Bowdun Offshore Wind Farm, Offshore EIA Report

Volume 1, Chapter 4: Environmental Impact Assessment Methodology

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Glossary

Defined Term	Definition
Additional Mitigation	Also referred to as secondary mitigation which is defined by The Institute of Sustainability and Environmental Professionals (ISEP) (formerly Institute of Environmental Management and Assessment (IEMA)) as: 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 Environmental Impact Assessment (EIA) Report (sic).
Applicant (the)	Bowdun Offshore Wind Farm Limited (BOWFL).
Array Area	The Array Area is the area in which the Offshore Generation Assets will be located.
Bowdun Offshore Wind Farm Limited (BOWFL)	A Special Purpose Vehicle (SPV) (legal entity) for the purpose of developing the Project. BOWFL are the Applicant for the Offshore Application.
Benthic	Living on or in the seabed.
Crown Estate Scotland (CES)	Public corporation accountable to Scottish Government, responsible for the management of land and property, including marine assets in Scotland owned by the monarch.
Cumulative Effects	The effects of the Proposed Development assessed together with effects from the Onshore Infrastructure forming the Project as well as one or more different projects on the same receptor/resource.
Effect	Term used to express the consequence of an impact (i.e. the result of change or changes on specific environmental resources or receptors). 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.
Embedded Mitigation	Measures that are adopted as part of the Proposed Development and therefore assessed within the EIA. The proposed approach for the EIA for the Proposed Development is that Embedded Mitigation includes both primary mitigation and tertiary mitigation. These are defined by the ISEP as follows: Primary: Modifications to the location or design of the development made during the pre-application phase that are an inherent part of the project, and do not require additional action to be taken. Tertiary: Actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects.
Environmental Impact Assessment (EIA)	Process for the assessment of likely significant environmental effects of a project on the physical, biological and human environment during construction, Operation and Maintenance (O&M) and decommissioning.

Defined Term	Definition
Environmental Impact Assessment Regulations (EIA Regulations)	Terminology used in this Offshore EIA Report to refer to three sets of regulations: • The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017; • The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017; and • The Marine Works (Environmental Impact Assessment) Regulations 2007.
Habitats Directive	Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.
Habitats Regulations	A term that refers to the collective legislation that translates the Habitats Directive into specific legal obligations in Scotland, namely: The Conservation (Natural Habitats, &c.) Regulations 1994; The Conservation of Habitats and Species Regulations 2017; and The Conservation of Offshore Marine Habitats and Species Regulations 2017 (in each case as amended).
Habitats Regulations Appraisal (HRA)	An assessment carried out under the Habitats Regulations to determine if a plan or project could adversely affect the integrity of a European Site.
Impact	A change caused by an action that occurs during a project's lifetime.
Inter-Related Effects	The potential effects of multiple impacts from the construction, O&M and decommissioning of the Project, affecting one receptor.
Marine Licence	A Marine Licence permits the undertaking of different activities in the marine environment, including construction, the deposition or removal of substances or objects, and dredging. The Marine (Scotland) Act 2010 requires Marine Licences to be obtained for licensable activities taking place within Scottish Territorial Seas (MHWS to 12 nm). The Marine and Coastal Access Act (MCAA) 2009 requires a Marine Licence to be obtained for licensable marine activities within the Scottish offshore region (12 nm – 200 nm).
Maximum Design Scenario (MDS)	The scenario within the design envelope likely to result in the greatest impact on a particular topic receptor, and therefore the one that should be assessed for that topic receptor.
Mean High Water Springs (MHWS)	The average tidal height throughout the year of two successive high waters during those periods of 24 hours when the range of the tide is at its greatest.
Mean Low Water Springs (MLWS)	The average tidal height throughout the year of two successive low waters during those periods of 24 hours when the range of the tide is at its greatest.
Mitigation	Measures to avoid, prevent, reduce or control effects on the environment. See also definitions for Embedded Mitigation and Additional Mitigation.
Offshore Application	Term used to refer to the applications associated with the Proposed Development. The Applicant will apply for: • A Section 36 Consent under the Electricity Act 1989; and • Marine Licence(s) under Marine Scotland Act 2010 and Marine and Coastal Access Act 2009.

Defined Term	Definition
Offshore Environmental Impact Assessment (EIA) Report (hereafter, 'Offshore EIA Report')	Document prepared to report the findings of the EIA for the Proposed Development and produced in accordance with the EIA Regulations. The Offshore EIA Report is submitted to support the Offshore Application for the Proposed Development, and to comply with EIA Regulations.
Offshore Export Cables	Subsea cables used to transmit electricity generated offshore by the Wind Turbines from the OSPs to shore. The Transition Joint Bay (TJB) is the location where the Offshore Export Cables terminate, and the onshore cabling begins.
Offshore Generation Assets	The infrastructure of the Proposed Development required to generate electricity comprising of the Wind Turbines, Wind Turbine foundations and associated infrastructure (e.g. IACs).
Offshore Infrastructure	All of the Offshore Infrastructure associated with the Proposed Development that is located seaward of MHWS, comprising the Offshore Generation Assets and the Offshore Transmission Assets.
Offshore Scoping Report	The report that presents the findings of the EIA scoping process undertaken for the Proposed Development with the purpose of obtaining a Scoping Opinion. The Offshore Scoping Report defines what is intended to be assessed and reported as part of the EIA.
Offshore Substation Platform(s) (OSPs)	OSPs comprise the support structure, topside and electrical components used for collecting and/or converting electricity generated by the Wind Turbines for transmission by the Offshore Export Cables.
Onshore Infrastructure	All of the Onshore Infrastructure associated with the Project that is located landward of MLWS.
Onshore Transmission Assets	The transmission infrastructure associated with the Project above MLWS which is subject to the Planning Permission in Principle (PPP) Application submitted to Aberdeenshire Council (REF: APP/2025/1952).
Operation and Maintenance (O&M)	The phase of the Proposed Development following completion of construction. This phase of development includes routine inspections, repairs and replacement of infrastructure and equipment (including Interconnector Cables and IACs), Scour Protection replenishment or replacement, major component replacement, painting and/or other coating works, removal of marine growth, and replacement of access ladders.
Pathway	Describes the means or route by which a receptor (such as the seabed) can be affected by an identified impact source (such as Wind Turbine foundations).
Piling	The action of installing piles: installation can use various methodologies, the most common of which are impact piling (in which the piles are struck by a "hammer") and drilling (during which a hole is drilled into the seafloor, the drilling tool is removed, and the pile is slotted into that hole).
Pre-Application Consultation (PAC)	Pre-Application Consultation with communities and stakeholders with regard to the consent applications for the Project that meets the requirements of Marine Licensing (Pre-application Consultation) (Scotland) Regulations 2013.

Defined Term	Definition
Project (the)	An overarching term for the Bowdun Offshore Wind Farm (Bowdun OWF) comprising the offshore and onshore infrastructure required to generate and transmit electricity from the Array Area to the onshore Grid Connection Point (GCP). The Project includes the Offshore Generation Assets, the Offshore Transmission Assets and the Onshore Transmission Assets.
Project Design Envelope (PDE)	A description of the range of possible elements that make up the design options for the Proposed Development under consideration when the exact engineering parameters are not yet known.
Proposed Development	Term used to define the Offshore Infrastructure associated with the Project seaward of MHWS for which consent is being sought. Further details of the parameters are included in Volume 1, Chapter 3: Project Description.
Scoping Opinion	A document produced by MD-LOT which is issued in response to submission and review of the Offshore Scoping Report. The Scoping Opinion is supported with feedback and advice from consultees, which details what is expected to be included in the Offshore EIA Report and what can be scoped out of the EIA process.
Scottish Territorial Waters	The territorial waters of Scotland that extend out from MHWS to 12 nm.
Scottish Ministers (the)	The decision makers with regard to Marine Licence(s) and Section 36 Consent applications in Scottish Offshore Waters and Scottish Marine Area.
Scour Protection	Protective materials installed to avoid sediment being eroded away from the base of the foundations and/or buried subsea cable due to the flow of water.
Section 36 Consent	Scottish Ministers' consent under Section 36 of the Electricity Act 1989 required to permit the generation and operation of an energy generation station.
Significance	Effect factor that is determined by the magnitude of impact along with the sensitivity of the receptor.
Study Area	For each environmental topic, the baseline environment will be characterised, and the potential environmental impacts will be described within a topic-specific study area. Specific study areas are defined for each topic and are based on the maximum spatial extent across which potential impacts of the Project may be experienced by the relevant receptors (i.e. Zone of Influence).
Thistle Wind Partners (TWP)	Company established for the development of the Project.
Water Framework Directive (WFD)	Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for community action in the field of water policy. The WFD promotes water management through river basin planning. It covers inland surface waters, estuarine waters, coastal waters and groundwater.
Wind Turbines	Structures comprising of a tubular tower, rotor blades, and a nacelle which houses the Wind Turbine generator.

Acronyms

Acronym	Definition
AfL	Agreement for Lease
BOWFL	Bowdun Offshore Wind Farm Limited
BSI	British Standards Institution
CEA	Cumulative Effects Assessment
CEF	Cumulative Effects Framework
CES	Crown Estate Scotland
COWRIE	Collaborative Offshore Wind Research into The Environment
EEA	European Economic Area
EIA	Environmental Impact Assessment
EMEC	European Marine Energy Centre
EU	European Union
HRA	Habitats Regulations Appraisal
IEMA	Institute of Environmental Management and Assessment
ISEP	Institute for Sustainability and Environmental Practice
MD-LOT	Marine Directorate - Licensing Operations Team
MDS	Maximum Design Scenario
MHWS	Mean High Water Spring
MLWS	Mean Low Water Spring
O&M	Operation and Maintenance
OWF	Offshore Wind Farm
PDE	Project Design Envelope
PINS	Planning Inspectorate
UK	United Kingdom

Table of Units

Units	Definition
km	Kilometre
km²	Square kilometre
nm	Nautical mile

4 Environmental Impact Assessment Methodology

4.1 Introduction

4.1.1 This chapter of the Offshore Environmental Impact Assessment (EIA) Report details the methodology used to assess the likely significant environmental effects of the Proposed Development. It outlines various techniques used to evaluate potential effects on physical, biological, and human receptors, ensuring a comprehensive analysis. The methodologies also considered inter-related, cumulative, and transboundary effects.

