THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES

2010

Morgan Offshore Wind Project: Generation Assets

Relevant Representations of Natural England

For:

The construction and operation of the Morgan Generation Offshore Wind Farm located approximately 37km from the Northwest English Coast in the Irish Sea.

Planning Inspectorate Reference: EN010136

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10 July 2024

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Natural England's Relevant Representations

PART I – OVERVIEW OF REPRESENTATIONS

1. Scope of Natural England's Advice

1.1. Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

1.2. Natural England's remit extends to the territorial sea adjacent to England, up to the 12 nautical mile limit from the coastline. The Examining Authority should note that pursuant to an authorisation made by the JNCC under the Natural Environment and Rural Communities Act 2006, Natural England is authorised to exercise the JNCC's functions as a statutory consultee in respect of applications for offshore renewable energy installations in offshore waters (0-200nm) adjacent to England.

1.3. This application is included in that authorisation and, therefore, Natural England will be providing statutory advice in respect of that delegated authority. However, JNCC retains responsibility as the statutory advisors for European offshore marine sites that are located outside the territorial sea and UK internal waters (i.e. more than 12nm offshore) and continues to provide Natural England advice on the significance of any potential impacts on interest features of those sites.

2. Approach to Relevant Representations

2.1 These representations contain a summary of what Natural England considers to be the main nature conservation, landscape and related issues with regards the Development Consent Order (DCO) application, as well as the Deemed Marine Licences (DML) contained therein and indicate the principal submissions that it wishes to make at this point.

2.2 In the interests of issue resolution Natural England has combined Relevant Representation and Written Representations within this response. This is to provide the detail on all issues as early as possible to allow more time for discussion and resolution. If required and appropriate Natural England will develop these points through further Written Representations or in response to Examiner's questions.

2.3 Owing to the relatively short consultation period to review the Applicant's submission documents, coupled with the complexity of the project development scenarios, Natural England may wish to revise our advice or add additional points. This may also arise if further information about the project becomes available. Therefore, we reserve the right to bring such matters to the Examining Authority's attention.

2.4 Natural England wishes to bring to the Examining Authority's attention our concerns regarding the anticipated overlapping timetable for Morgan: Generation Assets Project and the application submission and then Examination for the Morecambe: Generation Assets Project and Morgan and Morecambe: Transmission Assets Project. We highlight case teams are the same for all projects and we, therefore, kindly request that, if/where possible, Examination deadlines for the projects are staggered as much as possible to allow sufficient time for our case team to provide the best possible advice and responses to the Examining Authority and the Applicant.

2.5 Please note that at Deadline 1 Natural England will submit a Risk and Issues log which will incorporate the comments we have made in this representation and track their resolution

throughout the examination process. It is anticipated that this will continue to be submitted alongside our submissions during Examination and will reflect any progress in issue resolution following the Relevant Representations.

2.6 Natural England intends to provide further detailed advice to the Offshore in Principal Monitoring Plan [APP-066] at Deadline 1 or next most suitable deadline, allowing time for further information to be provided by the Applicant to inform potential monitoring requirements. Natural England is mindful of the recent decision for the Sheringham and Dudgeon Extension Project (SADEP). While some of the key decisions are reflected in our advice to the Development Consent Order (DCO), once our full review of the decision is complete, further advice reflecting the DCO may be provided at the earliest opportunity.

2.7 Natural England are keen to continuously improve our input into Examinations and would therefore welcome any feedback on our approach.

3. Engagement with the Applicant

3.1 Natural England has been working with the Applicant to provide pre-application advice and guidance on Morgan Generation Offshore Wind Farm (OWF) project since 2021. The Evidence Plan Process (EPP) has included monthly project progress meetings, expert working group (EWG) meetings, and steering group meetings. To assist developers, Natural England has produced a series of documents to provide *'Offshore Wind Marine Environmental Assessments: Best Practice Advice for Evidence and Data Standards'* for developments in English inshore and offshore waters. During the pre-application process we have advised that developers follow our Best Practice Advice and other guidance through the application and consenting process.

3.2 Natural England has also been working with the Marine Management Organisation (MMO), and the Centre for the Environment, Fisheries and Aquaculture Science (CEFAS) to provide coordinated advice in relation to each of our remits.

3.3 At appropriate points in the Examination, Natural England will undergo discussions with the Applicant to seek to resolve these concerns and agree outstanding matters. We will update on progress via our Risk & Issues Log.

4. Structure of Natural England's Relevant Representations

4.1 The representations in Part II provide Natural England's statutory advice. They are set out as follows:

- **Section 5** identifies the designated sites and natural features potentially affected by this application.
- **Section 6** sets out the key outstanding environmental concerns which Natural England would like the Examining Authority to consider, through a colour-coded **Principal Areas of Disagreement Summary Statement (PADSS)**.
- **Section 7 – Detailed Advice Appendices -** Natural England's detailed technical advice, where more detailed explanation of issues has been considered relevant, can be found in the technical Appendices A to G. These will include additional considerations beyond those raised in the PADSS that warrant consideration in the Examination.

4.2 Natural England advises that the matters set out in Part II of our relevant representations will require consideration by the Examining Authority as part of the examination process. The

Examining Authority may wish to ensure that the matters set out in these relevant representations are addressed as part of the Examining Authority's first set of questions to ensure the provision of information early in the examination process.

4.3 Throughout our advice, Natural England will be using colour coding to denote the level of potential risk or significance of impact associated with our comments. Full details of this are provided in Table 4.1 below.

4.4 Within Section 6 of these Relevant Representations we have assigned a broad risk rating to each row of the PADSS to indicate the level of our concern. For each of the Appendices in Section 7 we provide a summary of the main concerns associated with the thematic area in question, followed by a table of detailed advice setting out all the salient issues we have identified. In both tables we have used the colour coding to give an indication of the level of risk associated with each of the points we raise.

Table 4.1 Natural England's risk rating with colour coding

Purple Note for Examiners and/or competent authority. May relate to DCO/DML.	
Red Natural England considers that unless these issues are resolved it will have to advise that (in relation to any one of them, and as appropriate) it is not possible to ascertain beyond reasonable scientific doubt that the project will not affect the integrity of an SAC/SPA and/or significantly hinder the conservation objectives of an MCZ and/or damage or destroy the interest features of a SSSI and/or comply fully with the Environmental Impact Assessment requirements. Addressing these concerns may require the following: • new baseline or survey data; and/or • significant revisions to baseline characterisation and/or impact modelling and/or • significant design changes; and/or • significant mitigation Natural England feels that issues given Red status are so complex, or require the provision of so much outstanding information, that they are unlikely to be resolved during the Examination without a fundamental change in approach.	
Amber Natural England does not agree with the applicant's position or approach and consider that this could make a material difference to the outcome of the decision-making process for this project. Natural England considers that these matters may be resolved through: • provision of additional evidence or justification to support conclusions; and/or • revisions to impact assessment methodology and/or assessment conclusions; and/or • minor to moderate revisions to impact modelling; and/or • well-designed mitigation measures that are adequately secured through the draft DCO/dML and/or • amendments to draft plans If these issues are not addressed or resolved by the end of the Examination, then they may become a Red risk as set out above.	
Yellow Natural England doesn't agree with the Applicant's position or approach. We would ideally like this to be addressed but are satisfied that for this particular project it is unlikely to make a material difference to our advice or the outcome of the decision-making process. However, we reserve the right to revise our opinion should further evidence be presented. It should be noted by interested parties that just because these issues/comments are not raised as significant concerns in this instance, it should not be understood or inferred that Natural England would be of the same view in other cases or circumstances.	
Green Natural England is in broad agreement with the Applicant's approach and has no significant outstanding concerns. As above, we reserve the right to revise our opinion should new evidence be presented.	

PART II – NATURAL ENGLAND'S ADVICE

5. The Natural Features Potentially Affected by this Application

5.1 Natural England highlight that due to the location of Morgan Generation OWF, designated sites from the other UK devolved administrations are screened into the assessment. We highlight that Natural England are the relevant Statutory Nature Conservation Body (SNCB) to consult on impacts to English sites, but we cannot advise on sites located in Wales, Scotland or Northern Ireland. Therefore, the relevant SNCB should be consulted for advice on designated sites pertaining to their organisational remits.

5.2 The English designated sites and interest features included within Table 5.1 are those which may be significantly affected by the proposed project, based on the information provided to date. It should be noted that this list may change if new evidence emerges during the Examination. Links have been provided to the citation, conservation objectives and supplementary advice for designated nature conservation sites. We have provided links, as these are large and live documents which are updated on a regular basis to incorporate the most up to date evidence. To avoid potentially out of date or inaccurate documents being referred to during the Examination we recommend that the links are utilised.

5.3 In relation to SPAs, SACs and Ramsar sites, on the basis of the information submitted, Natural England is not satisfied that it can be excluded beyond reasonable scientific doubt that the project would have an adverse effect alone or in-combination on the integrity of the sites in Table 5.1.

