

MONA OFFSHORE WIND PROJECT

Environmental Statement

Volume 1, Chapter 5: Environmental Impact Assessment Methodology

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Image of an offshore wind farm

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Contents

5	ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY	1
5.1	Introduction	1
5.2	Environmental impact assessment legislation and guidance	1
5.3	Key principles of the assessment	2
5.3.1	Overview	2
5.3.2	Proportionate EIA	3
5.3.3	Consultation	4
5.3.4	Identification of design parameters and the MDS	5
5.3.5	Approach to mitigation and the iterative design process	6
5.3.6	Approach to assessment.....	10
5.4	Cumulative Effect Assessment.....	18
5.4.2	Cumulative effect assessment legislation and guidance	18
5.4.3	Approach to cumulative effect assessment	21
5.5	Transboundary effects	27
5.5.1	Transboundary effects legislation and guidance	27
5.5.2	Approach to assessment of transboundary effects	27
5.6	Inter-related effects	28
5.7	References	29

Tables

Table 5.1:	Schedule 4 requirements.....	6
Table 5.2:	Definition of direct, indirect, cumulative, inter-related, positive and adverse impacts.	11
Table 5.3:	Topics for which no Environmental Statement chapter is proposed.	12
Table 5.4:	Definition of the spatial extent, duration, frequency and reversibility when defining the magnitude of an impact.	14
Table 5.5:	Definition of terms relating to the magnitude of an impact.	15
Table 5.6:	Definition of the vulnerability, recoverability and value/importance when defining the sensitivity of a receptor.	16
Table 5.7:	Definition of terms relating to the sensitivity of the receptor.	16
Table 5.8:	Matrix used for the assessment of the significance of the effect.....	17
Table 5.9:	Definition of significance levels for the Mona Offshore Wind Project.....	17
Table 5.10:	Key projects considered in the CEA.....	23

Figures

Figure 5.1:	Iterative approach to development of measures adopted as part of the Mona Offshore Wind Project within the EIA.....	10
Figure 5.2:	Mona Offshore Wind Project and surrounding offshore wind projects.	20
Figure 5.3:	Methodology for the screening of potential projects, plans and activities to provide cumulative effects.	22

MONA OFFSHORE WIND PROJECT

Glossary

Term	Meaning
Cumulative effect assessment	Assessment of the likely effects arising from the Mona Offshore Wind Project alongside the likely effects of other development activities in the vicinity of the Mona Offshore Wind Project
Effect	The consequence of an impact
Impact	A change that is caused by an action
Maximum design scenario	The realistic worst case scenario, which is selected on a topic-specific and impact specific basis, from a range of potential parameters for the Mona Offshore Wind Project
Natural Environment Research Council	Research council supporting research and training within the natural environment in Britain
Project lifetime effects	Effects that occur throughout more than one phase of the project (construction, operations and maintenance, and decommissioning) interacting to potentially create a more significant effect upon a receptor than if just assessed in isolation in a single phase.
Receptor-led effects	Effects that interact spatially and/or temporally resulting in inter-related effects upon a single receptor.
RenewableUK	Industry body representing the renewables industry in the UK. Member companies include developers, consultants, engineers, stakeholders and supply chain members.
Scoping Opinion	Sets out the Secretary of State's response to the Applicant's Scoping Report and contains the range of issues that the Secretary of State, in consultation with statutory stakeholders, has identified should be considered within the EIA.
Transboundary effects	Impacts from a project within one state affect the environment of another state(s).

Acronyms

Acronym	Description
AHEF	Archaeology and Heritage Engagement Forum
BEIS	Department of Business, Energy and Industrial Strategy
CEA	Cumulative Effect Assessment
CIEEM	Chartered Institute of Ecology and Environmental Management
DCO	Development Consent Order
DECC	Department of Energy and Climate Change
DESNZ	Department for Energy Security and Net Zero
DMRB	Design Manual for Roads and Bridges
EEA	European Economic Area
EIA	Environmental Impact Assessment
EWG	Expert Working Groups

MONA OFFSHORE WIND PROJECT

Acronym	Description
IEMA	Institute of Environmental Management and Assessment
IEP	Industry Evidence Programme
JNCC	Joint Nature Conservation Committee
MDS	Maximum Design Scenario
MMO	Marine Management Organisation
MNEF	Marine Navigation Engagement Forum
NERC	Natural Environment Research Council
NPS	National Policy Statement
NRW	Natural Resources Wales
PEIR	Preliminary Environmental Information Report
SNCB	Statutory Nature Conservation Body
SWMP	Site Waste Management Plan
UNECE	The United Nations Economic Commission for Europe
ZOI	Zone Of Influence

5 Environmental Impact Assessment methodology

5.1 Introduction

5.1.1.1 This Environmental Statement has been prepared in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the 2017 EIA Regulations). The 2017 EIA Regulations (Schedule 4) require that an Applicant provides environmental information as follows:

- A description of the aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the inter-relationship between the above factors
- A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative effects of the development, resulting from:
 - The existence of the development
 - The use of natural resources
 - The emission of pollutants, the creation of nuisances and the elimination of waste.

5.1.1.2 This chapter describes the Environmental Impact Assessment (EIA) methodology that has been employed within the Environmental Statement for the assessment of the likely impacts and subsequent effects of the Mona Offshore Wind Project upon physical, biological and human receptors. Further details on topic-specific methodologies are included in the relevant topic chapters of the Environmental Statement (Volume 2, Chapters 1 to 11; Volume 3, Chapters 1 to 11; and Volume 4, Chapters 1 to 4). The following topic chapters follow a more topic-specific methodology than the general approach set out in this chapter, and describe that methodology within their respective chapters:

- Volume 3, Chapter 9: Air quality of the Environmental Statement
- Volume 4, Chapter 2: Climate change of the Environmental Statement.

5.1.1.3 Volume 1, Chapter 2: Policy and legislative context of the Environmental Statement provides further information on the legal framework for the consenting process, including details of the Planning Act 2008 (the 2008 Act) and associated planning policy.

5.2 Environmental impact assessment legislation and guidance

5.2.1.1 The EIA methodology employed in this Environmental Statement draws upon legislation and guidance including:

- Legislation
 - The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (relevant to the application for development consent)
 - The 2008 Act (relevant to the application for development consent)

MONA OFFSHORE WIND PROJECT

- The Marine Works (Environmental Impact Assessment Regulations) 2007 (the 2007 EIA Regulations) (relevant to the marine licence application to Natural Resources Wales (NRW))
- The Marine and Coastal Access Act 2009 (relevant to the marine licence application to NRW)
- Guidance
 - The Planning Inspectorate Advice Note Three: EIA notification and consultation (the Planning Inspectorate, 2017)
 - The Planning Inspectorate Advice Note Seven: Environmental Impact Assessment: Preliminary Environmental Information, Screening and Scoping (the Planning Inspectorate, 2020a)
 - The Planning Inspectorate Advice Note Nine: Rochdale Envelope (the Planning Inspectorate, 2018)
 - The Planning Inspectorate Advice Note Twelve: Transboundary Impacts and Process (the Planning Inspectorate, 2020b)
 - The Planning Inspectorate Advice Note Seventeen: Cumulative effects assessment (the Planning Inspectorate, 2019)
 - Environmental Impact Assessment Guide to: Delivering Quality Development (Institute of Environmental Management and Assessment (IEMA), 2016)
 - Delivering Proportionate EIA, A Collaborative Strategy for Enhancing UK Environmental Impact Assessment Practice (IEMA, 2017)
 - Cumulative Impact Assessment Guidelines, Guiding Principles for Cumulative Impact Assessment in Offshore Wind Farms (RenewableUK, 2013)
 - Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects (Cefas, 2012).

5.2.1.2 Where relevant topic-specific guidance and legislation exists, this is discussed within the relevant Environmental Statement chapters (see Volume 2, Chapters 1 to 11; Volume 3, Chapters 1 to 11; and Volume 4, Chapters 1 to 4). Relevant policy is provided in Volume 1, Chapter 2: Policy and legislative context of the Environmental Statement.

5.3 Key principles of the assessment

5.3.1 Overview

5.3.1.1 The assessment of each topic (e.g. marine mammals, traffic and transport, shipping and navigation etc.) forms a separate chapter of this Environmental Statement. For each topic chapter, the following components are included:

- Identification of the study area for the topic-specific assessments
- Description of the planning policy and guidance context
- Summary of consultation activity, including comments received in the Scoping Opinion, the statutory consultation undertaken pursuant to Section 42 of the Planning Act and topic working groups
- Description of the environmental baseline conditions (including future baseline conditions)

MONA OFFSHORE WIND PROJECT

- Presentation of impact assessment, which includes:
 - Identification of the Maximum Design Scenario (MDS) for each impact assessment
 - Identification of likely impacts and assessment of the significance of identified effects, taking into account any mitigation measures adopted as part of the Mona Offshore Wind Project
 - A description of the measures adopted as part of the Mona Offshore Wind Project, including primary and tertiary mitigation and design measures which seek to prevent, reduce or offset environmental effects
 - Identification of any further secondary mitigation measures required in respect of likely significant effects (in addition to those measures adopted as part of the Mona Offshore Wind Project), together with consideration of any residual effects
 - Identification of any future monitoring required
 - Assessment of any cumulative effects with other major developments, including those that are proposed, consented and under construction (including, where applicable, those projects, plans or activities that are currently operational that were not operational when baseline data was collected)
 - Assessment of any transboundary effects (i.e. effects across state boundaries).