4.1.2 This chapter presents:

- the methodology used to determine potential impacts including the approach used to assess the magnitude of impact, the sensitivity of receptors and to conclude the likely significance of environmental effects;
- the methodology used for assessing Inter-Related Effects;
- the methodology used to complete the Cumulative Effects Assessment (CEA); and
- the methodology used for assessing transboundary effects.

4.1.3 Each topic chapter contains further topic specific methodologies where appropriate. These are explained further within the relevant Offshore EIA Report chapters (Volume 2, Chapters 7 to 23).

4.1.4 The Applicant has prepared a separate Onshore EIA Report in respect of a planning application for the Onshore Infrastructure of the Project under the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 which describes the EIA Methodology followed for the onshore elements of the Project (landward of Mean Low Water Springs (MLWS)).

4.2 Legislative and Policy Context

4.2.1 The requirement for EIA in Scotland originates from the European Union (EU) Directive on the assessment of the effects of certain public and private projects on the environment (EIA Directive) (2011/92/EU, as amended by Directive 2014/52/EU), which has been transposed into Scottish law through the following regulations (collectively referred to hereafter as the EIA Regulations):

- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017;
- The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017; and
- The Marine Works (Environmental Impact Assessment) Regulations 2007.

4.2.2 Under the EIA Regulations, the Applicant will seek the following:

- Section 36 consent under the Electricity Act 1989 for an offshore generating station in the Scottish offshore region (12 to 200 nm);
- Marine Licence covering the Offshore Generation Assets; and
- Marine Licence covering the Offshore Transmission Assets.

4.2.3 When applying for a Section 36 consent or a Marine Licence, an EIA Report is required to be prepared and submitted to support these applications if the Proposed Development is likely to have a significant effect on the environment due to its nature, size or location.

4.2.4 The Applicant may also apply later for further consents, licences and permissions, including but not limited to:

- Safety zone declarations during construction and operation under the Energy Act 2004; and
- Decommissioning scheme under the Energy Act 2004.

4.2.5 Further details of the policy and legislative background to the Proposed Development, details of the required consents and licences alongside EU Exit related amendments, can be found in Volume 1, Chapter 2: Policy and Legislation.

4.2.6 The assessment of effects methodology employed in this Offshore EIA Report draws upon relevant legislation, policy, guidance, professional judgement and industry standards including those listed below:

- A Handbook on EIA: Guidance for Competent Authorities, Consultees and Others Involved in the EIA Process in Scotland (NatureScot, 2018);
- A Review of Assessment Methodologies for Offshore Wind Farms (OWFs) (Collaborative Offshore Wind Research into The Environment (COWRIE) METH-08-08) (Maclean *et al.,* 2009);
- Council Directive 2011/92/EU of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment, as amended by Council Directive 2014/52/EU (the EIA Directive);
- EIA Regulations;
- EIA for Offshore Renewable Energy Projects (British Standards Institute (BSI), 2015);
- Electricity Act 1989 - Section 36 applications: guidance for applicants on using the design envelope (Scottish Government, 2022);
- Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects (Centre for Environment, Fisheries and Aquaculture Science (Cefas), 2012);
- Guidelines for Ecological Impact Assessment (EcIA) in the United Kingdom and Ireland – Terrestrial, Freshwater, Coastal and Marine (Chartered Institute of Ecology and Environmental Management (CIEEM), 2019);

- Institute of Environmental Management and Assessment (IEMA; now known as the Institute for Sustainability and Environmental Practice (ISEP)) EIA Implementing the Mitigation Hierarchy from Concept to Construction (IEMA, 2024);
- IEMA Guide to Determining Significance for Human Health in EIA (IEMA, 2022);
- Marine Scotland Consenting and Licensing Guidance: For Offshore Wind, Wave and Tidal Energy Applications (Marine Scotland, 2018);
- Marine Scotland: Guidance for applicants on using the design envelope for applications under section 36 of the Electricity Act 1989;
- Nationally Significant Infrastructure Projects: Advice on Transboundary Impacts and Process (Planning Inspectorate (PINS), 2024);
- Planning Advice Note (PAN) 1/2013 EIA (Scottish Government, 2013);
- The Conservation of Habitats and Species (Amendment) (EU Exit); Regulations 2019 (HM Government, 2019a);
- The Conservation of Habitats and Species Regulations 2017 – only applies in Scotland for specific activities including consent applications under Sections 36 and 37 of the Electricity Act 1989;
- The Conservation of Offshore Marine Habitats and Species Regulations 2017 – applies to the Scottish offshore region (beyond 12 nm);
- The Marine Environment (EU Exit) (Scotland) (Amendment) Regulations 2019 (HM Government, 2019b); and
- The Wildlife and Countryside Act 1981.

4.2.7 It should be noted that in cases where there is no Scottish guidance for a particular topic/matter, then other relevant guidance has been used, including that from England and Wales, such as the 'Nationally Significant Infrastructure Projects: Advice on Transboundary Impacts and Process (PINS, 2024)' to inform the assessment.

4.2.8 Where relevant topic specific legislation and policy exist, this has been discussed within the relevant Offshore EIA Report chapters (Volume 2, Chapters 7 to 23).

4.2.9 References to legislation in this Offshore EIA Report are to the relevant legislation as amended.

4.2.1 Table 4.1 outlines the requirements of the EIA Regulations (under Regulation 4 of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, Regulation 5 of the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 and Schedule 3 of the Marine Works (Environmental Impact Assessment) Regulations 2007 and where these requirements have been considered within this Offshore EIA Report.

Table 4.1: EIA Regulations Requirements and Where in this Offshore EIA Report these are Addressed

EIA Regulations - Requirement	Chapter/Appendix Reference
Population and human health	• Volume 2, Chapter 13: Commercial Fisheries; • Volume 2, Chapter 14: Shipping and Navigation; • Volume 2, Chapter 15: Aviation and Radar; • Volume 2, Chapter 16: Infrastructure and Other Users; and • Volume 2, Chapter 18: Socio-Economics, Tourism and Recreation. • Volume 2, Chapter 20: Seascape, Landscape and Visual Impacts; and • Volume 2, Chapter 21: Cultural Heritage.
Biodiversity	• Volume 2, Chapter 8: Benthic Ecology; • Volume 2, Chapter 9: Fish and Shellfish Ecology; • Volume 2, Chapter 10: Marine Mammals; • Volume 2, Chapter 11: Offshore Ornithology; and • Volume 2, Chapter 12: Offshore Bats.
Land, soil, water, air and climate	• Volume 2, Chapter 7: Physical Processes; and • Volume 2, Chapter 22: Climatic Change.
Material assets, cultural heritage and the landscape	• Volume 2, Chapter 13: Commercial Fisheries; • Volume 2, Chapter 14: Shipping and Navigation; • Volume 2, Chapter 15: Aviation and Radar; • Volume 2, Chapter 16: Infrastructure and Other Users; • Volume 2, Chapter 18: Socio-Economics, Tourism and Recreation • Volume 2, Chapter 19: Marine Archaeology; • Volume 2, Chapter 20: Seascape, Landscape and Visual Impacts; and • Volume 2, Chapter 21: Cultural Heritage.
The interaction between the factors referred to in points (a) to (d)	• Volume 2, Chapter 23: Inter-Related Effects.
The effects referred to in paragraph 1 on the factors set out there in shall include the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned	• Volume 2, Chapter 17: Major Accidents and Disasters.

4.3 Consultation

4.3.1 Consultation on the proposed Offshore EIA Methodology (including the CEA methodology and approach to assessing inter-related and transboundary effects) was undertaken at the Offshore EIA scoping stage. The Bowdun Offshore Scoping Report (Bowdun Offshore Wind Farm Limited (BOWFL), 2024) presented the proposed methodologies and requested feedback on the planned approach.

4.3.2 A summary of the matters raised in relation to EIA Methodology and approach during consultation activities are presented in Table 4.2 along with how these issues have been considered in the production of this Offshore EIA Report.

4.3.3 Matters raised which are topic specific are detailed within the relevant topic chapters (Volume 2, Chapters 7 to 23), whilst a summary of all consultations including those public consultation events is included in the consultation chapter (Volume 1, Chapter 5: Consultation and Engagement).

Table 4.2: Summary of Key Consultation Issues Raised During Consultation Activities Undertaken for the Proposed Development Relevant to the EIA Methodology

Date	Consultee and Type of Consultation	Summary of Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
25/11/2024	Marine Directorate - Licensing Operations Team (MD-LOT) (and Scottish Ministers) (MD-LOT, 2024)	MD-LOT states that "*Section 3.12 of the Scoping Report sets out an overview of the estimated decommissioning activities and the Developer's proposed decommissioning approach. The EIA Report should include the rationale in support of the assessment of potential significant effects during the decommissioning phase. Any uncertainty on the impacts upon receptors from activities during decommissioning should be clearly explained, along with the implications for the assessment of significant effects.*"	Effects upon receptors from activities during the decommissioning phase have been considered as part of the assessment within the relevant topic chapters (Volume 2, Chapters 7 to 23).
		MD-LOT advise that "*Matters are not scoped out unless specifically addressed and justified by the Developer and confirmed as being scoped out by the Scottish Ministers. The matters scoped out should be documented and an appropriate justification noted in the EIA Report.*"	Scoped out impacts are justified within the relevant topic chapters (Volume 2, Chapters 7 to 23).
		MD-LOT states that "*Any embedded mitigation relied upon for the purposes of the assessment should be clearly and accurately explained in detail within the EIA Report. The likely efficacy of the mitigation proposed should be explained with reference to residual effects. The EIA Report must identify and describe any proposed monitoring of significant adverse effects and how the results of such monitoring would be utilised to inform any necessary remedial actions.*"	The use of Embedded Mitigation implemented as part of the Project Design is summarised in the Project Description (Volume 1, Chapter 3: Project Description) and presented as relevant in each topic chapter (Volume 2, Chapters 7 to 23). Embedded Mitigation is defined in Section 4.6 of this Chapter. Outline Management Plans have been detailed in Volume 4. All proposed Embedded Mitigation, Additional Mitigation and monitoring measures are described in the Schedule of Mitigation and Commitments (Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments) and in each topic chapter as relevant (Volume 2, Chapters 7 to 23).