Table 5.1 Designated Nature Conservation Sites in Natural England's remit

Site Name	Conservation advice	Features for which Outstanding Concerns Remain
Liverpool Bay/ Bae Lerpwl SPA	Liverpool Bay / Bae Lerpwl SPA – UK9020294A	• Little gull (*Hydrocoloeus minutus*), (Non-breeding) • Red-Throated Diver (*Gavia stellata*), (Non-breeding) • Common scoter (*Melanitta nigra*), (Non-breeding) • Waterbird Assemblage (Non-breeding) - above species
Morecambe Bay and Duddon Estuary SPA & Ramsar site	Morecambe Bay and Duddon Estuary SPA – UK9020326	• Herring gull (*Larus argentatus*), (Breeding) • Lesser black-backed gull (*Larus fuscus*), (Breeding and non-breeding) • Seabird assemblage, (Breeding) - above species
Ribble and Alt Estuaries SPA & Ramsar site	Ribble and Alt Estuaries SPA – UK9005103	• Lesser black-backed gull (*Larus fuscus*), (Breeding) • Seabird assemblage, (Breeding) - above species

Site Name	Conservation advice	Features for which Outstanding Concerns Remain
Bowland Fells SPA	Bowland Fells SPA – UK9005151	• Lesser black-backed gull (*Larus fuscus*), (Breeding)
Bowland Fells SSSI	Bowland Fells SSSI - 1005542	• As per SPA above
Isles of Scilly SPA	Isles of Scilly SPA – UK9020288	• Great black-backed gull (*Larus marinus*), Breeding • Lesser black-backed gull (*Larus fuscus*), Breeding • Seabird assemblage, Breeding – above species
Flamborough and Filey Coast SPA	Flamborough and Filey Coast SPA - UK9006101	• Kittiwake (*Rissa tridactyla*), Breeding • Razorbill (*Alca torda*), Breeding • Seabird assemblage, Breeding – above species
Flamborough and Filey Coast SSSI	Flamborough Head SSSI - 1002289	• As per SPA above

5.4 **Protected Species** – We advise that since the Morgan Generation OWF is located entirely offshore, consideration should be given to the need for European Protected Species (EPS) licences in relation the marine species. We highlight that the Marine Management Organisation (MMO) is responsible for wildlife licensing of activity in English waters. Further standing advice on marine EPS can be found on the MMO's website.

5.5 Should the DCO be granted, Natural England advises the Applicant progresses with a licence application at the earliest opportunity.

5.6 **Other matters relating to Natural England's remit**

- **Seascape, Landscape and Visual Impact Assessment (SLVIA) –** Natural England has engaged with the Applicant and provided advice on SLVIA throughout the pre-application and Preliminary Environmental Information Report (PEIR). Natural England has no major remaining concerns on the impact the proposal will have on SLVIA receptors. However, there are some outstanding issues which we would expect to be updated and addressed in the final application as follows:
- As advised at the PEIR stage, Natural England request that single frame images with a Horizontal Frame of View (HFoV) of 39.6° are included within the SLVIA for all viewpoints. Natural England also note that a couple of the images within the SLVIA documents still have issues with

sun glare obscuring the Wind Turbine Generator (WTG) representations (e.g. images for viewpoint 14 in document APP-039). Updated material should be submitted into the Examination in due course.

- **Cumulative Effect Assessment (CEA) –** During the early stages of pre-application engagement, Natural England raised concerns around the proposed separate Development Consent Order (DCO) applications for 'Generation Assets' and 'Transmission Assets' (Please also see Annex 1 of this cover letter). Whilst supportive of the sharing of transmission assets to reduce environmental impacts, we advised that consideration was required by the relevant parties to consider how the National Grid 'Coordinated Approach' can be implemented and robustly consented to ensure that OWF projects impacts can be considered and consented holistically, the risk of stranded assets can be avoided, and that offshore windfarm energy can be delivered in a timely manner. Additionally, we advised that the Environmental Statement (ES) should be in a position to consider the project as a whole and this should be reflected in the CEA.

  We note that across the relevant topic areas, the Applicant has undertaken a CEA which considers three scenarios:

  Scenario 1: Morgan Generation Assets plus Morgan and Morecambe Offshore Wind Farms: Transmission Assets.

  Scenario 2: Morgan Generation Assets plus Morgan and Morecambe Offshore Wind Farms: Transmission Assets and the Morecambe Offshore Windfarm Generation Assets.

  Scenario 3: Morgan Generation Assets plus Morgan and Morecambe Offshore Wind Farms: Transmission Assets alongside all other projects, plans and activities using a 'tiered' approach.

  Natural England welcome the Applicant's approach and efforts to address our concerns relating to the CEA. We advise that we are broadly content that this approach but maintain several concerns with related to the wider issue of the 'coordinated approach' and stranded assets as outlined in Annex 1.

6. Principal Areas of Disagreement Summary Statement (PADSS)

This PADSS should be read in conjunction with the Appendices of these Relevant Representations, which provide further detail on the areas of disagreement as well as other areas of disagreement which require resolution. For ease of reference, we have added a RAG rating for each principal area.

The principal issue in question	The brief concern held by Natural England which will be reported on in full in WR / LIR	What needs to change, or be included, or amended so as to overcome the disagreement	Likelihood of the concern being addressed during Examination	RAG rating
Development Consent Order (DCO) and deemed Marine Licence (dML)				
Maximum parameters of the works are not adequately captured	The DCO and dMLs do not accurately capture important metrics such as the maximum area and volume of scour and cable protection, and the number and size of UXOs that can be detonated.	The Applicant should update the DCO and dMLs to ensure the maximum parameters of all important metrics are appropriately secured.	Potential resolution	
Pre-construction documentation required at least six months prior to commencement	Due to the increasing complexity of construction of large offshore works, the proposed four month consultation period is no longer appropriate.	The Applicant should amend the dMLs to allow for documents to be submitted at least six months prior to commencement.	Potential resolution	
Conditions to require an updated Offshore Operations and Maintenance Plan (OOMP) and secure post construction time limits for cable protection	Currently, there is no condition requiring an updated OOMP to be submitted. The condition should also secure that no cable protection should be deployed later than 10 years post construction.	The Applicant should update the dMLs to require an updated OOMP and a maximum period of ten years post construction for cable protection.	Potential resolution	
Ecological monitoring conditions	The monitoring conditions included within the dMLs do not secure any ecological monitoring.	Monitoring of benthic, offshore ornithology and marine mammals should be conditioned.	Potential resolution	
Offshore Ornithology				
Cumulative Effects Assessment (CEA) methodology	The Applicant has undertaken a qualitative assessment of impacts from historic projects without	Natural England advise that the method previously supplied to the Applicant during pre-application	Potential resolution	

The principal issue in question	The brief concern held by Natural England which will be reported on in full in WR / LIR	What needs to change, or be included, or amended so as to overcome the disagreement	Likelihood of the concern being addressed during Examination	RAG rating
	considering quantitative impacts, which Natural England advise is inappropriate. We therefore consider there to be a high level of uncertainty in the Applicant's CEA. Additionally, there are inconsistencies in the data used across the Round 4 Irish Sea offshore wind projects.	discussions remains our preferred approach, and that this should be adopted across the Irish Sea Round 4 projects, who should also collaborate to establish the use of consistent data.	If Applicant agrees to take forward SNCB advice on CEA and adopts a consistent approach across the Round 4 Irish Sea projects.	
Collision Risk Modelling (CRM), displacement assessments and subsequent apportioning	Natural England have outstanding concerns relating to both the CRM and displacement assessments and subsequent apportioning undertaken by the Applicant. These currently preclude any consideration of the Applicant's EIA and HRA conclusions.	Greater clarity and transparency is required on the results of assessments, and how these are used in later stages (e.g. apportioning), especially with respect to CRM parameters. Furthermore, we consider that the full range of SNCB advised displacement and mortality rates must be considered when apportioning impacts.	Potential resolution If Applicant updates assessments as per SNCB advice.	
Marine Mammals				
Use of Noise Abatement Systems as mitigation	Natural England strongly advises the Applicant to commit to using noise abatement (NAS) as mitigation during construction.	We strongly recommend that the Applicant fully commits to using NAS as mitigation measure to reduce both injury and disturbance to marine mammal receptors during construction activities (i.e. piling and high order UXO clearance).	Potential resolution If the Applicant agrees to fully commit to using NAS as a mitigation measure, this may be resolved during Examination.	
Benthic Ecology and Physical Processes				
EIA assessments for benthic ecology and physical processes.	Natural England advise that the following potential pressures/impacts have not been considered/assessed or that further information is required:	Natural England advises that an updated ES is submitted which includes and assess these pressures/impacts with respect to	Potential resolution	

The principal issue in question	The brief concern held by Natural England which will be reported on in full in WR / LIR	What needs to change, or be included, or amended so as to overcome the disagreement	Likelihood of the concern being addressed during Examination	RAG rating
	• WCS/MDS parameters are not described and assessed (as detailed in Appendix D); • Boulder clearance; • UXO clearance; • Impacts of seabed scour due to the presence of windfarm infrastructure during the operation and maintenance phase; and • Impacts due to cable and infrastructure repair during the operation and maintenance phase.	benthic ecology and marine processes as required.		
Lack of decommissioning proposals	Natural England has concerns that the Applicant has not committed to endeavour to return the seabed to its original state at the end of the project.	Natural England advises that the Applicant should produce a draft decommissioning plan that outlines all decommissioning options (maintain, full removal and partial removal), and that an updated plan is secured in the dML.	Potential resolution This should be submitted into the Examination to resolve this issue.	
Fish and Shellfish Ecology				
Use of Soft Starts and ramp ups as mitigation for fish species	Natural England does not agree with the use of the Marine Mammal Mitigation Protocol (MMMP) methods of soft starts and ramp ups as a means of mitigation for fish species.	Do not include these measures as appropriate mitigation for impacts to fish species.	Potential resolution	

7. Detailed Advice Appendices

Natural England's detailed advice, where more detailed explanation of issues has been considered relevant, can be found in the following Appendices:

- Appendix A – Development Consent Order, Deemed Marine Licence
- Appendix B – Offshore Ornithology
- Appendix C – Marine Mammals
- Appendix D – Physical Processes
- Appendix E – Fish and Shellfish Ecology
- Appendix F – Benthic Subtidal Ecology
- Appendix G – Other Plans

Annex 1

Natural England's without prejudice advice in relation to taking into account all aspects of the of an offshore windfarm project which may be subject to determination across separate NSIPs with joint/shared infrastructure which may have cumulative impacts to nature conservation features.

