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MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Environmental Statement

Volume 1, Chapter 5: Environmental impact assessment methodology

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Glossary

Term	Meaning
Cumulative effect assessment	Assessment of the likely effects arising from the Morgan Generation Assets alongside the likely effects of other development activities in the vicinity of the Morgan Generation Assets.
Effect	The term used to express the consequence of an impact. The significance of effect is determined by correlating magnitude of the impact with the importance, or sensitivity, of the receptor or resource in accordance with defined significance criteria.
Impact	A change that is caused by an action (e.g. an action/proposed development (seabed preparation) during construction which results in habitat loss (impact)).
Inter-related effects	Multiple effects upon the same receptor arising from the Morgan Offshore Wind Project. These occur either where a single effect acts upon a receptor over time to produce a potential additive effect or where a number of separate effects, such as underwater sound and collision risk, affect a single receptor
Maximum Design Scenario (MDS)	The scenario within the design envelope with the potential to result in the greatest impact on a particular topic receptor, and therefore the one that should be assessed for that topic receptor.
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 Morgan Generation Assets (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	The physical or biological resource or human user group that could be affected by the Morgan Generation Assets impacts.
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 Environmental Impact Assessment (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

Acronym	Description
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
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
OEMP	Offshore Environmental Management Plan
OTNR	Offshore Transmission Network Review
PEIR	Preliminary Environmental Information Report
SNCB	Statutory Nature Conservation Body
ZoI	Zone Of Influence

Units

Unit	Description
GW	Gigawatt

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 the 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 this Environmental Statement for the assessment of the likely impacts and subsequent effects of the Morgan Offshore Wind Project: Generation Assets (hereafter referred to as the Morgan Generation Assets) upon physical, biological and human receptors. Further details on topic-specific methodologies are included in the relevant topic-specific chapters of the Environmental Statement (Volume 2, Chapters 1 to 15 of the Environmental Statement).

5.1.1.3 The following topic follows a more topic-specific methodology than the general approach set out in this chapter, and describes the methodology within its respective chapter:

- Volume 2, Chapter 12: Climate change of the Environmental Statement.

5.1.1.4 The EIA incorporates a full project assessment for the Morgan Offshore Wind Project (generation and transmission assets) through a stage approach (see section 5.4.3).

5.1.1.5 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)
  - The Marine Works (Environmental Impact Assessment Regulations) 2007 (the 2007 EIA Regulations)
  - The Marine and Coastal Access Act 2009
- Policy:
  - National Planning Policy Framework (Department for Levelling Up, Housing & Communities, 2023)
  - Overarching National Policy Statement (NPS) for Energy (NPS EN-1) (Department for Energy Security and Net Zero (DESNZ), 2023a)
  - NPS for Renewable Energy Infrastructure (NPS EN-3) (DESNZ, 2023b)
- 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: Shaping Quality Development (Institute of Environmental Management and Assessment (IEMA), (2015)
  - Environmental Impact Assessment Guide to: Delivering Quality Development (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 15 of the Environmental Statement). 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 NPS EN-3 states at paragraph 2.8.198 that *'the assessment should be undertaken for all stages of the lifespan of the proposed wind farm in accordance with the appropriate policy and guidance for offshore wind farm EIAs'*.

5.3.1.2 The assessment of each topic (e.g. marine mammals, 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 (i.e. in the absence of the Morgan Generation Assets))
- 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 Morgan Generation Assets.
  - A description of the measures adopted as part of the Morgan Generation Assets, 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 Morgan Generation Assets), 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).

5.3.1.3 Inter-related effects (i.e. inter-relationships between environmental topic areas) are assessed in a separate chapter in Volume 2, Chapter 15: Inter-related effects of the Environmental Assessment.

5.3.1.4 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 Proportionate EIA is an approach to EIA to reduce unnecessary assessments so that only those which are the focus of the EIA Regulations (i.e. likely significant effects) are discussed in the Environmental Statement. 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 Morgan Generation Assets Environmental Statement. This has been achieved through the following:

- Effective scoping and the generation of the Morgan Generation Assets Scoping Report (Morgan Offshore Wind Ltd, 2022)
- The development of consultation Evidence Plans (see section 5.3.3.4 of this chapter)
- The application of the existing evidence base
- The Mitigation and monitoring schedule (Document Reference J6) adopted as part of the Morgan Generation Assets application (see section 5.3.5.4 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 Morgan Generation Assets Scoping Report (Morgan 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 for Energy Security and Net Zero (DESNZ) (formerly the Department of Business, Energy and Industrial Strategy (BEIS)) in June 2022. The Applicant received the Scoping Opinion in July 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) in 2023.