Date	Consultee and Type of Consultation	Summary of Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
		MD-LOT states that "*The EIA Report should clearly demonstrate how the Developer has had regard to the mitigation hierarchy, including giving consideration to the avoidance of key receptors. The Scottish Ministers advise that where the mitigation is envisaged to form part of a management or mitigation plan, the EIA Report must set out these plans or the reliance on these in sufficient detail so the significance of the residual effect can be assessed and evaluated. This should also include identification of any monitoring and remedial actions (if relevant) in the event that predicted residual effects differ to actual monitored outcomes. Commitment to develop plans without sufficient detail is not considered to be suitable mitigation in itself.*"	The mitigation hierarch has been followed and all proposed Embedded Mitigation, Additional Mitigation, management plans, and any monitoring are set out in each technical topic chapter and are summarised in Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments. A justification for the recommendation, based on the efficacy of the measure, and how the information will be used is provided.
		MD-LOT states that "*The EIA Report must include a table of mitigation which corresponds with the mitigation identified and discussed within the various chapters of the EIA Report and accounts for the representations and advice attached in Appendix I.*"	Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments provides a tabularised summary of Embedded Mitigation and Additional Mitigation.
		MD-LOT states that "*Where potential impact on the environment have been fully investigated but found to be of little or no significance, it is sufficient to validate that part of the assessment by detailing in the EIA Report, the work that has been undertaken, the results, what impact, if any, has been identified and why it is not significant.*"	Effects including that are found to be of little or no significance are justified within the relevant topic chapters (Volume 2, Chapters 7 to 23).
		Scottish Ministers state that "*The Scottish Ministers advise that the Developer must make every attempt to narrow the range of options. Where flexibility in the design envelope is required, this must be defined within the EIA Report and the reasons for requiring such flexibility clearly stated. At the time of application, the parameters of the Proposed Development should not be so wide-ranging as to represent effectively different projects. To address any uncertainty, the EIA Report must consider the potential impacts associated with*	A Project Design Envelope (PDE) approach for assessment has been used. This allows for necessary flexibility in future design changes within set parameters. The detail in the PDE was sufficient to evaluate likely significant environmental effects and necessary mitigation, considering various possibilities. More details on this approach are in Volume 1, Chapter 3: Project Description.

Date	Consultee and Type of Consultation	Summary of Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
		each of the different scenarios. The criteria for selecting the worst case and the most likely scenario, together with the potential impacts arising from these, must also be described. The parameters of the Proposed Development must be clearly and consistently defined in the application for the s.36 consent and marine licences and the accompanying EIA Report."	Furthermore, the criteria evaluated within the Maximum Design Scenario (MDS) tables for each subject were included in their respective chapters (Volume 2, Chapters 7 to 23). The MDS approach has been defined in Section 4.5.9. When applicable, the most probable scenario has been detailed and assessed. Details regarding the site selection and refinement of the PDE are detailed in Volume 1, Chapter 6: Site Selection and Consideration of Reasonable Alternatives.
	NatureScot (MD-LOT, 2024)	NatureScot state that "*We welcome the identification of "embedded mitigation measures" described as outlined in each of the relevant receptor chapters of the EIA Scoping Report and summarised in Appendix A (Draft Schedule of Mitigation and Commitments).*"	Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments provides a tabularised summary of Embedded Mitigation and Additional Mitigation.
		NatureScot state that "*However, much of the embedded mitigation detailed throughout includes the development of and adherence to post-consent plans/programmes. Plans do not strictly constitute mitigation – it is the measures contained within the plan that will mitigate impacts. The EIA Report must clearly articulate those mitigation measures that are informed by the EIA (or HRA) and are necessary to avoid or reduce predicted significant adverse environmental effects of the proposed development. We advise that the full range of mitigation and monitoring measures, and published guidance, are considered and discussed in the EIA Report.*"	A description of how the Embedded Mitigation and Additional Mitigation identified was used to reduce the potential effects of the Proposed Development on the receptor can be found within each topic chapter (Volume 2, Chapters 7 to 23). Furthermore, a description of the guidance used, specific to each topic, can be found within the relevant chapter. Volume 4, Appendix 24 to 33 describe the management plans.
		NatureScot states that "*Section 4.7 of the Scoping Report outlines the proposed approach to cumulative effects assessment. Paragraph 4.7.9 indicates that where likely significant effects for the proposed development alone are assessed as negligible, these*	A detailed assessment of cumulative effects has been undertaken and described within each chapter (Volume 2, Chapters 7 to 23).

Date	Consultee and Type of Consultation	Summary of Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
		will not be considered within the cumulative effects assessment. However, as discussed in the Ayre Scoping Workshop (held 6th March 2024) and raised in our post Scoping Workshop advice (dated 30th April 2024), we advise that project alone impacts could be deemed negligible, but when combined with others, the overall magnitude could be greater and therefore result in a cumulative effect. As such, further consideration should be given to negligible project alone impacts in the cumulative effects assessment."	
		NatureScot states that "*Additionally, we are concerned with the likelihood of multiple offshore export cables, including proposed interconnectors, making landfall between Orkney and the mainland and the potential for cumulative impacts arising from construction and associated geophysical, geotechnical and environmental survey programmes. Therefore, we recommend that this is considered further...*"	Concerns raised by NatureScot have been included within the CEA process as described in Volume 3, Technical Appendix 4.4: Cumulative Effects Assessment - Screening. These have, where relevant, been brought forward into assessment within chapters (Volume 2, Chapters 7 to 23).
		NatureScot states that "*The EIA Report provides the assessment to support the application and should be suitably structured, with appropriate formatting, sufficient information with limited repetition to ensure it can be reviewed efficiently and effectively. Consideration should therefore be given to the following aspects:* • *It should clearly follow the direction provided in the Scoping Opinion, or where specific agreement was later reached during the pre-application process. Any divergence from this needs to be laid out separately and must be fully justified.* • *Consideration should be given to the volume and flow of information within and across each receptor chapter and associated technical appendices. The flow of information relating to impact pathway, assessment and conclusions should be concise, but not omit key information on steps taken. Repeated*	This chapter of the Offshore EIA Report has been designed to provide an overview of the structure and format of each chapter (Volumes 2, Chapters 7 to 23). Careful consideration has been made to incorporate the approach outlined in the Scoping Report into the Offshore EIA Report. PDFs of the Offshore EIA Report that are navigable electronically have been submitted. Furthermore, a digital EIA website platform has been created by TWP which contains the Offshore EIA Report for public access.

Date	Consultee and Type of Consultation	Summary of Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
		duplication of text should be avoided through appropriate structuring. • *In electronic versions of the EIA Report, navigational aids including use of hyperlinks etc. are required, particularly where there are supporting technical appendices to any chapters.* • *Each stage of the assessment process should be sufficiently transparent to allow the assessments to be repeated. Where specific tools have been used, details of which version and when the assessment was carried out is required."*	
04/09/2025	NatureScot (Email)	**Cumulative Effects Framework (CEF)** *The latest information we have is that the CEF will be published in autumn 2025 for industry use..., this will be too late for the assessment work that is currently being undertaken for the EIA and HRA [for Bowdun]. Therefore, we propose to use the 'interim CEF' which has been developed by Royal Haskoning on behalf of the NEEOG developers. We understand this interim CEF has been discussed with NatureScot and MD-LOT, and agreement reached in its use whilst waiting for the CEF to be published.* *We appreciate that the CEF is still under development and may not be available in the timescale required to complete Ayre's assessments.* *We are aware of the interim CEF developed on behalf of NEEOG (Royal HaskoningDHV 2024). The purpose of this project was to produce a cumulative baseline that could be used for all East and Northeast ScotWind projects so that a consistent approach was being used, until the CEF was published. It has already been used in*	The interim CEF has been used in Volume 2, Chapter 11: Offshore Ornithology. Furthermore, MD-LOT have been consulted in regard to the long list of projects used for CEA (see consultation entry dated 08/01/2026).

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		some recent applications. In view of this, we agree that the interim CEF can be used. *However, it is important that all projects relevant to … Bowdun are included in the in-combination assessments. Since the interim CEF was developed additional applications have been submitted, including Ossian and Cenos offshore wind farms, which may need to be included. It should also be noted that the interim CEF used values for the West of Orkney Offshore Wind Farm which were taken from the 2023 EIA (OWPL, 2023). We advise that the updated values from the Offshore Ornithology Additional Information (OWPL, 2024) should be used instead.* *We recommend that MD-LOT are consulted regarding the list of projects that should be included in the in-combination assessments.*	
04/12/2025	NatureScot, MD-LOT (Email)	NatureScot states that "*Specifically for marine mammals, we are content with the use of the interim CEF to supplement a full cumulative assessment with iPCoD. It would be useful to see these presented alongside for comparison*". Further to this, on 26/01/2026 NatureScot confirms that *"the interim CEF relates to ornithology only"*.	The CEF for marine mammals uses the latest version of iPCoD. The iPCoD cumulative assessment can be found in Volume 3, Technical Appendix 10.3: Marine Mammal iPCoD Modelling Report.
		NatureScot states that "*We do not have a timescale for the publication of the CEF, but if it should become available in the short term, then it should be used*". Further to this, on 26/01/2026 NatureScot agrees that the Proposed Development is *"at an advanced stage and will use the interim CEF"*.	The interim CEF has been used in Volume 2, Chapter 11: Offshore Ornithology. Furthermore, MD-LOT have been consulted in regard to the long list of projects used for CEA.
		In relation to the proposed approach regarding Natural England's scoping response for guillemot and razorbill apportioning, NatureScot advised *"Bowdun is located in Scottish waters and so NatureScot guidance/assessment methods should be used."*	Noted.