Natural England notes that having separate NSIP/consents for assets relating to the same project introduces considerable potential for complexity and duplication in all phases of the projects. We observe such a scenario could arise in the case of Morgan given the potential for up to three Development Consent Orders (DCOs) with overlapping requirements i.e. Morgan Generation Assets DCO/dML, Morecambe Generation Assets DCO/dML and Morgan and Morecambe Transmission Assets DCO/dML.

Therefore, we advise that prompt consideration is required by the relevant parties to consider how conditions including mitigation measures (and potential compensation measures) can be implemented and consented to ensure that impacts can be considered holistically; the risk of stranded assets can be avoided; and ultimately that energy projects can be delivered in a timely manner, given the potential for confusion to perpetuate into the post-consent phase.

This without prejudice advice draws from our experiences of the consenting process for both the Triton Knoll offshore windfarm 'array' NSIP and the Triton Knoll Electrical System NSIP. It is provided to help address the challenges that may be faced by projects where multiple NSIPs/consents are required, but timeframes may not align, the merits of the applications are unlikely to be considered by the same examining authority and there are subsequent implications for DCO requirement and marine licence discharge.

Generic advice on the consideration of indirect, secondary and cumulative impacts

For any one of the examining/competent authorities to assess the direct, indirect, secondary and cumulative impacts from multiple linked NSIPs/consents, there will need to be sufficient information submitted on the indirect, secondary and cumulative impacts of the grid connection works within the initial applications. And throughout the examination the merits of the Applicant's approach to addressing this issue will need to be evaluated. We draw the ExA's attention to National Policy Statements for Energy (EN-1 (Section 4.10, 4.11), EN-3 (Section 2.8) and EN-5 (Section 2.7)) which require projects to ensure they provide sufficient information on the indirect, secondary and cumulative effects. The competent authorities must be satisfied that there are no obvious reasons why the necessary approvals for the other element are likely to be refused.

Natural England advises that it cannot be reasonably contended that a cumulative assessment does not need to be carried out of a project that is not only intrinsically linked to the proposed development, but is necessarily required to come forward for the proposed development to have any meaningful existence beyond resulting in a stranded asset - be that the generation or transmission element.

Experience of consenting process for associated NSIPs

Natural England highlights our experience during the Triton Knoll generation array examination where we found it difficult to advise the ExA on whether there were, or were not, any obvious reasons why the necessary approvals would be likely to be refused for the transmission assets. We believe depending on the submission and examination timeframes for the Morgan and Morecambe transmission DCO and the nature conservation risk posed by the transmission assets a similar situation has the potential to arise for both Morgan and Morecambe Generation Array NSIP HRAs.

Whilst we recognised that the transmission NSIP for Triton Knoll would have to consider the project in-combination, Natural England remained concerned in relation to the potential building out of a stranded asset. Therefore, we also advised that a condition preventing the offshore works associated with the generation asset commencing until the necessary grid connection consents had been obtained was included within the generation DCO/dML. Such an approach would ensure that any secondary, indirect and cumulative impacts that were identified as arising during the course of any assessments into the grid connections works would prevent the authorised development coming forward, as they would result in the necessary grid connection consents being refused. We believe a similar approach could be appropriate for Morgan Generation DCO/dML.

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Morgan Offshore Wind Project: Generation Assets

Appendix A to the Relevant Representations of Natural England

Development Consent Order (DCO) and Deemed Marine Licence (dML)

For:

The construction and operation of the Morgan Offshore Wind Project: Generation Assets located approximately 37km from the Northwest English Coast in the Irish Sea.

Planning Inspectorate Reference: EN010136

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10 July 2024

Appendix A – DCO and dML

In compiling this response, the following documents have been considered:

- [APP-005] C1 Draft development consent order;
- [APP-006] C2 Explanatory memorandum;
- [APP-010] F1.3 Project description

1. Natural England's Advice and Recommendations

A summary of Natural England's key concerns in relation to the draft Development Consent Order (DCO) and deemed Marine Licences (dMLs) is set out in Table 1. Our detailed advice and recommendations are presented in further detail in Table 2.

Glossary of Acronyms and Abbreviations

DCO	Development Consent Order
dML	Deemed Marine Licence
ES	Environmental Statement
IPMP	In Principle Monitoring Plan
MCZ	Marine Conservation Zone
NE	Natural England
O&M	Operations and Maintenance
OEMP	Offshore Environmental Management Plan
OOMP	Outline Offshore Operations and Maintenance Plan (OOMP)
OWF	Offshore Wind Farm
UXO	Unexploded Ordinance

Table 1 Summary of Key Issues – Development Consent Order (DCO) and Deemed Marine Licence (dML)

NE Ref	Summary of Key Concerns	Natural England's Recommendations to Resolve Issues.	Risk
A1	The DCO and dMLs do not accurately capture all the required maximum parameters of the proposed works. Important metrics such as the maximum area and volume of scour and cable protection and the number and size of Unexploded Ordinance (UXOs) that can be detonated have not been included.	The Applicant should update the DCO and dMLs to ensure the maximum parameters of all important metrics are appropriately secured.	
A2	The pre-construction documentation required under the dMLs condition 20 is to be provided four months prior to commencement. Due to the increasing complexity of construction of large offshore works, four months is no longer considered an appropriate period.	The Applicant should amend the dMLs to allow for documents to be submitted at least six months prior to commencement.	
A3	There is no condition requiring an updated Offshore Operations and Maintenance Plan (OOMP) be submitted for approval. It is a standard requirement for offshore wind dMLs that the OOMP be updated and resubmitted. Further to this, the condition should also secure that no cable protection should be deployed later than 10 years post construction. Permission for any further cable protection works after that time should be sought through a new Marine Licence. This is a standard position of Natural England, see Annex 1 of the Benthic Ecology appendix for our position paper.	The Applicant should update the dMLs to include an appropriate requirement to provide an updated OOMP, and to secure the maximum period of ten years post construction for deployment of cable protection.	
A4	The monitoring conditions included within the dMLs do not secure any ecological monitoring.	Monitoring of benthic, ornithological and marine mammals should be secured through appropriate conditions.	

Table 2 Natural England's Detailed Advice and Recommendations – Development Consent Order and Deemed Marine Licence

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
Document(s) Used: [APP-005] C1 Draft development consent order					
	A5	Sched. 2 Para 2 (2)	This table lists the main parameters of the proposed development. However, this table does not include the maximum volume of scour protection. It also does not include the maximum area and volume of cable protection. These parameters have been included in most OWF DCOs and detail the limits of the works assessed within the Environmental Statement (ES). It should be noted that both area and volume of hard substrate is required as both metrics are relevant to the quantification of potential impacts, and the Applicant should be limited to the maximums assessed within the ES. We also note the tables do not include the maximum numbers of UXOs to be detonated. Due to the sensitivity of Marine Mammal and some fish species to the detonation of explosives and that the placement of explosives to detonate UXOs within the marine environment is a licensable activity in it's own right, the maximum number of such detonations and the maximum size of the UXO to be removed should be secured within the DCO and dMLs.	The Applicant should update Table 2 to include scour protection and cable protection area and volumes. The updates should also include maximum number and size of UXOs to remove using high order detonations. A similar issue arises within Tables 2 and 3 in Schedules 3 and 4, for brevity we will not repeat our comment but would request these tables also be corrected.	
	A6	Sched 3 and 4 Part 2 Condition 10	The condition sets out the maximum parameters of the project within the dMLS. However, Natural England notes that the maximum Hammer Energy is not provided. The maximum hammer energy is a key metric for the potential impact on marine mammals and fish. It has been included as a standard limit in most recent offshore wind farm application, please see East Anglia One North, East Anglia 2, Boreas or Vanguard DCOs. It is essential that the maximum hammer energy	The Applicant should update the dMLS to include the maximum hammer energy that may be used. This should be presented as a maximum for each different foundation type (monopile, pin pile etc).	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			assessed within the ES is secured through condition as it is a key metric on the impacts.		
	A7	Sched. 3 and 4 Part 2 Condition 20 (a)	Natural England notes that the micro-siting required here is only for the micro-siting around archaeological interest features. We would note that micro-siting around features of conservation importance, such as reef of Annex I quality, is a standard mitigation. This has been included on all recent offshore wind farm consents. Please see East Anglia One North and East Anglia two for recent examples.	We recommend that the requirement to consider micro siting around features of conservation importance is secured within the dMLs.	
	A8	Sched 3 and 4 Part 2 condition 20	Natural England notes that this condition does not include a requirement to submit an updated offshore operations and maintenance plan (OOMP). We would note that a condition covering the operations and maintenance activity is a standard condition of most offshore wind farms, further that an outline OOMP is included as a definition but not referred to in any condition. It is important that the plan be appropriately updated at time of construction and resubmitted to the MMO as enforcing body, and that the relevant SNCB is consulted on the final plan prior to its approval. Further we would note that Natural England's standard position is that cable protection may only be deployed on a licence up to ten years after construction. This is due to the natural variability of the marine environment and the potential for important ecological habitats to appear over time.	Natural England recommends that a condition to secure an updated OOMP be included and that it stipulates that cable protection may only be deployed under this consent for a period of ten years post construction. See Annex 1 of the Benthic Ecology appendix for our position paper.	
	A9	Sched. 3 and 4 Part 2	This condition secures that pre-construction plans must, except where stated otherwise, be submitted four months prior to construction. Due to the increased complexity of constructing such large offshore projects, it is no longer appropriate for	Natural England advises that this condition be amended to require the pre-construction documentation six months prior	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
		Condition 21	these documents to be provided just four months prior to construction as additional time is often needed to agree on the required mitigation. We would note that East Anglia Two and East Anglia One North provided six months.	to commencement of construction.	
	A10	Sched 3 and 4 Part 2 condition 22	Natural England notes that the Underwater Sound Management Strategy will need to be supplied for both piling and UXO detonation. A minimum of two documents for each licence. Further we note that the timing requirement is limited to three months prior to the activity, for piling we refer to comment A5 regarding the need for further time. However, this mitigation strategy is required due to the potential for in combination impacts and it is important that the document not be provided too early to ensure that information on other works is as up to date as possible prior to sign off of the plan. Therefore, Natural England requests the condition require the plans to be submitted no later than 6 months and no sooner than 9 months prior to the activity.	The Applicant should amend the condition to include the required timings.	
	A11	Sched 3 and 4 Part 2 Conditions 27-29	These conditions detail and secure the required monitoring for the development. However, they do not include any of the ecological monitoring required, except the during construction piling monitoring. Please see East Anglia Two and East Anglia One North for examples. We would expect benthic surveys, ornithological surveys and marine mammal surveys to be secured.	The Applicant should update the monitoring conditions to secure the ecological monitoring requirements.	