5.3.3.2 The Morgan Generation Assets PEIR set out the preliminary findings of the EIA, forming the basis 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 Morgan Generation Assets, 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 this Environmental Statement. All responses have been considered and are presented within the Consultation Report (Document Reference E3) and full details of the consultation process including stakeholder engagement are presented in Volume 1, Chapter 1: Introduction of the Environmental Statement.

5.3.3.3 Consultation continued throughout the pre-application phase prior to submission of the application for the Morgan Generation Assets. 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 facilitated the Evidence Plan Process for the Morgan Generation Assets. 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. The process provides an opportunity for stakeholders to advise on proposals at an early stage and to help mitigate any environmental effects. 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 Morgan Generation Assets. The steering group is comprised of:

- The Planning Inspectorate
- The Applicant
- Natural England
- The Joint Nature Conservation Committee (JNCC)
- The Marine Management Organisation (MMO)
- Natural Resource Wales (NRW).

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 to mitigate potential environmental effects. EWGs have been established for the following topics:

- Physical processes, benthic ecology and fish and shellfish ecology
- Marine mammals
- Offshore ornithology.

5.3.3.8 The Applicant facilitated a Marine Navigation Engagement Forum (MNEF) to enable the Applicant to regularly update stakeholders on plans and progress of the Morgan Generation Assets, Mona Offshore Wind Project and the Morecambe Offshore Windfarm: Generation Assets (hereafter referred to as the Morecambe Generation Assets), and for stakeholders to express views or concern on the potential impacts of the projects for discussion and, where possible, resolution. Four MNEF meetings were held prior to PEIR application and a further two MNEF meetings were held between PEIR and the submission of the Application for Development Consent.

5.3.3.9 An offshore Archaeology and Heritage Engagement Forum (AHEF offshore) was established in order to consult with the MMO and Historic England on the potential impacts that the Morgan Generation Assets may have on the offshore historic environment. Two AHEF meetings were held prior to PEIR application and a further two AHEF meetings were held between PEIR and the submission of the Application for Development Consent.

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 Morgan Generation Assets, or the way they 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 Morgan Generation Assets EIA process has employed an 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.

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 15 of the Environmental Statement), the MDS is identified from the range of potential options for each parameter within Volume 1, Chapter 3: Project description of the Environmental Assessment. 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 Morgan Generation Assets 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 Morgan Generation Assets, but within certain maximum parameters, which are fully assessed in this Environmental Statement.

5.3.4.7 Volume 1, Chapter 3: Project description of this Environmental Statement describes the Morgan Generation Assets design and identifies the range of potential parameters for all relevant components. Each topic chapter of this Environmental Statement sets out the assumptions made regarding the Project Design Envelope (PDE), relevant to that chapter, and the MDS for each impact.

5.3.5 Approach to the iterative design process and mitigation

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 topic chapters (Volume 2, Chapters 1 to 15 of the Environmental Statement).
4. A description of the factors likely to be significantly affected by the development.	Presented within topic chapters (Volume 2, Chapters 1 to 15 of the Environmental Statement) and associated annexes (e.g. Volume 3, Annex 3.1: Underwater sound technical report of the Environmental Statement).
5. A description of the likely significant effects of the development on the environment.	Presented within topic chapters (Volume 2, Chapters 1 to 15 of the Environmental Statement).
6. A description of the forecasting methods or evidence used to identify and assess the significant effects on the environment.	Presented within topic chapters (Volume 2, Chapters 1 to 15 of the Environmental Statement) and associated annexes (Volume 3 and Volume 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.	Presented within topic chapters (Volume 2, Chapters 1 to 15 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.	Presented, where applicable, in the relevant topic chapters (Volume 2, Chapters 1 to 15 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 (Document Reference F1).
10. A reference list detailing the sources used for the descriptions and assessments included in the Environmental Statement.	Reference lists are included at the end of each chapter (Volume 2, Chapters 1 to 15 of the Environmental Statement) and within relevant annexes (Volume 3 and Volume 4 of the Environmental Statement).

5.3.5.2 During the EIA process, potential environmental effects 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 (following the first step in the mitigation hierarchy) 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 or offset the magnitude of that impact. 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 this Environmental Statement.

