the Landfall Area, within which the final ECC will be located. The ECC search area currently encompasses a preferred ECC
Fish hearing Group 1	Fishes with no swim bladder or other gas chamber
Fish hearing Group 2	Fishes with swim bladders in which hearing does not involve the swim bladder or other gas volume
Fish hearing Group 3	Fishes in which hearing involves a swim bladder or other gas volume
Foundation	The subsea infrastructure which supports the offshore substation platform(s) and Intermediate Reactive Compensation (IRC) platform
Frontal position	The spatial location of a density front, which may vary seasonally
Frontal system	A region comprising one or more interacting density fronts across a broader spatial scale
Grid Connection Point	The Transmission Interface Point (TIP) substation which connects to the National Electricity Transmission System (NETS)
Habitat	The environment that a plant or animal inhabits
Habitats Regulations Assessment (HRA)	A process which helps determine likely significant effects and (where appropriate) assesses adverse impacts on the integrity of European sites. The process consists of up to three stages: screening, appropriate assessment and derogation (if required), which encompasses consideration of alternative solutions, consideration of IROPI (Imperative Reasons of Overriding Public Interest) and securing compensatory measures
Heat flux	Exchange of heat between the atmosphere and ocean, driving thermal stratification

Terminology	Definition
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
Highly Pathogenic Avian Influenza (HPAI)	Avian disease considered as a pressure on seabird populations
Impact	Change that is caused by an action; for example, land clearing (action) during construction which results in habitat loss (impact)
Impact Pathway	The pathway by which a change brought about by the development operates on a receptor
Implementation and Monitoring Plan	Plan detailing how compensation measures will be delivered and monitored
Innovation and Targeted Oil & Gas (INTOG)	INTOG is a leasing round through which developers were able to apply to Crown Estate Scotland for the property rights to build small-scale innovative offshore wind projects (IN), or offshore wind farms for the purpose of providing low carbon electricity to power oil and gas installations and help to decarbonise the sector (TOG)
Inter-array Cables	Cables connecting wind turbines to each other and to offshore substation platforms
Interconnector Cable	Cable/s connecting offshore substation platforms to each other
Interim Population Consequences of Disturbance (iPCoD)	A model developed to evaluate the potential effects of offshore marine renewable energy construction and operation on UK marine mammal populations
Intermediate Reactive Compensation (IRC) Platform	Where alternating current (AC) transmission technology is used an Intermediate Reactive Compensation (IRC) platform may be required to reduce loss of electricity which may occur between the Array Area and the onshore substation. The IRC platform has been included as part of the Proposed Development
Intertidal Region	An area of a seashore that is covered at high tide and uncovered at low tide
Landfall Area	For the purposes of the Proposed Offshore Development this is the area between MHWS and MLWS in which all of the export cables will make landfall and is the transitional area between the Offshore Transmission Infrastructure and the Onshore Transmission Infrastructure.
Likely Significant Effect	With respect to Habitat Regulation Appraisals, any effect that may reasonably be predicted as a consequence of a plan or project that may affect the conservation objectives of the features for which the European site was designated but excluding trivial or inconsequential effects. A likely effect is one that cannot be ruled out on the basis of objective information. A 'significant' effect is a test of whether a plan or project could undermine the site's conservation objectives