Date	Consultee and Type of Consultation	Summary of Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
		NatureScot states that *"We do not require an assessment of shadow flicker impacts to be carried out".*	Noted.
		NatureScot advises that "*the Southern Trench ncMPA and any other MPAs (and SACs) are fully assessed for any impacts from the project alone and cumulatively that could overlap or have connectivity to them within the final EIA".*	The assessment of the Southern Trench ncMPA (minke whale) and Turbot Bank ncMPA (sandeels) has been included in Volume 3, Technical Appendix 8.3: Marine Protected Areas Assessment and the Report to Inform Appropriate Assessment Part 2: Special Areas of Conservation (TWP-BOW-RPS-ENV-RPT-00014). The MPA screening concludes that the Proposed Development is not capable of affecting the fish and ornithology feature of any MPAs.
03/02/2026	Natural England (Email)	*"Natural England recognises that ornithology advice from NatureScot differs slightly from that provided by Natural England. Natural England do not expect applicants in Scottish waters to undertake a separate impact assessment for all seabird receptors based on Natural England's advice. However, there may be instances where an additional assessment in line with our advice is needed to be able to adequately assess the effects on English SPA features. This would be where applicants identify an AEOI or are unable to rule one out on an English SPA feature, either alone or in-combination; or where, following consultation, Natural England identifies an AEOI or is unable to rule one out".*	Engagement with Natural England regarding AEOI on English SPA features will commence post submission when more information is available.
08/01/2026	MD-LOT, NatureScot (Email)	MD-LOT states *"MD-LOT is content with the wind, wave and tidal energy projects identified. However, the Applicant should review project descriptions using the following general principles:* • *For operational projects, the consented parameters should be considered in cumulative effects assessments. This approach ensures uniformity and*	MD-LOT advice has been addressed and integrated into Volume 3, Technical Appendix 4.4: Cumulative Effects Assessment – Screening. A detailed assessment of cumulative effects has been undertaken and described within each chapter (Volume 2, Chapters 7 to 23).

Date	Consultee and Type of Consultation	Summary of Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
		these values represent the realistic worst-case scenarios. • *For projects that have scoped but not yet had a consent application determined, the most up-to-date information should be used. For instance, if a project has applied after scoping, it is important to use the worst-case scenario described within the application's project design envelope.* • *Furthermore, MD-LOT highlights the need to consider Additional Information submitted for projects within the cumulative effects assessment scope e.g. the recent population viability analysis submissions for Caledonia (North and South), Muir Mhòr and Ossian.* • *For phased (e.g. Seagreen) or split (e.g. EMEC or Cerulean Winds) projects, each aspect of the project should be given separate consideration with accurate parameters considered for the relevant aspect."* MD-LOT provided project specific guidance in relation to Kincardine, Forthwind, Morven North and Morven South, West Islay Tidal Farm, Aspen, Beech and Cedar.	

4.4 Environmental Impact Assessment Report

4.4.1 In August 2024, the Applicant submitted the Offshore Scoping Report (BOWFL, 2024) to MD-LOT to support a request for a formal Scoping Opinion from Scottish Ministers in relation to the Proposed Development. The Scoping Opinion (Bowdun Wind Farm Scoping Opinion (MD-LOT, 2024)) was received in November 2024.

4.4.2 The Offshore Scoping Report outlined how the Offshore EIA Report would be presented. The Scoping Opinion provided additional detailed guidance on the scope and content of the Offshore EIA Report, highlighting key environmental issues and areas of concern that need to be addressed.

4.4.3 Based on the Offshore Scoping Report and the Scoping Opinion, the Offshore EIA Report focuses on the following topic areas for impacts arising from the Proposed Development below Mean High Water Springs (MHWS) (including Inter-Related Effects between topics):

- Offshore Physical Environment:
  - physical processes;
  - subsea noise; and
  - water framework assessment
- offshore biological environment:
  - benthic ecology;
  - fish and shellfish ecology;
  - marine mammals;
  - offshore ornithology; and
  - offshore bats
- offshore human environment:
  - commercial fisheries;
  - shipping and navigation;
  - aviation and radar;
  - infrastructure and other users;
  - major accidents and disasters;
  - socio-economics, tourism and recreation;
  - marine archaeology;
  - seascape, landscape and visual impacts;
  - cultural heritage; and
  - climatic change.

4.4.4 Following receipt of the Scoping Opinion, Table 4.3 details the topics which have been scoped out of further consideration and identifies additional topics which have been included in the Offshore EIA Report.

Table 4.3: Topics that have been Scoped In and Out Following Receipt of the Scoping Opinion

Topic	Determination	Decision
Offshore Bats	Scoped into the Offshore EIA Report	NatureScot's response to the Scoping Report stated that "*Nathusius' pipistrelle bats will need to be considered under EIA for the Offshore Project*". As such, the Applicant has undertaken additional work to determine the presence of *N. pipistrelle* bats, as well as other species of bat, and determine if there is a likely significant environmental effect on this receptor due to the Proposed Development (Volume 2, Chapter 12: Offshore Bats).
Offshore Water Quality	Scoped out of the Offshore EIA Report	The Applicant, during the scoping stage, has determined that the Proposed Development is unlikely to result in significant environmental effects on offshore water quality (BOWFL, 2024). MD-LOT's response within the Scoping Opinion (MD-LOT, 2024), advised consultation with SEPA. Consultation with SEPA has determined that Offshore Water Quality can be scoped out of the Offshore EIA Report. However, to fulfil the criteria listed in SEPA's Standing Advice, a Water Framework Directive assessment has been undertaken (Volume 3, Technical Appendix 7.5: Offshore Water Framework Directive).
Other Environmental Topics	Scoped out of the Offshore EIA Report	The Applicant, during the scoping stage, identified several topics which could be scoped out of the Offshore EIA Report as they are considered within other topic chapters. These include: • human health; • waste; and • other residues and emissions. MD-LOT's response within the Scoping Opinion (MD-LOT, 2024), stated that "*The Scottish Ministers acknowledge Section 24.2 of the Scoping Report which notes topics that are proposed to be scoped out of further consideration in the EIA Report as they will be considered within relevant receptor chapters. The Scottish Ministers are content with what is proposed and provide no further comment.*" Furthermore, the Scoping Report also identified the following topics which could be fully scoped out of the Offshore EIA Report. These are: • offshore airborne noise and vibration; and • air quality.

Topic	Determination	Decision
		MD-LOT's response within the Scoping Opinion (MD-LOT, 2024), stated that "*The Scottish Ministers acknowledge the Developer's proposal to scope out offshore air quality for the offshore elements of the Proposed Development from further assessment in the EIA Report. The Scottish Ministers are content with what is proposed and provide no further comments.*"

4.4.5 It should be noted that during the scoping phase, each topic underwent a thorough evaluation to identify potential impacts. This process involved determining which impacts should be included (scoped in) and which could be excluded (scoped out) from topics and inclusion within the Offshore EIA Report. The decisions made during the scoping phase were based on detailed analysis in relation to the identification of significant effects, and consultation received throughout the scoping process. The justification for these decisions, including the rationale for scoping in or out specific impacts, is comprehensively described in the relevant topic chapters of the Offshore EIA Report (Volume 2, Chapters 7 to 23).

4.5 Key Principles of the Environmental Impact Assessment

Overview

4.5.1 Within this Offshore EIA Report, the assessment of each topic (e.g. physical processes, marine mammals, infrastructure and other users, etc.) are presented in a separate topic specific chapters. Within each of the topic chapters, unless otherwise stated, the following matters have been considered:

- **Study Area** - identification and explanation of the Study Area for the topic specific assessments;
- **Legislative and Policy Context** - description of topic specific legislation and policy and how it has been considered within the chapter;
- **Consultation** - summary of consultation and engagement activities, including (but not limited to) comments received as part of the Bowdun Offshore Scoping Opinion (MD-LOT, 2024), pre-application consultation events and stakeholder meetings;
- **Data Sources** – summary of where data, used in the development of the baseline, were collected from;
- **Baseline Environment** - description of the environmental baseline conditions, including future baseline;

- **Key Parameters for Assessment** - identification of the MDS for each potential impact, including impacts scoped out of the assessment with justification;
- **Methodology for Assessment of Likely Significant Effects –** description of the assessment methodology undertaken specific to each chapter;
- **Embedded Measures and Mitigation** - description of the Embedded Mitigation measures adopted as part of the Proposed Development;
- **Assessment of Significance** - identification of likely impacts and assessment of the significance of effects, taking into account any Embedded Mitigation adopted as part of the Proposed Development, identification of any Additional Mitigation measures required in respect of likely significant environmental effects (in addition to any Embedded Mitigation measures adopted as part of the Proposed Development), together with consideration of any residual effects;
- **Inter-Related Effects** - description and summary of any receptors subject to the combined effects of the Proposed Development. All potential cross spatial and cross temporal impacts on the receptor will be considered;
- **Cumulative Effects Assessment** - assessment of any Cumulative Effects between the Proposed Development and other developments on a single receptor. These will include projects which have become operational since the collection of baseline data, projects under construction, those with consent, projects for which an application for consent has been submitted but not yet determined, projects in scoping, where an Agreement for Lease (AfL) has been granted and there is information in the public domain to allow for a meaningful assessment, and the onshore elements of the Project;
- **Proposed Monitoring -** identification of any future monitoring required; and
- **Transboundary Effects** - assessment of any transboundary effects (i.e. effects upon European Economic Area (EEA) states).

4.5.2 In addition to this, Inter-Related Effects (i.e. inter-relationships between environmental topic areas) have been assessed in a separate standalone chapter (Volume 2, Chapter 23: Inter-Related Effects) which considers the impacts of the Proposed Development on each of the identified receptor groups and includes consideration of ecosystem assessment for relevant topics.

4.5.3 The effects of climate change on future baseline conditions have been considered within the description of baseline conditions for each topic and, therefore, are inherently considered in the assessment of likely significant environmental effects on the receptors in the respective topic chapters (Volume 2, Chapters 7 to 23). The climate change assessment for the Proposed Development has been included in the Climatic Effects chapter and appendices (Volume 2, Chapter 22: Climatic Change; Volume 3, Technical Appendices 22.1, 22.2 and 22.3).

4.5.4 The effects of the Proposed Development on human health are included within the relevant topics of this Offshore EIA Report.

