Morven North Offshore Wind Array Project

Environmental Impact Assessment Report

Volume 1, Chapter 6: EIA Methodology

MVCNS-J1201-RPS-10014
May 2026

B01

Document status

Version	Purpose of document	Authored by	Checker	Approved by	Date
FINAL	Application	TTRPSEL	TTRPSEL	MvOWL	May 2026

Prepared by:	Prepared for:
TTRPSEL	**Morven Offshore Wind Limited**

Table of Contents

List of tables

List of figures

6 Environmental Impact Assessment Methodology

6.1 Introduction

6.1.1.1 This chapter of the Morven North Offshore Wind Array Project's (hereafter 'Morven North') Environmental Impact Assessment (EIA) Report presents the EIA methodology used for the assessment of likely significant environmental effects of the Morven North infrastructure on physical, biological and anthropogenic environment receptors.

6.1.1.2 The Morven North EIA Report has been prepared to aid an application for consent for Morven North under Section 36 of the Electricity Act 1989 and the related marine licenses (under the provisions of Part 4 of the Marine and Coastal Access Act 2009 for UK waters beyond 12nm). This conforms with the requirements of the following regulations (hereafter referred to as the 'EIA Regulations'):

- in relation to a Section 36 consent application: The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017;
- in relation to a marine licence application: The Marine Works (Environmental Impact Assessment) Regulations 2007.

6.1.1.3 As outlined in Volume 1, Chapter 1: Introduction, this EIA Report has been prepared for Morven North only.

6.1.1.4 Due to the ongoing engagement with the National Energy System Operator (NESO) surrounding the future offshore and onshore grid network through the Holistic Network Design (HND) and HND Follow Up Exercise (HNDFUE), the proposed export cable(s) and onshore substation(s) for Morven North will be delivered as part of a separate consent application(s). These elements do not form part of the Morven North application, however they are included and therefore assessed within the Morven North whole project assessment and Cumulative Effects Assessment (CEA).

6.1.1.5 This chapter presents:

- the assessment methodology used to determine potential impacts, including the approach that has been used to assess the magnitude of effect, sensitivity of receptors and reach a conclusion on the likely significance of effects as outlined in Section 6.4;
- the methodology used for whole project assessment and CEA as outlined in Section 6.5;
- the methodology for assessing transboundary effects as outlined in Section 6.5.1;
- the methodology for assessing inter-related and ecosystem effects as outlined in Section 6.7.

6.1.1.6 Each topic chapter also contains further topic-specific methodologies where relevant. These are explained further within the relevant Morven North EIA Report chapters (Volume 2, Chapters 7 to 21).

6.2 Environmental Impact Assessment legislation and guidance

6.2.1.1 Preparation of the Morven North EIA Report stems from the requirement set out within 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) and the EIA Regulations. When applying for Section 36 consent or a marine licence as outlined in paragraph 6.1.1.2, an EIA Report is a requirement to support these applications if Morven North is likely to have a significant effect on the environment due to factors such as the scale, location or nature of the project.

6.2.1.2 The methodology used to assess effects, as incorporated in the Morven North EIA Report, references the relevant legislation, policy, and guidance, including those listed below:

- 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 (hereafter the 'EIA Directive');
- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017;

- The Marine Works (Environmental Impact Assessment) Regulations 2007;
- 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 Wildlife and Countryside Act 1981;
- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (HM Government, 2019);
- Marine Scotland Marine licensing and consenting: offshore renewable energy projects (Marine Scotland, 2025);
- Guidelines for Ecological Impact Assessment (EcIA) in the UK and Ireland – Terrestrial, Freshwater, Coastal and Marine (Chartered Institute of Ecology and Environmental Management (Version 1.3) (CIEEM, 2024);
- A Handbook on Environmental Impact Assessment: Guidance for Competent Authorities, Consultees and Others Involved in the Environmental Impact Assessment Process in Scotland (NatureScot, 2018);
- Environmental Impact Assessment for Offshore Renewable Energy Projects (British Standards Institute (BSI), 2015);
- Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects (Centre for Environment, Fisheries and Aquaculture Science, 2012);
- A Review of Assessment Methodologies for Offshore Wind Farms (Collaborative Offshore Wind Research into the Environment (COWRIE) METH-08-08 (Maclean *et al*., 2009);
- Institute of Environmental Management and Assessment (IEMA) Environmental Impact Assessment Guide to Delivering Quality Development (IEMA, 2016);
- IEMA Impact Assessment Guidelines: Implementing the Mitigation Hierarchy from Concept to Construction (IEMA 2024);
- The Scottish Government: Electricity Act 1989 - section 36 applications: guidance for applicants on using the design envelope (The Scottish Government, 2022);
- UK Planning Inspectorate Advice: Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment (PINS, 2025a);
- UK Planning Inspectorate Advice: Nationally Significant Infrastructure Projects: Advice on Transboundary Impacts and Process (PINS, 2025b);
- Planning Advice Note (PAN) 1/2013 Environmental Impact Assessment (Scottish Government, 2013);
- Cumulative Impact Assessment Guidelines – Guiding Principles for Cumulative Impact Assessment in Offshore Wind Farms (RenewableUK, 2013);
- IEMA Guide to Determining Significance for Human Health In Environmental Impact Assessment (IEMA, 2022).

6.2.1.3 Where relevant topic specific guidance and legislation exists, this is discussed within the relevant Morven North EIA Report chapters (Volume 2, Chapters 7 to 21).

6.2.1.4 References to legislation in the Morven North EIA Report are to the appropriate legislation "as amended".

6.3 Consultation

6.3.1.1 Consultation on the proposed EIA methodology (including the approach to CEA and the methodology used to conduct the inter-related and ecosystem effects and transboundary effects assessments) for the Morven Option Lease Agreement Site (hereafter 'Morven Site'), was undertaken at the Scoping stage, within the Scoping Report for the Morven Site (hereafter, 'the Morven Site Scoping Report'). Following an update to the consenting strategy, as detailed in Volume 1, Chapter 1: Introduction, the Morven Site has been separated into two distinct array projects, namely the Morven North Offshore Wind Array Project and the Morven South Offshore Wind Array Project (hereafter 'Morven North and Morven South'). Further consultation with stakeholders and the Marine Directorate Licensing and

Operations Team (MD-LOT) was undertaken in Q4 2024 and Q1 2025 on the change in consenting strategy and aspects relevant to the EIA methodology for Morven North and Morven South.

6.3.1.2 Wider consultation on Morven North with stakeholders and local communities is described in Volume 1, Chapter 5: Consultation. Topic-specific consultation is presented in the relevant Morven North EIA Report chapters of the (Volume 2, Chapters 7 to 21).

6.3.1.3 Key consultation relevant to EIA methodology which has been undertaken to date for Morven North is set out in Table 6.1, along with a summary of how the points raised during consultation have been considered within this chapter.

Table 6.1: Summary of key consultation and points raised relevant to Morven North Environmental Impact Assessment methodology

Date and consultee	Issue raised	Response to issue raised/where this has been considered in the Morven North EIA Report
Consultee responses obtained from Morven Site Scoping Opinion (MD-LOT, 2023).		
Berwick Bank OWF - August 2023	The Cambois Project (consent application submitted 9 August 2023) was not highlighted in the Morven Scoping Report and may be relevant to the Morven development's Cumulative Effects Assessment. In particular, we ask that the location of Berwick Bank's array area, Branxton export cable and Cambois export cable is considered in Morven's export cable routing work.	The list of plans, projects and other developments considered and brought forward to Stage 3 screening for cumulative effects includes these projects, in accordance with the methodology described in Section 6.5.5.
East Lothian Council -August 2023	Whole project assessment: The council considers the grid connection is an essential component of the windfarm and that information on the grid connection must therefore be included within the description of the project. If two separate EIA Reports are prepared for the onshore and offshore works, there should be a clear link between the EIA information for the grid connection and that for the windfarm, so that the public can fully understand the impacts of the whole project.	The whole project assessment (Section 6.5.3) has assessed the likely significant effects as defined by the EIA Regulations (LSE[1]) of Morven North together with the grid connection infrastructure as a 'whole project' as far as possible, as described in Section 6.5.
Marine Directorate - Licensing Operations Team (MD-LOT) - November 2023	The Scottish Ministers request for sufficient information concerning proposed offshore export cable works and onshore works is included in the EIA Report for the cumulative impacts of Morven Offshore Wind Project. This will ensure as much information as possible relating to the project as a 'whole' is presented.	The whole project assessment has assessed the LSE[1] of Morven North together with the grid connection infrastructure as a 'whole project', as described in Section 6.5.3. As far as possible, high-level project detail used to inform potential cumulative effects arising from the interaction of the differing aspects of the Morven Programme has been provided.
MD-LOT - November 2023	The EIA Report must include a full and detailed description of all options considered within the design envelope.	A description of the Project Design Envelope (PDE) approach has been provided in Section 6.4.3. The approach allows EIA to be conducted on the basis of a realistic 'worst case' scenario (i.e. the maximum project design parameters) which is selected from a range of design values. The term 'Maximum Design Scenario' (MDS) will be used throughout the EIA Report. The MDS that could potentially be built out will be selected on a topic-by-topic and impact-by-impact basis and assessed within the relevant topic chapters (Volume 2, Chapters 7 to 21). Further detail is available in Volume 1, Chapter 3: Project Description.