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

Morgan Offshore Wind Project: Generation Assets

Appendix B to the Relevant Representations of Natural England

Offshore Ornithology

For:

The construction and operation of the Morgan Generation Offshore Wind Farm located approximately 37km from the Northwest English Coast in the Irish Sea.

Planning Inspectorate Reference: EN010136

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10 July 2024

Appendix B – Offshore Ornithology

In formulating these comments, the following documents have been considered:

- [APP-010] F1.3 Volume 1, Chapter 3: Project description
- [APP-012] F1.5 Volume 1, Chapter 5: Environmental impact assessment methodology
- [APP-023] F2.5 Volume 2, Chapter 5: Offshore ornithology
- [APP-053] F4.5.1 Environmental Statement - Volume 4, Annex 5.1 Offshore ornithology baseline characterisation
- [APP-054] F 4.5.2 Volume 4, Annex 5.2: Offshore ornithology displacement technical report
- [APP-055] F 4.5.3 Volume 4, Annex 5.3: Offshore ornithology collision risk modelling technical report
- [APP-056] F 4.5.4 Volume 4, Annex 5.4: Offshore ornithology migratory bird collision risk modelling technical report
- [APP-057] F 4.5.5 Volume 4, Annex 5.5: Offshore ornithology apportioning technical report
- [APP-058] F 4.5.6 Volume 4, Annex 5.6: Offshore ornithology PVA technical report
- [APP-096] E1.1 HRA stage 2 Information to Support an Appropriate Assessment (ISAA) Part 1: Introduction
- [APP-098] E1.3 HRA Stage 2 information to support an appropriate assessment Part Three: Special Protection Areas (SPA) and Ramsar Site assessments
- [APP-099] E1.4 HRA Stage 1 Screening Report
- [APP-100] E1.5 HRA integrity matrices

1. Natural England's Advice and Recommendations

A summary of Natural England's key concerns in relation to Offshore Ornithology is set out in Table 1. Our detailed advice and recommendations are presented in further detail in Table 2.

Glossary of Acronyms and Abbreviations

AA	Appropriate Assessment
AEoI	Adverse Effect on Integrity
BDMPS	Biologically Defined Minimum Population Scale/Size
CEA	Cumulative Effects Assessment
CGR	Counterfactual of Population Growth
CPS	Counterfactual of Population Size
CRM	Collision Risk Modelling
DAS	Digital Aerial Survey
DCO	Development Consent Order
dML	Deemed Marine Licence
EIA	Environmental Impact Assessment
ExA	Examining Authority
FFC SPA	Flamborough and Fylde Coast Special Protection Area
HAT	Highest Astronomical Tide
HPAI	Highly Pathogenic Avian Influenza
HRA	Habitats Regulations Assessment
IoS SPA	Isles of Scilly Special Protection Area
JNCC	Joint Nature Conservation Committee
LAT	Lowest Astronomical Tide
LBBG	Lesser Black Backed Gull
LCI	Lower Confidence Interval
LSE	Likely Significant Effect
NE	Natural England
O&M	Operations and Maintenance
OWF	Offshore Wind Farm
PEIR	Preliminary Environmental Information Report
PVA	Population Viability Analysis
RIAA	Report to Inform Appropriate Assessment
RTD	Red-Throated Diver
sCRM	Stochastic Collision Risk Modelling
SNCB	Statutory Nature Conservation Body
SoS	Secretary of State
SPA	Special Protection Area
UCI	Upper Confidence Interval
VE	Five Estuaries
ZOI	Zone of Influence

Table 1 Summary of Key Issues – Offshore Ornithology

NE Ref	Summary of Key Concerns	Natural England's Recommendations to Resolve Issues.	Risk
B1	***Cumulative Effects Assessment (CEA) methodology*** Natural England do not consider the CEA to be sufficiently robust. Throughout the Expert Working Group (EWG) process, and in our review of the Applicants Preliminary Environmental Information Report (PEIR), Natural England have highlighted the risks associated with the deficiencies of the projects cumulative and in-combination assessments. This is due to the lack of quantitative consideration of some historic projects. The Statutory Nature Conservation Bodies (SNCBs) i.e. Natural England (NE), Natural Resources Wales (NRW) and JNCC supplied bespoke advice to all R4 Irish Sea projects in October 2023 (Annex 1). We note that the Applicant has not followed this advice. Instead, historic projects without quantified impacts have been considered qualitatively. Thus, we consider there to be a high level of uncertainty in the Applicants assessments. Natural England also highlight inconsistencies in figures used for some projects compared to those in other assessments (e.g. Mona Offshore Wind Farm (OWF)). Further, it is of note that Morecambe OWF have recently submitted their application to PINS, detailing two full years of baseline data collection. Only the first year of data was collected and analysed at the Preliminary Environmental Information Report (PEIR) stage, this is now outdated.	To address the data gaps in the cumulative and in-combination assessments, Natural England advise that the method previously supplied to the Applicant (Annex 1) remains our preferred approach. However, we recognise that for most assessments the legitimate risk of impact on integrity judgements is relatively low. To enhance confidence in the assessments we recommend that the Applicant aligns their qualitative approach to historic projects with that proposed by the Morecambe OWF (PINS doc ref: EN010121-000242-5.1.12 Chapter 12 Offshore Ornithology.pdf(planninginspectorate.gov.uk). Natural England have not yet conducted a complete technical review, but currently consider this approach to be a useful screening method. We note that further investigation of data gaps as originally advised may still be required in some cases. Natural England advise that the Round 4 Irish Sea windfarms should be using the same data to conduct their cumulative and in-combination assessments and urge collaboration on this aspect. This is important both with respect to historic projects and the Round 4 projects themselves, especially as these projects are in examination simultaneously and the impact estimates may be considered subject to change. Natural England consider this a compelling reason to adopt SNCB advice throughout the assessments to ensure consistency and early acceptance of each projects assessments.	

NE Ref	Summary of Key Concerns	Natural England's Recommendations to Resolve Issues.	Risk
		See our detailed comment, (NE ref: B36).	
B2	***Collision Risk Modelling (CRM), displacement assessments and subsequent apportioning*** Natural England have outstanding concerns relating to both the Collision Risk Modelling (CRM) and displacement assessments and subsequent apportioning undertaken by the Applicant which we consider currently preclude any consideration of the conclusions drawn by the Applicants assessments. • It is not clear that appropriate flying bird density data has been derived for consideration in CRM (for detailed comment, see NE Ref: B19). • It appears that CRM results using the Applicants preferred flight speed parameters, which Natural England consider inappropriate, have been progressed through to the apportioning stage of the assessments (for detailed comments, see NE Ref: B23, B32). • Specific displacement and mortality rates of auks, rather than the SNCB advised ranges, have been used for assessment in step 1 of the Applicants HRA integrity test (for detailed comment, see NE Ref: B48). As the Applicant has elected to undertake multiple assessments using a mixture of SNCB advised and their own preferred parameters, it is frequently difficult to review the assessments.	Natural England advise that greater clarity and transparency is required on the results of assessments, and how these are used in later stages (e.g. apportioning), especially those using various CRM parameters. Furthermore, we consider that the full range of SNCB advised displacement and mortality rates must be considered when apportioning impacts. We would highlight that Natural England will only base our advice on assessments that follow SNCB guidance. It is not currently clear that such assessments are available. The Applicant should update the assessments as required. We note that this process may also necessitate updates to the Applicants screening for cumulative and in-combination assessments.	