Evidence Based Approach

4.5.5 The Proposed Development is situated 38 km off the Aberdeenshire coast within the ScotWind leasing round E3 Plan Option covering an area of 187 km^2, for which there exists substantial data and knowledge available regarding the environmental baseline. This data/knowledge has been acquired through (but not limited to) surveys and assessments undertaken for Hywind Scotland, Kincardine, and the Seagreen 1 and 1A Offshore Windfarm Projects as well as large-scale studies for particular receptors such as marine mammals. The Applicant has also commissioned site-specific surveys, undertaken as part of the baseline studies. Where possible in this Offshore EIA Report, the Applicant has made use of these data to:

- characterise the baseline environment to inform the EIA where data are sufficient and appropriate to do so;
- identify data gaps;
- support scoping out of impacts where there is clear evidence of lack of a receptor-impact pathway; and
- where impacts have been scoped in, to draw upon the pre-existing evidence base in addition to site-specific and recent data where appropriate.

4.5.6 Each topic chapter of this Offshore EIA Report (Volume 2, Chapters 7 to 23) seeks to provide a description of:

- the data that have been obtained, including the role of the current datasets, as well as publicly available desktop data sources, in defining the baseline environment for the Proposed Development;
- the role of the datasets, as well as publicly available data sources (including an explanation as to whether this data is sufficient, appropriate and contemporaneous) in the Proposed Development assessments of effects; and
- if necessary, a description of additional data collected to inform the Proposed Development assessment of effects.

Proportionate EIA

4.5.7 The Offshore EIA Report should provide a concise, proportionate but robust assessment of the likely significant environmental effects associated with a development (IEMA, 2017). A detailed but proportionate EIA helps inform decision-making, although the level of detail provided as part of the EIA is a matter of professional judgement.

4.5.8 The Applicant understands that the EIA needed to be considered from an early stage in project planning and design, and to ensure the EIA is robust and proportionate has:

- made use of existing data and evidence, including publicly available sources, in order to develop a strong understanding of the environmental baseline and to allow 'scoping out' of impacts, where justified;
- included Embedded Mitigation measures at an early stage, including adoption of good practice and project design measures; and
- incorporated early advice and the addressing of concerns from consultees and stakeholders so appropriate measures can be developed (see Volume 2, Chapter 5: Consultation and Engagement and the relevant topic chapters; Volume 2, Chapters 7 to 23).

Maximum Design Scenario

4.5.9 The PDE approach, also known as the "Rochdale Envelope" approach (Scottish Government, 2022), has been adopted for assessing the impacts of the Proposed Development. This approach allows for the assessment of likely significant environmental effects based on the realistic 'worst case' parameters.

4.5.10 Volume 1, Chapter 3: Project Description sets out the PDE for the Proposed Development and identifies the range of potential parameters or options for relevant components or design elements of the Proposed Development.

4.5.11 The PDE approach has been utilised because technology selection and detailed design will not be undertaken until later in the Project timeline (i.e. post consent decision). The design of the Proposed Development will likely go through multiple iterations in order to take account of environmental constraints and stakeholder feedback received during the EIA process, and as a result of outputs from site investigations, as well as engineering and design studies.

4.5.12 The PDE has been used to develop the MDSs. The MDSs consider the design option that has the potential to cause the greatest environmental impact to a particular receptor. The MDS has been derived from the range of design parameters provided in the PDE and has been applied in each topic assessment (Volume 2, Chapters 7 to 23). As an example, the Proposed Development will have a range of potential options for the

seabed area covered by Wind Turbines, dependant on their size, layout and foundation type. The impact assessment has therefore been carried out on the design option which has the potential to result in the greatest impact for a particular receptor. In this example, this will be the maximum number of Wind Turbines and the foundation design with the largest seabed footprint. If it is shown that no likely significant environmental effect is anticipated for this design option, then it can then be assumed that any parameters which are equal to or less than those assessed will have the same level of, or less, environmental effect.

4.5.13 For each of the topic chapters (Volume 2, Chapters 7 to 23) within this Offshore EIA Report, and for each of the impacts assessed, the MDS considered has been the scenario which would give rise to the greatest potential impact and effect and has formed the basis of the assessment of effects.

4.5.14 Employing the MDS approach allowed the Applicant to retain necessary flexibility in design of the Proposed Development at the point of Offshore Application, within certain maximum design scenarios, all of which are fully assessed in the Offshore EIA Report. Flexibility in design is required to allow for future project design iterations which may be required as a result of advancements in technology, or as a result of design changes to account for greater understanding of the site conditions.

4.6 Mitigation Measures

Overview

4.6.1 As a part of the EIA process, mitigation measures have been used to avoid, reduce or offset potential impacts, reducing the potential for significant effects to occur. The EIA Regulations require that where likely significant environmental effects are identified, "*a description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements*" to be included in the Offshore EIA Report.

4.6.2 Mitigation within the EIA process can be categorised into the following:

- Primary mitigation;
- Secondary mitigation; and
- Tertiary mitigation.

4.6.3 The iterative assessment process for the Proposed Development includes a feedback loop (Figure 4.1) where the mitigation hierarchy is applied. An impact, and the significance of the resulting effect, are initially assessed, and if this is considered to be a significant adverse effect in EIA terms, changes are made (where reasonably practicable) to the relevant project design parameters or specific mitigation measures are introduced to

avoid, reduce or offset the magnitude of the potential impact. This assessment is repeated, and the process continues, until:

- the effect has been reduced to a level that is not significant in EIA terms; or
- considering other limitations, no additional changes can be made to the project design parameters, nor are there feasible mitigation measures available to lessen the impact's magnitude (and consequently its significance). In such instances, an overall effect that remains significant in EIA terms is reported in the Offshore EIA Report.

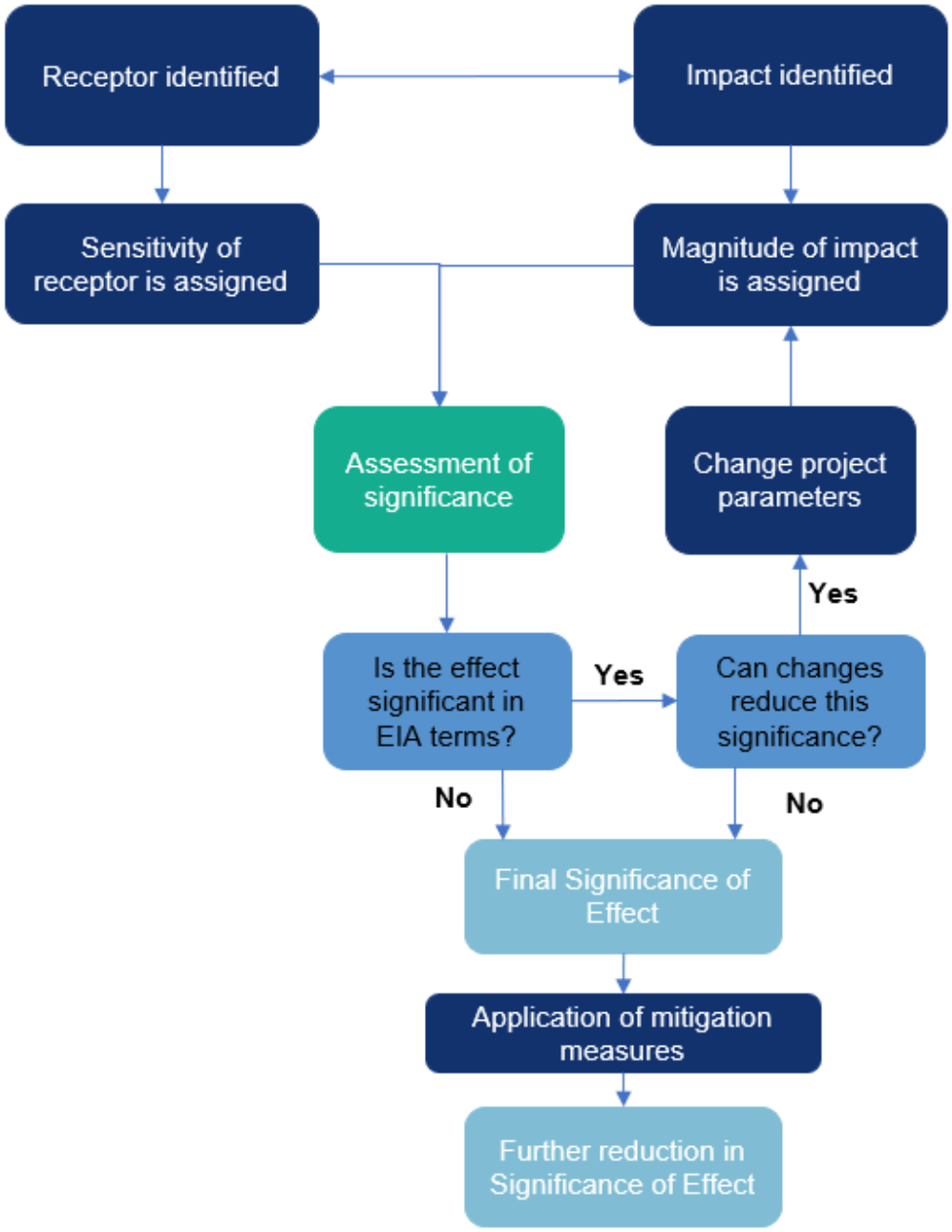

Figure 4.1: Proposed Iterative Approach to Mitigation Within the Proposed Development EIA

Primary Mitigation

4.6.4 IEMA (2024) describe primary (inherent) mitigation as: "*Modification to the location or design of the development made during the pre-application phase that are an inherent part of the project, and do not require additional action to be taken*".

4.6.5 Primary mitigation has been included within the term 'Embedded Mitigation' within this Offshore EIA Report. Note that both primary and tertiary mitigation (see below for further information on tertiary mitigation) form the collective term 'Embedded Mitigation'.

4.6.6 The iterative approach to the assessment process has been utilised to inform the design of the Proposed Development (through the identification of likely significant environmental effects and the development of Embedded Mitigation to address these). The incorporation of such mitigation measures within the design demonstrates a commitment to implementing the identified mitigation measures.

4.6.7 By employing this approach, the significance of effect presented in this Offshore EIA Report is considered representative of the maximum effect that the Proposed Development will have, should the application for consent be approved and the Proposed Development be constructed and operated.

Secondary Mitigation

4.6.8 IEMA (2024) describe secondary (Additional) mitigation as: "*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 Environmental Statement*".

4.6.9 Within this Offshore EIA Report, secondary mitigation has been considered as 'Additional Mitigation' which has been applied after the initial assessment process has been completed to prevent, reduce and offset likely significant environmental effects which could not be avoided through Embedded Mitigation.