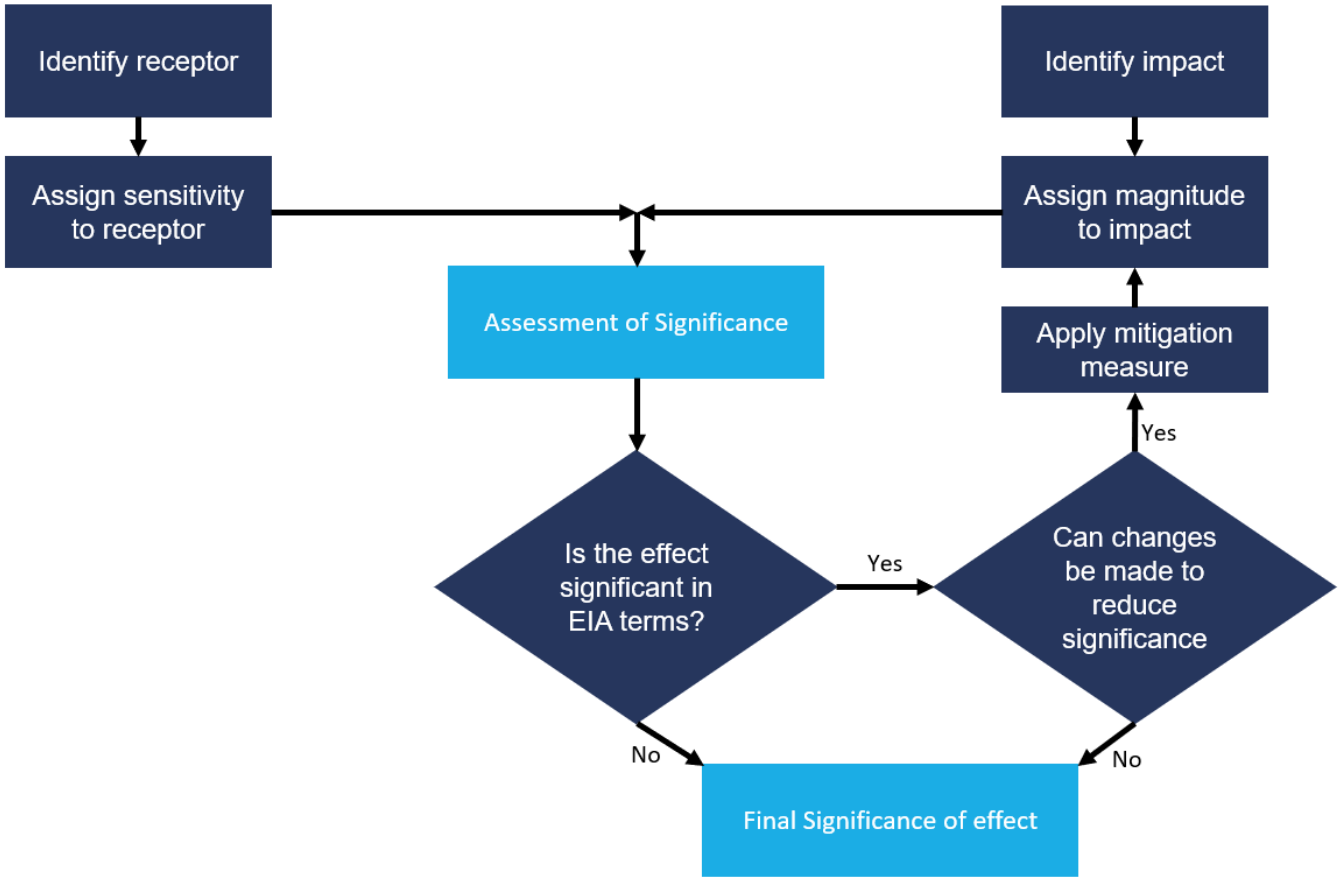

Figure 5.1: Iterative approach to development of measures adopted as part of the Morgan Generation Assets within the EIA.

Measures adopted as part of the Morgan Generation Assets

5.3.5.4 The iterative approach to the Morgan Generation Assets EIA process, as described in paragraph 5.3.5.2 above, has been utilised to inform the Morgan Generation Assets 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 Morgan Generation Assets demonstrates commitment to implementing the identified measures. These measures have been referred to throughout this Environmental Statement as 'measures adopted as part of the Morgan Generation Assets' and are detailed in the Mitigation and monitoring schedule (Document Reference J6).

5.3.5.5 The Morgan Generation Assets assessed within this Environmental Statement therefore include a range of measures that have been designed to reduce or prevent significant adverse effects arising.

5.3.5.6 The topic chapters set out the mitigation measures that form part of the Morgan Generation Assets and that have been taken into account in the assessment of effects for that topic. These include:

- Primary (inherent) mitigation: measures included as part of the project design. These include modifications to the location or design envelope of the Morgan Generation Assets 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 (inexorable) mitigation: IEMA describes these 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*' (referred to as tertiary mitigation in IEMA, 2016).