Date and consultee	Issue raised	Response to issue raised/where this has been considered in the Morven North EIA Report
MD-LOT - November 2023	The Scottish Ministers advise that the EIA Report must include a full and detailed description of Offshore Substation Platform (OSP) options being considered including the design, size and foundations.	An overview of the OSP design, size and foundation options are presented in Volume 1, Chapter 3: Project Description, and these options have been considered for each topic through the application of the MDS approach as described in Section 6.4.3.
MD-LOT - November 2023	The Scottish Ministers advise that the EIA Report must include a full and detailed description of all foundation and support structure designs considered within the design envelope.	An overview of the foundation options for wind turbines and OSPs are presented in Volume 1, Chapter 3: Project Description, and these options have been considered for each topic through the application of the MDS approach as described in Section 6.4.3.
MD-LOT - November 2023	The Scottish Ministers advise that the EIA Report must provide a full description and consideration of the nature and scope of these activities, including the types of activity, their frequency, how activities will be carried out for the Proposed Development.	A description of offshore construction activities, offshore operational and maintenance activities and decommissioning activities for which consent is sought are presented within Volume 1, Chapter 3: Project Description, and these options have been considered for each topic through the application of the MDS approach as described in Section 6.4.3.
MD-LOT - November 2023	The Morven Site Scoping Opinion agreed that the transboundary effects assessment should consider effects on the following topics during the construction, Operations and Maintenance (O&M), and decommissioning phases of Morven North: • fish and shellfish ecology; • marine mammals; • offshore ornithology; • shipping and navigation; • climate change; • commercial fisheries.	The approach to the assessment of transboundary effects has been described within Section 6.6. Potential transboundary effects will be identified and be assessed within the relevant topic chapters (Fish and Shellfish Ecology (Volume 2, Chapter 9); Marine Mammals (Volume 2, Chapter 10); Offshore Ornithology (Volume 2, Chapter 11); Commercial Fisheries (Volume 2, Chapter 12); Shipping and Navigation (Volume 2, Chapter 13); Climate Change (Volume 2, Chapter 18).
MD-LOT - November 2023	The Scottish Ministers recommend early consideration of nature inclusive design aspects in line with the NatureScot representation. The Scottish Ministers further direct the Developer to the NatureScot representation on the need to understand the potential impacts holistically at a wider ecosystem scale rather than only a set of discrete individual receptor assessments. The Scottish Ministers therefore	The methodology used to assess ecosystem effects is discussed within Section 6.7 and will be outlined within each respective topic chapters (Volume 2, Chapters 7 to 20), as well as Volume 2, Chapter 21: Inter-Related and Ecosystem Effects.

Date and consultee	Issue raised	Response to issue raised/where this has been considered in the Morven North EIA Report
	advise that potential impacts should be considered across key trophic levels, particularly in relation to the availability of prey species. Detailed advice on assessment of across trophic levels in provided in the receptor chapters in Section 5 of the Scoping Opinion	
SSEN Transmission – August 2023	We note that the scoping request does not consider export cables and associated infrastructure	As discussed in paragraph 6.1.1.4 and further outlined in Section 6.5, the export cable(s) and onshore substation(s) for Morven North will be delivered as part of a separate application for consent. Whole project assessments will be undertaken for the grid connection together with Morven North through various scenarios to account for the potential combinations of different grid connection projects, in accordance with the methodology outlined in Section 6.5. This will be presented within the whole project assessment and Cumulative Effects Assessment sections of each topic chapter (Volume 2, Chapters 7 to 20).
Pre-application consultation		
MD-LOT – June 2025	MD-LOT confirmed that approach to the whole project, Morven Programme and cumulative assessment, as set out within MvOWL's targeted consultation letter dated 13 March 2025, was likely to be acceptable, subject to NatureScot's agreement. MD-LOT confirmed the cut-off dates for the consideration of new or updated information for plans projects and activities within cumulative assessments should be six months prior to application submission for quantitative assessment and three months for qualitative cumulative assessment.	Cut-off dates for the qualitative and quantitative assessments were implemented as set out in paragraph 6.5.6.9. The whole project, Morven Programme and cumulative assessment approach is set out in Section 6.5.
NatureScot and MD-LOT – August 2025	NatureScot and MD-LOT agreed to refinements to the whole project, Morven Programme and Cumulative Effects Assessment approach set out set out within MvOWL's targeted consultation letter dated 13 March 2025. To allow each of the Morven North and Morven South consent applications to be considered independently, NatureScot advised that cumulative assessment should consider the potential effects of Morven North together with other projects, plans and activities	The whole project, Morven Programme and cumulative assessment approach is set out in Section 6.5. The approach to Morven Programme assessment is set out in Section 6.5.5.

Date and consultee	Issue raised	Response to issue raised/where this has been considered in the Morven North EIA Report
	(including other components of the Morven Programme alongside other tiered projects), rather than the consideration of Morven Programme impacts together with other projects, plans and activities. It was also agreed that the Morven Programme assessment would only be required for offshore ornithology and shipping and navigation receptors.	
NatureScot – January 2025	NatureScot reviewed a draft of Volume 4, Annex 6.1: Cumulative Effects Screening updated as of September 2025. NatureScot reviewed Sections 1 (Introduction) and Section 2 (Methodology) only, and confirmed agreement with the approach outlined, including the Cumulative Study Areas and tiers. It was noted that where the extent of a Cumulative Study Area was described as 'up to' a certain distance (for example, up to 28km for the Morven North Physical Processes Cumulative Study Area), a lesser distance than indicated would not be supported unless justification was provided.	The cumulative effects screening and tiers have followed the approach agreed by NatureScot. Section 6.5.6 presents the approach to cumulative effects screening and Section 6.5.7 presents the tiers, with further details provided within Volume 4, Annex 6.1: Cumulative Effects Screening. The Cumulative Study Areas for each topic have been defined within topic chapters (Volume 2, Chapters 7 to 20). Where a Cumulative Study Area extent has been considered within a range defined "up to" a specific distance, this is noted within Table 2.1 of Volume 4, Annex 6.1: Cumulative Effects Screening, with full justification of Cumulative Study Areas provided within the relevant topic chapter (Volume 2, Chapters 7 to 20).

6.3.1.4 In addition to the written consultation received via the Scoping Opinion for the Morven Site (MD-LOT, 2023), the Applicant held a Public Information Day in-person at Stonehaven Town Hall on 29 October 2025 to allow members of the public and stakeholders to meet the Applicant, ask questions and discuss the proposals. A virtual exhibition hall was also provided for members of the public and stakeholders who could not attend in-person. The Applicant also held an online webinar on the evening of 12 November 2025 to provide information to members of the public and stakeholders on Morven North.

6.4 Key principles of the Morven North Environmental Impact Assessment methodology

6.4.1.1 The assessment of each relevant EIA topic (e.g. marine archaeology, offshore ornithology, fish and shellfish ecology, etc.) is presented within a topic specific chapter (Volume 2 Chapters 7 to 20) throughout the Morven North EIA Report. Within each of the topic chapters, the following aspects have been considered:

- the identification of topic-specific study area(s) for the assessment;
- a summary of topic-specific policy, guidance and legislation;
- a summary of topic-specific consultation activity, including the MD-LOT and stakeholder consultation comments received as part of the Morven Site Scoping Report (MD-LOT, 2023);
- a description of the methodology to inform the baseline characterisation, including detail on desktop study sources and site specific surveys where appropriate;
- descriptions of the environmental baseline conditions, including a future baseline scenario;
- presentation of the assessment of likely significant effects as defined by the EIA Regulations (LSE[1]), which is comprised of:
  - presentation of a Maximum Design Scenario (MDS) considering each potential impact;
  - details on impacts scoped out of the assessment with appropriate reasoning;
  - a description of the designed-in measures adopted as part of Morven North;
  - identification of likely impacts occurring and the assessment of the significance of identified impacts through the construction, O&M and decommissioning phases of the development;
  - This assessment also includes a consideration of relevant designed-in measures for the topic that have been included within the project design;
  - identification of any further secondary mitigation measures required in relation to LSE (in addition to designed-in measures) along with the assessment of any residual effects;
  - assessment of any likely significant whole project or cumulative effects between Morven North, the Morven Programme and other plans, projects or other activities on a single receptor (as detailed in Section 6.5). These will include projects which have become operational since 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 that have submitted a scoping report and those where an Option Lease Agreement has been granted, or are reasonably foreseeable and there is information in the public domain to allow for a meaningful assessment;
  - identification of any future monitoring that may be required;
  - assessment of any transboundary effects (such as effects on European Economic Area (EEA) states);
  - a summary of the inter-related and ecosystem effects.

6.4.1.2 Inter-related effects (i.e. inter-related effects on individual receptors or receptor groups via multiple environmental pathways) have been further discussed within Volume 2, Chapter 21: Inter-related and Ecosystem Effects. Where relevant, this assessment also considers the ecosystem assessment of relevant receptor groups.

6.4.1.3 The effects of climate change on future baseline conditions have been considered in the description of baseline conditions and therefore are inherently considered in the assessment of LSE[1] on the receptors in the respective topic chapters (Volume 2, Chapters 7 to 20). The climate change

assessment for Morven North is included in the Climate Change Chapter and Annexes (Volume 2, Chapter 18: Climate Change; Volume 3, Annex 18.1: Shared Climate Change Risk Assessment, Volume 3, Annex 18.2: Shared Greenhouse Gases Technical Report and Volume 3, Annex 18.3: In-combination Climate Change Impact (ICCI) Assessment).