5.3.1.2 Inter-related effects (i.e. inter-relationships between environmental topic areas) are assessed in a separate chapter in both Volume 2, Chapter 11: Inter-related effects (offshore) and Volume 3, Chapter 11: Inter-related effects (onshore) of the Environmental Statement.

5.3.1.3 The approach to the principal components of the EIA process is described in further detail in the following sections.

5.3.2 Proportionate EIA

5.3.2.1 In 2017 IEMA set out a collaborative strategy for enhancing the UK EIA practice through the delivery of proportionate EIA. The Strategy set out IEMA's long term commitment to delivering proportionate EIA within the UK, identifying the following key benefits:

- Focusses assessments so their findings are accessible to all stakeholders
- Reduces uncertainty and risk within project consenting
- Saves time and costs for developers, consenting authorities and consultees
- Allows more time to be spent exploring the delivery of environmental improvements.

5.3.2.2 The aim of undertaking proportionate EIA (as per IEMA, 2017; and the Industry Evidence Programme (IEP) (The Crown Estate *et al.*, 2018) has been a key consideration in the development of this Environmental Statement. A number of tools and processes have been used to aid the proportionality of the Mona Offshore Wind Project Environmental Statement. This has been achieved through the following:

MONA OFFSHORE WIND PROJECT

- The development of consultation Evidence Plans (see section 5.3.3.4 of this chapter)
- The application of the existing evidence base
- The commitment to measures adopted as part of the Mona Offshore Wind Project application (see section 5.3.5 of this chapter).

5.3.3 Consultation

- 5.3.3.1 Consultation on the proposed EIA methodology (including the Cumulative Effects Assessment (CEA) methodology and approach to assessing transboundary and inter-related effects) was undertaken at the EIA scoping stage. The Mona Scoping Report (Mona Offshore Wind Ltd, 2022), which contained details of the proposed approach to EIA for each topic was submitted to the Secretary of State for the Department of Business, Energy and Industrial Strategy (BEIS) in May 2022. The Applicant received the Scoping Opinion in June 2022 (The Planning Inspectorate, 2022). The Applicant met with stakeholders to discuss their feedback in more detail and to make any necessary amendments to the proposed approach ahead of formal consultation on the Preliminary Environmental Impact Report (PEIR).
- 5.3.3.2 The Mona PEIR set out the preliminary findings of the EIA to date, forming the base of the statutory consultation undertaken pursuant to Section 42 of the Planning Act, representing the final statutory stage of pre-application consultation. This was in order to allow those taking part in the consultation to understand the nature, scale, location and likely significant environmental effects of the Mona Offshore Wind Project, such that they could make an informed contribution to the process of pre-application consultation under the 2008 Act and to the EIA process. The consultation on the PEIR lasted 47 days and concluded on 04 June 2023, with feedback from stakeholders incorporated where relevant into the Environmental Statement.
- 5.3.3.3 Consultation continued throughout the pre-application phase of the Mona Offshore Wind Project. The topic chapters of this Environmental Statement and the Consultation report (Document Reference E3) that accompanies the Development Consent Order (DCO) application explain in more detail how feedback from stakeholders has been taken into account in the preparation of this Environmental Statement.
- 5.3.3.4 The Applicant has undertaken the Evidence Plan Process for the Mona Offshore Wind Project. Evidence plans are formal mechanisms to agree with key stakeholders what information the Applicant needs to supply to the Planning Inspectorate as part of an application for development consent. This also helps to ensure compliance with The Conservation of Habitats and Species Regulations 2017 and The Conservation of Offshore Marine Habitats and Species Regulations (the Habitats Regulations), and helps applicants provide sufficient information as part of their application.
- 5.3.3.5 An evidence plan steering group has been established for the Mona Offshore Wind Project. The steering group is comprised of:
- The Planning Inspectorate
 - The Applicant
 - Natural England
 - The Marine Management Organisation (MMO)
 - NRW
 - The Joint Nature Conservation Committee (JNCC).

MONA OFFSHORE WIND PROJECT

- 5.3.3.6 These participants were invited as these are the key regulatory bodies and Statutory Nature Conservation Bodies (SNCBs).
- 5.3.3.7 The steering group has met at key milestones throughout the EIA process. A steering group meeting log has been provided as part of the DCO application, in the Consultation report (Document Reference E3). In addition, Expert Working Groups (EWGs) have been established to discuss topic-specific issues with relevant stakeholders. EWG meetings have been held at key stages in the EIA process or when new information becomes available for each topic, to provide the opportunity for stakeholders to provide feedback and advice to inform the proposals at an early stage. EWGs have been established for the following topics:
- Physical processes, benthic ecology and fish and shellfish ecology
 - Marine mammals
 - Offshore ornithology
 - Onshore ecology and onshore and intertidal ornithology.
- 5.3.3.8 Other than the EWGs established for topics involved in the Evidence Plan Process, engagement forums for consultation with stakeholders have also been set up for the following topics:
- Marine archaeology (in the form of the offshore Archaeology and Heritage Engagement Forum (AHEF))
 - Shipping and navigation (in the form of the Marine Navigation Engagement Forum (MNEF))
 - Historic environment (in the form of the onshore AHEF).
- 5.3.3.9 In addition to the EWGs and engagement forums, technical consultation has taken place on a wide range of topics. These meetings (along with the aforementioned EWGs and forums) are detailed in the Technical engagement plan (Document Reference E4), and minutes are provided for all meetings.

5.3.4 Identification of design parameters and the MDS

- 5.3.4.1 Where consent is applied for and obtained before (and often several years before) construction commences, it has the potential to leave the Applicant unable to use advances in technology. It is not possible to provide precise final design details of the Mona Offshore Wind Project, or the way it will be built, a number of years ahead of the time it will be constructed. Therefore, some flexibility is required within the design and EIA process.
- 5.3.4.2 The Mona Offshore Wind Project EIA process has employed a MDS approach, also known as the Rochdale Envelope approach. This approach is consistent with the Planning Inspectorate's Advice Note Nine: Rochdale Envelope (Planning Inspectorate, 2018). This provides flexibility, while ensuring all potentially significant effects (positive or adverse) are assessed within the EIA process and reported in the Environmental Statement.
- 5.3.4.3 This approach is generally accepted for offshore wind projects because it is a constantly evolving industry with a focus on being cost-effective. Improvements in technology and construction methodologies occur frequently and an unnecessarily prescriptive approach could preclude the adoption of new, more cost-effective technology and methods, potentially affecting the viability of a project, the value provided to consumers and impacting energy security.

MONA OFFSHORE WIND PROJECT

- 5.3.4.4 The MDS approach allows the EIA process to be conducted on the basis of a realistic 'worst case' scenario (i.e. the maximum project design parameters) which is selected from different design and construction scenarios.
- 5.3.4.5 For each of the impacts assessed within the topic chapters (Volume 2, Chapters 1 to 11; Volume 3, Chapters 1 to 11; and Volume 4, Chapters 1 to 4), the MDS is identified from the range of potential options for each parameter within Volume 1, Chapter 3: Project description of the Environmental Statement. The MDS assessed is therefore the scenario which would give rise to the greatest potential impact, and therefore effect.
- 5.3.4.6 For example, where several wind turbine options are included in the design, then the assessment of the Mona Offshore Wind Project has been based on the wind turbine type considered to have the greatest impact. This may be the wind turbine type with the largest footprint, the greatest tip height or the largest area of seabed disturbed during construction, depending upon the topic under consideration. By identifying the MDS for any given impact, it can therefore be concluded that the impact (and therefore the effect) will be no greater for any other design or construction scenario than that assessed for the MDS. By employing the MDS approach, the Applicant retains some flexibility in the final design of the Mona Offshore Wind Project, but within certain maximum parameters, which are fully assessed in this Environmental Statement.
- 5.3.4.7 Volume 1, Chapter 3: Project description of the Environmental Statement describes the Mona Offshore Wind Project design and identifies the range of potential parameters for all relevant components.

5.3.5 Approach to mitigation and the iterative design process

Introduction

- 5.3.5.1 Schedule 4 of the 2017 EIA Regulations requires that "A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment" should be included in the Environmental Statement. The requirements of Schedule 4, along with the location within the application where each requirement has been addressed, are presented in Table 5.1.

Table 5.1: Schedule 4 requirements.

Schedule 4 requirement	Where this requirement is addressed within the Environmental Statement
1. A description of the development	Presented in Volume 1, Chapter 3: Project description of the Environmental Statement.
2. A description of the reasonable alternatives studied by the developer	Presented in Volume 1, Chapter 4: Site selection and consideration of alternatives of the Environmental Statement.
3. A description of the relevant aspects of the current state of the environment (baseline scenario)	Presented within each topic chapter. <ul style="list-style-type: none"> Offshore chapters (Volume 2, Chapters 1 to 11 of the Environmental Statement). Onshore chapters (Volume 3, Chapters 1 to 11 of the Environmental Statement) Offshore and onshore combined chapters (Volume 4, Chapters 1 to 4 of the Environmental Statement).
4. A description of the factors likely to be significantly affected by the development	Presented within each topic chapter and associated annexes (e.g. Volume 4, Chapter 4: Human health of the Environmental Statement).