Table 2 Natural England's Detailed Advice and Recommendations – Offshore Ornithology

Natural England's Key Considerations	**Natural England's Advice**				
Relevant and Written Representations)	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
Project Parameters - Documents Used: [APP-010] F1.3 Volume 1, Chapter 3: Project description, [APP-023] F2.5 Volume 2, Chapter 5: Offshore ornithology					
Natural England's Position on Worst Case Scenario or Scenarios	B3	[APP-023], Table 5.25	The minimum lower blade tip height of 34 m above Lowest Astronomical Tide (LAT). The worst-case scenario 'air gap' is usually stated as blade tip height above Highest Astronomical Tide (HAT).	The Applicant should present the air gap above HAT to facilitate comparison with other projects and the required minimum air gap of 22m relative to HAT.	
Baseline Characterisation - Document Used: [APP-053] F4.5.1 Volume 4, Annex 5.1: Offshore ornithology baseline characterisation					
Survey Data Acquisition	B4	[APP-053], Table A.2	Copy paste error. Table A.2 is titled the same as previously presented table.	Update table title for clarity.	
	B5	[APP-053]	Natural England are satisfied that appropriate baseline data has been gathered for the purposes of ornithological impact assessment.	N/A	
Data Gaps	B6	[APP-053], 1.3.2	Recent seabird population trends section does not consider the impacts of Highly Pathogenic Avian Influenza (HPAI) in the region.	Natural England suggest that HPAI and the impacts on seabirds in the region should be borne in mind when considering the Applicants impact assessment. Any impacts of Offshore Wind Farms (OWFs) may be more acute against a backdrop of stochastic events resulting in elevated levels of mortality. (Guidance in Annex 2).	
	B7	[APP-053], Table 1.19	Table is not supplied in full.	The Applicant should provide the complete table in an updated assessment.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations)	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
	B8	[APP-053], Section 1.4 Table 1.13	Connectivity with designated sites method is incomplete. Furthermore, Table 1.13 details *"Designated sites at which kittiwake is a qualifying feature with which there is connectivity with the Morgan Generation Assets."* However, only the breeding season is considered here – connectivity outside of the breeding season has not been considered.	It is apparent from the other submitted documents that the Applicant has followed SNCB advice to use the Biologically Defined Minimum Population Scales (BDMPS) to identify connectivity with seabird populations in the non-breeding season(s). This should be detailed here, and throughout the application, for clarity and consistency.	
	B9	[APP-053], 1.5.1.40	The Applicant states, *"The Morgan Generation Assets are not in the foraging range or directly overlapping with any SPA at which little gull is a qualifying feature."* Natural England agree but note consider it highly likely that little gulls observed at the project will also be using the nearby Liverpool Bay SPA. Furthermore, it is of note that a relatively high population within the project study area was estimated in January 2023 (159 birds).	Natural England welcome that the Applicant has taken little gull forward for further assessment. We consider it highly likely that the birds recorded by the Applicants baseline surveys are part of the Liverpool Bay SPA population, and it would be appropriate for the assessment to consider the implications of this.	
Analysis, Modelling and Reporting	B10	[APP-053], 1.2.3.9	The Applicant states, *"All bird behaviours (flying and sitting) were included in this analysis. Therefore, an assumption is made that flying and sitting birds do not differ in their distributions within the Morgan Offshore Ornithology Array Area survey area."* Natural England question if this is a safe assumption for the key	See comment relating to the calculation of densities of flying birds for use in CRM (NE Ref: B19). Natural England advise that it may be necessary to use the design-based density estimates for CRM unless the Applicants approach can be demonstrated to	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations)	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			species. While we agree with the approach for modelling spatial distribution of birds, this assumption may ultimately preclude the modelled density data being used for Collision Risk Modelling (CRM), which only considers densities of flying birds.	accurately describe the densities of flying birds within the array area.	
	B11	[APP-053], 1.2.3.21	The Applicant states, *"The correction factors applied to sitting guillemot, razorbill, and puffin were based on JNCC (2013), which assumed that 24.3% of guillemot, 17.4% of razorbill, and 14.2% of puffin are underwater when digital aerial imagery is captured, leading to correction factors of 1.311, 1.211 and 1.165 respectively. Availability bias correction factors were only applied to estimates of abundance of birds sitting on the sea surface and were not applied to seabirds in flight."* However, Natural England do not believe that a correction factor for puffin is supported by the reference.	Please clarify the source of the correction factor for puffin and confirm that it is appropriate to apply this correction factor to sitting birds only. Natural England advise that if the time spent underwater is as a proportion of all time (i.e. not only time on the water) then the application of a correction factor should reflect this.	
	B12	[APP-053], 1.3.3.9	**Calculation of the total regional breeding population** - Despite engagement on this issue through the EWG including the provision of detailed SNCB advice (Annex 3), the Applicant has persisted with calculating regional	While we accept that the project conclusions will be unchanged, Natural England continue to advise that it would be preferable for the SNCB method (supplied as written advice to the EWG) to be adopted. This ensures consistency with	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations)	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			populations using a method that the SNCBs do not agree with. We note and agree that, excepting Manx shearwater and gannet, the Applicants preferred regional populations are smaller, and therefore could be considered *"more precautionary"* in terms of impact assessment against them. Natural England highlight that throughout the submitted documents the Applicant frequently criticises or characterises specific aspects of SNCB advice or best practice guidance as being too precautionary, often proposing an alternative approach. Thus, it is somewhat confusing that SNCB guidance which would result in **reductions** to project alone impacts is not adopted. Furthermore, we would highlight the value in considering SNCB advice holistically and urge caution in specific critiques of elements of that guidance considered in isolation (e.g. see NE Ref: B23, B32 relating to the Applicants review of flight speed parameters in CRM).	other projects, as well as within the project for the alone and cumulative assessments. We welcome consideration of the SNCB advised regional population figures for Manx shearwater and gannet in the project alone assessments, and for all species in the cumulative assessment.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations)	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			Critically, we note the fundamental problem with the projects definition of regional populations being incompatible with cumulative assessments, in which case the SNCB method is adopted. Thus, impacts are being assessed against two different regional populations for no apparent benefit.		
Environmental Impact Assessment - Document Used: • [APP-023] F2.5 Volume 2, Chapter 5: Offshore ornithology • [APP-054] F 4.5.2 Volume 4, Annex 5.2: Offshore ornithology displacement technical report • [APP-055] F 4.5.3 Volume 4, Annex 5.3: Offshore ornithology collision risk modelling technical report • [APP-057] F 4.5.5 Volume 4, Annex 5.5: Offshore ornithology apportioning technical report • [APP-058] F 4.5.6 Volume 4, Annex 5.6: Offshore ornithology PVA technical report					
Identified impacts	B13	[APP-023]	Natural England consider that the Applicant have identified the key pressures, impacts and receptors.	N/a	
	B14	[APP-023], 5.10.1.7	The Applicant states, *"It should be noted that the Arklow Bank Phase 1, Barrow, North Hoyle and Rhyl Flats are currently operational however, the operational consents for these projects expires before the Morgan Generation Assets become operational. These projects are therefore discounted from the CEA as there is no temporal overlap between the operational phases of these projects and the Morgan Generation Assets."*	Natural England highlight that if these historic projects are re-powered, or maintained beyond current operational consents, those projects would require a consent from the relevant authority, and thus, would themselves produce new cumulative assessments that include the impacts of Morgan OWF. In that context, the Applicant's proposed approach is acceptable.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations)	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
	B15	[APP-054], 1.3.2 Table 1.3	Natural England do not agree with the approach of allocating March to the pre-breeding season for kittiwake. This should be March to August inclusive, i.e. including all migratory months also defined as 'breeding season'. However, we do not consider it necessary to assess displacement for kittiwake in any case and agree with the breeding seasons defined for all other species in Table 1.3.	We suggest double-checking that the breeding season months used for the kittiwake displacement assessment are acceptable to JNCC and any other relevant interested parties.	
	B16	[APP-055], 1.3.2.1	Natural England note that the Applicant states, *"Collision risk modelling was undertaken using the Stochastic Collision Risk Model (sCRM) developed by Marine Scotland (McGregor et al., 2018).."* However, upon Natural England requesting the input/output log files for review (by email on 07/05/24) we were informed by the Applicant (by email on 21/05/24) that, "*collision risk modelling was run in R using an adapted version of the sCRM code so there are no input/output log files."* And further, *"The information that the ornithologists may need to run the sCRM is available in the CRM technical report."* It therefore appears that the methods described in the submitted documents do	**The Applicant should clarify and confirm the method used for CRM and update the submitted documents to reflect this.** Regardless of the method used, clarification is required on the bird density data considered. We highlight that supply of the bootstrapped data is required not only to verify the sCRM, but also to enable future access for consideration in cumulative and in-combination assessments. Natural England would also further highlight our comments on the derivation of bird in flight density data by using the proportions of flying birds across the entire survey area. We reiterate that we do not	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations)	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			not accurately describe those implemented by the Applicant to undertake CRM.	currently consider the method appropriate for deriving densities of flying birds for CRM (NE Ref: B19).	
	B17	[APP-055], 1.3.3 Table 1.3	Natural England note that the great black-backed gull bird length SD has been updated since the provision of draft advice and agreement on the parameters to be used during the EWG engagement process.	Natural England are content with the parameters used for the assessment. However, we suggest that if the Applicant undertakes any further CRM the EWG is consulted to confirm the latest guidance is followed.	
	B18	[APP-055], Table 1.4	Lower blade tip height above lowest astronomical tide (LAT) 34m and the air gap at mean sea level (MSL) 30m are presented in the table presenting the 'maximum design scenario'. A -4m tidal offset from MSL is also detailed. Natural England are not clear on the input parameters used for CRM. While we are unsure of the exact method used (see NE Ref: B16), we believe the air gap at highest astronomical tide (HAT) is the usual input data.	The Applicant should confirm and detail the air gap at HAT within the MDS.	