6.4.1.4 The key principles which have been applied to each topic chapter are detailed in Sections 6.4.2 to 6.4.5.

6.4.2 Evidence-based approach

6.4.2.1 Morven North will be situated in the North Sea, approximately 61km southeast of Aberdeen at its nearest point. This region of the North Sea has undergone extensive surveys and assessments as part of both existing and planned offshore developments such as Berwick Bank, Ossian, Seagreen Alpha/Bravo (referred to as Seagreen 1 and Seagreen 1A Projects when considered within the CEA for Morven North), Bellrock, Bowdun, Inch Cape and Neart na Gaoithe (NnG). As such, extensive baseline data on the surrounding environment is available. The Applicant has further contributed to the existing knowledge base via the commissioning of site specific surveys undertaken as part of the baseline characterisation of the Morven Site. Where possible in the Morven North EIA Report, the Applicant has made use of this data to:

- characterise the baseline environment to inform the EIA where data are sufficient and appropriate;
- identify aspects which are data poor;
- employ the pre-existing evidence base in addition to site specific and recent data where relevant;
- support the case for impacts which have been scoped out where there is clear evidence of lack of a receptor-impact pathway.

6.4.2.2 Where appropriate, additional data to inform the assessment of effects of Morven North have been identified and outlined within the appropriate topic-specific chapter of the Morven North EIA Report (Volume 2, Chapters 7 to 21).

6.4.3 Maximum Design Scenario

6.4.3.1 The assessment of Morven North has applied an MDS approach, in compliance with current best practice and the "Rochdale Envelope Principle[1]" (PINS, 2018; The Scottish Government, 2022). This approach involves the assessment of likely significant effects which could result from realistic MDS parameters for Morven North.

6.4.3.2 Volume 1, Chapter 3: Project Description presents the Morven North PDE as a range of potential design scenarios for each parameter. Based on the PDE, an individual, impact specific MDS has been developed for all impacts assessed within the topic chapters (Volume 2, Chapters 7 to 20). The MDS for each impact identifies the worst case from the range of PDE parameters which would give rise to the greatest potential effect.

6.4.3.3 An example of the MDS approach for temporary habitat loss and disturbance for benthic subtidal ecology is as follows: where several OSP foundation design options have been identified within the PDE, the option associated with the greatest potential extent of seabed disturbance would be used to define the MDS for this impact.

6.4.3.4 The process of identifying and assessing the MDS for each impact means that it can be assumed that the impact and subsequent effect will be no greater for any other design scenario defined within

[1] Case law (i.e. R v Rochdale MBC ex parte Milne (No1.) [1999] 5 WLUK 67 and R v Rochdale MBC ex parte Milne (No.2) [2000] 7 WLUK 955).

the PDE. This approach allows the Applicant to assess the MDS for all impacts, whilst retaining the necessary flexibility in project design parameters. Design flexibility is necessary to ensure the most appropriate and contemporary technology for the Morven North infrastructure is procured and installed, which may take place several years after the production and submission of the Morven North EIA Report.

6.4.4 Measures to avoid, prevent, reduce or, if possible, offset likely significant adverse effects

Overview

6.4.4.1 Where LSE[1] are identified, the EIA Regulations require "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 EIA Report.

6.4.4.2 The iterative approach to the assessment process implemented for Morven North involves a feedback loop, as illustrated Figure 6.1. An impact, along with the resulting significance of effect, is initially assessed. If this is deemed to be a significant adverse effect in EIA terms, adjustments are made (where reasonably practicable) to relevant project design parameters, or specific mitigation measures are implemented to avoid, prevent, reduce, or offset the magnitude of the potential impact. The assessment is then repeated to determine the updated significance of effect, and the process continues, until the EIA practitioner is satisfied, within the bounds of the scope of development objectives, that one of the following options is applicable:

- the effect has been reduced to a level that is not significant in EIA terms;
- having regard to other constraints, no further changes may be made to project design parameters or no practicable mitigation measures are available to reduce the magnitude of impact (and hence the significance of effect). In such cases, an overall effect that is still significant in EIA terms may be presented in the Morven North EIA Report.

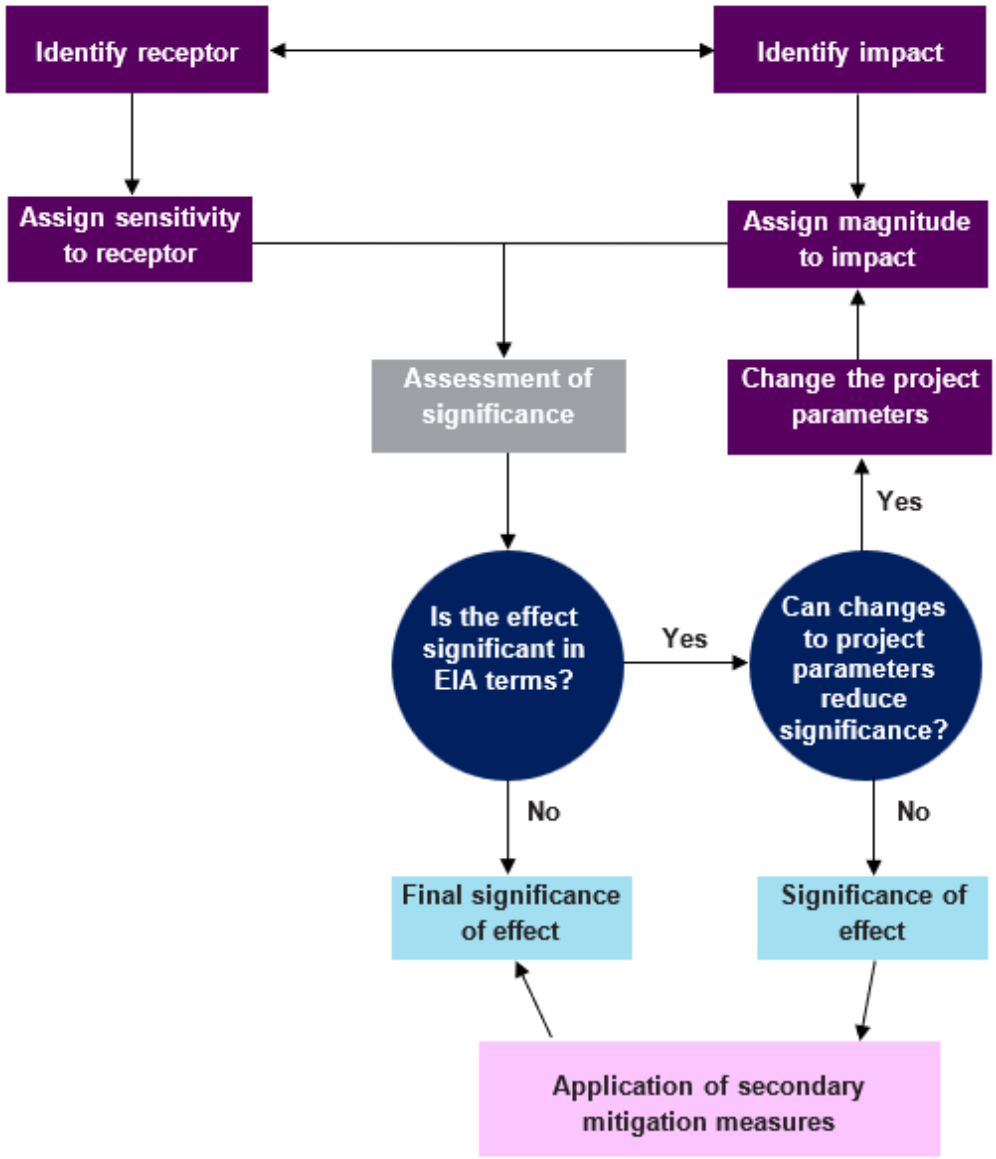

Figure 6.1: Iterative approach to mitigation within the Morven North Environmental Impact Assessment

Primary mitigation

6.4.4.3 The Institute of Sustainability and Environmental Professionals (ISEP) (formerly Institute of Environmental Management and Assessment (IEMA)) describes primary (inherent) mitigation as: "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" (IEMA, 2024).

6.4.4.4 As described in paragraph 6.4.4.2, an iterative approach to the assessment process has been employed to inform the design parameters of Morven North (through a process of identification of LSE[1] and the subsequent amendments to project design to avoid potential effects). Commitment to the implementation of primary mitigation measures which have been identified through this iterative approach is detailed within each topic specific chapter (Volume 2, Chapters 7 to 21), where relevant.

Secondary mitigation

6.4.4.5 ISEP describes secondary (foreseeable) 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" (IEMA, 2024).

6.4.4.6 Secondary mitigation refers to additional measures which are implemented following the completion of the assessment process. The aim of secondary mitigation is to prevent, reduce and offset LSE[1] that may arise, which could not be avoided through designed-in measures. Any secondary mitigation would be secured though a condition of the marine licence and can be implemented through management plans. Where required, secondary mitigation proposed to reduce significance of effects is detailed within the topic chapters of the Morven North EIA Report (Volume 2, Chapters 7 to 21).

Tertiary mitigation

6.4.4.7 ISEP describes 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 requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects" (IEMA, 2024).

6.4.4.8 Both primary (inherent) mitigation and tertiary (inexorable) mitigation are referred to as "designed-in measures" within the Morven North EIA Report. Proposed Tertiary mitigation related to Morven North is detailed within the topic chapters of the Morven North EIA Report (Volume 2, Chapters 7 to 21).

6.4.5 Identification of impacts and significance of effect

Scope of the assessment

6.4.5.1 The scope of this EIA Report complies with the requirements set out by the EIA Regulations as discussed in Volume 1, Chapter 2: Policy and Legislation.