MONA OFFSHORE WIND PROJECT

Schedule 4 requirement	Where this requirement is addressed within the Environmental Statement
	<ul style="list-style-type: none"> Offshore chapters (Volume 2, Chapters 1 to 11 of the Environmental Statement) Onshore chapters (Volume 3, Chapters 1 to 11 of the Environmental Statement) Offshore and onshore combined chapters (Volume 4, Chapters 1 to 4 of the Environmental Statement).
5. A description of the likely significant effects of the development on the environment	<p>Presented within each topic chapter.</p> <ul style="list-style-type: none"> Offshore chapters (Volume 2, Chapters 1 to 11 of the Environmental Statement). Onshore chapters (Volume 3, Chapters 1 to 11 of the Environmental Statement) Offshore and onshore combined chapters (Volume 4, Chapters 1 to 4 of the Environmental Statement).
6. A description of the forecasting methods or evidence used to identify and assess the significant effects on the environment	<p>Presented within each topic chapter and associated annexes (Volumes 5 to 8 of the Environmental Statement):</p> <ul style="list-style-type: none"> Offshore chapters (Volume 2, Chapters 1 to 11 of the Environmental Statement). Onshore chapters (Volume 3, Chapters 1 to 11 of the Environmental Statement) Offshore and onshore combined chapters (Volume 4, Chapters 1 to 4 of the Environmental Statement).
7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment	<p>Presented within each topic chapter.</p> <ul style="list-style-type: none"> Offshore chapters (Volume 2, Chapters 1 to 11 of the Environmental Statement). Onshore chapters (Volume 3, Chapters 1 to 11 of the Environmental Statement) Offshore and onshore combined chapters (Volume 4, Chapters 1 to 4 of the Environmental Statement).
8. A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters	<p>Presented, where applicable, within the following topic chapters.</p> <ul style="list-style-type: none"> Volume 2, Chapter 2: Benthic subtidal and intertidal ecology of the Environmental Statement Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement Volume 2, Chapter 4: Marine mammals of the Environmental Statement Volume 2, Chapter 7: Shipping and navigation of the Environmental Statement Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement Volume 3, Chapter 2: Hydrology and flood risk of the Environmental Statement Volume 3, Chapter 3: Onshore ecology of the Environmental Statement Volume 3, Chapter 8: Traffic and transport of the Environmental Statement Volume 4, Chapter 1: Aviation and radar of the Environmental Statement

MONA OFFSHORE WIND PROJECT

Schedule 4 requirement	Where this requirement is addressed within the Environmental Statement
	<ul style="list-style-type: none"> Volume 4, Chapter 2: Climate change of the Environmental Statement.
9. A non-technical summary of the information provided under requirements 1-8	Presented within the Non-technical summary of the Environmental Statement.
10. A reference list detailing the sources used for the descriptions and assessments included in the Environmental Statement	<p>Reference lists are included at the end of each chapter and within relevant annexes (Volumes 5 to 8 of the Environmental Statement).</p> <ul style="list-style-type: none"> Offshore chapters (Volume 2, Chapters 1 to 11 of the Environmental Statement). Onshore chapters (Volume 3, Chapters 1 to 11 of the Environmental Statement) Offshore and onshore combined chapters (Volume 4, Chapters 1 to 4 of the Environmental Statement).

5.3.5.2 During the EIA process, potential environmental issues have been taken into account as part of an ongoing iterative design process which considers primary, tertiary and secondary mitigation. The process of EIA has therefore been used as a means of informing the design. Before the initial assessment of an impact, it is first decided whether it can be avoided altogether by designing it out. If this is not possible, the following approach is used.

5.3.5.3 This iterative approach involves a feedback loop, as presented in Figure 5.1. An impact is initially assessed and, if this is deemed to result in a significant adverse effect in EIA terms, changes to the project design are made (where reasonably practicable) to:

- Avoid,
- Reduce, then
- Mitigate the significance of that impact.

5.3.5.4 The assessment is then repeated and the process continues until the EIA practitioner is satisfied that:

- 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 in order to reduce the magnitude of impact (and hence significance of effect). In such cases an overall effect that is still significant in EIA terms may be presented in the Environmental Statement.

Measures adopted as part of the Mona Offshore Wind Project

5.3.5.5 The iterative approach to the Mona Offshore Wind Project EIA process, as described in paragraph 5.3.5.2 above, has been utilised to inform the Mona Offshore Wind Project design (through the identification of impacts that may give rise to likely significant effects and the development of mitigation measures to address any that may arise). The incorporation of such measures within the design of the Mona Offshore Wind Project demonstrates commitment to implementing the identified measures. These measures have been referred to throughout the Environmental Statement as 'measures adopted as part of the Mona Offshore Wind Project'.

MONA OFFSHORE WIND PROJECT

- 5.3.5.6 The Mona Offshore Wind Project assessed within this Environmental Statement therefore include a range of measures that have been designed to reduce or prevent significant adverse effects arising.
- 5.3.5.7 The topic chapters set out the mitigation measures that form part of the Mona Offshore Wind Project and that have been taken into account in the assessment of effects for that topic. These include:
- Primary mitigation: measures included as part of the project design. These include modifications to the location or design envelope of the Mona Offshore Wind Project which are integrated into the application for consent. These measures are secured through the consent itself through the description of the development and the parameters secured in the DCO and/or marine licences (referred to as primary mitigation in IEMA, 2016)
 - Tertiary mitigation: measures required to meet legislative requirements, or actions that are generally standard practice used to manage commonly occurring environmental effects and are secured through the DCO requirements and/or the conditions of the marine licences (referred to as tertiary mitigation in IEMA, 2016).
- 5.3.5.8 In some cases, these measures may result in enhancement of environmental conditions. Environmental enhancement is where there is a beneficial enhancement above and beyond any mitigation provided. Biodiversity net gain is a typical example of enhancement. The Mona Offshore Wind Project's objectives for conserving, enhancing and restoring biodiversity are set out in a Biodiversity benefit statement (Document Reference J7) that accompanies the application. The proposed locations and management measures for the enhancement areas have been discussed with NRW and other stakeholders through the onshore ecology EWG.
- 5.3.5.9 Primary and tertiary mitigation measures are set out first and are incorporated as part of the initial assessment under each topic chapter. Where any residual significant adverse effects are identified within the assessment, further mitigation measures (referred to as secondary measures) may have been identified. These are measures that could further prevent, reduce and, where possible, offset the adverse effects on the environment. Further mitigation is presented after the assessment within each topic chapter.
- 5.3.5.10 Monitoring commitments may be put in place as necessary to assess the effectiveness of mitigation measures and validate assessment conclusions.

MONA OFFSHORE WIND PROJECT

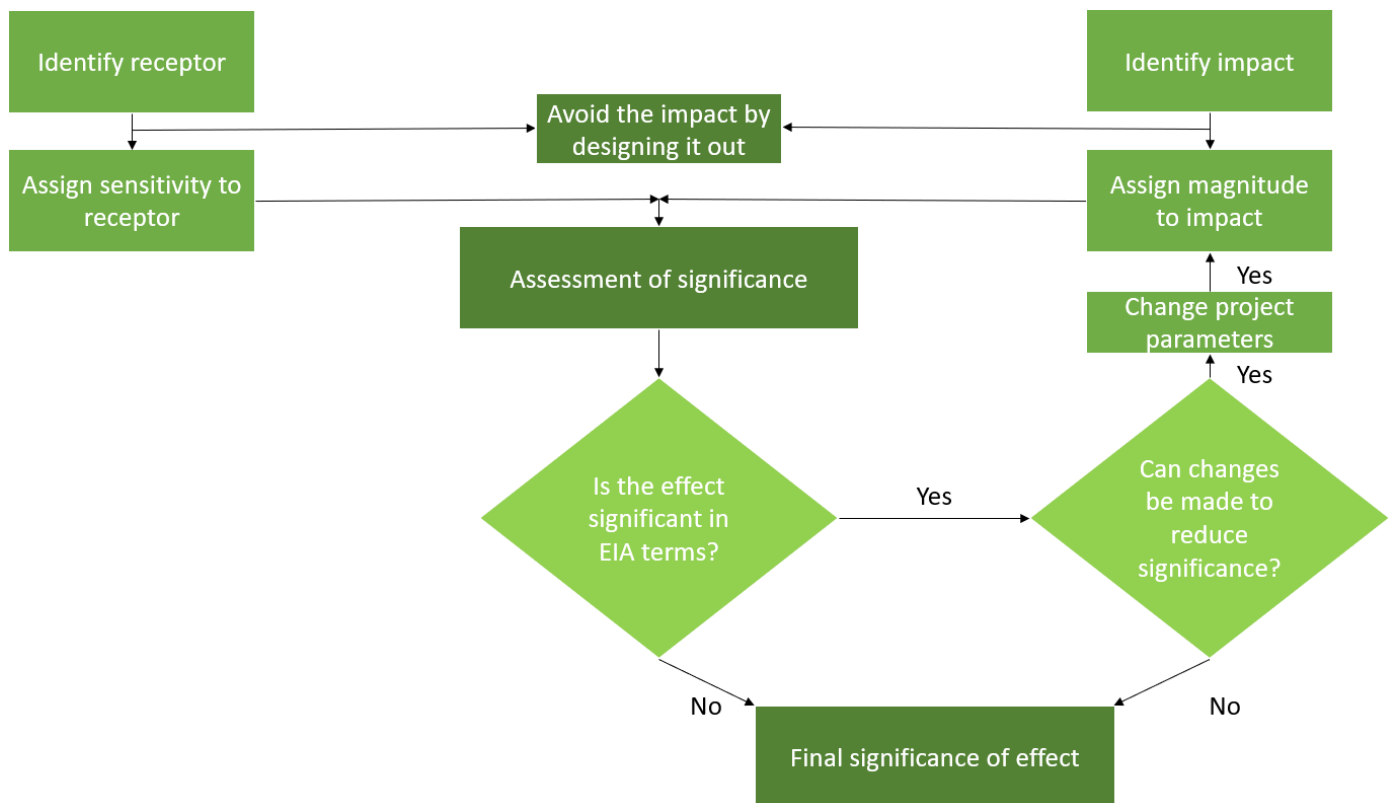


Figure 5.1: Iterative approach to development of measures adopted as part of the Mona Offshore Wind Project within the EIA.