	B19	[APP-055], 1.3.4.4	Natural England do not consider it appropriate to use the proportion of birds in flight across the entire surveyed area (array+10km buffer) to estimate the proportions of birds in flight within the array area only, and thus calculate the densities of flying birds that will be considered by CRM. This is because bird	Natural England advise that abundance and density estimates (with associated CIs) of birds on the water and in flight should be calculated separately using design-based methods. For CRM, these densities of birds in flight should be an accurate representation of the data collected within the array area specifically.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations)	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			behaviour over the whole survey area may not be representative of that in the array area. Especially when considering a 10km buffer it is possible that certain species may utilise different areas of the site for different behaviours, e.g., foraging, transiting, loafing. We do not consider the sample size of birds in the array area to be an issue, or justification for the Applicants approach.	Thus, given the uncertainties around the proportions of birds in flight from the model-based density estimates, we advise design-based density estimates of flying birds within the array area should be used in preference. However, in the first instance we recommend a basic analysis to determine if the proportion of birds in flight in the array only is broadly comparable to that across the entire survey area. This may give some comfort that the Applicants approach is appropriate, or alternatively, that further investigation or use of design-based estimates is required. Natural England consider the primary value of MRSea to be the production of spatial distribution outputs, which can help facilitate array planning and mitigation to reduce impacts on ornithological receptors. Due to the pooling of flying and sitting birds in that modelling, it may prove preferable to use the density data derived using design-based methods to undertake CRM. The Applicant has demonstrated that their model-based and design-based density estimates (for all behaviours combined) are similar.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations)	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
	B20	[APP-055], 1.3.4.5	The Applicant states, *"… if MRSea generated a density of 10 black-legged kittiwake per km2 in the Morgan Array Area for all behaviours, and there were a total of 2,000 black-legged kittiwake in the raw data for the Morgan Array Area, 600 of which were in flight. The density of flying birds in the Morgan Array Area would then be calculated as 600/2000 * 10 = 3 kittiwake per km2."* Natural England assume the worked example refers to 2000 birds in the total survey area, not the array?	The Applicant should review the worked example text and edit if necessary. See also NE Ref: B21 for comment on this method.	
	B21	[APP-055], 1.3.4.6 Table 1.5	The Applicant states, *"There were two density estimates for each calendar month as the digital aerial surveys spanned 24 monthly samples across two years. Under the assumption that overdispersion does not vary much among years, each of the two monthly estimates and confidence limits were averaged. This approach was taken as opposed to generating separate outputs for each aerial survey, because ultimately those outputs would need to be averaged to generate an average impact, resulting in the same outcome."* Natural England advise that this methodology does not follow best	Natural England advises the following approach for deriving mean abundance and density estimates, and their associated SDs and CIs when bootstrapping is used (applicable to model- or design-based estimates). 1. Apportioning (unidentified birds or behaviours) and application of correction factors (e.g. for availability bias) should be applied to model- or design-based bootstrap sample estimates for each survey. 2. The resultant overall abundance distributions from the samples should be used to derive the means, SDs and CIs.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations)	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			practice guidance. Further, we do not consider it appropriate to take an average of confidence limits.	3. If a mean, SD and CIs are required based on two or more surveys (e.g. from two peak abundance estimates within a season or two densities of birds in flight in a calendar month), the relevant corrected bootstrap samples should be pooled to provide a single sample from which to draw the estimates. The Applicant should present an updated assessment in line with this advice.	
	B22	[APP-055], Section 1.4	Tabulated CRM results are presented for a range of avoidance rates and flight speeds. Natural England highlight that the estimates calculated using SNCB advised parameters should be progressed through all stages of the assessment. Natural England will not consider the results of assessments using the Applicants preferred parameters or alternative approaches when considering the assessment conclusions on impact significance or the potential for AEoI.	Natural England advise that impacts estimated using the SNCB advised approach must be considered for apportioning, when calculating increases in baseline mortality, and in any subsequent PVA. For clarity, Natural England request that the results of CRM arising from the SNCB advised flight speed and avoidance rates are highlighted in updated tables.	
	B23	[APP-055],	The Applicant presents a review of evidence relating to seabird flight speeds, the current SNCB guidance on	Natural England advise that the results of CRM undertaken using SNCB advice is clearly highlighted in submitted documents	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations)	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
		Section 1.5.1	flight speeds for use within CRM and presents the results of CRM using the SNCB advised and the Applicants preferred flight speeds. Natural England advises that the evidence presented by the Applicant was considered in the formulation of SNCB advice on CRM parameters. Guidance on flight speed is acknowledged by the SNCBs as requiring update and work is currently underway using tracking data for a number of species at a range of sites, which should provide further information on flight speeds. However, in the meantime and in-lieu of any site or region specific evidence, we continue to advise that the rates set out in SNCB guidance are followed. Natural England are not persuaded that the use of flight speeds derived by Skov et al (2018) as proposed is appropriate. Further, we urge general caution when proposing alternative parameters due to the methods used to define avoidance rates. The calculation of avoidance rates involves a comparison of how many collisions are predicted by the model, in the absence of avoidance and using given parameters, with real-world	to aid clarity and to allow SNCBs to provide advice. It must also be clear throughout the Examination that these impact estimates are being fully considered at all stages of the assessment process. If the Applicant wishes to retain their review of evidence and proposed updates to flight speed parameters, a full consideration of the implications of this should be reflected within that review i.e. that other parameters may also need to be recalculated.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations)	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			collision data collected from wind farms. If the model parameters are changed so that fewer collisions are predicted in the absence of avoidance, then a lower avoidance rate may also be warranted - the smaller the gap between predicted (without avoidance) and observed collisions, the lower the avoidance rate.		
	B24	[APP-055], 1.5.2	The Applicant states that *"it is considered that the species-specific rate, specifically for herring gull, lesser black-backed gull and great black-backed gull, represents the best available evidence for use in collision risk modelling."* **Natural England reiterate the advice provided through the EWG, that we do not currently consider the use of species-specific rates to be appropriate for CRM.** In short, this is because the paucity of offshore, species-specific data undermines the confidence we can place in species-specific rates at this stage. Further, some of the high value collision data collected offshore could not confirm specific species identifications, so there is more data to inform grouped rates in some cases.	Natural England advise that the results of CRM undertaken using SNCB advice is clearly highlighted in submitted documents to aid clarity. It is especially important that it is these impact estimates that have been considered later in the assessment process. Again, we highlight that the estimates calculated using SNCB advised parameters should be progressed through all stages of the assessment.	
	B25	[APP-055],	Natural England welcome the consideration of migratory birds and impact estimates derived by CRM. We	N/A	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations)	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			note the low levels of predicted impact from the project alone relative to the contributing populations. While there is no discussion of the results, or conclusions drawn within the document, Natural England are satisfied that the project alone will not result in any significant level of impact to migratory birds.		
	B26	[APP-057], 1.2.3.3 - 1.2.3.7	The Applicant has used Seabird 2000 colony counts for apportioning breeding birds to colonies, rather than the more recent Seabirds Count census. The relevant data was published in October 2023 and therefore was available for the assessment. Seabird 2000 data is now dated, and in many cases does not represent the current situation with respect to breeding seabirds in the region of concern. For example, the Applicant uses a Manx shearwater population of 332 (166 AOS) for Lundy. The population reported in the latest count data is 11,008 (5504 AOS). We welcome that SPA colony apportioning has been undertaken using recent data in a second step but note that the overall proportion of birds	Natural England advise that the best available evidence is used. In the case of apportioning to colonies in the breeding season, we consider that this is the latest Seabirds Count data. This data represents the most relevant and recent concurrent reference point for all UK colonies. The Applicant should present an updated assessment using Seabirds Count data. For apportioning in the non-breeding season, the Applicants approach remains appropriate.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations)	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			apportioned to those SPAs is still derived from the Seabird 2000 data, with those birds being re-distributed according to relative population changes at the SPAs. We do not consider this approach to be appropriate as it is temporally mismatched and does not utilise the best available evidence.		
	B27	[APP-057], 1.2.3.11 1.2.3.14 Table 1.5	The Applicant has followed a method developed by Hornsea Project Two to undertake kittiwake age apportioning. **Natural England reiterate the SNCB advice provided to the EWG, that we do not agree with the use of this method.** The method uses survival rates and the proportion of birds aged as one year old in the baseline survey data to calculate the proportions of adult birds that are actually second or third year (assumed non-breeding) birds. Natural England consider this method problematic. • It is not clear if the proportion of birds aged as one-year old is representative of the 'juvenile birds' present. These birds can be aged as such (due to distinctive plumage features) on initial fledging and into their 'first summer' the following year (when they are in fact, second year	Natural England advise a more appropriate approach for age-apportioning kittiwakes in the breeding season would be to simply use the 84.11% of adults recorded in the Morgan site-specific DAS data. Alternatively, given the general uncertainty around the value of ageing data for kittiwakes we advise the Applicant should take a precautionary approach and assume all birds present in the breeding season are adults for the purposes of impact assessment.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations)	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			birds). Those cohorts are subject to different survival rates. • The juvenile survival rates (0-1 year) given in Horswill & Robinson (2015) are extremely dated and from a single North Sea colony (Coulson & White, 1959). It is highly uncertain that they are applicable here.		
	B28	[APP-057], 1.2.3.15	The Applicant considers that, *"To include any impacts occurring on any sabbatical birds within that apportioned to those individuals of the species breeding at a colony, would likely overestimate the effects to these species/populations*" **Natural England strongly disagrees with this statement.** Expert review of the seabird demographic rates presented by Horswill & Robinson (2015) and the literature used to inform them should introduce significant caution in any consideration of sabbaticals during impact assessment. In short, there are insufficient studies to inform a full understanding and no clear basis to extrapolate findings to other colonies. Further, it is highly uncertain that historic findings remain relevant	**Natural England does not consider the current evidence base sufficient to recommend sabbatical rates of >0 for any seabird species.** We therefore welcome the presentation of results derived from adult populations that have not been altered to take sabbaticals into account. We advise that integrity judgements should be based on assessments that do not remove sabbatical birds at the apportioning stage.	