6.4.5.2 In July 2023, the Applicant submitted the Morven Site Scoping Report (MvOWL, 2023) to MD-LOT to support a request for a formal Scoping Opinion in relation to the Morven Site (which encapsulates the boundaries for the two distinct projects, Morven North and Morven South) prior to application, from Scottish Ministers. The Morven Site Scoping Opinion (MD-LOT, 2023) was received on 30 November 2023.

6.4.5.3 Due to the nature, scale and location of Morven North and advice provided through the EIA process, the Morven North EIA Report focuses on the following topic areas:

- Physical Processes (Volume 2, Chapter 7);
- Benthic Subtidal Ecology (Volume 2, Chapter 8);
- Fish and Shellfish Ecology (Volume 2, Chapter 9);
- Marine Mammals (Volume 2, Chapter 10);
- Offshore Ornithology (Volume 2, Chapter 11);
- Commercial Fisheries (Volume 2, Chapter 12);
- Shipping and Navigation (Volume 2, Chapter 13);
- Marine Archaeology (Volume 2, Chapter 14);
- Aviation (Military and Civil) (Volume 2, Chapter 15);
- Other Sea Users (Volume 2, Chapter 16);
- Socio-Economics (Volume 2, Chapter 17);
- Climate Change (Volume 2, Chapter 18);
- Major Accidents and Disasters (Volume 2, Chapter 19);
- Human Health (Volume 2, Chapter 20);
- Inter-related and Ecosystem Effects (Volume 2, Chapter 21).

6.4.5.4 Table 6.2 outlines the requirements of the EIA Regulations and where these requirements have been considered within the Morven North EIA Report.

Table 6.2: Environmental Impact Assessment Regulations and where in the Morven North Environmental Impact Assessment Report these are addressed

EIA Regulations - requirement	Where addressed in the Morven North EIA Report
1(a): Population and Human Health	Commercial fisheries (Volume 2, Chapter 12); Shipping and Navigation (Volume 2, Chapter 13); Aviation (Military and Civil) (Volume 2, Chapter 15); Other Sea Users (Volume 2, Chapter 16); Socio-Economics (Volume 2, Chapter 17); Major Accidents and Disasters (Volume 2, Chapter 19); Human Health (Volume 2, Chapter 20).
1(b): Biodiversity, with particular attention to species and habitats protected under the EIA Regulations	Benthic Subtidal Ecology (Volume 2, Chapter 8); Fish and Shellfish Ecology (Volume 2, Chapter 9); Marine Mammals (Volume 2, Chapter 10); Offshore Ornithology (Volume 2, Chapter 11); Ecosystem Effects (Volume 2, Chapter 21).
1(c): land, soil, water, air and climate	Physical Processes (Volume 2, Chapter 7); Climate Change (Volume 2, Chapter 18).
1(d): material assets, cultural heritage and the landscape	Commercial Fisheries (Volume 2, Chapter 12); Shipping and Navigation (Volume 2, Chapter 13); Aviation (Military and Civil) (Volume 2, Chapter 15); Other Sea Users (Volume 2, Chapter 16); Socio-Economics (Volume 2, Chapter 17); Major Accidents and Disasters (Volume 2, Chapter 19); Marine Archaeology (Volume 2, Chapter 14).
1(e): the interaction between the factors referred to in points (a) to (d)	Inter-related and Ecosystem Effects (Volume 2, Chapter 21); Also summarised within each topic-specific chapter (Volume 2, Chapters 7 to 20) as appropriate.
2: The effects referred to in paragraph 1 on the factors set out therein 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	Major Accidents and Disasters (Volume 2, Chapter 19).

Impacts and effects

6.4.5.5 Morven North has the potential to result in a range of impacts and effects in relation to the physical, biological and anthropogenic environment.

6.4.5.6 For the purposes of the Morven North EIA Report, the term 'impact' is defined as a change as a result of an action. For example, the action of impact pile driving on a wind turbine foundation, is likely to cause increased underwater sound (impact). Impacts can be defined as direct, indirect, temporary,

irreversible, secondary, cumulative and inter-related. They can also be either beneficial or adverse, although the relationship between them is not always straightforward and relies on available evidence and professional judgement.

6.4.5.7 The term 'effect' is defined as the consequence of an impact. For example, following the pile driving example as described in paragraph 6.4.5.6, the impact of increased underwater sound from pile driving can result in disturbance to marine mammal species within proximity (effect).

6.4.5.8 Effect significance is determined by consideration of the magnitude of impact alongside the sensitivity of each receptor or receptor group in accordance with the defined significance criteria.

6.4.5.9 Definitions are presented in Table 6.3.

Table 6.3: Definition of impact and effect terms relevant to the Morven North Environmental Impact Assessment Report

Term	Definition
Direct impact	Occurs as a straightforward consequence of activities undertaken in direct connection to the project (derived from Highways Agency *et al*., 2008).
Indirect impact	Occurs as a consequence of a direct impact and may arise via a complex pathway and be experienced at a point in space or time that is removed from the direct impact (Highways Agency *et al*., 2008).
Cumulative effect	Effects that arise from a combination of the project and other projects, plans and activities on the same receptor or resource (based on Highways Agency *et al*., 2020).
Inter-related effect	Effects that may arise from the interactions between different EIA topic effects considered within the alone assessment, potentially leading to more significant effects than if they were to be considered in isolation (based on DECC, 2011).
Beneficial or adverse effect	An effect can be either 'beneficial' or 'adverse'. A beneficial effect is one that improves the quality of the environment, and an adverse impact is one that reduces the quality of the environment.

Determining magnitude of impacts

6.4.5.10 The magnitude of an impact is the spatial extent, duration, frequency and reversibility of an impact from the construction, O&M or decommissioning activities of Morven North (detailed within Table 6.4 (Highways Agency *et al*., (2008) and CIEEM (2024)). A magnitude is assigned to each of the impacts assessed within this EIA Report.

Table 6.4: Definition of terms relevant to defining the magnitude of an impact

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. sound transmission underwater).
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 project phase 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 impact 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 impacts.

6.4.5.11 The magnitude of an impact is defined within each topic chapter according to the following scale:

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

6.4.5.12 The definitions for each of these categories is set out Table 6.5, which describes both potential beneficial and adverse magnitudes of changes (adapted from Highways Agency *et al*. (2020)). Each of the topic chapters contain specific definitions relevant to its respective topic for each of these categories which are based upon topic-relevant external policy, guidance, standards and other material, including specialist knowledge.

Table 6.5: Definition of terms relating to the magnitude of an impact

Magnitude of impact	Definition
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 or resource quality; extensive restoration or enhancement; major improvement of attribute quality (Beneficial).
Medium	Loss of resource, but not adversely affecting 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).
Low	Some measurable change in attributes, quality or vulnerability, minor loss or, or alteration to, one (maybe more) key characteristics, features or elements (Adverse).

Magnitude of impact	Definition
	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of adverse impact occurring (Beneficial).
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).

Determining sensitivity of receptors

6.4.5.13 Receptors can be the physical or biological resource or human user group that have the potential to be affected by impacts as a result of Morven North throughout the projects' stages. These receptors are identified through pre-existing data and baseline characterisation studies conducted in the development of the Morven North EIA Report.

6.4.5.14 In defining the sensitivity for each receptor/receptor group, the vulnerability, recoverability and value/importance of that receptor/receptor group has been considered. These are defined in Table 6.6 and are used in each topic chapter as relevant. In instances where these aspects are not considered in the assessment, the reasoning for this is explained within the appropriate topic chapter.

Table 6.6: 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 (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 (MarLIN, 2020).
Value/Importance of the receptor.	Importance of the receptor in terms of ecological, social/community and/or economic value (CIEEM, 2024).

6.4.5.15 Sensitivity is defined within each topic chapter according to the following scale:

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

6.4.5.16 Definitions for each of these categories is set out in Table 6.7 (adapted from the Highways Agency *et al*. (2020)). Each topic chapter contains topic-specific definitions for each of these categories, which are based upon topic-relevant external policy, guidance, standards and other material, or specialist knowledge.

Table 6.7: Definition of terms relating to the sensitivity of the receptor

Value (sensitivity of the receptor)	Description
Very High	Very high importance and rarity, international receptor with no potential or very limited potential for recovery, substitution or both.
High	High importance and rarity, international and national receptor and limited potential for recovery, substitution or both.
Medium	High or medium importance and rarity, regional receptor, and potential for recovery, substitution or both.
Low	Low or medium importance and rarity, local receptor and high potential for recovery, substitution or both.
Negligible	Very low importance and rarity, local receptor and very high potential for recovery, substitution or both.

6.4.5.17 The following technical chapters have applied an EIA methodology which deviates from the one described in this chapter. The topic-specific EIA methodology utilised is described within these chapters:

- Volume 2, Chapter 11: Offshore Ornithology;
- Volume 2, Chapter 13: Shipping and Navigation;
- Volume 2, Chapter 17: Socio-Economics;
- Volume 2, Chapter 18: Climate Change;
- Volume 2, Chapter 19: Major Accidents and Disasters.

Determining significance of effect

6.4.5.18 The overall significance of an effect is determined through the correlation of the potential magnitude of impact and the sensitivity of the receptor. To ensure consistency in defining the significance of an effect, a matrix approach has been adopted, and is presented in Table 6.8.