5.3.6 Approach to assessment

Impact vs effect

- 5.3.6.1 The Mona Offshore Wind Project has the potential to create a range of 'impacts' and consequent 'effects' with regard to the physical, biological and human environment. The definitions of impact and effect used in this assessment are drawn from the Design Manual for Roads and Bridges (DMRB) LA104 (Highways England *et al.*, 2020). The DMRB was devised for linear transport schemes but can be applied to any infrastructure project, including offshore wind farms and their associated linear cable routes. The DMRB provides overarching descriptions and matrices that can be applied to all technical topics within an EIA. These are described further in this section.
- 5.3.6.2 For the purposes of the Environmental Statement, the term 'impact' is defined as a change that is caused by an action. For example, the laying of an inter-array cable (action) is likely to result in seabed disturbance (impact). Impacts can be defined as direct, indirect, secondary, cumulative and inter-related (Table 5.2). They can be either positive/beneficial or adverse, although the relationship between them is not always straightforward and relies on available evidence and professional judgement.
- 5.3.6.3 The term 'effect' is defined as the consequence of an impact. For example, the laying of an inter-array cable (action) results in seabed disturbance (impact), with the potential to disturb benthic habitats and species (effect).
- 5.3.6.4 The 'significance' of each effect is determined by considering the magnitude of the impact alongside the importance, or sensitivity, of the receptor/receptor group, in accordance with the defined significance criteria.

MONA OFFSHORE WIND PROJECT

Table 5.2: Definition of direct, indirect, cumulative, inter-related, positive and adverse impacts.

Term	Definition
Direct impact	Occurs as a straightforward consequence of activities undertaken in direct connection to the Mona Offshore Wind Project (derived from the DMRB).
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 (derived from the DMRB).
Cumulative impact	Impacts that result from incremental changes caused by other reasonably foreseeable actions alongside the project in question. This includes the impact of all other developments that were not present at the time of data collection (surveys etc.) (derived from the DMRB).
Inter-related impacts	Inter-relationships consider impacts of the proposals on the same receptor. These occur where a number of separate impacts, (e.g. noise and air-quality), affect a single receptor (Planning Inspectorate, 2018).
Positive or adverse impacts	An impact can be either “positive” or ‘adverse’. A positive impact is one that improves the quality of the environment and an adverse impact is one that reduces the quality of the environment (CIEEM, 2016).

Scope of the impact assessment

- 5.3.6.5 The Mona Scoping Report (Mona Offshore Wind Ltd, 2022), which contained details of the proposed approach to the EIA for each topic, was submitted to the Secretary of State for BEIS in May 2022. The Applicant received the Scoping Opinion in June 2022 (The Planning Inspectorate, 2022). The topics considered within the Environmental Statement are presented in Volume 1, Chapter 1: Introduction of the Environmental Statement. Each topic assessment:
- Presents the existing environmental baseline established from desk studies, site-specific surveys and consultation
 - Identifies any assumptions and limitations encountered in compiling the environmental information
 - Presents the potential environmental effects arising from the Mona Offshore Wind Project, based on the information gathered and the analysis and assessments undertaken
 - Highlights any necessary monitoring and/or mitigation measures which could prevent, minimise, reduce or offset the possible environmental effects of the Mona Offshore Wind Project.
- 5.3.6.6 There are a number of environmental topics that are required to be considered under Schedule 4 of the 2017 EIA Regulations and Schedule 3 of the 2007 EIA Regulations for which no Environmental Statement chapter is proposed. This approach has been confirmed through the Planning Inspectorate’s Scoping Opinion (The Planning Inspectorate, 2022). These topics are described in Table 5.3 below.

MONA OFFSHORE WIND PROJECT

Table 5.3: Topics for which no Environmental Statement chapter is proposed.

Topic	Justification
Topics covered by annexes in the Environmental Statement	
Waste	<p>A Site Waste Management Plan (SWMP) (Document Reference J26.9) is included as a technical annex to the Environmental Statement. The SWMP identifies the likely waste arisings from the construction of the generation assets and sets out appropriate measures for managing the waste in accordance with the waste hierarchy principle. These include measures to reduce waste; to use less harmful alternative materials; opportunities to use materials with recycled content; to provide appropriate waste storage; and the utilisation of licensed/registered waste carriers.</p> <p>Contractors will be required to follow the measures set out in the SWMP for managing waste and recording the movement of waste from the area of construction to the waste management facilities. Contractors will also be required to follow the best practice measures within the Code of Construction Practice (Document Reference J26) and the Project Environmental Management Plan. On that basis, the potential impacts arising from the disposal and recovery of waste during construction of the generation assets are unlikely to give rise to significant effects. Therefore, no standalone chapter within the Environmental Statement is considered to be necessary.</p>
Underwater sound	<p>Information on underwater sound resulting from the construction, operations and maintenance, and decommissioning phases of the Mona Offshore Wind Project has been included as an annex to Volume 1: Chapter 3: Project description of the Environmental Statement (Volume 5, Annex 3.1: Underwater sound technical report of the Environmental Statement). Underwater sound is not, in itself, a receptor on which an assessment can be undertaken. An increase in underwater sound is an impact that may affect other ecological receptors. Therefore, underwater sound will not have a separate Environmental Statement chapter and impacts resulting from an increase in underwater sound has been assessed in Volume 2, Chapter 3: Fish and shellfish ecology and Volume 2, Chapter 4: Marine mammals of the Environmental Statement.</p>
Topics scoped out	
Local planning policy context	<p>A description of the consenting process and the 2008 Act has been provided within Volume 1, Chapter 1: Introduction of the Environmental Statement.</p> <p>For each environmental topic, the relevant legislative and planning policy context has been described within each topic chapter of the Environmental Statement. The assessment of each topic included in the Environmental Statement has considered the requirements and objectives set out in national, regional and local planning policy where relevant and appropriate.</p> <p>In addition, a Planning statement (Document Reference J2) has been submitted in support of the application for development consent, which outlines how the Mona Offshore Wind Project complies with relevant local plans and planning policy.</p>
Daylight, sunlight and microclimate	<p>The above ground elements of the Mona Offshore Wind Project do not include tall buildings. Any built elements, such as the onshore substation, would not be sufficiently tall or close to other buildings to result in significant effects in relation to daylight and sunlight. In addition, given the nature of the Mona Offshore Wind Project, these are not likely to result in microclimate changes and therefore this topic is scoped out of the EIA.</p> <p>The effects of the Mona Offshore Wind Project on climate change have been considered separately in Volume 4: Chapter 2: Climate change of the Environmental Statement.</p>
Heat and radiation	<p>The technical specification of the onshore substation will consider any heat generated within the design and this would, as is usual practice, prevent any overheating or heat effects. Potential EMF impacts from the Offshore Substation Platforms (OSPs), interconnector, inter-array and export cables have been considered in the marine ecology chapters of the Environmental Statement. Due to the distance between the onshore substation components and the closest publicly accessible point (the perimeter fence), the greatest EMFs exposure in the vicinity of substation is typically from the underground cables entering and exiting them. Perimeter fencing provides screening of the electric field, and this would not be expected to exceed the public exposure guidelines (e.g. Department of Energy and Climate Change</p>