5.3.5.7 In some cases, the measures identified through the iterative EIA process or through stakeholder consultation will result in enhancement of environmental conditions. Environmental enhancement is where there is a beneficial enhancement above and beyond any mitigation provided.

5.3.5.8 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 (foreseeable) mitigation) may have been identified. These are measures that could further prevent, reduce and, where possible, offset the adverse effects on the environment (see paragraph 5.3.6.23). Further mitigation is presented after the assessment within each topic chapter.

5.3.5.9 The mitigation measures developed during the EIA process (secondary mitigation), as well as standard industry practice measures (tertiary mitigation), are fully committed to by the Applicant as integral aspects of the Morgan Generation Assets project. The Mitigation and monitoring schedule (Document Reference J6) identifies whether mitigation is primary, secondary or tertiary and how commitments are secured.

5.3.5.10 Monitoring commitments will be put in place, as necessary, to assess the effectiveness of mitigation measures and validate assessment conclusions. Monitoring commitments are presented within the Mitigation and monitoring schedule referenced above.

5.3.6 Approach to assessment

Identification of receptors

5.3.6.1 Elements of the environment which are potentially subject to variation (i.e. receptors) due to environmental changes brought about by Morgan Generation Assets are identified on a subject by subject basis. Each topic assessment defines the study area that is covered for that topic, providing justification of the area selected to incorporate potential significant effects, which include direct and indirect effects.

Impact and effect

5.3.6.2 The Morgan Generation Assets have 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.

5.3.6.3 For the purposes of this 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, 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.

5.3.6.4 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).

5.3.6.5 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.

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 Morgan Generation Assets (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 (Chartered Institute of Ecology and Environmental Management (CIEEM), 2016).

Scope of the impact assessment

5.3.6.6 The Morgan Generation Assets Scoping Report (Morgan 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 DESNZ (formerly BEIS) in June 2022. The Applicant received the Scoping Opinion in July 2022 (The Planning Inspectorate, 2022). The topics considered within this 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 Morgan Generation Assets, based on the information gathered and the analysis and assessments undertaken
- Highlights any necessary mitigation, monitoring and/or enhancement measures which could prevent, minimise, reduce or offset the possible environmental effects of the Morgan Generation Assets.

5.3.6.7 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.

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

Topic	Justification
Topics covered by annexes and assessed within topic chapters of the Environmental Statement	
Waste	An Offshore Environmental Management Plan (OEMP) covering the period of construction and operation will be submitted post-consent. This will include details of waste management and disposal arrangements, including marine pollution under the marine pollution contingency plan. Contractors will be required to follow the good practice measures set out within the OEMP. On that basis, the potential impacts arising from the disposal and recovery of waste during the construction and operation of the Morgan Generation Assets are unlikely to give rise to significant effects. Therefore, no standalone chapter within the Environmental Statement is considered to be necessary.
Underwater sound	Information on underwater sound resulting from the construction, operations and maintenance, and decommissioning phases of the Morgan Generation Assets has been included as an annex to Volume 1, Chapter 3: Project description of the Environmental Statement (Volume 3, 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 of the Environmental Statement and Volume 2, Chapter 4: Marine mammals of the Environmental Statement.
Topics scoped out	
Local planning policy context	A description of the consenting process and the 2008 Act has been provided within Volume 1, Chapter 1: Introduction of the Environmental Statement. 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. In addition, a Planning Statement (Document Reference J2) has been submitted in support of the application for development consent, which outlines how the Morgan Generation Assets complies with relevant local plans and planning policy.

Topic	Justification
Heat and radiation	Potential electromagnetic fields (EMF) impacts from the Offshore Substation Platforms (OSPs), Interconnector and inter-array cables have been considered in the marine ecology chapters of the Environmental Statement. As the Morgan Generation Assets are unlikely to generation significant levels of heat and/or radiation, heat and radiation has been scoped out of the EIA.
Topics covered in other chapters of the Environmental Statement	
Other residues and emissions	The potential impacts of residues and emissions (e.g. dust, pollutants, light, noise and vibration) arising from the construction, operations and maintenance, and decommissioning phases of the Morgan Generation Assets have been considered in the following topic of the Environmental Statement where relevant: • Volume 2, Chapter 1: Physical processes of the Environmental Statement (impacts of sediment releases) • Volume 2, Chapter 2: Benthic subtidal ecology, Volume 2, Chapter 3: Fish and shellfish ecology, Volume 2, Chapter 4: Marine mammals and Volume 2, Chapter 5: Offshore ornithology of the Environmental Statement (impacts of emissions to water and noise emissions on ecological receptors) • Volume 3, Annex 3.1: Underwater sound technical report of the Environmental Statement (impacts of sound emissions and vibration) • Volume 3, Annex 3.2: Sulphur hexafluoride report of the Environmental Statement (control of sulphur hexafluoride gas).
Material assets	The potential impacts on material assets arising from the construction, operations and maintenance, and decommissioning phases of the Morgan Generation Assets have been considered in the following topic chapters of the Environmental Statement: • Volume 2, Chapter 6: Commercial fisheries of the Environmental Statement • Volume 2, Chapter 7: Shipping and navigation of the Environmental Statement • Volume 2, Chapter 8: Marine archaeology and cultural heritage of the Environmental Statement • Volume 2, Chapter 9: Other sea users of the Environmental Statement • Volume 2, Chapter 11: Aviation and radar of the Environmental Statement • Volume 2, Chapter 13: Socio-economics of the Environmental Statement.
Major accidents and disasters	The potential for major accidents and disasters arising from the construction, operations and maintenance, and decommissioning phases of the Morgan Generation Assets has been considered in the following topic chapters of the Environmental Statement: • Volume 2, Chapter 2: Benthic subtidal 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 2, Chapter 11: Aviation and radar of the Environmental Statement • Volume 2, Chapter 12: Climate change of the Environmental Statement.