6.4.5.19 In cases where a range of significance is possible for an effect, there remains the possibility that this may span the significance threshold (i.e. where the range is given as minor to moderate). In such cases the final significance is based upon the technical specialist's professional judgement as to which outcome delineates the most likely effect, with an explanation as to why this is the case.

6.4.5.20 The matrix approach is consistent with the general approach described in the Design Manual for Roads and Bridges (DMRB) (Highways England *et al*., 2020) and Environmental Impact Assessment for Offshore Renewable Energy Projects – Guide (BSI, 2015). A number of modifications have however been made in the interest of proportionality, including:

- An impact of 'negligible' magnitude, as defined within Table 6.5, will always result in a non-significant effect identified, due to a maximum possible significance of 'minor' as outlined within the matrix approach in Table 6.8.
- Receptors of 'negligible' importance, as defined in Table 6.7, always lead to a non-significant effect due to a maximum possible significance of 'minor' as per the matrix approach included within Table 6.8.

6.4.5.21 Effects to be assessed as part of the Morven North EIA Report have been agreed with statutory nature conservation bodies (SNCBs) and stakeholders as part of the Scoping Opinion received from MD-LOT and consultation as detailed in the Volume 1, Chapter 5: Consultation.

Table 6.8: Matrix used for the assessment of the significance of the effect

Magnitude of impact					
Sensitivity of receptor		Negligible	Low	Medium	High
	Negligible	Negligible	Negligible to minor	Negligible to minor	Minor
	Low	Negligible to minor	Negligible to minor	Minor	Minor to moderate
	Medium	Negligible to minor	Minor	Moderate	Moderate to major
	High	Minor	Minor to moderate	Moderate to major	Major
	Very high	Minor	Moderate to major	Major	Major

6.4.5.22 For the purposes of this assessment:

- a level of significance of moderate or above will be considered a 'significant' effect in terms of the EIA Regulations;
- a level of significance of minor or below will be considered 'not significant' in terms of the EIA Regulations.

6.4.5.23 The definitions for each significance level are based on Highways Agency *et al*., (2020), and presented within Table 6.9.

6.4.5.24 Effects of moderate significance and above are considered to be important in the decision-making process, whilst effects of minor significance or below are assigned little, if any, weight in the decision-making process.

Table 6.9: Definition of significance levels

Significance level	Definition
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 potentially enhancing the subsequent design of the project.
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 considered to be very important considerations and are likely to be material in the decision-making process.

Mitigation measures

6.4.5.25 If, during the development of the Morven North EIA Report, an impact is deemed likely to produce LSE[1], changes are typically made to the project design (primary mitigation) to reduce or offset the magnitude of impact. If the effect of an impact presents a moderately significant adverse outcome,

mitigation such as engineering controls or construction methods (secondary mitigation) are employed to reduce or offset the magnitude of the impact, as outlined in Section 6.4.4.

6.4.5.26 Volume 3, Annex 6.4: EIA Commitments Register, provides a summary of the mitigation commitments, including the designed-in measures (primary and tertiary) and secondary mitigation detailed within the topic chapters of the Morven North EIA Report (Volume 2, Chapters 7 to 21). The means of implementation of these mitigation measures is also specified for each of the mitigation commitments, along with any caveats to these commitments as requested by Scottish Ministers within the Morven Site Scoping Opinion (MD-LOT, 2023).

Residual effects

6.4.5.27 Residual effects are those effects remaining once all mitigation measures have been taken into consideration in assessment. Following the identification of secondary mitigation measures as described above and as required, in addition to primary and tertiary mitigation, the assessment re-evaluates the significance of effect utilising the methodology outlined above. The assessment of likely significance of residual effects provides the following conclusions for the purposes of the assessment:

- a residual level of significance equal to or greater than moderate will be considered a 'significant' effect in terms of the EIA Regulations;
- a residual level equal to or less than minor will be considered 'not significant' in terms of the EIA Regulations.

6.5 Whole project assessment, Morven Programme assessment and Cumulative Effects Assessment

6.5.1 Overview

6.5.1.1 Under the EIA Regulations, CEA is required to assess the LSE[1] on the environment arising from a project cumulatively with other relevant plans, projects and activities. Cumulative effects are therefore the combined effects of a project assessed together with the effects from other plans, projects and activities on the same receptor group or resource. The term 'cumulative assessment' is used in this EIA Report to describe the assessment of changes caused by other reasonably foreseeable actions alongside Morven North.

6.5.1.2 A whole project assessment is also required to assess the LSE[1] on the environment arising from Morven North cumulatively with grid connection infrastructure which does not form part of the Morven North application, but would, together with Morven North, constitute a "whole project". The requirement for whole project assessment was confirmed through advice received via the Morven Site Scoping Report, as set out in Table 6.1.

6.5.1.3 The Morven Programme comprises four distinct components: Morven North, Morven South Offshore Wind Array Project (hereafter 'Morven South'), the Morven Hawthorn Pit Grid Connection Project (hereafter 'MHPGC Project') and the Morven Branxton Area Grid Connection Project (hereafter 'MBAGC Project')). As set out in paragraph 6.1.1.4 above, and detailed in Volume 1, Chapter 4: Site Selection and Consideration of Alternatives, each component of the Morven Programme will be consented separately, and therefore do not form part of the Morven North application. However, all components of the Morven Programme have been included and assessed within the Morven North whole project assessment and CEA.

6.5.1.4 This section details the whole project and cumulative assessment methodology utilised within the Morven North EIA Report (Volume 2, Chapters 7 to 20). Also detailed in this section is the Morven Programme assessment methodology utilised within Volume 2, Chapter 11: Offshore Ornithology, and Volume 2, Chapter 13: Shipping and Navigation only of the Morven North EIA Report.

6.5.2 Whole project assessment and Cumulative Effects Assessment legislation and guidance

6.5.2.1 An assessment of cumulative effects is required in accordance with the EIA Directive. As Morven North is situated in Scottish waters beyond 12 nm, the requirements for a CEA under the Marine and Coastal Access Act 2009 are implemented through the EIA Regulations.

6.5.2.2 The EIA Directive (Annex IV, Article 5e) states: "A description of the likely significant effects of the project on the environment resulting from: 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".

6.5.2.3 Article 5 of the EIA Directive (Annex IV) 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". This is transposed directly into domestic law through the EIA Regulations.

6.5.2.4 Whole project assessment has been undertaken to align with paragraph 2.8.57 of the National Policy Statement (NPS) for Renewable Energy Infrastructure (EN-3) (Department for Energy Security & Net Zero, 2025), which states: "where applicants seek consent for offshore transmission infrastructure separately from proposals for offshore wind development, for example, Multi-Purpose Interconnectors or subsea 'onshore' transmission also referred to as bootstraps, consideration should be given at a strategic level to the overall environmental impacts of the offshore development and transmission infrastructure".

6.5.2.5 There are several other relevant guidance documents which have been considered in the development of the whole project assessment and CEA approach, including:

- A Handbook on Environmental Impact Assessment: Guidance for Competent Authorities, Consultees and Others Involved in the Environmental Impact Assessment Process in Scotland (NatureScot, 2018);
- Environmental Impact Assessment for Offshore Renewable Energy Projects (BSI, 2015);
- RenewableUK Cumulative Impact Assessment Guidelines. Guiding Principles for Cumulative Impacts Assessment in Offshore Wind Farms (RenewableUK, 2013);
- National Policy Statement (NPS) for Renewable Energy Infrastructure (EN-3);
- Planning Inspectorate Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment (Planning Inspectorate, 2025a).

6.5.3 Scenario approach to whole project assessment, Morven Programme assessment and Cumulative Effects Assessment

6.5.3.1 The nature of the Morven Programme has required the development of a scenario-based approach to the Morven North CEA and whole project assessment. A number of assessment scenarios have been considered to take into account the split of the Morven Site and the need to consider potential combinations of Morven North with the two potential grid connection options, as well as Morven South and the third-party projects screened into the CEA.

6.5.3.2 The following assessment scenarios have been considered to identify the potential effects of Morven North in combination with other projects on the same receptor, as follows (and summarised in Table 6.10):

- Whole project assessment: to identify the potential impacts associated with Morven North together with each grid connection option in turn, (Scenario 1: MHPGC Project and Scenario 2: MBAGC Project), each of which would comprise a "Whole Project";
- Morven Programme assessment: only applicable to Volume 2, Chapter 11: Offshore Ornithology, and Volume 2, Chapter 13: Shipping and Navigation; to identify the potential

impacts associated with the Morven North together with the other three distinct components of the Morven Programme (Scenario 3). The inclusion of this additional assessment approach for these two chapters was agreed with stakeholders;

- CEA: to identify the potential impacts associated with Morven North together with other relevant projects, plans and activities including other components of the Morven Programme, using a tiered approach (Scenario 4).

Table 6.10: Morven North whole project assessment, Morven Programme assessment and Cumulative Effects Assessment scenarios

Whole project assessments		Morven Programme assessment	Cumulative Effects Assessment
Scenario 1	**Scenario 2**	**Scenario 3[2]**	**Scenario 4**
Morven North + MHPGC Project	Morven North + MBAGC Project	Morven North + Morven South + MHPGC Project + MBAGC Project (Morven Programme)	Morven North and Tier 1, Tier 2 and Tier 3 Projects

6.5.4 Approach to whole project assessment

6.5.4.1 As the different components of the Morven Programme have the potential to form a "whole project", there is a requirement to understand the impacts which may arise from the construction, O&M and decommissioning phases of the different components of the Morven Programme in the form of component scenarios of the whole project. Scenario 1 and 2 have considered either of the proposed grid connection options (MHPGC Project and MBAGC Project) as a whole project with Morven North.