MONA OFFSHORE WIND PROJECT

Topic	Justification
	(DECC), 2012 'Power lines: Demonstrating compliance with EMF public exposure guidelines. A voluntary Code of Practice'). Additional information has been added to Volume 1, Chapter 3: Project description of the Environmental Statement. This information includes the location of the Onshore Cable Corridor and the Onshore Substation in relation to sensitive receptors and measures included in the design that would minimise the impacts of heat. There are no overhead cables proposed as part of the Mona Offshore Wind Project. As a result of this additional information, heat and radiation is proposed to be scoped out of the EIA.
Topics covered in other chapters of the Environmental Statement	
Other residues and emissions	<p>The potential impacts of residues and emissions (e.g. dust, pollutants, light, noise, vibration) arising from the construction, operations and maintenance, and decommissioning phases of the Mona Offshore Wind Project have been considered in the following topics of the Environmental Statement where relevant:</p> <ul style="list-style-type: none"> • Volume 2, Chapter 1: Physical processes of the Environmental Statement (impacts of sediment releases) • Volume 2, Chapter 2: Benthic subtidal and intertidal ecology, Volume 2, Chapter 3: Fish and shellfish ecology and Volume 2, Chapter 4: Marine mammals and offshore ornithology of the Environmental Statement (impacts of emissions to water and noise emissions on ecological receptors) • Volume 3, Chapter 1: Geology and ground conditions of the Environmental Statement (impacts of emissions/residues to land on soil quality) • Volume 3, Chapter 2: Hydrology and flood risk of the Environmental Statement (impacts of surface water runoff on water quality and flood risk) • Volume 3, Chapter 3: Onshore ecology and Volume 3, Chapter 4: Onshore and intertidal ornithology of the Environmental Statement (impacts of emissions to water, land or air and noise emissions on ecological receptors) • Volume 3, Chapter 9: Noise and vibration of the Environmental Statement (impacts of noise emissions and vibration) • Volume 3, Chapter 10: Air quality of the Environmental Statement (impacts of emissions to air, including dust and other pollutants) • Volume 5, Annex 3.1: Underwater sound technical report of the Environmental Statement (impacts of sound emissions and vibration).
Material assets	<p>The potential impacts on material assets arising from the construction, operations and maintenance, and decommissioning phases of the Mona Offshore Wind Project have been considered in the following topic chapters of the Environmental Statement:</p> <ul style="list-style-type: none"> • Volume 2, Chapter 6: Commercial fisheries of the Environmental Statement • Volume 2, Chapter 7: Shipping and navigation of the Environmental Statement • Volume 2, Chapter 9: Marine archaeology of the Environmental Statement • Volume 2, Chapter 10: Other sea users of the Environmental Statement • Volume 3, Chapter 5: Historic environment of the Environmental Statement • Volume 3, Chapter 7: Land use and recreation of the Environmental Statement. • Volume 4, Chapter 1: Aviation and radar of the Environmental Statement • Volume 4, Chapter 3: Socio-economics of the Environmental Statement.
Major accidents and disasters	<p>The potential for major accidents and disasters arising from the construction, operations and maintenance, and decommissioning phases of the Mona Offshore Wind Project has been considered in the following topic chapters of the Environmental Statement:</p> <ul style="list-style-type: none"> • Volume 2, Chapter 2: Benthic subtidal and intertidal ecology of the Environmental Statement • Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement • Volume 2, Chapter 4: Marine mammals of the Environmental Statement • Volume 2, Chapter 7: Shipping and navigation of the Environmental Statement

MONA OFFSHORE WIND PROJECT

Topic	Justification
	<ul style="list-style-type: none"> Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement Volume 3, Chapter 2: Hydrology and flood risk of the Environmental Statement Volume 3, Chapter 3: Onshore ecology of the Environmental Statement Volume 3, Chapter 8: Traffic and transport of the Environmental Statement Volume 4, Chapter 1: Aviation and radar of the Environmental Statement Volume 4, Chapter 2: Climate change of the Environmental Statement.

5.3.6.7 In addition, a number of individual impacts have been scoped out based on the baseline information that has been collected for the Mona Offshore Wind Project and the project description outlined in Volume 1, Chapter 3: Project description of the Environmental Statement. Impacts which have been scoped out and confirmed through the Scoping Opinion are outlined in each of the topic chapters (Volume 2, Chapters 1 to 11, Volume 3, Chapters 1 to 11 and Volume 4: Chapters 1 to 4 of the Environmental Statement).

Defining magnitude of impact and sensitivity of receptor

Magnitude of impact

5.3.6.8 For each of the impacts assessed in this Environmental Statement, a magnitude has been assigned. The magnitude of an impact considers the spatial extent, duration, frequency and reversibility of the impact from the construction, operations and maintenance, or decommissioning phase of the Mona Offshore Wind Project. Each of these terms is defined in Table 5.4 below.

Table 5.4: Definition of the spatial extent, duration, frequency and reversibility when defining the magnitude of an impact.

^a Topic-specific definitions for these categories are provided in each of the topic chapters.

Term	Definition
Spatial extent of the impact	Geographical area over which the impact may occur (CIEEM, 2016).
Duration of the impact	The time over which an impact occurs. An impact may be described as short, medium or long-term ^a and permanent or temporary (derived from the DMRB).
Frequency of the impact	The number of times an impact occurs across the relevant phase/lifetime of a project (derived from the DMRB).
Reversibility of the impact	An irreversible (permanent) impact may occur when recovery is not possible within a reasonable timescale, or there is no reasonable chance of action being taken to reverse it. By contrast, a reversible (temporary) impact is one where recovery is possible naturally in a relatively short time period, or where mitigation measures can be effective at reversing the impact. It is possible for the same activity to cause both irreversible and reversible impacts (derived from the DMRB).

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

- Negligible
- Low

MONA OFFSHORE WIND PROJECT

- Medium
- High.

5.3.6.10 An example of the definitions for each of these categories is set out in Table 5.5 below, which describes both positive and adverse magnitudes of change (based on the DMRB). Topic-specific definitions for each of these categories are provided in each of the topic chapters (Volume 2, Chapters 1 to 11, Volume 3, Chapters 1 to 11 and Volume 4: Chapters 1 to 4 of the Environmental Statement). The design of these topic-specific scales draws upon topic-relevant external policy, guidance, standards and other material, including specialist knowledge and professional judgement. Where there are differences in opinion on the magnitude of each impact between the Applicant and relevant stakeholders, these have been identified within the Environmental Statement with justification given for the Applicant's choice.

Table 5.5: Definition of terms relating to the magnitude of an impact.

Term	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).
	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).
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).

Sensitivity of receptor

- 5.3.6.11 For the purpose of this Environmental Statement, receptors are defined as the physical or biological resource or human user group that could be affected by the Mona Offshore Wind Project impacts. These receptors are identified through available data and baseline studies that have been reviewed in the preparation of this Environmental Statement.
- 5.3.6.12 In defining the sensitivity for each receptor, the vulnerability, recoverability and value/importance has been taken into consideration. Each of these terms is defined in Table 5.6 and is used on a basis appropriate to each topic chapter. Where these considerations are not included in the assessment the reason for this is explained within the relevant topic chapter.

MONA OFFSHORE WIND PROJECT

Table 5.6: Definition of the vulnerability, recoverability and value/importance when 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, 2001).
Recoverability of the receptor	The ability of a receptor to be able to return to a state close to that which existed before an activity or event caused damage (MarLIN, 2012).
Value/importance of the receptor	The importance of the receptor in terms of ecological, social/community and/or economic value (CIEEM, 2016).

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

- Negligible
- Low
- Medium
- High
- Very high.

5.3.6.14 An example of the definitions for each of these categories is set out in Table 5.7. Topic-specific definitions for each of these categories are provided in each of the topic chapters (Volume 2, Chapters 1 to 11, Volume 3, Chapters 1 to 11 and Volume 4: Chapters 1 to 4 of the Environmental Statement). The value of a receptor for each topic draws upon relevant external guidance and other material, including specialist knowledge, which is relevant to that topic. Where there may be differences in opinion on the sensitivity of each receptor or receptor group between the Applicant and relevant stakeholders, these are identified within the Environmental Statement with justification given for the Applicant's choice.

Table 5.7: Definition of terms relating to the sensitivity of the receptor.

Sensitivity	Definition (adapted from the DMRB)
Very High	Very high importance and rarity, international scale and very limited potential for substitution.
High	High importance and rarity, national scale and limited potential for substitution.
Medium	High or medium importance and rarity, regional scale, limited potential for substitution.
Low	Low or medium importance and rarity, local scale.
Negligible	Very low importance and rarity, local scale.

Evaluation of significance of effect

5.3.6.15 The overall significance of an effect is evaluated by considering the magnitude of the impact alongside the sensitivity of receptor. Each chapter defines the approach taken to the assessment of significance. Unless set out otherwise within the chapter, a matrix approach has been adopted as a guide. This matrix has been adapted from the DMRB.

MONA OFFSHORE WIND PROJECT

Table 5.8: Matrix used for the assessment of the significance of the effect.

Sensitivity of receptor	Magnitude of impact			
	Negligible	Low	Medium	High
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

5.3.6.16 Professional judgement is used to define the magnitude of impact and receptor sensitivity. The matrix is then used, together with professional judgement, to evaluate the significance of effect. The significance may be one, or a range of, no change, negligible, minor, moderate or major. In general, a significance of effect of moderate or greater is considered 'significant' in EIA terms. For each topic chapter, what is considered 'significant' has been clearly defined. Where further mitigation is not possible a residual significant effect may remain.

5.3.6.17 In cases where a range is suggested for the significance of effect, there remains the possibility that this may span the significance threshold (i.e. the range is given as minor to moderate). In such cases 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.

5.3.6.18 The definitions for each of the significance levels are shown in Table 5.9.

Table 5.9: Definition of significance levels for the Mona Offshore Wind Project.

Sensitivity	Definition (adapted from the DMRB)
Major	These beneficial or adverse effects are considered to be very important considerations 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 that are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also enter this category. Effects upon human receptors may also be attributed this level of significance.
Moderate	These beneficial or adverse effects have the potential to be important and may influence the key decision-making process. The 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.
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 project.
Negligible	No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.
No change	No loss or alteration of characteristics, features or elements; no observable impact in either direction.