Tertiary Mitigation

4.6.10 IEMA (2024) describe tertiary (inexorable) mitigation as: "*Actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirement, or actions that are considered to be standard practices used to manage commonly occurring environmental effects*".

4.6.11 For the purpose of the EIA, both primary and tertiary mitigation has been referred to as 'Embedded Mitigation' whilst secondary mitigation has been referred to as 'Additional Mitigation'.

4.6.12 Both Embedded and Additional Mitigation measures proposed to reduce the significance of impact, have been detailed within the topic chapters of the Offshore EIA Report and summarised in Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments.

4.7 Identification of Impacts and Significance of Effect

Impacts and Effects

4.7.1 Information about the Proposed Development (including the MDS) and the proposed activities within all stages of the Proposed Development life cycle (construction, Operation and Maintenance (O&M), and decommissioning) have been combined with information about the environmental baseline to identify the potential interactions between the Proposed Development and the environment.

4.7.2 These potential interactions are known as impacts. The impacts are then assessed for the level of significance of their effect on the receiving environment/receptors.

4.7.3 To ensure consistency across the Offshore EIA Report, the terms effect and impact are defined below:

4.7.4 '**Impact'** is defined as a change caused by an action that occurs during a Proposed Development's lifetime. For example, changing the environment through either the Proposed Development actions or the presence of the Proposed Development. Impacts are categorised through various characteristics as shown in Table 4.4. Impacts can be positive or negative.

4.7.5 **'Effect'** is defined as the consequence of an impact. For example, the installation of subsea cables (action) results in a disturbance of the seabed (impact), which may cause a loss of benthic habitat (effect). Effects fall into the same groups as the categories for impacts listed in Table 4.4.

Table 4.4: Definition of Impact Terms Relevant to the Offshore EIA Report

Impact Categories	Description
Direct or Indirect	Direct impacts occur at the same time as an action and occur within the same area, as opposed to indirect impacts which still result from an action but arise later or in a different area.
Adverse or Beneficial	Adverse impacts have a negative effect on the environment whilst beneficial impacts have a positive effect on the environment.
Reversible or Irreversible	Reversible impacts are temporary, with natural recovery possible, unlike irreversible impacts, where natural recovery is not possible.
Inter-related	The potential effects of multiple impacts from the construction, O&M and decommissioning of the Proposed Development, affecting one receptor.
Cumulative	Impacts that arise from a combination of the Proposed Development and other projects.

Impact Categories	Description
Transboundary	When an impact has an effect on a receptor that falls within the boundary of another EEA.

4.7.6 The significance of effects is determined by consideration of the magnitude of impact alongside the sensitivity of each receptor/receptor group in accordance with the defined significance criteria.

Determining Magnitude of Impacts

4.7.7 The magnitude of an impact is the consideration of the spatial extent, duration, frequency and reversibility of an impact from the construction, O&M or decommissioning of the Proposed Development (Table 4.5).

Table 4.5: Definition of Terms Relevant to Defining the Magnitude of an Impact (Highways Agency *et al.* (2020) and CIEEM (2019))

Term	Definition
Spatial extent of the impact	The spatial or geographical area over which the impact/effect may occur under a suitably representative range of conditions (e.g. noise transmission under water).
Duration of the impact	The time over which an impact occurs. Duration should be defined in relation to ecological characteristics (such as the lifecycle of a species) as well as human timeframes. An impact may be described as short, medium or long-term and permanent or temporary.
Frequency of the impact	The number of times or how often an activity occurs over the relevant phase of the Proposed Development and will influence the resulting effect.
Reversibility of the impact	An irreversible impact is one from which recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it. A reversible effect is one from which recovery is possible or which may be counteracted by mitigation. In some cases, the same activity can cause both reversible and irreversible impact.

4.7.8 The definition and determination of the magnitude of impact may vary for specific pathways, receptors and individual technical assessments and relevant further information is provided in the applicable topic chapters (Volume 2, Chapters 7 to 23). However, the magnitude of the impact has been defined within each topic chapter according to the following scale:

- negligible;
- low;
- medium; and
- high.

4.7.9 Definitions for each of these categories has been set out in Table 4.6, which describes both positive and negative magnitudes of change

(adapted from Highways Agency *et al*. (2020)). Each of the topic chapters contains topic specific definitions for each of these categories which are based upon topic-relevant external policy, guidance, standards and other material, including specialist knowledge and professional judgement.

Table 4.6: Definition of Terms Relating to the Magnitude of an Impact (Highways Agency *et al*., 2020)

Magnitude of Impact	Definition
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse).
	Very minor benefit to, or positive addition of one or more characteristics, features or elements (Beneficial).
Low	Some measurable change in attributes, quality or vulnerability, minor loss, or alteration to, one (maybe more) key characteristics, features or elements (Adverse).
	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial).
Medium	Loss of resource but not adversely affecting the integrity of resource; partial loss of/damage to key characteristics, features or elements (Adverse).
	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality (Beneficial).
High	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements (Adverse).
	Large scale or major improvement in resource quality; extensive restoration or enhancement; major improvement of attribute quality (Beneficial).

Determining Sensitivity of Receptors

4.7.10 Receptors have been defined as the physical or biological resources or human groups that could be affected by the potential impact resulting from the Proposed Development. These receptors are identified through available data and baseline studies compiled as part of this Offshore EIA Report and detailed within each topic chapter (Volume 2, Chapters 7 to 23).

4.7.11 In defining the sensitivity for each receptor/receptor group, the recoverability, value/importance, and vulnerability of that receptor will be taken into consideration. These terms are defined in Table 4.7 and are used on a basis appropriate to each topic chapter. In instances where these considerations are not included in the assessment, or additional factors are considered when determining sensitivity, the reason for this is explained within the relevant topic chapter.

Table 4.7: Definition of Terms Relevant to Defining the Sensitivity of a Receptor

Term	Definition
Vulnerability of the receptor	The degree to which a receptor is susceptible to injury, damage, or harm from an activity (Intergovernmental Panel on Climate Change (IPCC), 2007).
Recoverability of the receptor	The ability of a habitat, community or individual (or individual colony) of species to redress damage sustained as a result of an external factor (Marine Life Information Network (MarLIN), 2020).
Value/Importance of the receptor	Importance of the receptor in terms of ecological, social/community and/or economic value (CIEEM, 2019).

4.7.12 Sensitivity has been defined within each topic chapter, unless otherwise specified, according to the following scale:

- negligible;
- low;
- medium;
- high; and
- very high.

4.7.13 The definitions for each category are outlined in Table 4.8, based on those from Highways Agency *et al.* (2020), which is recognised as best practice guidance for defining sensitivity. Each topic chapter includes specific definitions derived from relevant external policies, guidance, standards, and expert knowledge.

4.7.14 Sensitivity determination for a receptor depends on the EIA topic or receptor in question, with details provided in the respective topic chapter of the Offshore EIA Report. These definitions are based on expert judgement, specialist knowledge, and topic-relevant guidance, with justifications included where applicable.

Table 4.8: Definition of Receptor Sensitivity Values (based on Highways Agency *et al.*, 2020)

Sensitivity of the Receptor	Description
Negligible	Very low importance and rarity, local receptor and very high potential for recovery.
Low	Low or medium importance and rarity, local receptor and high potential for recovery.
Medium	High or medium importance and rarity, regional receptor, and potential for recovery.
High	High importance and rarity, international and/or national receptor and limited potential for recovery.
Very High	Very high importance and rarity, an international receptor with no potential or very limited potential for recovery.

4.7.15 Where topics have deviated from the methodology described within this chapter, topic-specific methodologies have been described within their relevant chapter.

Evaluation of Significance of Effect

4.7.16 The overall significance of an effect has been determined through consideration of both the magnitude of impact and alongside the sensitivity of the receptor. To ensure consistency in defining the significance of an effect, a matrix approach has been adopted, as presented in Table 4.9.

4.7.17 Where a range is suggested for the significance of effect (i.e. Minor to Moderate), the final significance is based upon the topic expert's professional judgement as to which outcome delineates the most likely effect, with an explanation as to why this is the case. Where specific assessment methodologies or alternative approaches to the determination of significance are used, these are clearly detailed and explained in the relevant topic chapter (Volume 2, Chapter 7 to 23).

4.7.18 The matrix approach is consistent with the general approach described in the Design Manual for Roads and Bridges (DMRB) (Highways Agency *et al.*, 2020), which is recognised as best practice guidance for defining sensitivity and EIA for Offshore Renewable Energy Projects – Guide (BSI, 2015). However, several modifications have been made in the interest of proportionality, including:

- an impact of negligible magnitude will always lead to an effect that is less than or equal to Minor as per the matrix approach included in Table 4.9; and
- receptors of negligible importance, value or sensitivity will not be considered further because it will always lead to a non-significant effect as per the matrix approach in Table 4.9.

4.7.19 The approach to the assessment of significance of effects was included in the Scoping Report and was agreed with stakeholders as part of the scoping exercise, and confirmed as part of the Scoping Opinion.

Table 4.9: Assessment of Significance, Showing the Combinations of Receptor Sensitivity and Magnitude of Impact

Value		Magnitude of Impact			
		Negligible	**Low**	**Medium**	**High**
Sensitivity of Receptor	**Negligible**	Negligible	Negligible or Minor	Negligible or Minor	Minor
	Low	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
	Medium	Negligible or Minor	Minor	Moderate	Moderate or Major
	High	Minor	Minor or Moderate	Moderate or Major	Major
	Very High	Minor	Moderate or Major	Major	Major

4.7.20 For the purposes of this assessment:

- a level of significance of effect of moderate or more will be considered a 'significant' effect in terms of the EIA Regulations; and
- a level of significance of effect of Minor or less will be considered 'not significant' in terms of the EIA Regulations.

4.7.21 Effects of moderate significance or above are therefore considered important in the decision-making process, whilst effects of Minor significance or less warrant little if any, weight in the decision-making process. The definitions of each of the significance levels are presented in Table 4.10.