5.3.6.8 In addition, a number of individual impacts have been scoped out based on the baseline information that has been collected for the Morgan Generation Assets 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 15 of the Environmental Statement).

Defining magnitude of impact and sensitivity of receptor

Magnitude of impact

5.3.6.9 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 Morgan Generation Assets. 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).

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

- Negligible
- Low
- Medium
- High.

5.3.6.11 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 15 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 judgment. 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

5.3.6.12 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 Morgan Generation Assets impacts. These receptors are identified through available data and baseline studies that have been reviewed in the preparation of this Environmental Statement.

5.3.6.13 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.

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).

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

- Negligible

- Low
- Medium
- High
- Very high.

5.3.6.15 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 15 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

5.3.6.16 The overall significance of an effect is evaluated by considering the magnitude of the impact alongside the sensitivity of receptor (Table 5.8). 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.

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

5.3.6.17 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, 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.

5.3.6.18 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.

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

Table 5.9: Definition of significance levels for the Morgan Generation Assets.

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.

Addressing uncertainty

5.3.6.20 There is some degree of inherent uncertainty within the EIA process. There is uncertainty in relation to future improvements to construction and design. In addition, there is uncertainty in relation to future baseline conditions, such as the potential effects of climate change on existing receptors. There is also a degree of uncertainty in terms of the margin of error within forecasting or modelling tools. The following sections set out the approach to addressing uncertainty within this Environmental Statement. In all cases, where uncertainty exists, this has been identified (and quantified where possible) within the relevant chapter of this Environmental Statement, together with details of the measures that have been taken to reduce uncertainty as far as reasonably practicable.

1) Future baseline

5.3.6.21 The consideration of future baseline conditions has taken into account the likely effects of climate change, as far as these are known at the time of writing. It is recognised that there is some element of uncertainty regarding future trends in environmental conditions and climate. Where accepted methodologies for identifying the likely effects of climate change are available, these have been considered in the assessment. For example, the Met Office Hadley Centre publishes probabilistic climate change projections for the UK, termed the UKCP18 dataset (Met Office Hadley Centre, 2018).

Published documents such as the UK Climate Change Risk Assessment 2017 (Climate Change Committee, 2017) and subsequent updates have also been taken into account. Recent published research has also been reviewed to inform judgements on whether specific receptors are susceptible to the effects of climate change.

2) Forecasting and modelling

5.3.6.22 Where forecasting and modelling tools are used, care has been taken to ensure that the tool selected is appropriate for the assessment, taking into account topic-specific good practice and guidance. Model assumptions are described, and calibration has been used to ensure a reasonable degree of accuracy in measurements. In addition, uncertainty has been addressed by undertaking modelling for a number of scenarios and at representative points across the Morgan Generation Assets, where applicable. Topic chapters within the Environmental Statement set out the measures taken to address any uncertainty with regard to modelling inputs and outputs.

Further mitigation and future monitoring measures

5.3.6.23 The topic-specific assessments apply and 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). Where an assessment identifies residual likely significant adverse effects, further mitigation measures may be applied. These are measures that could further prevent, reduce and, where possible, offset these effects. They are defined by IEMA as actions that will require further activity in order to achieve the anticipated outcome and may be imposed as part of the planning consent, or through inclusion in the Environmental Statement (referred to as secondary mitigation in IEMA, 2016). Further mitigation is presented after the assessment within each topic chapter where residual likely significant adverse effects have been identified, following the mitigation hierarchy.