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			now, or for the extended period that OWF projects may impact populations. Key issues that currently preclude the proper consideration of sabbaticals, but were apparently not considered by the Applicant, are briefly detailed below. • Mean proportions of populations expected to take sabbaticals are poorly understood. Temporal and spatial variation of sabbatical rates remains largely unknown. Thus, we have no basis to assign rates to breeding populations that are not directly studied. • The behaviour of sabbatical birds is unknown. We do not know if they are present at colonies, or how they forage. Thus, we do not understand their potential impact exposure. • It is possible, and indeed, likely that sabbatical birds contribute to some colony population estimates if they are present in breeding habitat during counts. Further, if they do remain at colonies (e.g. defending a nest site) some sabbatical birds may even inform productivity rates calculated for breeding populations. This would		

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			need to be accounted for in impact assessment. • Sabbatical birds are part of the breeding population and their potential impact exposure compared to breeding birds is not known. Natural England acknowledges that sabbaticals represent a knowledge gap for ecologically realistic impact assessments. However, we do not believe that simply removing them from assessments during apportioning is appropriate.		
	B29	[APP-057], 1.2.3.15	The Applicant claims, *"breeding colony population size estimates, which are used within the Environmental Impact Assessment and ISAA part 3 – SPA and Ramsar site assessments (Document Reference E1.3) to inform the derivation of the significance of impacts, do not include these sabbatical birds."* Natural England do not consider this statement to be evidence based. Furthermore, we remain wholly unconvinced that seabirds are not attending colonies while taking sabbaticals from breeding, and therefore	Natural England consider it of fundamental importance that the discussion around sabbatical rates remains evidence-based and fully considers the quality of any evidence, its more general applicability, the high levels of uncertainty and significant residual knowledge gaps. Natural England advise that the Applicant should ensure assessments that do not apportion sabbatical birds are clearly presented, and that those mortality estimates are considered in relation to baseline mortality and taken through to PVA where required	

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Relevant and Written Representations)	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			potentially being counted as part of the breeding population. In fact, Reed *et al* (2015), reported that on the Isle of May (where the adopted sabbatical rate for guillemot was calculated), ***"Non-breeding guillemots spend much time in the colony near their last breeding site".*** Thus, Natural England consider that sabbatical guillemots may be represented in colony population estimates, especially given the methods employed to count auk colonies (individuals present in breeding habitat are counted, rather than apparently occupied nests/sites). Similarly, we consider it possible that gulls may attend colonies, and even attend or defend nest sites while taking a sabbatical.		
	B30	[APP-057], 1.2.3.16	The Applicant states, *"Consideration will be given in relevant assessments to the sabbatical values presented in Table 1.6 for each species."* Natural England again advise that we do not consider the current evidence base sufficient to apply sabbatical rates of >0 in apportioning for any seabird species.	Following review of all submitted documents, Natural England assume that impact assessments that have removed sabbaticals are not actually progressed through all stages of assessment. In document E1.3 the Applicant states, *"The apportioning values do not include consideration of sabbatical birds."*	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations)	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			We would further highlight the general issue of a lack of clarity regarding the consideration of alternative approaches to impact assessment throughout the documents.	The Applicant should confirm that this is the case and edit text for clarity as necessary.	
	B31	[APP-058], Table 1.2	Natural England note that for the great black-backed gull PVA, the Applicant has used the herring gull survival rates, including using the adult herring gull figure.	Natural England advise using the herring gull 0-1 year survival rate and the adult great black-backed gull rate detailed in Horswill and Robinson, which is considered precautionary in terms of weighted mean survival rates for 1% thresholds.	
	B32	[APP-058], Table 1.4	Natural England note that the Applicant presents two total mortality impacts for consideration by PVA of great black-backed at the Isles of Scilly (IoS) SPA. Two different avoidance rates are detailed. However, it is not clear here if all other parameters considered in the CRM to derive these estimates are in line with SNCB advice, or those preferred by the Applicant (or a mixture). Natural England note that the in-combination assessment (E1.3, Table 1.74) apportions 0.4 collisions to IoS SPA. The Applicant apportions 9.14% of impacts to IoS (F4.5.5, Table 1.17). Thus, we calculate	Please clarify the parameters used to derive mortality estimates considered in the PVA models. Natural England reiterate that we will only consider the findings based on our recommended parameters when making integrity judgements.	

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			(0.4 / 9.14) *100 = 4.38 total collisions. However, the mean collisions detailed in 4.5.3 Table B.2 do not align with this figure.		
	B33	[APP-023], 5.9.1.14	The Applicant presents evidence relating to displacement of auks to justify the consideration of 50% displacement rates and 1% mortality rates in the assessment, drawing on APEM (2002) and MacArthur Green (2023). Natural England do not agree with the Applicant's interpretation of this evidence, and especially that it supports a claim that auks are not displaced by OWFs. We highlight that the Beatrice OWF study was principally focussed on auk responses to individual turbines i.e. those auks that were not displaced rather than those that were, and did not assess avoidance of the array as a whole in a way that is compatible with the impact assessment methodology. I.e., test for a reduction in abundance/density within the array and 2km buffer. However, while abundance increased in the post-operational period over the whole study	With respect to recent literature of relevance to the assessment of displacement impacts on auks Natural England would highlight that a recent study in the German North Sea suggested that displacement of auks could be occurring at much greater distances from OWFs (up to 19.5km) than are currently considered by best practice impact assessments (Peschko et al, 2024). Natural England reiterate that our advice remains evidence based, and we take a complete view of that evidence in forming our guidance and advice. We question the characterisation of our advice as being "precautionary" compared to the Applicants "more evidence based" approach. An apparently limited or selective appraisal of relevant evidence has been made. Further, we suggest that some questionable and misleading conclusions have been drawn from the Applicants review.	

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			area, the proportion of the auk population within the array area (generally) decreased, indicative of a displacement effect.	Natural England therefore advise that SNCB guidance is followed throughout the assessments so we can provide our advice into the Examination.	
	B34	[APP-023], 5.9.1.16	Natural England do not consider there to be any convincing evidence that is broadly supportive of auk displacement from OWFs being a short-term effect, or that birds will habituate to them. Natural England do accept that there is a large degree of uncertainty regarding displacement rates and effects. We would highlight our proposal to the Offshore Renewables Joint Industry Project (ORJIP), subsequently accepted and now being contracted, for a project to help address this, Improving understanding of distributional change for relevant seabird species (ImpUDis), though unfortunately this will not report during the Examination of this project.	Although we hope that new evidence will reduce uncertainty with respect to displacement effects and impact assessment, at present, SNCB guidance remains unchanged. Natural England are not persuaded that the Applicant presents any evidence that challenges the validity of that guidance.	
	B35	[APP-023], 5.9.1.27	*"The EWG recommended the use of a 30-70% displacement rate range and a 1-10% displacement rate range. NatureScot advise a 30% displacement rate and 1% to 3% mortality rate for kittiwake in both the breeding and non-breeding season (Nature Scot, 2023) and*	We do not consider this an accurate reflection of the EWG advice. Natural England and NRW advised that displacement was not assessed for kittiwake. Therefore Natural England will not review or consider the findings of the displacement assessment for kittiwake.	