Table 4.10: Definition of Significance (BOWFL, 2024)

Effect	Justification
Negligible	No effects or those that are beneath levels of perception, within normal bounds of variation, or within the margin of forecasting error.
Minor	These beneficial or adverse effects are generally, but not exclusively, raised as local factors. They are unlikely to be critical in the decision-making process but are important in enhancing the subsequent design of the Proposed Development.
Moderate	These beneficial or adverse effects have the potential to be important and may influence the decision-making process. The Inter-Related and/or Cumulative Effects of such factors may influence decision-making if they lead to an increase in the overall adverse or beneficial effect on a particular resource or receptor.
Major	These beneficial or adverse effects are very important and are likely to be material in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national, or regional importance. However, a major change in a site or feature of local importance may also enter this category.

4.7.22 In some instances, chapters may deviate from the above methodology due to specific assessment requirements as laid out by their specific topic guidance, in these instances the topic will describe the appropriate methodology by which the assessment of significance has been undertaken.

Embedded and Additional Mitigation

4.7.23 Following the assessment of impacts, with Embedded Mitigation applied, if an impact has the potential to cause a significant effect (moderate significance or above), where reasonably practicable, Additional Mitigation has been applied. These measures are designed to reduce or offset the magnitude of the impact. It is important to note that even after mitigation, the residual effect could still be significant in terms of the EIA Regulations (see Residual Effects below).

4.7.24 Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments provides a summary of the mitigation commitments, including the Embedded Mitigation and Additional Mitigation detailed within the topic chapters of the Offshore EIA Report. The means of implementation is also specified for each of the mitigation commitments.

Residual Effects

4.7.25 Residual effects are defined as the effects remaining once all mitigation measures have been applied following the completion of impact assessment. Following the identification of Additional Mitigation as described above, in addition to Embedded Mitigation, the assessment re-evaluates the significance of effect utilising the methodology outlined above.

4.8 Inter-Related Effects

4.8.1 The EIA Regulations require consideration of the inter-relationships between EIA topics that may not be significant alone but may have a higher significance when considered with inter-related environmental effects. For example, the separate impacts of underwater sound and habitat loss may together influence a single receptor, such as marine mammals. Underwater sound from construction activities can disrupt the communication, navigation, and feeding behaviours of marine mammals. Simultaneously, habitat loss due to seabed disturbance can reduce the availability of critical feeding and breeding grounds. When these impacts are considered together, the combined effect on marine mammals may be more significant than each impact assessed in isolation.

4.8.2 The assessment of potential Inter-Related Effects has been carried out concurrently considering two levels of potential effect:

- project lifetime effects: effects that occur throughout more than one phase of the Proposed Development (e.g. construction, O&M, decommissioning); and

- receptor led effects: effects that interact spatially and/or temporally resulting in Inter-Related Effects upon a single receptor during a single phase of the Proposed Development.

4.8.3 Within this Offshore EIA Report, an assessment of Inter-Related Effects has been undertaken with specific reference to the potential for such effects to arise in relation to receptor groups. The term 'receptor group' is used to highlight the fact that the proposed approach to the inter-relationships assessment will, in the main, not assess every individual receptor assessed in the EIA, but rather, potentially sensitive groups of receptors.

4.8.4 Inter-Related Effects are identified and assessed in Volume 2, Chapter 23: Inter-Related Effects, and includes a descriptive assessment outlining the potential for individual effects to combine, incorporating qualitative and, where reasonably practicable, quantitative assessments, to potentially create additional effects that may be of greater significance than the individual effects acting in isolation. Furthermore, a summary of Inter-Related Effects has been included within each topic chapter (Volume 2, Chapters 7 to 23).

4.8.5 The approach for assessing the potential Inter-Related Effects on each receptor or receptor group followed the key steps below:

- reviewed the topic chapters of the Offshore EIA Report to identify receptors or receptor groups requiring assessment and the likely effects on each receptor or receptor group; and
- assessed how individual effects might combine to create Inter-Related Effects on each receptor or receptor group for project lifetime effects and receptor-led effects, and concluded on likely significant inter-related effect.

4.8.6 Where the significance of an effect within the topic specific assessment has been identified as 'negligible across all stages of the project', the assumption has been made that these effects can not contribute to any Inter-Related Effects. These effects will, therefore, not be included in the Inter-Related Effects assessment as any effect is predicted to be negligible for the Proposed Development over the lifetime of the Project.

4.8.7 The inter-related assessment considers only effects from the Proposed Development and not those from other projects, which will be considered in the CEA.

4.8.8 Additional details on the approach and methodology followed for the assessment of Inter-Related Effects relating to the Proposed Development are provided in Volume 2, Chapter 23: Inter-related Effects.

4.9 Cumulative Effect Assessment

Overview

4.9.1 Under the EIA Regulations, a CEA is required to provide consideration of the impacts arising from the Proposed Development alone and cumulatively with other relevant projects and activities. Cumulative Effects are therefore the combined effects of the Proposed Development assessed together with effects from one or more different projects and activities on the same receptor/resource.

4.9.2 The term cumulative assessment has been used in this Offshore EIA Report to describe the assessment of incremental changes caused by other reasonably foreseeable actions alongside the Proposed Development. The term 'in-combination' is reserved for use in the context of the separate Habitats Regulations Appraisal (HRA) requirements. Therefore, to avoid confusion the term 'in-combination' is not used in this Offshore EIA Report.

4.9.3 This section provides an overview of the legislation and guidance associated with the CEA and the approach to CEA. Further information on the CEA methodology can be found in Volume 3, Technical Appendix 4.4: Cumulative Effects Assessment – Screening.

Policy, Legislation and Guidance

4.9.4 An assessment of Cumulative Effects is required in accordance with the EIA Directive (2011/92/EU, as amended by Directive 2014/52/EU) and the EIA Regulations.

4.9.5 The EIA Directive (Annex IV, paragraph 5(e), on the information for the EIA report, states that the following should be included: "*A description of the likely significant effects of the project on the environment resulting from, inter alia:... (e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources*".

4.9.6 Paragraph 5 of Annex IV of the EIA Directive also states: "*The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project*".

4.9.7 This is transposed directly into domestic law through the EIA Regulations.

4.9.8 There are several other relevant guidance documents which have been considered in the development of the CEA, including:

- A Handbook on EIA: Guidance for Competent Authorities, Consultees and Others Involved in the EIA Process in Scotland (NatureScot, 2018);
- EIA for Offshore Renewable Energy Projects (BSI, 2015);
- Nationally Significant Infrastructure Projects: Advice on CEA (PINS, 2024).
- Guidance to support Offshore Wind Applications – Marine Ornithology Impact Pathways for Offshore Wind Developments (NatureScot, 2023).
- Offshore wind, wave and tidal energy application: consenting and licensing manual (Marine Scotland, 2018);
- Renewable UK Cumulative Impact Assessment Guidelines. Guiding Principles for Cumulative Impacts Assessment in Offshore Wind Farms (Renewable UK, 2013); and
- Guidance on The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (Scottish Government, 2017).

4.9.9 References to CEA in the legislative, policy, and guidance documents in Section 4.2 have been included in the CEA approach. The scope of the CEA aligns with the EIA Policy and Legislation requirements detailed in Volume 1, Chapter 2: Policy and Legislation.

Approach to the Cumulative Effect Assessment

4.9.10 This section describes the approach for creating the long list and shortlist of projects and activities to include in the CEA, and describes the approach to undertaking a CEA within a topic chapter. A full description of how the CEA long list and shortlist of projects and activities have been created, including all projects long/shortlisted can be found in Volume 3, Technical Appendix 4.4: Cumulative Effects Assessment - Screening. Where topics have deviated from the approach, this has been described within the chapter.

4.9.11 The Marine Scotland (2018) Consenting and Licensing Guidance: For Offshore Wind, Wave and Tidal Energy Applications states that "*Engagement with MD-LOT is required to identify which plans/projects/ongoing activities should be included in the in-combination element of the CEA*". This has been undertaken.

4.9.12 The methodology for the screening of potential projects and activities to provide Cumulative Effects is also presented in Figure 4.2.

Maximum Design Scenario

4.9.13 Similar to the MDS approach within Section 4.5, the CEA will consider the MDS for each project and activity screened in that has the potential to result in an effect on an identified receptor or receptor group, cumulatively with the Proposed Development.

Screening Stage

4.9.14 A fundamental requirement of undertaking the CEA is to identify foreseeable developments or activities, including the onshore elements of the Project, with which the Proposed Development may interact to result in Cumulative Effects. There is the potential for an interaction to occur at all phases (construction, O&M, and decommissioning) of the Proposed Development to result in Cumulative Effects. The process of identifying those projects or activities for which there is the potential for an interaction to occur is referred to as 'screening'.

4.9.15 A methodology has been developed to systematically and transparently screen which projects and activities may act cumulatively with the Proposed Development and need to be considered as part of the CEA. This involves a staged process that considers the level of detail available for projects and activities, as well as the potential for interactions on a conceptual, spatial and temporal basis. See Volume 3, Technical Appendix 4.4: Cumulative Effects Assessment – Screening for CEA methodology details.

Compiling the CEA Long List

4.9.16 To ensure a thorough and comprehensive approach to the identification of potential projects considered in the CEA, an initial 'long list' of projects within a defined CEA search area (Volume 3, Technical Appendix 4.4: Cumulative Effects Assessment – Screening).

4.9.17 Offshore wind projects, including the onshore elements of the Project, have been considered in the long list, alongside other developments including those which:

- have become operational since baseline data was collected;
- are under construction;
- have consent;
- are the subject of an application for consent that has been submitted but not yet determined;
- are in scoping or have a Scoping Opinion; and
- are projects which are "*reasonably foreseeable*" (i.e. developments that are being planned, such as in the case of offshore renewable energy developments, projects which have a Crown Estate Scotland

(CES) AfL, and for which there is information in the public domain to allow for a meaningful assessment).

4.9.18 The CEA has considered all other relevant projects that are publicly available.

4.9.19 To allow for the finalisation of the Offshore EIA Report, a minimum six-month cut-off period to submission of the Offshore EIA Report is used for the inclusion of cumulative projects to be assessed quantitatively, and a minimum of three-month cut-off period prior to submission used for the inclusion of cumulative projects to be assessed qualitatively, after which no new or updated information will be considered as part of the CEA.