5.3.6.24 Where relevant and necessary, future monitoring measures have been set out within the topic chapters.

5.3.6.25 All enhancement, mitigation and monitoring commitments and the means of implementation have been included within the consent application and the Mitigation and monitoring schedule (Document Reference J6) .

Residual effects

5.3.6.26 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 5.2.

5.4 Cumulative Effect Assessment

5.4.1 Overview

5.4.1.1 Cumulative effects are effects on a single receptor arising from the Morgan Generation Assets when considered alongside the likely effects arising from other proposed developments. This includes projects that were not present at the time of data collection or survey and, as such, are not considered as part of the baseline for the topic being assessed. The CEA therefore considers the likely effects arising from the Morgan Generation Assets alongside the likely effects of other projects, plans and

activities in the vicinity of the Morgan Generation Assets, based on the information available.

5.4.1.2 In-combination effects are defined as the combined effect of the Morgan Generation Assets, 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 Information to Support the Appropriate Assessment (ISAA) (Document Reference E1).

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 NPSs for energy infrastructure. They describe the national case and establish the need for certain types of infrastructure development including energy, as well as identifying key issues that should be considered by the Examining Authority and decision-maker when considering an application for development consent.

5.4.2.3 Specifically, NPS EN-1 (DESNZ, 2023a) 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'*.

5.4.2.4 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*.'

5.4.2.5 A full summary of NPS requirements relevant to the Morgan Generation Assets, and how these have been addressed, is provided in the NPS tracker appended to the Planning Statement (Document Reference J2).

5.4.2.6 The Morgan Generation Assets are 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 become an issue of increasing importance for offshore wind developers. 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' (the Planning Inspectorate, 2019). The approach to CEA undertaken for the Morgan Generation Assets takes into account the principles outlined in the RenewableUK guidelines and the Planning Inspectorate Advice Note, together with comments made in response to the Morgan Generation Assets Scoping Report and consultation as described in section 5.3.3.

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 (the Planning Inspectorate, 2019). The assessment is divided into two main phases:

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

These two phases are outlined in Figure 5.2. 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

5.4.3.2 A fundamental requirement of undertaking CEA is to identify those projects, plans or activities with which the Morgan Generation Assets 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'.

5.4.3.3 A 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 Morgan Generation Assets. 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.

5.4.3.4 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. Stakeholder engagement will continue after submission.

Compiling the CEA long list

5.4.3.5 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) 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.

5.4.3.6 For the purposes of the Morgan Generation Assets 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.

5.4.3.7 The CEA long list for the Morgan Generation Assets is included in Volume 3, 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 Environmental Statement was developed.

Screening of the CEA long list

5.4.3.8 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.

5.4.3.9 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 Morgan Generation Assets. This involved a stepwise process that 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 confidence: data confidence 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 Morgan Generation Assets 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

- 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 Morgan Generation Assets 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.

Assessment stage

5.4.3.10 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 chapter of the Environmental Statement (Volume 2, Chapters 1 to 15 of the Environmental Statement).

Implementing the CEA

5.4.3.11 The Morgan Generation Assets CEA has been undertaken for this Environmental Statement and is presented within each topic chapter (Volume 2, Chapters 1 to 15 of the Environmental Statement). The CEA is presented in a separate section of the topic chapters to the impact assessment of the Morgan Generation Assets alone.

5.4.3.12 For the Morgan Generation Assets CEA, a tiered approach has been adopted consistent with the Planning Inspectorate Advice Note Seventeen. 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.

5.4.3.13 The tiered approach uses the following categorisations, note there is a decreasing level of detail likely to be available as you go from Tier 1 to Tier 3:

- Tier 1:
  - Under construction
  - Permitted application(s), whether under the Planning Act 2008 or other regimes, but not yet implemented
  - Submitted application(s), whether under the Planning Act 2008 or other regimes, but not yet determined
- Tier 2:
  - Projects on the Planning Inspectorate's Programme of Projects where a scoping report has been submitted and is in the public domain
- Tier 3:
  - Projects on the Planning Inspectorate's Programme of Projects where a scoping report has not been submitted and isn't in the public domain

- Identified in a relevant development plan (and emerging Development Plans – with appropriate weight being given as they move closer to adoption) recognising that there will be limited information available on the relevant proposals
- Identified in other plans and programmes (as appropriate) which sets the framework for future development consents/approvals, where such development is reasonably likely to come forward.

5.4.3.14 The tiered approach is consistent with the Planning Inspectorate Advice Note Seventeen (Planning Inspectorate, 2019), and aligns with the Renewable UK Cumulative Impact Assessment Guidelines, specifically Guiding Principle 4 and Guiding Principle 7 (RenewableUK, 2013).