6.5.4.2 The whole project assessment has been based on the Morven North alone assessment MDS together with the Project Description which is contained within the MHPGC Project Scoping Report (April 2025) and non-statutory consultation (October 2025), and project information available for MBAGC Project.

6.5.5 Approach to Morven Programme assessment

6.5.5.1 The Morven Programme assessment has considered the LSE[1] of Morven North together with the other three distinct components of the Morven Programme (Scenario 3). The Morven Programme assessment has been provided only for the assessments provided in Volume 2, Chapter 11: Offshore Ornithology, and Volume 2, Chapter 13: Shipping and Navigation to supplement the CEA scenario (Scenario 4, see Section 6.5.6) for impacts that are assessed as having a minor adverse effect and above within the Morven North alone assessment, as agreed in consultation with relevant stakeholders.

6.5.5.2 The Morven Programme assessment within the aforementioned chapters is included to provide further context and to support the conclusions of the CEA scenario (Scenario 4). This assessment (Scenario 3) will not form the basis of the CEA conclusions, as this approach would not comply with the EIA Regulations, discussed in Section 6.5.2, which require a project (i.e. Morven North) to be considered against other projects and plans that might come forward (i.e. Morven South, MHPGC Project, and/or MBAGC Project, alongside third party projects, plans and activities). All other topics, aside from Volume 2, Chapter 11: Ornithology and Volume 2, Chapter 13: Shipping and: Navigation

[2] Note that Scenario 3 is only applicable for Volume 2, Chapter 11: Offshore Ornithology, and Volume 2, Chapter 13: Shipping and Navigation to supplement the conclusions of Scenario 4.

will consider the whole project assessment and CEA only as outlined in Scenarios 1, 2 and 4 (Sections 6.5.4 and 6.5.6).

6.5.5.3 The Morven Programme assessment MDS has been based on the Morven North alone assessment MDS, the Morven South alone assessment MDS, the Project Description which is contained within the MHPGC Project Scoping Report, and project information available for MBAGC Project, collectively.

6.5.6 Approach to cumulative project screening

6.5.6.1 The CEA has considered the LSE[1] of Morven North together with other relevant plans, projects and activities, including other components of the Morven Programme, using a tiered approach (Scenario 4).

6.5.6.2 A fundamental requirement of undertaking the CEA is to identify those foreseeable developments or activities with which Morven North may interact with to produce a cumulative effect. There is the potential for interaction to occur during all phases (construction, O&M and decommissioning) in the development of Morven North. The process of identifying those projects, plans or activities for which there is the potential for an interaction to occur is referred to as 'screening'.

6.5.6.3 A refined approach to screening the projects, plans and activities that are to be considered cumulatively alongside Morven North has been developed. This involved a staged process that takes into consideration the current level of detail available for projects, plans and activities, as well as the potential for interactions on a conceptual, physical and temporal basis.

6.5.6.4 The methodology used to compile the list of other projects, the tiering approach and the screening of projects for Scenario 4 is described below.

Stage 1: Compiling the Cumulative Effects Assessment long list

6.5.6.5 To ensure a thorough and comprehensive approach to identification of potential plans, projects and activities considered in the CEA, an initial 'long list' of projects within the defined Cumulative Study Areas was developed.

6.5.6.6 Cumulative Study Areas were defined for each topic and based on the maximum spatial extent across which potential cumulative impacts of Morven North that may be experienced by the relevant topic receptors. Further detail on the Cumulative Study Area for each topic is available in Volume 3, Annex 6.1: Cumulative Effects Screening, and the relevant topic chapters (Volume 2, Chapters 7 to 20).

6.5.6.7 Projects, plans and activities within the largest Cumulative Study Area being considered across all topics have been compiled in the long list, including developments which:

- form part of the Morven Programme (i.e. Morven South, MHPGC Project, and MBAGC Project);
- 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;
- have a scoping report submitted, at Preliminary Environmental Information Report (PEIR) stage (in the case of English and Welsh projects), or both;
- are plans and 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 Option Lease Agreement) and for which is sufficient information available in the public domain to enable a meaningful assessment;
- Existing developments for specific topics where there is a large conceptual, temporal and spatial overlap between project impacts (e.g. offshore ornithology assessments consider the cumulative effects of operational offshore wind farms).

6.5.6.8 The Marine Scotland (2018) Guidance 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".

6.5.6.9 The CEA has considered all other relevant plans, projects and activities that are publicly available six months prior to the submission of the Morven North application where quantitative assessment is required. A qualitative CEA will consider all other relevant projects, plans and activities that are publicly available three months prior to submission of the Morven North application.

6.5.6.10 The CEA long list has been developed using datasets from MD-LOT, Crown Estate Scotland (CES), The Crown Estate (TCE) and others to identify projects and plans in the vicinity of Morven North relating to topics such as commercial fisheries, cables and pipelines, energy and oil and gas.

6.5.6.11 The CEA long list for Morven North is provided in Volume 3, Annex 6.1: Cumulative Effects Screening.

Stage 2: Refining the Cumulative Effects Assessment long list

6.5.6.12 Scottish EIA guidance states that a number of factors such as the "nature, size, or location" of a development influence the potential for cumulative effects (Scottish Government, 2017). Refinement of the CEA long list was undertaken by allocating projects, plans and activities to the following categories:

- Aquaculture;
- Cables and pipelines;
- Shipping ports;
- Military, aviation and radar;
- Energy;
- Marine aggregates;
- Oil and gas;
- Coastal.

6.5.6.13 The locations and distances from Morven North and Morven South were also recorded, alongside a summary of the publicly available project descriptions and indicative programmes.

6.5.6.14 Information was gathered using data available within the public domain, such as planning databases and internet searches to determine the project, plan or activity status, their intended activities and the schedule for each. Where EIA Reports, Habitat Regulations Appraisal (HRA) Reports or licence applications were available, these were identified for topic specialists to consider during screening (see Volume 3, Annex 6.1 Cumulative Effects Screening).

Stage 3: Screening of the Cumulative Effects Assessment long list

6.5.6.15 For a cumulative effect to occur, it must be established that a cumulative effect has the potential to affect the receptor(s) directly or indirectly (i.e. there must be an impact-receptor-pathway). All projects, plans and activities listed in the CEA long list were considered individually on a topic-by-topic basis to ensure the potential for a relevant receptor-impact pathway in screening each of the plans, activities or projects was identified.

6.5.6.16 The initial CEA long list was refined into a short-list for each topic following consideration of potential for cumulative effects for each potential impact-receptor pathway following the staged process as set out below:

- Data confidence: projects, plans and activities with a low level of detail publicly available cannot meaningfully contribute to a CEA and, as such, were screened out. The application of this screening step is consistent with Guiding Principle 7 of the RenewableUK Cumulative Impact Assessment Guidelines (RenewableUK, 2013).
- Conceptual overlap: in instances where an impact has the potential to directly or indirectly affect the receptor(s) in question (i.e. presence of an impact-receptor pathway).

- Physical overlap: a physical overlap refers to the ability for impacts arising from Morven North to overlap with those from other projects, plans and activities on a receptor basis. This results in an overlap of the physical extent of the impacts arising from two (or more) projects, plans or activities which must be established for a cumulative effect to arise. Exceptions for certain mobile receptors that move between, and are subject to, two or more separate physical extents of impact from two or more projects.
- Temporal overlap: for a cumulative effect to arise from two or more projects, a temporal overlap of impacts arising from each must be established. Some impacts are active only during certain phases of development, such as piling noise during construction. 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 projects. This will be considered for each topic with projects being screened in for cumulative assessment if required.

6.5.6.17 This screening stage was based on the experience and knowledge of technical specialists, and the current guidance and regulations. The plans, projects and activities that remain after review of the long list are taken forwards to the assessment stage. The outcomes of the screening exercise are presented on a topic-by-topic basis in Volume 3, Annex 6.1: Cumulative Effects Screening.

6.5.6.18 It is noted that when considering the potential for Morven North to overlap with and act cumulatively with Morven South and other projects on a given impact-receptor pathway, the assumed construction and O&M dates for Morven North and Morven South may differ slightly between topic chapters for the purposes of assessment, given differences in assumptions made when defining the cumulative MDS for a given impact-receptor pathway. Depending on the impact assessed, the MDS considered may be the concurrent or sequential construction of Morven North and Morven South, leading to different topic-specific assumptions for construction and O&M dates. These assumptions are set out in each topic chapter for the purposes of defining the MDS for the whole project assessment and CEA only and may differ slightly from the indicative construction and O&M dates for Morven North described in Volume 1, Chapter 3: Project Description.

6.5.7 Tiered approach

6.5.7.1 During screening, a list of all projects, plans and activities screened for assessment is produced specific to each topic (although several plans, projects and activities will be relevant to multiple topics) and presents all plans, projects and activities considered within each topic chapter's CEA.

6.5.7.2 A tiered approach has been adopted for undertaking the CEA, as described in Figure 6.2. This approach provides a framework for placing relative weight on the potential for each project, plan or activity to ultimately be realised, based upon the project, plan or activity's current stage of maturity and certainty in the project's parameters.

6.5.7.3 All projects, plans and activities have been allocated into one of the three Tiers. This includes the allocation of the other three components of the Morven Programme into Tiers for assessment in the CEA. It should be noted that data collection is assessed against the source of this data (i.e. data confidence) to verify its accuracy and reliability.