4.9.20 The CEA long list for the Proposed Development is provided in Volume 3, Technical Appendix 4.4: Cumulative Effects Assessment - Screening. This long list has been developed using datasets from MD-LOT, the Crown Estate (CE) and CES (amongst others), to identify projects in the vicinity of the Proposed Development relating to certain topics such as commercial fisheries, cables and pipelines, energy and oil and gas.

CEA Screening

4.9.21 Projects within the CEA search area were screened in based on the following criteria:

- **Conceptual overlap:** for a conceptual overlap to occur it must be established that such an impact has the potential to affect the receptor(s) in question, directly or indirectly. In EIA terms this has been described as an impact-receptor pathway and is defined here as a conceptual overlap.
- **Spatial overlap:** refers to the ability for impacts arising from the Proposed Development to overlap with those from other projects or activities on a receptor basis. This means that, in most examples, an overlap of the spatial extents of the impacts arising from two (or more) projects must be established for a Cumulative Effect to arise. Exceptions to this exist for certain mobile receptors, such as marine mammals and ornithology receptors, that may move between, and therefore be subject to, two or more separate spatial extents of impact from two or more projects.
- **Temporal overlap:** refers to the overlapping of development phases (i.e. construction, O&M, or decommissioning) of two or more projects or activities. In order for a Cumulative Effect to arise from two or more projects or activities, a temporal overlap of effects arising from each must be established. It should be noted that some impacts are active only during certain phases of development, such as piling noise during construction. In these cases, it is important to establish the extent to which an overlap may occur between the specific phase of the Proposed Development and other projects or activities.

The absence of a strict overlap, however, may not necessarily preclude a Cumulative Effect as receptors may become further affected by additional, non-temporally overlapping project phases.

4.9.22 This screening stage was based on the experience and knowledge of technical specialists, and the current guidance and EIA Regulations. The projects that remain after review of the long list are taken forwards to the assessment stage.

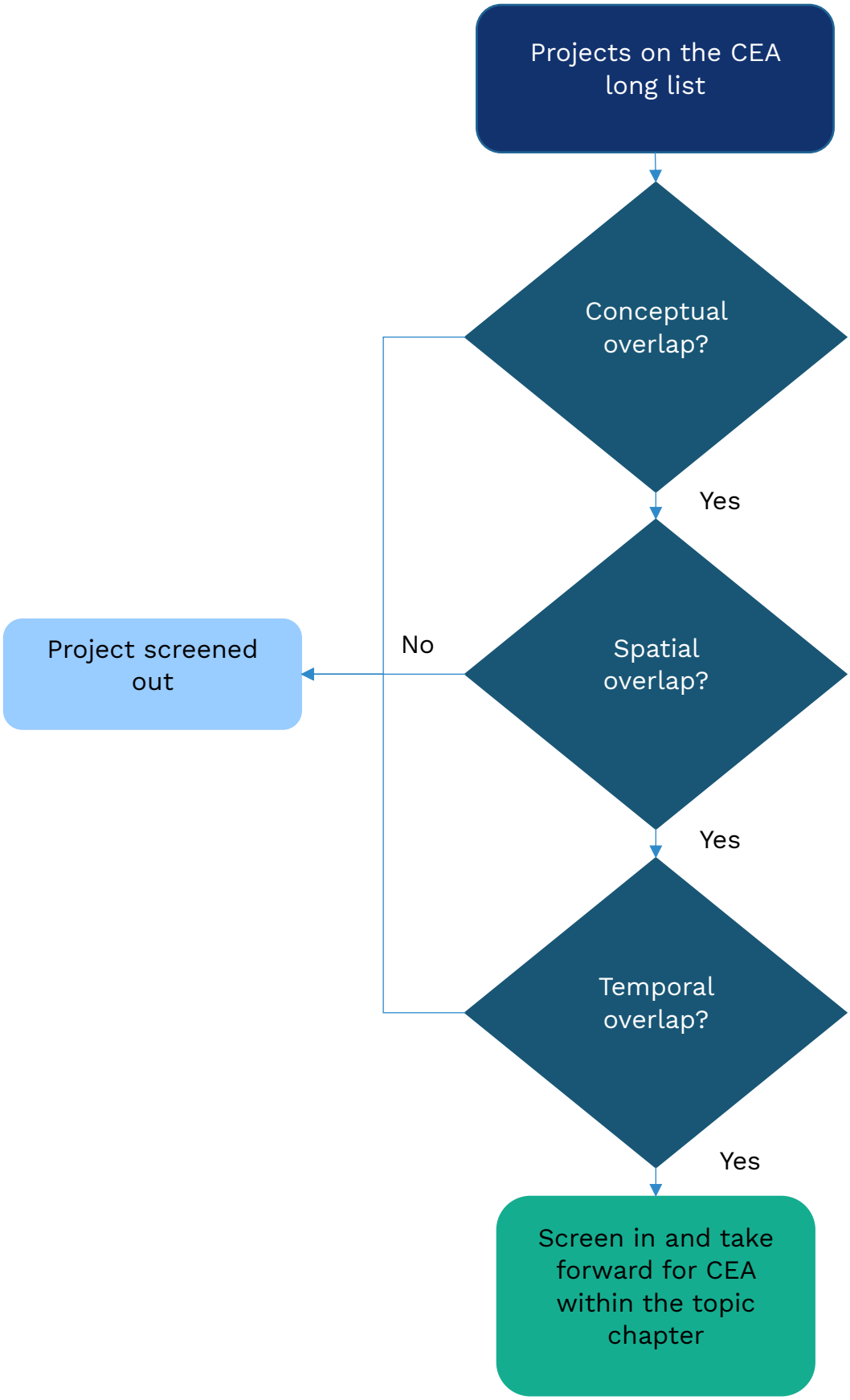

Figure 4.2: CEA Methodology for the Screening of Potential Projects

Assessment Stage

4.9.23 Following the screening stage, a shortlist of all projects and activities screened in for further topic screening, as set out below, and assessment was produced. This list is specific to each topic (although several projects and/or activities will be relevant to multiple topics) and presents all projects and activities considered in each topic chapter's CEA and was further screened on the following set of defined screening criteria:

- screened out of the assessment because the project:
  - is included as part of the topic baseline, so not considered within the CEA;
  - has no conceptual or physical effect-receptor pathway;
  - low data confidence;
  - has no physical effect-receptor overlap;
  - has no temporal overlap; or
  - the project has been withdrawn from development or operation
- screened into the assessment because the project or activity:
  - has conceptual overlap, and/or spatial overlap and/or temporal overlap
- projects which are built or operational at the time of data collection have generally been screened out. This is because these projects have been accounted for within the baseline environment. The exception to this is where projects have an ongoing impact (for example, ongoing operations and maintenance activities at existing neighbouring wind farms where these were not operational at the time of baseline characterisation).

4.9.24 Projects screened in by topic were then tiered based on their maturity, parameter certainty, and potential for significant cumulative environmental effects with the Proposed Development. This approach was outlined in the Bowdun Offshore Scoping Report (BOWFL, 2024) and is summarised below and in Figure 4.2:

- Tier 1 – The onshore elements of the Project;
- Tier 2 – Projects that have an application submitted, are consented, under construction or operational to the extent not already captured within the baseline;
- Tier 3 – Projects which have submitted a Scoping Report and/or have received a Scoping Opinion; and
- Tier 4 – Reasonably foreseeable projects including those with CES option or lease agreements (and for which there is information in the public domain to allow for a meaningful assessment).

4.9.25 All projects that have been screened via the previously described screening process were allocated into one of the above Tiers and considered as part of the CEA. It should be noted that each Tier is not distinct from one another but that the approach is additive (i.e. once Tier 1 has been assessed), information is then added into the Tier 2 step of the assessment and so on. That way information on projects has been appropriately cumulatively assessed.

4.9.26 The CEA presented in this Offshore EIA Report has been undertaken based on information presented in the EIA Reports (or other similar planning documents) for the other projects. Projects often seek consent for an MDS, which may be refined during the determination period of the application and during the post-consent phases of the development. Changes made to a project's design since the publication of the EIA Report for that project have not generally been included in the CEA long list or assessed within the topic chapters due to the uncertainty surrounding whether these are ultimately implemented or not. Where topic or project-specific advice has been received in relation to the project design, this has been identified in the topic assessment.

4.9.27 Where practicable, the CEA methodology follows the Proposed Development EIA Methodology outlined in Section 4.5. By following this approach, a level of consistency has been maintained throughout the topic chapters and relevant comparisons can be made. This approach, however, differs between topic chapters according to several factors, such as the nature of the topic, the cumulative projects included for that topic, the data available for each project, and the specific practicalities around undertaking CEA for that discipline. Where possible, the CEA has included a quantitative assessment, but where this has not been possible, the CEA comprises a mix of qualitative and quantitative, or wholly qualitative assessment. The approach taken to CEA is further explained in a topic-by-topic basis.

4.10 Proposed Monitoring

4.10.1 The monitoring protocols for the Proposed Development are designed to ensure that environmental impacts are effectively managed throughout the lifecycle of the Project. Recommendations for any monitoring should be based on sound scientific principles and are only required for significant adverse effects.

4.11 Transboundary Effects

4.11.1 Transboundary effects arise when impacts from a development has the potential to affect the environment in the jurisdictions of one or more EEA States. The EIA Directive, which has been transposed into Scottish law through the EIA Regulations, requires the assessment of transboundary effects (Volume 1, Chapter 2: Policy and Legislation). A full description of how the transboundary effects assessment has been carried out is found in Volume 3, Technical Appendix 4.5: Transboundary Impacts - Screening.

4.11.2 Volume 3, Technical Appendix 4.5: Transboundary Impacts - Screening presents the update to the transboundary screening work undertaken at the scoping stage, considering the more recent project information. Undertaken with respect to Marine Scotland Consenting and Licensing Guidance for Offshore Wind, Wave and Tidal Energy Applications (Marine Scotland, 2018), and Advice Note Twelve: Transboundary Impacts (PINS, 2024).

4.11.3 Each chapter provides an assessment of transboundary effects for each receptor group, which considers the inter-relationships between effects. Assessments within the topic chapters are based on the screening undertaken by the Applicant and also consider the instances where project information has developed or matured in the meantime, or consultation responses have provided further detail or direction.

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