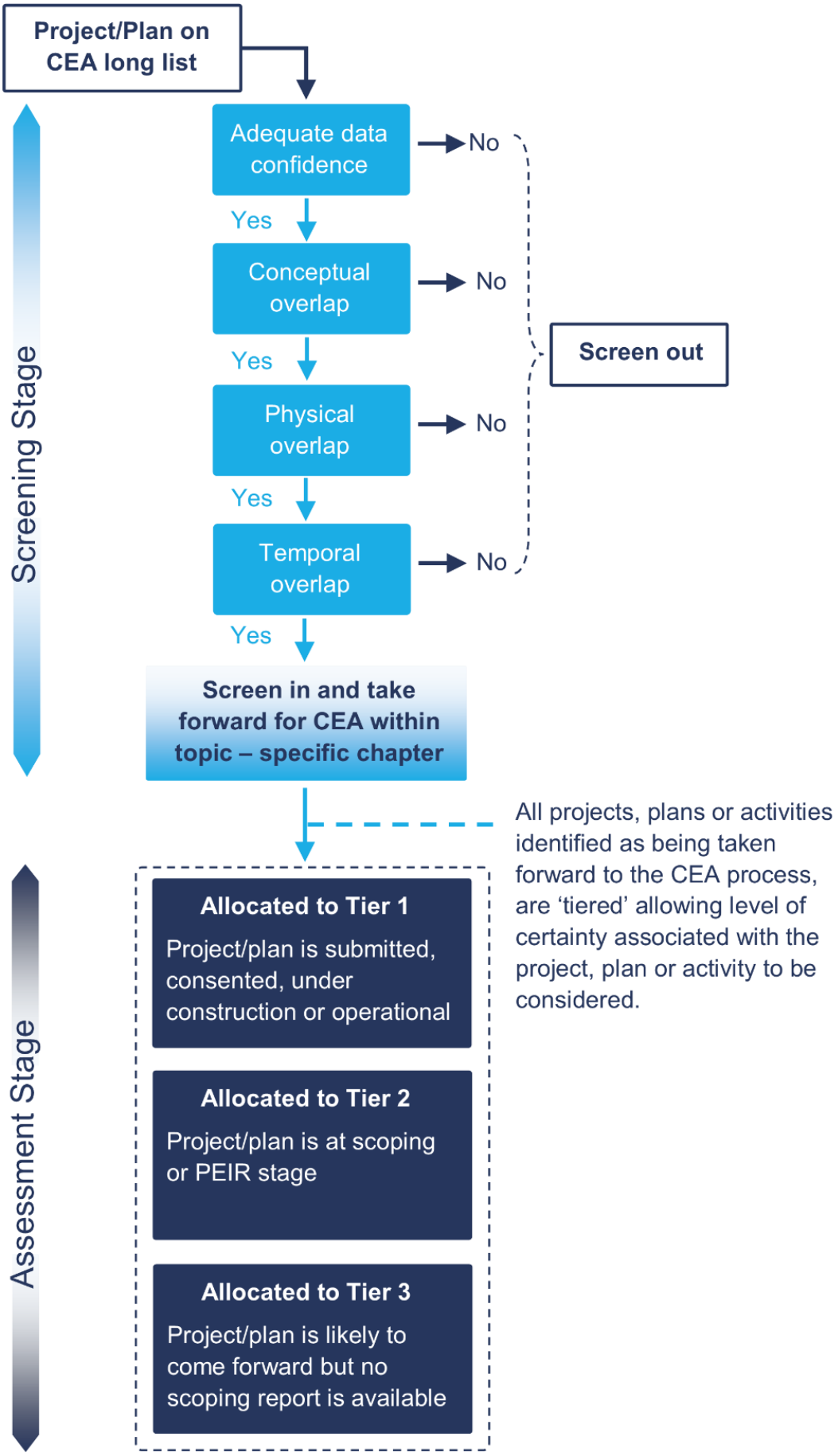

Figure 5.2: Methodology for the screening of potential projects, plans and activities to provide cumulative effects.

5.4.3.15 The Morgan and Morecambe Offshore Wind Farms: Transmission Assets (hereafter referred to as the Transmission Assets) are included in the CEA within the three staged full project assessment approach set out at paragraph 5.4.3.26. The Applicant is jointly promoting the Transmission Assets along with Cobra Instalaciones y Servicios, S.A. (Cobra) and Flotation Energy plc. Morgan Generation Assets has updated the CEA within its Environmental Statement to take into account any new data which has been made available following the submission of the Morgan and Morecambe Offshore Wind Farms: Transmission Assets PEIR. 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.