Terminology	Definition
Local Study Area	The local Study Area has been designed to capture the extent of Proposed Offshore Development specific, direct impacts (e.g., SSC plume distance travelled) and will delineate the overlap with fish and shellfish ecology receptors. For the purpose of the EIA, a 25 km buffer around the Project boundary has been selected as a precautionary local Study Area i.e., the modelled sediment plumes fall comfortably within the local Study Area
Macro-avoidance rate	Proportion of birds assumed to avoid a wind farm at a large spatial scale in collision risk modelling
Macroplastics	Large plastic debris that can entangle wildlife and degrade into microplastics
Magnitude	A combination of the extent, duration, frequency and reversibility of an impact
Marine Directorate	Organisation whose purpose is to manage Scotland's seas. Responsible for: <ul style="list-style-type: none"> • marine renewable, fishing vessel, freshwater fisheries and seal licensing; • ensuring compliance with fisheries regulations; • promoting sustainable, profitable and well-managed fisheries and aquaculture industries; • ensuring a sound scientific evidence base exists to inform our marine policies; • the sustainable management of freshwater fish and fisheries resources; and • promoting sustainable economic growth from the marine renewables industry
Marine Directorate – Licensing Operations Team (MD-LOT)	MD-LOT is the regulator responsible for determining marine licence applications on behalf of the Scottish Ministers in the Scottish inshore region (between 0 and 12 nautical miles (nm)) under the Marine (Scotland) Act 2010, and in the Scottish offshore region (between 12 and 200 nm) under the Marine and Coastal Access Act 2009
Marine Licence	Licence granted under either or both of the Marine and Coastal Access Act 2009 or the Marine (Scotland) Act 2010
Marine Protected Area (MPA)	MPAs are areas of the ocean established to protect habitats, species and processes essential for healthy, functioning marine ecosystems
Marine Recovery Fund (MRF)	Strategic fund for delivering compensation measures across the marine environment
Maximum Design Scenario	A realistic set of project design parameters for each impact pathway considered as part of the EIA, which will be developed from the Project Design Envelope which will establish the parameters (or combination of parameters) that could result in the maximum effect

Terminology	Definition
Mean High Water	Mean of all high water levels
Mean High Water Spring (MHWS)	The height of mean high water during spring tides in a year
Mean Low Water	Mean of all low water levels
Mean Low Water Spring (MLWS)	The height of mean low water during spring tides in a year
Microplastics	Small plastic particles ingested by marine organisms
Mixed water column	A vertically homogeneous water column with little or no density stratification
Mixing efficiency (R_f)	The proportion of turbulent energy that contributes to irreversible mixing of stratified water
Mixing timescale (τ_{mix})	The time required for turbulent mixing to erode stratification
Mixing–advection dominance (D)	A dimensionless ratio comparing mixing and advection; $D \ll 1$ indicates advection-dominated conditions
Morphological recovery	Re-establishment of seabed form following disturbance
Multibeam Echosounder (MBES)	A type of sonar used to map the seabed which emits acoustic waves in a fan shape
National Site Network	The National Site Network comprises Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) designated (or proposed) on EU Exit day and which formerly formed part of the Natura 2000 network. The term “national site network” is used in each of the Habitats Regulations and the terms refer to the same network of sites
Natura 2000 Network	A coherent European ecological network of Special Areas of Conservation and Special Protection Areas comprising sites located within European Union Member States
NatureScot	Formerly known as Scottish Natural Heritage, NatureScot is Scotland’s Statutory Nature Conservation Body
North East & East Ornithology Group (NEEOG)	Regional group involved in ornithological data and strategy
Offshore EIA Scoping Report	Scoping Report for the Proposed Offshore Development, submitted October 2023
Offshore Export Cable	High voltage cable used for exporting power from the offshore substation platforms/Offshore convertor station platforms located within the Proposed Offshore Development Array Area to the Landfall Area
Offshore Generation Infrastructure	The infrastructure associated with the Proposed Offshore Development comprising WTGs, WTGS foundations and associated infrastructure, inter- array cables, and interconnector cables.
Offshore Substation Platform (OSP)	The offshore platform that facilitates the transfer of power from the WTGs and inter-array cables to the offshore export cables
Onshore Transmission Infrastructure	The combined name for all of the onshore infrastructure associated with the proposed development from landfall to the connection to the national electricity grid