Further mitigation and future monitoring measures

- 5.3.6.19 The topic-specific assessments consider the range of primary mitigation measures that have been designed to reduce or prevent significant adverse effects arising (as described in section 5.3.5). However, they may identify secondary mitigation measures where required. These are measures that could further prevent, reduce and, where possible, offset any adverse effects on the environment.
- 5.3.6.20 Where relevant and necessary, future monitoring measures have been set out within the topic chapters.
- 5.3.6.21 All enhancement, mitigation and monitoring commitments have been included within the consent application and the means of implementation identified.

Residual effects

- 5.3.6.22 Residual effects are defined as the effects remaining once all further mitigation measures have been taken into consideration. Following the identification of further mitigation measures as described above, the assessment re-evaluates the significance of effect utilising the methodology outlined above in Table 5.8.

5.4 Cumulative Effect Assessment

- 5.4.1.1 Cumulative effects are defined as those that result from incremental changes caused by other reasonably foreseeable projects, plans and activities that were not present at the time of data collection or survey, alongside the project in question. The CEA therefore, considers the likely effects arising from the Mona Offshore Wind Project alongside the likely effects of other projects, plans and activities in the vicinity of the Mona Offshore Wind Project, based on the information available.
- 5.4.1.2 In-combination effects are defined as the combined effect of the Mona Offshore Wind Project, with the effects from a number of different projects, plans and activities, on the integrity of European Sites designated for their nature conservation value. In-combination effects are presented separately within the HRA Stage 2 Information to Support the Appropriate Assessment (ISAA) report.

5.4.2 Cumulative effect assessment legislation and guidance

- 5.4.2.1 Cumulative effects are assessed in accordance with the 2017 EIA Regulations which stipulate that an Environmental Statement should include: *“A description of the likely significant effects of the development 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”* (Paragraph 5, Part 1, Schedule 4).
- 5.4.2.2 The need to consider cumulative effects in planning and decision making is also set out in the National Policy Statements for energy infrastructure (NPSs). Specifically, NPS EN-1 (Department for Energy Security and Net Zero (DESNZ), 2024a) states at paragraph 4.1.5 that, in considering any proposed development, in particular when weighing its adverse impacts against its benefits, the Secretary of State should take into account: *“its potential adverse impacts, including on the environment, and including any long-term and cumulative adverse impacts, as well as any measures to avoid, reduce, mitigate or compensate for any adverse impacts, following the mitigation hierarchy”*.

MONA OFFSHORE WIND PROJECT

- 5.4.2.3 NPS EN-1 goes on to state at paragraph 4.3.19 that the Secretary of State should consider how the “*accumulation of, and interrelationship between, effects might affect the environment, economy, or community as a whole, even though they may be acceptable when considered on an individual basis with mitigation measures in place.*”
- 5.4.2.4 The Mona Offshore Wind Project is being developed within a period of rapid growth in the offshore wind sector. This rapid development includes development of other Offshore Wind Leasing Round 4, ScotWind and Marine Area Consent regime in Ireland. As such, the approach to CEA has, over recent years, become an issue of increasing importance for offshore wind developers. In response, RenewableUK and the Natural Environment Research Council (NERC) have published guidelines on the undertaking of the CEA ‘Cumulative Impact Assessment Guidelines’ (RenewableUK, 2013) and the Planning Inspectorate have published an advice note, ‘Advice Note Seventeen: Cumulative Effects Assessment’ (Planning Inspectorate, 2019c). The approach to CEA undertaken for the Mona Offshore Wind Project takes into account the principles outlined in the RenewableUK guidelines and the Planning Inspectorate Advice Note, together with comments made in response to the Mona Offshore Wind Project Scoping Report and consultation as described in section 5.3.3. The Mona Offshore Wind Project along with the surrounding commissioned and planned offshore wind projects are presented in Figure 5.2.

MONA OFFSHORE WIND PROJECT

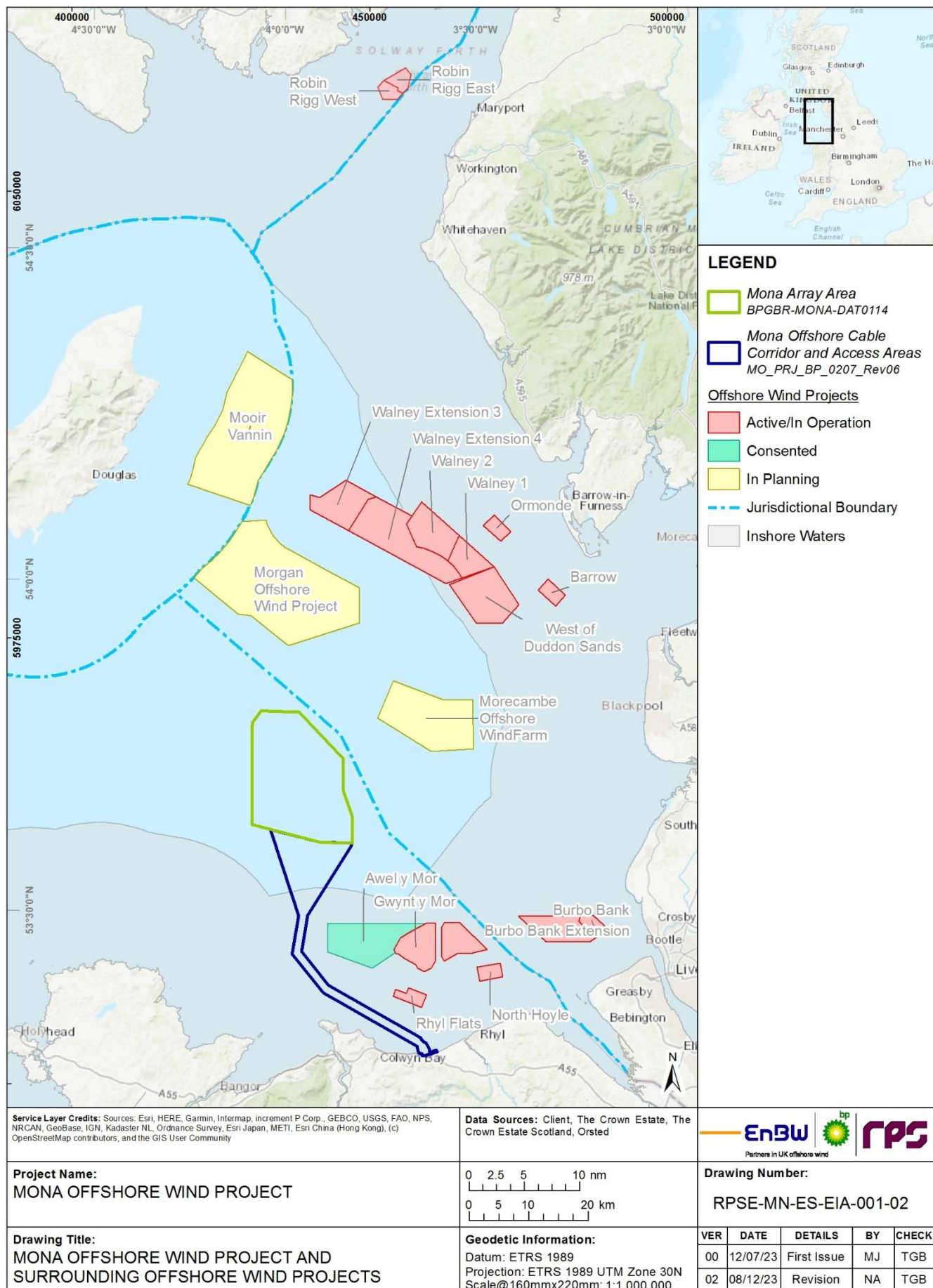


Figure 5.2: Mona Offshore Wind Project and surrounding offshore wind projects.

5.4.3 Approach to cumulative effect assessment

Cumulative effect assessment methodology

5.4.3.1 The CEA methodology follows the four staged approach as set out in Planning Inspectorate Advice Note Seventeen (Planning Inspectorate 2019). The assessment is divided into two main phases:

- Screening of projects, plans and activities (stages 1 – 3 in Advice Note Seventeen)
- Assessment (stage 4 in Advice Note Seventeen).

5.4.3.2 These two phases are outlined in Figure 5.3 below. Each of the process components is explained in further detail below, alongside a worked example of the screening process.

Screening of projects, plans and activities

5.4.3.3 A fundamental requirement of undertaking CEA is to identify those projects, plans or activities with which the Mona Offshore Wind Project may interact to produce a cumulative effect. These interactions may arise within the construction, operations and maintenance, or decommissioning phase. 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'.

5.4.3.4 A specialised process has been developed in order to methodically and transparently screen the large number of projects, plans and activities that may be considered cumulatively alongside the Mona Offshore Wind Project. This involves a staged process that considers the level of detail available for projects, plans and activities, as well as the potential for interactions on a conceptual, physical and temporal basis.

5.4.3.5 The projects, plans and activities screened into the CEA have been consulted upon with the Statutory Nature Conservation Bodies and Local Planning Authorities throughout the pre-application process, in order to seek agreement on the projects, plans and activities which have been considered in the cumulative assessment. Key projects considered in the CEA are presented in Table 5.10.