5.4.3.16 In the case of the Mona Offshore Wind Project, which is being promoted by Mona Offshore Wind Limited, this has been included in the CEA (Tier 1 development) for the Morgan Generation Assets.

5.4.3.17 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 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.

5.4.3.18 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.

5.4.3.19 Where practicable, the CEA methodology follows the outline of the Morgan Generation Assets 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 2, Chapter 12: Climate change of the Environmental Statement.

5.4.3.20 Where the potential significant effect for the Morgan Generation Assets alone is assessed as negligible, or where an impact is predicted to be highly localised, these have not generally been 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.

Assessment of the Transmission Assets

5.4.3.21 The CEA approach has been updated from PEIR to Environmental Statement in order to address comments received on the consenting strategy for the Morgan Generation Assets (refer to Volume 1, Chapter 1: Introduction of the Environmental Statement) during statutory consultation on the PEIR. The revised CEA approach takes into account the impact associated with the Morgan Generation Assets together with the Transmission Assets, the Morecambe Generation Assets (hereafter referred to as the Morecambe Generation Assets), and other projects and plans.

5.4.3.22 The Morgan Generation Assets has been scoped into the Pathways to 2030 workstream under the Offshore Transmission Network Review (OTNR). The OTNR aims to consider, simplify and wherever possible facilitate collaborative approach to offshore wind projects connecting to the UK National Grid. In July 2022, the UK Government published the 'Pathway to 2030 Holistic Network Design' documents, which set out the approach to connecting 50 GW of offshore wind to the National Grid (NGESO, 2022). A key output of the Holistic Network Design Review process was the conclusion that the Morgan Generation Assets and the Morecambe Offshore Windfarm should work collaboratively in connecting their two wind farms to the National Grid electricity transmission network at Penwortham in Lancashire.

5.4.3.23 As the projects are being developed by separate companies, it is not feasible for all aspects of both projects to be consented under a single application. In order to comply with the conclusion of the Holistic Network Design Review, the Applicant intends to deliver a coordinated grid connection with the Morecambe Offshore Windfarm, including the sharing of offshore and onshore export cable corridors and grid connection location at Penwortham.

5.4.3.24 The Applicant is submitting a stand-alone DCO application to consent the construction, operations and maintenance, and decommissioning of the generation assets of the Morgan Offshore Wind Project and a separate application to consent the construction, operations and maintenance and decommissioning of the transmission assets required to enable the export of electricity from both the Morgan Generation Assets and the Morecambe Offshore Windfarm to the National Grid entry point at Penwortham.

5.4.3.25 The Applicant was asked to present information to demonstrate how the two elements of the Project (generation and transmission) would be considered and assessed cumulatively when they are being assessed through separate DCO applications.

5.4.3.26 The three staged approach below sets out how this cumulative assessment for the Morgan Offshore Wind Project (Morgan Generation Assets and the Transmission Assets) has been undertaken and presented within the cumulative effects assessment section of each assessment chapter. The cumulative assessment considers three scenarios:

1. Assessment of the Morgan Generation Assets, together with the Transmission Assets: presents a full project assessment for the Morgan Offshore Wind Project which includes both the generation and transmission assets
2. Assessment of the Morgan Generation Assets, together with the Transmission Assets and the Morecambe Generation Assets: presents a full project assessment for all infrastructure associated with the Morgan Offshore Wind Project, the Morecambe Offshore Windfarm and the Transmission Assets
3. Assessment of the Morgan Generation Assets, together with the Transmission Assets with all other relevant projects: presents the cumulative assessment scenario of the Morgan Generation Assets and Transmission Assets together with all relevant screened-in projects from the cumulative effects assessment long list (see paragraph 5.4.3.5).

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 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 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 Morgan Generation Assets Scoping Report).

Transboundary screening

5.5.2.4 The Applicant has notified the Planning Inspectorate of the potential for transboundary impacts arising from the Morgan Generation Assets through the request for a Scoping Opinion.

5.5.2.5 The identification and screening of transboundary impacts was presented in the Morgan Generation Assets Scoping Report (Morgan Offshore Wind Ltd, 2022). This Environmental Statement includes Volume 3, 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

5.5.2.6 The assessment of transboundary effects including consultation for each receptor group is included in the relevant topic chapters of this Environmental Statement, taking into account the inter-relationships between effects. These assessments are based upon the screening undertaken by the Morgan Generation Assets, 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 this 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 Morgan Generation Assets. 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). 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'* (Planning Inspectorate, 2018).

5.6.1.3 The approach, methodology and assessment of inter-related effects assessment is available in Volume 2, Chapter 15: Inter-related effects of the Environmental Statement.

5.7 References

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