6.5.7.4 The tiered approach is broadly consistent with the Planning Inspectorate Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment (Planning Inspectorate, 2025a) and aligns with the Renewable UK Cumulative Impact Assessment Guidelines, specifically Guiding Principle 4 and Guiding Principle 7 (RenewableUK, 2013). The allocation of each project, plan and activity into tiers is not affected by the screening process but is merely a categorisation applied to all projects, plans and activities that have been screened for assessment.

6.5.7.5 The tiered approach applied the following categorisations, note there is a decreasing level of detail likely to be available from Tier 1 to Tier 3, as shown in Table 6.11.

Table 6.11: Overview of tiered approach for whole project and cumulative effects assessment

Tier	Detail
Tier 1	Existing developments either built (operational) or under construction[3]; approved developments awaiting implementation; and permitted/submitted application(s), but not yet determined. Morven South is also considered a Tier 1 project, subject to screening in topic-specific CEA.
Tier 2	All plans/projects assessed under Tier 1, plus plans/projects where a scoping report has been submitted and is in the public domain. The MHPGC Project is also considered a Tier 2 project, subject to screening in topic-specific CEA.
Tier 3	All plans/projects assessed under Tier 1 and 2, plus plans/projects that are reasonably foreseeable (e.g., projects identified in development plans, projects in other plans and programmes, offshore renewable energy projects that have a Crown Estate Scotland Option Lease Agreement). The MBAGC Project is also considered a Tier 3 project, subject to screening in topic-specific CEA.

6.5.7.6 All projects, plans and activities screened in were allocated into a tier and assessed for cumulative effects. A CEA has been undertaken for Tier 1 and Tier 2 and if possible for Tier 3, however, this has generally been undertaken at a very high level due to the availability of information and the data confidence associated with this information. Where the outcome of the tiered assessments is the same (e.g. Tier 1 results in a minor adverse significance of effect, Tier 1 and Tier 2 results in a minor adverse significance of effect and so on) no individual tiered assessment has been presented and instead tiers have been combined into one assessment.

6.5.8 Whole project, Morven Programme and Cumulative Effects Assessment methodology

6.5.8.1 The whole project assessment and CEA scenarios considered within the assessment have been included within the whole project assessment and CEA section of each topic chapter (Volume 2, Chapters 7 to 20) for impacts that are assessed as having a minor adverse effect and above within the Morven North alone assessment.

6.5.8.2 In addition, the Morven Programme assessment scenario has been included within Volume 2, Chapter 11: Offshore Ornithology and Volume 2, Chapter 13: Shipping and Navigation only, for impacts that are assessed as having a minor adverse effect and above within the Morven North alone assessment.

6.5.8.3 Where practicable, the whole project assessment, Morven Programme assessment (where applicable) and CEA methodology has followed the Morven North alone impact assessment methodology. Through this, consistency is maintained throughout the topic chapters and allows for relevant comparisons to be made. This approach however differs between topic chapters according to several factors, such as the nature of the topic, the cumulative projects, plans and activities included for that topic, the data available for each project, plan and activity, and the specific

[3] Note that existing developments are included in Tier 1 CEA long list but are generally screened out of the CEA assessments, aside from the following exceptions:

1. Existing developments which were not present at the time of baseline characterisation, where a potential cumulative impact-receptor pathway has been identified.
2. Existing developments are screened into tier 1 assessments for specific topics where there is a large conceptual, temporal and spatial overlap between project impacts. In these instances, the potential for ongoing effects through cumulative impact-receptor pathways throughout project lifetime, across the development phases, means that they are considered within quantitative assessment for these topic CEAs (e.g. offshore ornithology assessments consider the cumulative effects of operational offshore wind farms).

practicalities around undertaking CEA for that discipline. As such, while all topics have, in the first instance, aimed to provide a full quantitative assessment, this has not always been possible and in select cases the assessment presented employs a mix of qualitative and quantitative, or wholly qualitative assessment. Where the approach differs from that which is set out in this section, this is detailed within the specific topic chapter.

6.5.8.4 Where a potentially significant effect is assessed as negligible alone, or where an impact is predicted to be highly localised, these will not generally be considered within the CEA, as there is not considered to be a potential for cumulative effects with other plans, projects or activities. Where a specific assessment methodology differs from this approach then this has been outlined within the relevant topic chapter.

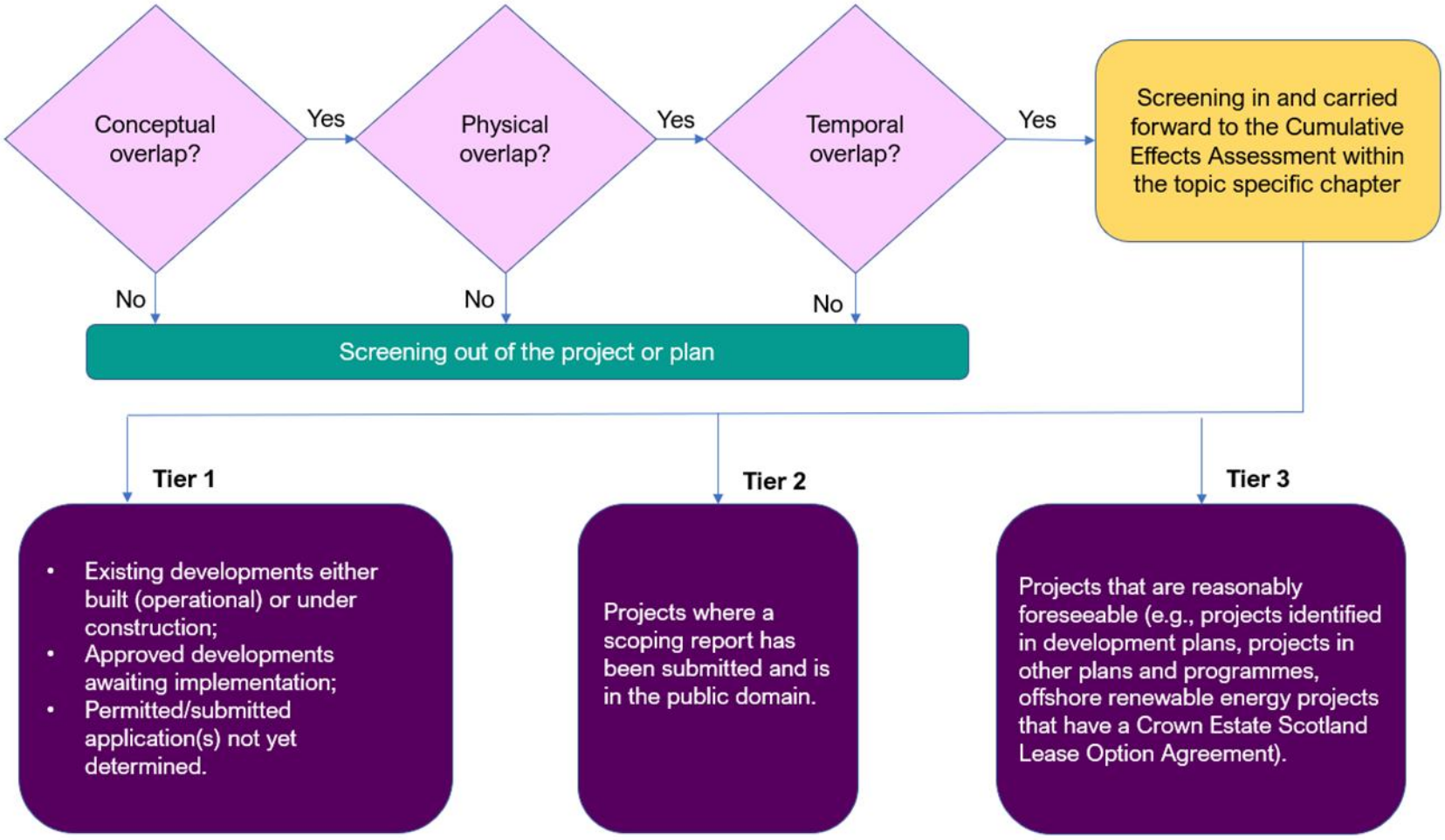

Figure 6.2: Methodology used within the Cumulative Effects Assessment to screen potential projects, plans and activities

6.6 Transboundary effects

6.6.1.1 The potential for transboundary effects to arise is a result of an impact from Morven North which has the potential to significantly affect the environment in the jurisdiction of an EEA state(s).

6.6.1.2 A screening exercise for potential transboundary impacts was undertaken and presented within the Morven Site Scoping Report (MvOWL, 2023). Volume 3, Annex 6.2: Transboundary Effects Screening presents an update to the transboundary screening undertaken at the scoping stage, with the consideration of both the division of the Morven Site into Morven North and Morven South, and more recent project information.

6.6.1.3 This exercise identified that the following receptors may experience transboundary impacts:

- fish and shellfish ecology;
- marine mammals;
- offshore ornithology;
- socio-economics;
- shipping and navigation;
- climate change;
- commercial fisheries.

6.6.1.4 The above topic chapters provide an assessment of transboundary effects for each receptor group, which also considers the inter-relationships between effects. The inter-related effects identified within each topic chapter have been summarised in Volume 2, Chapter 21: Inter-related and Ecosystem Effects. Assessments within each topic chapter are based on the transboundary screening undertaken by the Applicant and also consider instances where project information has developed, or consultation responses have provided further detail or direction.

6.7 Inter-related and ecosystem effects

6.7.1.1 The EIA Regulations require consideration of the inter-relationships between EIA topics that may lead to environmental effects. For example, the separate impacts of temporary habitat loss and seabed disturbance upon a single receptor group such as fish and shellfish ecology.