MONA OFFSHORE WIND PROJECT

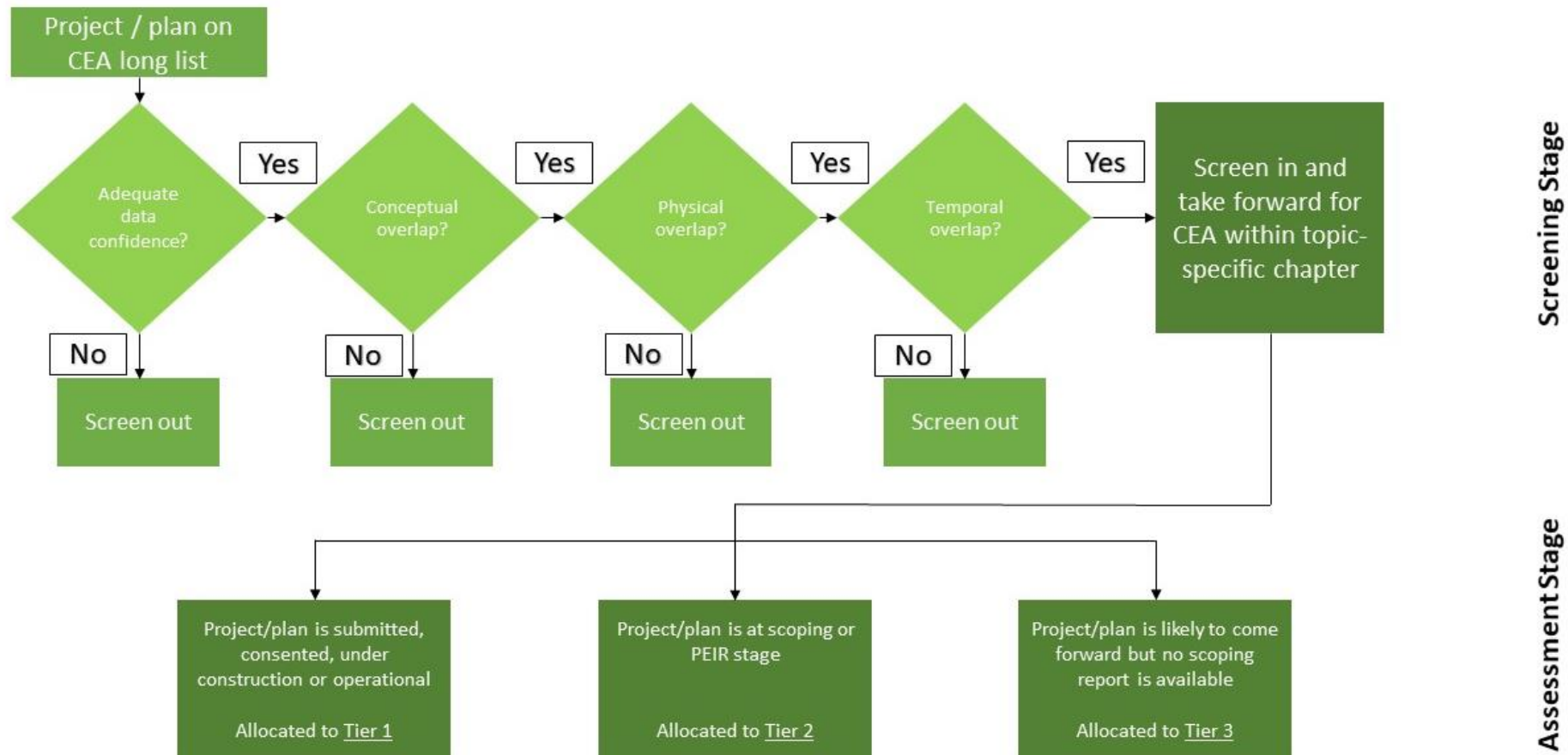


Figure 5.3: Methodology for the screening of potential projects, plans and activities to provide cumulative effects.

MONA OFFSHORE WIND PROJECT

5.4.3.6 The information publicly available up to three months before application was considered in this CEA. The CEA has therefore been undertaken based on the latest available information in the public domain up to the 21 November 2023. If further information is available for the proposal before the Mona Offshore Wind Project receives Development Consent, the Applicant will review the information and provide any update needed to the CEA.

Table 5.10: Key projects considered in the CEA.

Project	Information considered in the CEA	Anticipated date further information is due to be published	Topics which may be affected by the publication of further information
Morgan Offshore Wind Project Generation Assets	The information presented at PEIR (Morgan Offshore Wind Ltd., 2023), with the exception of Volume 2, Chapter 7: Shipping and navigation of the Environmental Statement which considered the revised Morgan Array Area presented in the Autumn 2023 project update.	Application for Development Consent, together with associated Environmental Statement, in Quarter 2 2024.	All offshore chapters (Volume 2, Chapters 1 to 10 of the Environmental Statement).
Morgan and Morecambe Offshore Wind Farms: Transmission Assets	The information presented at PEIR (Morgan Offshore Wind Limited and Morecambe Offshore Windfarm Limited., 2023).	Application for Development Consent, together with associated Environmental Statement, in Quarter 3 2024.	All offshore chapters (Volume 2, Chapters 1 to 10 of the Environmental Statement).
Morecambe Offshore Windfarm Generation Assets	The information presented at PEIR (Morecambe Offshore Windfarm Ltd., 2023), with the exception of Volume 2, Chapter 7: Shipping and navigation of the Environmental Statement which considered the revised Morecambe Array Area presented in the Autumn 2023 project update.	Application for Development Consent, together with associated Environmental Statement, in Quarter 2 2024.	All offshore chapters (Volume 2, Chapters 1 to 10 of the Environmental Statement).
National Grid Bodewyddan substation extension proposal	Information presented in the EIA Screening Request, including supporting documentation, such as the Preliminary Ecological Appraisal and Heritage Appraisal, and information included in the Autumn 2023 consultation material	The date on which further information is to be published remains unknown at this stage in the application process and is not available in the public domain.	All onshore chapters (Volume 3, Chapters 1 to 10) and onshore/offshore combined chapters (Volume 4, Chapters 2 to 4) of the Environmental Statement.
Moor Vannin Offshore Wind Farm	The information presented in the Scoping Report (Moor Vannin Offshore Wind Farm Ltd., 2023).	Application for Development Consent, together with associated Environmental Statement, in Quarter 1 2025. New information may become available through consultation beforehand.	All offshore chapters (Volume 2, Chapters 1 to 10 of the Environmental Statement).

Compiling the CEA long list

5.4.3.7 In order to undertake a comprehensive CEA, a long list of relevant projects, plans and activities occurring within a large Zone of Influence (ZOI) encompassing the entire east Irish Sea (offshore) and parts of north Wales (onshore) was produced. In accordance with the Planning Inspectorate Advice Note Seventeen: Cumulative Effects Assessment (Planning Inspectorate, 2019), the CEA long list includes other major developments (both onshore and offshore), including those which are:

- Under construction
- Permitted application(s), but not yet implemented
- Submitted application(s) not yet determined
- Projects on the National Infrastructure Planning Portal's Programme of Projects
- Identified in the relevant development plan (and emerging development plans - with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals will be limited
- Identified in other plans and programmes (as appropriate), which set the framework for future development consents/approvals, where such development is reasonably likely to come forward.

5.4.3.8 For the purposes of the Mona Offshore Wind Project CEA, the relevant project parameters for the projects, plans and activities considered cumulatively have been drawn from Environmental Statements or other similarly detailed planning documents (e.g. marine licence applications, planning applications and field development plans for oil and gas). Changes made post-consent to the projects, plans and activities have not 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. However, where greater certainty does exist, key changes post-consent have been taken into account.

5.4.3.9 The CEA long list for the Mona Offshore Wind Project is included in Volume 5, Annex 5.1: Cumulative effects screening matrix of the Environmental Statement. The CEA long list has been updated three months prior to application to ensure that updates to the other projects, plans and activities considered have been captured. In addition, this included any new projects, plans and activities that have progressed since the CEA long list for the Environmental Statement was developed.

Screening of the CEA long list

5.4.3.10 For a cumulative effect to occur, it must be established that a cumulative effect has the potential to directly or indirectly affect the receptor(s) in question (i.e. there must be an impact-receptor-pathway). All projects, plans and activities listed in the CEA long list were individually considered 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. Projects were screened in on the basis of conceptual overlap, physical overlap, and temporal overlap. Those that were screened in were then carried forward into the CEA of the relevant topic chapters of the Environmental Statement.

5.4.3.11 The process has been followed to methodically and transparently screen the large number of projects, plans and activities that have been considered cumulatively alongside the Mona Offshore Wind Project. This involved a stepwise process that

MONA OFFSHORE WIND PROJECT

considered the level of detail available for projects, plans and activities, as well as the potential for interactions to occur on the following basis:

- **Data availability:** data availability was taken into account when screening projects, plans and activities into or out of the CEA. The premise was that 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:** for a conceptual overlap to occur it must be established that such an impact has the potential to directly or indirectly affect the receptor(s) in question. In EIA terms this is described as an impact-receptor pathway and is defined here as a conceptual overlap
- **Physical overlap:** a physical overlap refers to the ability for impacts arising from the Mona Offshore Wind Project to overlap with those from other projects, plans and activities on a receptor basis. This means that, in most examples, an overlap of the physical extents of the impacts arising from the two (or more) projects, plans or activities must be established for a cumulative effect to arise. Exceptions to this exist for certain mobile receptors that may move between, and be subject to, two or more separate physical extents of impact from two or more projects
- **Temporal overlap:** in order for a cumulative effect to arise from two or more projects, a temporal overlap of impacts 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 Mona Offshore Wind Project and other projects, plans 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 projects.