Terminology	Definition
Option Area	The spatial extent of the area covered by the Option Agreement for developing the Proposed Development between the Applicant and Crown Estate Scotland
Pelagic	Anything relating to or living in the open ocean or deep sea, away from the shallow coastal waters and the seafloor
Permanent Threshold Shift (PTS)	Noise threshold that represents the onset level of a permanent impairment hearing caused by acoustic trauma. PTS results in irreversible damage to the sensory hair cells of the ear, and thus a permanent reduction of hearing acuity
Pilot Studies	Preliminary studies to test methods and inform monitoring and compensation design
Population Viability Analysis (PVA)	Modelling approach to project future population trends
Portfolio of Seabird Compensation Measures	Strategic set of compensation measures under offshore wind regulations
Potential Energy Anomaly (PEA, ϕ)	The energy required per unit volume to fully mix a stratified water column; a quantitative measure of stratification strength
Potential Energy of Stratification (ϕH)	The depth-integrated energy required to homogenise the water column, accounting for total water depth
Project Design Envelope (PDE)	A description of the range of possible elements which make up the project design options under consideration, as set out in detail in the overview of the proposed development (Chapter 4). This envelope is used to define the Proposed Development for Environmental Impact Assessment (EIA) and Habitats Regulation Appraisal (HRA) purposes when the exact engineering parameters are not yet known. This is also often referred to as the “Rochdale Envelope” approach
Project Design Envelope (PDE)	A description of the range of possible elements which make up the project design options under consideration, as set out in detail in the overview of the proposed development (Chapter 4). This envelope is used to define the Proposed Development for Environmental Impact Assessment (EIA) and Habitats Regulation Appraisal (HRA) purposes when the exact engineering parameters are not yet known. This is also often referred to as the “Rochdale Envelope” approach
Proposed Offshore Development	This includes all offshore aspects comprising WTGs; floating WTG foundations with associated anchors and moorings; inter-array and interconnector cables; and Offshore Transmission Infrastructure up to MHWS
Proposed Offshore Development Site	The area that encompasses both the Array Area and the ECC up to MHWS
Proposed Onshore Infrastructure	This includes all onshore aspects comprising transmission bays, export cables and substation infrastructure landward side of MHWS
Pycnocline	A layer of rapid density change with depth, often coincident with the thermocline

Terminology	Definition
Ramsar Site	Wetland designated under the Ramsar Convention for conservation importance
Receptor	A component of the natural or man-made environment that is potentially affected by an impact
Regional Study Area	The regional Study Area will allow the Proposed Offshore Development to be put in context with the fish ecology of the wider area and has been selected to capture relevant migration routes of migratory species such as Atlantic salmon (<i>Salmo salar</i>) and other diadromous fish, and to incorporate regionally important commercial species. The regional Study Area encompasses the entire Moray Firth, extends north-west to the northern coastline of Caithness, and south of the Forth and Tay region.
Report to Inform Appropriate Assessment (RIAA)	Document supporting Habitats Regulations Appropriate Assessment
Request for Additional Environmental Information (RAEI)	Formal request from regulator for further environmental detail
Residual current	The net current obtained after removal of tidal oscillations, representing longer-term transport
Risk	The likelihood of an impact occurring, combined with the effect or consequence(s) of the impact on a receptor if it does occur
Sabbatical birds	Adult seabirds that do not breed in a given season but remain part of the wider population
Scoping	An early part of the EIA process by which the key potential significant impacts of the Proposed Offshore Development are identified, and methodologies identified for how these should be assessed. This process gives the relevant authorities and key consultees opportunity to comment and define the scope and level of detail to be provided as part of the EIAR – which can also then be tailored through the consultation process
Scoping Opinion	A report presenting the written opinion of the Scottish Ministers as to the scope and level of detail of information to be provided in the Environmental Impact Assessment (EIA) for a development
Scoping Report	A report presenting the scope and level of detail of information to be provided in the EIA for the Proposed Development
Scottish Government	The devolved government of Scotland
Scottish Ministers	Members of the Scottish Government with the power to take decisions on matters including applications under the Electricity Act 1989
Scottish Offshore Wind Energy Council (SOWEC)	Industry-government body supporting offshore wind deployment in Scotland
ScotWind	CES leasing round whereby developers could apply to obtain lease areas of the seabed around Scotland for wind farm developments