6.7.1.2 Potential inter-related effects have been assessed considering two levels of potential effects:

- Project lifetime effects: effects that occur throughout multiple phases of the project (construction, O&M, and decommissioning) potentially interacting to create a more significant effect upon a receptor than if just assessed in isolation for a single phase of the project.
- Receptor-led effects: effects that interact temporally and/or spatially resulting in inter-related effects upon a single receptor. For example, the effect of habitat loss/disturbance and increased suspended sediment concentrations (SSC) may be greater when combined as opposed to when they are considered in isolation.

6.7.1.3 Receptor-led effects might be short-term, temporary or transient effects, or incorporate longer term effects. Within the Morven North EIA Report, 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 not assess every individual receptor assessed at the EIA stage, but rather, potentially sensitive groups of receptors. Receptor groups considered and assessed in the Morven North EIA Report include:

- physical processes;
- benthic subtidal ecology;
- fish and shellfish ecology;
- marine mammals;
- offshore ornithology;

- commercial fisheries;
- shipping and navigation;
- marine archaeology;
- aviation (military and civil);
- other sea users;
- socio-economics;
- climate change;
- major accidents and disasters;
- human health;
- ecosystem effects.

6.7.1.4 Inter-related effects are identified within each topic chapter where appropriate and further assessed within Volume 2, Chapter 21: Inter-related and Ecosystem Effects. This section provides a descriptive assessment outlining the potential for individual effects to combine, incorporating qualitative and quantitative assessments (where practicable), to potentially create additional effects of greater significance than the individual effects acting in isolation.

6.7.1.5 The approach for assessing the potential inter-related effects on each receptor group follows the steps below:

- review of the prior sections within each of the topic chapters of the Morven North EIA Report to identify receptors or receptor groups requiring assessment and the likely effects on each receptor group;
- assessment of how individual effects may combine to create inter-related effects on each receptor or receptor group for project lifetime effects and receptor-led effects and conclusion on likely significant inter-related effects.

6.7.1.6 Where the significance of an effect within the topic-specific assessment has been identified as negligible across all phases, it is considered that these effects cannot contribute to any inter-related effects. These effects will subsequently not be carried forward to the inter-related effects assessment as any effect is predicted to be negligible over the lifetime of Morven North.

6.7.1.7 The inter-related effects assessment considers potential effects from Morven North only, and not those from other plans, projects or developments. Inter-related effects from other plans, projects or developments are considered within the CEA.

6.7.1.8 Additional detail on the approach and methodology used for the assessment of inter-related effects relating to Morven North, and full details of the ecosystem effects assessment are provided in Volume 2, Chapter 21: Inter-related and Ecosystem Effects.

6.8 References

British Standards Institute (BSI) (2015). Environmental Impact Assessment for Offshore Renewable Energy Projects – Guide.

Centre for Environment, Fisheries and Aquaculture Science (Cefas) (2012). Guidelines for Data Acquisition to Support Marine Environmental Assessments of Offshore Renewable Energy Projects. Available at: https://tethys.pnnl.gov/sites/default/files/publications/CEFAS_2012_Eenvironmental_Assessment_Guidance.pdf/ (Accessed: March 2025).

CIEEM (2024). Guidelines for ecological impact assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. September 2024 Version 1.3 - updated September 2024. Chartered Institute of Ecology and Environmental Management, Winchester. (Accessed: March 2025).

DECC (2011) Overarching National Policy Statement for Energy (EN-1)

Department for Energy Security & Net Zero (2025) Draft National Policy Statement for Renewable Energy Infrastructure (NPS EN-3). Available: https://www.gov.uk/government/consultations/planning-for-new-energy-infrastructure-2025-revisions-to-national-policy-statements/draft-national-policy-statement-for-renewable-energy-infrastructure-en-3-accessible-webpage. (Accessed June 2025).

Highways Agency, Transport Scotland, Welsh Government and the Department for Infrastructure (2008). Design Manual for Roads and Bridges, Volume 11: Environmental Assessment. (Accessed: March 2025).

Highways England, Transport Scotland, Welsh Government and the Department for Infrastructure (2020). Design Manual for Roads and Bridges (DMRB): LA104 – Environmental Assessment and Monitoring. Available: https://www.standardsforhighways.co.uk/tses/attachments/0f6e0b6a-d08e-4673-8691-cab564d4a60a?inline=true. (Accessed: March 2025)

HM Government (2019). The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, Legislation.gov.uk. Available at: https://www.legislation.gov.uk/ukdsi/2019/9780111176573. (Accessed: March 2025).

IEMA (2016). IEMA Environmental Impact Assessment Guide to Delivering Quality Development.

IEMA (2022). IEMA Environmental Impact Assessment Guide to Determining Significance for Human Health in Environmental Impact Assessment. Available at: https://www.iema.net/media/yljb2nbs/iema-eia-guide-to-determining-significance-for-human-health-nov-2022.pdf (Accessed: March 2025)/

IEMA (2024). IEMA Impact Assessment Guidelines: Implementing the Mitigation Hierarchy from Concept to Construction. Available at: https://www.iema.net/media/oone2qce/iema-mitigation-in-eia-guidance-final.pdf (Accessed: March 2025).

Intergovernmental Panel on Climate Change (IPCC) (2007): Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press. Cambridge.

Judd, A. (2012). Cefas contract report: ME5403 – Module 15 Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects. Available: https://tethys.pnnl.gov/sites/default/files/publications/CEFAS_2012_Environmental_Assessment_Guidance.pdf (Accessed: March 2025).

Marine Scotland (2018). Marine Scotland Consenting and Licensing Guidance for Offshore Wind, Wave and Tidal Energy Applications. Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/consultation-paper/2018/10/marine-scotland-consenting-licensing-manual-offshore-wind-wave-tidal-energy-applications/documents/00542001-pdf/00542001-pdf/govscot%3Adocument (Accessed: January 2026)

Marine Scotland (2025). Marine licensing and consenting: offshore renewable energy projects. Available at: https://www.gov.scot/publications/marine-licensing-and-consenting-offshore-renewable-energy-projects/pages/overview/ (Accessed: December 2025).

MarLIN (Marine Life Information Network) (2020). Marine Life Information Network. Plymouth: Marine Biological Association of the United Kingdom. Available: www.marlin.ac.uk. (Accessed: March 2025)

Maclean, I. *et al*. (2009). A Review of Assessment Methodologies for Offshore Wind Farms. Available: https://www.researchgate.net/publication/256461323_A_Review_of_Assessment_Methodologies_for_Offshore_Wind_Farms. (Accessed: March 2025).

MD-LOT (2023). Marine Directorate -Licensing Operations Team Scoping Opinion Scoping Opinion – Morven Offshore Wind Farm Array Area. Available: https://marine.gov.scot/sites/default/files/morven_-_scop-0028_-_scoping_opinion_-_november_2023.pdf. (Accessed: March 2025).

MvOWL (2023). Morven Offshore Wind Array Project Environmental Impact Assessment Scoping Report. Available: https://marine.gov.scot/sites/default/files/230728_-_230717_-_morven_-_scop-0028_-_scoping_-_scoping_submission_scoping_report_-_developer_to_md-lot_redacted.pdf (Accessed: March 2025).

NatureScot (2018). Environmental Impact Assessment Handbook, Archive.org. Available: https://web.archive.org/web/20220901050635/https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20Environmental%20Impact%20Assessment%20Handbook%20V5.pdf (Accessed: March 2025).

Ossian OWFL (2023). Ossian Array EIA Scoping Report. Available: https://marine.gov.scot/sites/default/files/ossian_wind_-_array_eia_scoping_report_-_eor0811a.pdf. (Accessed: March 2025)

RenewableUK (2013). Cumulative Impact Assessment Guidelines Guiding Principles for Cumulative Impacts Assessment In Offshore Wind Farms. Available at: https://tethys.pnnl.gov/sites/default/files/publications/Cumulative-Impact-Assessment-Guidelines.pdf. (Accessed: March 2025)

The Scottish Government (2013). Planning Advice Note 1/2013: Environmental Impact Assessment. Available at: http://www.gov.scot/Resource/0043/00432581.pdf (Accessed: March 2025).

The Scottish Government (2017). The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations, Gov.scot. The Scottish Government. Available at: https://www.gov.scot/publications/energy-consents-how-to-apply/pages/screening/ (Accessed: May 2025). The Scottish Government (2022). Electricity Act 1989 - section 36 applications: guidance for applicants on using the design envelope, Gov.scot. The Scottish Government. Available at: https://www.gov.scot/publications/guidance-applicants-using-design-envelope-applications-under-section-36-electricity-act-1989/ (Accessed: March 2025).

The Scottish Government (2025). Marine licensing and consenting: offshore renewable energy projects, Gov.scot. The Scottish Government. Available at: https://www.gov.scot/publications/marine-licensing-and-consenting-offshore-renewable-energy-projects/ (Accessed: April 2025).

Planning Inspectorate (2018). Nationally Significant Infrastructure Projects - Advice Note Nine: Rochdale Envelope, GOV.UK. Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-nine-rochdale-envelope/ (Accessed: March 2025).

The Planning Inspectorate (2025a). Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment | National Infrastructure Planning. Available at: Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment - GOV.UK (Accessed: March 2025).

The Planning Inspectorate (2025b). Nationally Significant Infrastructure projects: Advice on Transboundary Impacts and Process. Available at: https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-transboundary-impacts-and-process (Accessed: March 2025).