5.4.3.12 In the case of the Morgan Offshore Wind Project, which is also being promoted by the Applicant, this has been included in the CEA (Tier 2 development) for the Mona Offshore Wind Project. The pre-application stages are running almost concurrently with the Mona Offshore Wind Project. As both projects are being promoted by the Applicant, the Mona Offshore Wind Project has updated the CEA within this Environmental Statement to take into account any new data which has been made available following the publication of the Morgan Offshore Wind Project PEIR. This is also the case for the collaborative application for consent for the Morgan and Morecambe Offshore Wind Farms: Transmission Assets (hereafter referred to as the Transmission Assets). This approach complies with the relevant EIA Regulations and is consistent with that taken for other applications, where relevant environmental information has become available after the point of application submission.

Assessment stage

5.4.3.13 Upon the completion of the screening stage described above, a list of all projects, plans and activities screened in for assessment was produced. This list is specific to each topic of the EIA process (although a number of projects, plans or activities are relevant to several topics) and presents all projects, plans and activities considered in each topic chapter's CEA. The list also includes a summary of relevant detail of each of the projects, plans and activities relevant to the CEA and is included within each topic

MONA OFFSHORE WIND PROJECT

chapter of the Environmental Statement (Volume 2, Chapters 1 to 11; Volume 3, Chapters 1 to 11; and Volume 4, Chapters 1 to 4).

Implementing the CEA

- 5.4.3.14 The Mona Offshore Wind Project CEA has been undertaken for the Environmental Statement and is presented within each topic chapter (Volume 2, Chapters 1 to 11; Volume 3, Chapters 1 to 11; and Volume 4, Chapters 1 to 4). The CEA is presented in a separate section of the topic chapters to the impact assessment of the Mona Offshore Wind Project alone.
- 5.4.3.15 For the Mona Offshore Wind Project CEA a tiered approach has been adopted. This approach provides a framework for placing relative weight on the potential for each project/plan to be included in the CEA to ultimately be realised, based upon the project/plan's current stage of maturity and certainty in the project's parameters. 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 in for assessment.
- 5.4.3.16 The tiered approach uses the following categorisations:
- Tier 1
 - Under construction
 - Permitted application
 - Submitted application
 - Those currently operational that were not operational when baseline data were collected, and/or those that are operational but have an evidenced ongoing impact
 - Tier 2
 - Scoping report has been submitted and is in the public domain
 - Tier 3
 - Scoping report has not been submitted and is not in the public domain
 - Identified in a relevant development plan
 - Identified in other plans and programmes.
- 5.4.3.17 The tiered approach is consistent with the Renewable UK Cumulative Impact Assessment Guidelines, specifically Guiding Principle 4 and Guiding Principle 7 (RenewableUK, 2013) and the Planning Inspectorate Advice Note Seventeen (Planning Inspectorate, 2019).
- 5.4.3.18 All projects, plans and activities that have been screened in via the previously described screening process have been allocated into one of the above Tiers and assessed for cumulative impact. In general, a CEA has been undertaken for Tier 1 and Tier 2 where possible. Where possible, a Tier 3 CEA has also been undertaken, 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. This approach is in accordance with the Planning Inspectorate Advice Note Seventeen (Planning Inspectorate, 2019). Where the outcome of the tiered assessments are 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 Tier 1, Tier 2 and Tier 3 results in a minor

MONA OFFSHORE WIND PROJECT

adverse significance of effect) no individual tiered assessment has been presented in the CEA and instead they have been combined in to the one assessment.

5.4.3.19 It is noted that offshore wind farms seek consent for a MDS and the 'as built' offshore wind farm will be selected from the range of consented scenarios. In addition, the MDS quoted in the application (and the associated Environmental Statement) are often refined during the determination period of the application. A similar pattern of reduction in the project envelope from that assessed in the Environmental Statement, to the consented envelope and the 'as built' project is also seen across other offshore wind farms. This process of refinement can result in a reduction to associated project parameters, for example the number and length of cable to be installed and the number of offshore substations. The CEA presented in this Environmental Statement has been undertaken on the basis of information presented in the Environmental Statements for the other projects, plans and activities.

5.4.3.20 Where practicable, the CEA methodology follows the outline of the Mona Offshore Wind Project alone impact assessment methodology as specified in section 5.3.6 above. This approach is employed in order to maintain consistency throughout the chapter and to allow 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 practicalities around undertaking CEA for that discipline. As such while all topics have, in the first instance, aimed to undertake a full quantitative assessment, this has not been possible throughout and in select cases the assessment presented employs a mix of qualitative and quantitative, or wholly qualitative assessment. These chapters are as follows:

- Volume 3, Chapter 9: Air quality of the Environmental Statement
- Volume 4, Chapter 2: Climate change of the Environmental Statement
- Volume 4, Chapter 3: Socio-economics of the Environmental Statement.

5.4.3.21 Where the potential significant effect for the Mona Offshore Wind Project alone is assessed as negligible, or where an impact is predicted to be highly localised, these have 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. This has been confirmed at a topic-specific assessment level. Further detail on the methodologies implemented for the CEA may be found in the relevant sections of the Environmental Statement topic chapters.

5.5 Transboundary effects

5.5.1 Transboundary effects legislation and guidance

5.5.1.1 Transboundary effects arise when impacts from a project within one European Economic Area (EEA) state affect the environment of another state(s). The need to consider such transboundary effects has been embodied by the United Nations Economic Commission for Europe (DECC) Convention on EIA in a Transboundary Context (commonly referred to as the 'Espoo Convention').

5.5.2 Approach to assessment of transboundary effects

5.5.2.1 The Espoo Convention is aimed at preventing, mitigating and monitoring environmental damage by ensuring that explicit consideration is given to transboundary environmental factors before a final decision is made as to whether to

MONA OFFSHORE WIND PROJECT

approve a project. The Espoo Convention requires that the Party of origin notifies affected Parties about activities listed in Appendix I of the Convention (which includes 'major installations for the harnessing of wind power for energy production (wind farms)') and likely to cause a significant adverse transboundary impact.

5.5.2.2 The Planning Inspectorate's Advice Note Twelve (The Planning Inspectorate, 2020b) sets out the procedures for consultation in association with an application for a DCO, where such development may have significant transboundary impacts. The note sets out the roles of The Planning Inspectorate, other states and developers.

5.5.2.3 Applicants are advised to:

- Consider, when preparing documents for consultation and application, that The Planning Inspectorate may notify the relevant state of their particular project
- Carry out preparatory work to complete a transboundary screening matrix to assist the Secretary of State in determining the potential for likely significant impacts on the environment in other states
- Submit the transboundary screening matrix along with the scoping request, if a Scoping Opinion is sought by the developer (a transboundary impacts screening matrix was submitted with the Mona Offshore Wind Project Scoping Report).

Transboundary screening

5.5.2.4 The Applicant has notified the Planning Inspectorate of the potential for transboundary impacts arising from the Mona Offshore Wind Project through the request for a Scoping Opinion. The identification and screening of transboundary impacts was presented in the Mona Offshore Wind Project Scoping Report (Mona Offshore Wind Ltd, 2022). This Environmental Statement includes Volume 5, Annex 5.2: Transboundary impacts screening of the Environmental Statement. An update to the transboundary screening work was presented within the PEIR. The updated transboundary screening in the Environmental Statement considers up to date project information, the transboundary screening undertaken by the Planning Inspectorate, consultation responses from EEA States and the outcomes of the EIA.

Transboundary assessment

5.5.2.5 The assessment of transboundary effects for each receptor group is included in the relevant topic chapters of the Environmental Statement, taking into account the inter-relationships between effects. These assessments are based upon the screening undertaken by the Mona Offshore Wind Project, though depart in certain instances where project information has developed or matured in the meantime, or consultation responses have provided further detail or direction. Further detail is presented in the topic-specific chapters of the Environmental Statement.

5.6 Inter-related effects

5.6.1.1 The 2017 EIA Regulations require consideration of the indirect and secondary likely significant impacts of the Mona Offshore Wind Project. For example, the separate impacts of noise and habitat loss may have an effect upon a single receptor such as marine mammals.

5.6.1.2 The approach presented in this Environmental Statement has been developed in line with the Planning Inspectorate Rochdale Envelope Advice Note (Advice Note Nine) (Planning Inspectorate, 2018) which states:

MONA OFFSHORE WIND PROJECT

“Inter-relationships consider impacts of the proposals on the same receptor. These occur where a number of separate impacts, (e.g. noise and air quality), affect a single receptor such as fauna.”

5.6.1.3 The approach, methodology and assessment of inter-related effects assessment is available in the Inter-related effects chapters of the Environmental Statement (Volume 2, Chapter 11 and Volume 3, Chapter 11).

5.7 References

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