Terminology	Definition
SeabORD	Empirically based model estimating displacement impacts on seabirds through changes in energetic costs and survival
Seasonally stratified regime	A system that alternates between mixed (winter) and stratified (summer) states
Secondary Mitigation	Actions that will require further activity in order to achieve the anticipated outcome. These may be imposed as part of the planning consent, or through inclusion in the EIA Report
Sediment transport	Movement of seabed material by currents and waves
Sensitivity	The extent to which a study subject can accept a change, of a particular type and scale, without unacceptable adverse effects
Significance	The significance of an effect combines the evaluation of the magnitude of an impact and the sensitivity of the receptor
Significant effect	An effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' (CIEEM, 2022)
Site Condition Monitoring (SCM)	Monitoring of ecological condition of designated sites
Site of Special Scientific Interest (SSSI)	National designation protecting areas of ecological importance
Sound Exposure Level (SEL or LE_n)	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 Exposure Level, cumulative (SEL_{cum} or $LE_{p,t}$)	Single value for the collected, combined total of sound exposure over a specified time or multiple instances of a noise source
Sound Exposure Level, single strike (SEL_{ss})	Calculation of the sound exposure level representative of a single noise impulse, typically a pile strike
Sound Pressure Level (SPL or L_p)	The sound pressure level is an expression of sound pressure using the decibel (dB) scale; the standard frequency pressures of which are 1 μ Pa for water and 20 μ Pa for air
Sound Pressure Level Peak (SPL_{peak} or $L_{p,pk}$)	The highest (zero-peak) positive or negative sound pressure, in decibels
Special Area of Conservation (SAC)	A site designation specified in the Habitats Directive (Council Directive 92/43/EEC). Each site is designated for one or more of the habitats and species listed in the Directive. The Directive requires that a management plan be prepared and implemented for each SAC to ensure the favourable conservation status of the habitats or species for which it was designated. In combination with SPAs, these sites contribute to the 'Natura 2000' or 'European' Sites network (in the UK – National Sites Network)
Special Protection Area (SPA)	Special Protection Areas (SPAs) are sites that are designated to protect rare or vulnerable birds (as listed on Annex I of the Directive 2009/147/EC on the conservation of wild birds), as well as regularly occurring migratory species

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Species	A group of living organisms consisting of similar individuals capable of exchanging genes or interbreeding
SSW-RS	Scottish Shelf Waters Reanalysis Service
Stratification	Vertical layering of the water column due to density differences, typically temperature-driven in the North Sea
Structure-induced turbulence	Turbulence generated by flow interaction with offshore structures
Sub-bottom Profiler	Sonar system that emits low-frequency pulses to map the sea floor
Subtidal	Areas of the coastal marine environment which lie below the level of mean low water and are continuously submerged by seawater
The Applicant	Buchan Offshore Wind Limited
The Project	All onshore and offshore elements of the Buchan Wind Farm Project
Thermocline	A layer of rapid temperature change with depth
Tidal mixing	Mixing generated by tidal currents, particularly strong in shallow or constricted regions
Turbulence	Chaotic fluid motion that enhances mixing of properties such as heat and momentum
Turbulent Kinetic Energy (TKE)	The kinetic energy associated with turbulent motion, used as a measure of mixing intensity
Unexploded Ordnance (UXO)	Explosive weapons that did not explode when they were employed and still pose a risk of detonation
Vulnerability	Describes the potential for harm as a result of an event, for example due to sensitivity or value of receptors. In the context of the EIA Directive, the term refers to the 'exposure and resilience' of the development to the risk of a major accident and/or disaster. Vulnerability is influenced by sensitivity, adaptive capacity and magnitude of impact
Wind forcing	The influence of wind stress on surface mixing and circulation
Wind Turbine Generators (WTGs)	The wind turbines that generate electricity consisting of tubular towers, blades and the nacelle which houses the electrical generating equipment