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			when following joint SNCB guidance (JNCC et al., 2022) a 10-30% displacement rate range would be used. In light of this guidance and additional evidence stated, for the purpose of this assessment, precautionary rates of 50% (range 30% to 70%) for displacement and 1% (range 1% to 10%) for mortality have been used for the operations and maintenance phase of the Morgan Generation Assets. Given that the displacement rate used for the construction phase is a 50% reduction from the operational phase displacement rate, the rate used for kittiwake during the construction phase is 25% (range 15% to 35%) as agreed with the SNCBs in the second EWG (held on 13/07/2022)."		
	B36	[APP-023], 5.10	Throughout the Expert Working Group (EWG) process, and in our review of the Applicants Preliminary Environmental Information Report (PEIR), Natural England have highlighted the risks associated with the deficiencies of the projects cumulative and in-combination assessments. This is due to the lack of appropriate data to enable quantitative consideration of some historic projects. The Statutory Nature Conservation	To increase confidence in the cumulative and in-combination assessments, Natural England advise that the method previously supplied to the Applicant remains our preferred approach. However, we recognise that for most assessments the legitimate risk of impact on integrity judgements is relatively low. Thus, we recommend that the Applicant aligns their qualitative approach with that	

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			Bodies (SNCBs) i.e. NE, NRW and JNCC supplied bespoke advice to all R4 Irish Sea projects (and demonstrator projects in the R5 Celtic Sea zone) in October 2023. Our advice detailed a pragmatic hierarchical method to 'gap-fill' the Irish Sea cumulative & in-combination assessments (Annex I). The proposed approach was relatively basic, with acknowledged limitations but was designed to generate indicative estimates for currently unknown (zeroed) impacts. This would then enable more informed expert judgement to be made on the likelihood of significant impacts and Adverse Effect on Integrity (AEoI), and thus if further investigation by a more rigorous assessment was warranted. Despite this, the Applicant's cumulative and in-combination assessments still do not quantitatively consider impacts from a number of relevant projects due to the acknowledged lack of data. Impacts specified as 'unknown' have been assessed qualitatively, but ultimately treated as zero. This approach will inevitably underestimate impacts and	proposed by the Morecambe OWF (PINS doc ref: EN010121-000242-5.1.12 Chapter 12 Offshore Ornithology.pdf (planninginspectorate.gov.uk). Natural England have not yet conducted a complete technical review, but currently consider this approach to be a useful initial screening method. We note that further investigation of data gaps as originally advised may still be required in some cases.	

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			compromises future assessments for any further development in the region. Natural England continue to advise this approach is unacceptable, and hence consider it inappropriate to comment on the potential significance of cumulative or in-combination impacts presented.		
Assessment Conclusions	B37	[APP-023]	While Natural England consider that project alone impacts are likely to be relatively small, a number of methodological issues must be resolved before we can take an informed view on the conclusions of the assessment.	Natural England advise updating the assessments and their conclusions as required.	
HRA - Document Used: • [APP-023] F2.5 Volume 2, Chapter 5: Offshore ornithology • [APP-096] E1.1 HRA stage 2 Information to Support an Appropriate Assessment (ISAA) Part 1: Introduction • [APP-098] E1.3 HRA Stage 2 information to support an appropriate assessment Part Three: Special Protection Areas (SPA) and Ramsar Site assessments • [APP-099] E1.4 HRA Stage 1 Screening Report • [APP-100] E1.5 HRA integrity matrices					
Screening	B38	[APP-099], General	Natural England note that due to the location of Morgan OWF, protected sites from the other UK devolved administrations are screened into the assessment. We highlight that Natural England are the relevant SNCB to consult on impacts to English sites, but we cannot advise on integrity judgements	We advise that the Applicant consult the relevant SNCBs regarding impacts to non-English sites. This may be particularly important with respect to Scottish sites, for which Nature Scot are the relevant SNCB.	

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			on sites located in Wales, Scotland or Northern Ireland.		
	B39	[APP-098], 1.3.2.2 1.4.5.4 [APP-099], Table1.9	Natural England highlight, *"As detailed in the HRA Phase 1 Screening Report (Document Reference E1.4), a total of 35 SPAs designated for ornithological features were advanced to the HRA Stage 2 ISAA Report with these located in Scotland, Wales, England, Northern Ireland and the Republic of Ireland."* *"Due to the location and scale of the Morgan Generation Assets, European sites with the potential to be impacted fall variously under the remit of Natural England, NRW, NatureScot, Department for Agriculture, Environment and Rural Affairs (DAERA), National Parks and Wildlife Service (NPWS) and the JNCC."*	Natural England advise that the Applicant should consult the relevant SNCBs on impacts to non-English sites. Natural England can only comment on the following sites screened into the HRA; • Morecambe Bay and Duddon Estuary SPA (and Ramsar site) • Ribble and Alt Estuaries SPA (and Ramsar site) • Bowland Fells SPA • Flamborough and Filey Coast SPA • Isles of Scilly SPA (and Ramsar)	
	B40	[APP-099], 1.3.5.13	The Applicant states, *"Where a species has not been recorded during the breeding season or has been recorded in only small numbers that would not be commensurate with a measurable impact, it is discounted for further consideration in the breeding season only."*	The Applicant should clarify what constitutes a small number.	

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		[APP-099], 1.3.5.19	The Applicant states, *"The first stage considers the results of the baseline aerial surveys to identify if each species was present in non-negligible numbers during the non-breeding seasons of relevance (Table 1.12)."*	The Applicant should define "non-negligible" and clarify the method used to identify it. Natural England advise that an arbitrary approach (e.g. <10 birds) is not necessarily appropriate as very low numbers of seabirds from small populations could be significant.	
	B41	[APP-099] 1.26	Natural England are concerned that the HRA Stage 1 Screening Report does not consider the potential for disturbance and displacement impacts from vessel movements in the construction or operation and maintenance phase on the red-throated diver and common scoter features of Liverpool Bay SPA. Until it can be confirmed that vessel movements will not pass through the SPA in the wintering period, LSE cannot be ruled out for these features.	Natural England advise that red-throated diver and common scoter at Liverpool Bay SPA should be assessed in the HRA Stage 2 ISAA Part 3 report. Vessel traffic should be considered from port to site as well as within the array, and any overlap with protected sites and the distribution of these features within the site properly considered. We note the commitment to secure and adhere to best practice vessel operations to minimise disturbance and suggest that the assessment fully considers the value and potential effectiveness of such measures. As regards suitable measures, Natural England has developed a Best Practice Protocol setting out some examples. Transiting along existing shipping lanes or other high traffic areas is likely to be particularly relevant in Liverpool Bay.	

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Assessment	B42	[APP-098] 1.4.6.11	*"The Morgan Generation Assets has followed the approach undertaken by all previous projects in UK waters and has not calculated in-combination collision risk estimates for projects for which project-specific values are not available."*	Natural England note that there is precedence for calculating collision risk estimates for projects for which project-specific values are not available. E.g., novel CRM of other projects was undertaken during the examination of Walney Extension for LBBG. This example was sent to the Applicant by Natural England on 16/04/24.	
	B43	[APP-098], 1.4.6.12	Natural England note that *"Where information is available for a project, collision risk estimates have been updated using the avoidance rate recommended by the EWG for the relevant species to provide a precautionary approach that ensures sites are not omitted from the assessment prematurely."*	Natural England are supportive of updating historical data in contemporary assessments, but request that the methodology employed is detailed by the Applicant in an updated submission.	
	B44	[APP-098], 1.4.7.2	The Applicant has taken a somewhat novel approach to HRA screening and assessment, and states *"As part of the EWG process, stakeholders agreed with the following two-step approach to the HRA Stage 2 ISAA for offshore ornithological features outlined below (see Technical Engagement Plan (Document Reference E4))."* We consider the approach to be appropriate for this project as predicted	Natural England highlight that we did agree to the approach detailed by the Applicant for this project due to the project's potential connectivity with a large number of designated sites and with an expectation that the likelihood of substantial impacts is low. However, we advise the ExA that this approach might not be appropriate in other circumstances.	

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			project alone impacts are small. However, we highlight that it may not be appropriate for other projects. E.g. if designated sites with AEOI in-combination impacts or sites considered to be in unfavourable condition/have restore conservation objectives are screened into the assessment. We also note for the avoidance of doubt, that impacts from the Morgan project should not be excluded from in-combination totals for future project assessments using this rationale.		
	B45	[APP-098] Figure 1.1	Natural England believe that there are errors in the diagram, e.g. Are effectively 0 birds impacted? Yes should rule out LSE, not no.	The figure should be amended to reflect the approach taken.	
	B46	[APP-098] 1.5.3.1	Natural England note that *"The apportioning values do not include consideration of sabbatical birds."*	Natural England welcome the Applicant's stated approach to apportioning with respect to sabbatical birds. We advise that this is made clear where appropriate throughout the submitted documents. See also our comment NE Ref: B28.	
	B47	[APP-098] 1.5.3 Table 1.7	In the Applicants 'Assessment of potential Adverse Effect on Integrity - Integrity test: Step 1' they propose preferred "evidence-based" displacement and mortality rates. Furthermore, the apportioned impacts from displacement	Natural England advise that the project fully considers the SNCB advised ranges of displacement and mortality rates in all assessments.	

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			and resulting increases to baseline mortality presented and assessed in the Step 1 assessment of the HRA Stage 2 ISSA Part 3 (SPAs and Ramsars) are based solely on the Applicant's preferred displacement (50%) and mortality (1%) rates. **Natural England do not consider this approach to be appropriate.** We continue to advocate for a range-based approach to displacement assessments to capture the very high levels of uncertainty in potential rates of both displacement and mortality. We would highlight that this approach is evidence-based and consider that it better reflects the relatively data poor nature of offshore impact assessment.		
	B48	[APP-098], 1.5.3.9 - 1.5.3.12	The Applicant presents an evidence review to justify the consideration of a 50% displacement rate to calculate impacts for assessment against baseline mortality in the Step 1 integrity test. Natural England are not persuaded that the evidence presented is sufficient to justify the Applicants position and highlight that a comprehensive evidence	Natural England advise that a range of displacement rates should be considered (30-70%) throughout the assessments.	

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Relevant and Written Representations)	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			review has not been undertaken. Further, we suggest that the interpretation of some evidence is questionable. E.g., the Applicant concludes that evidence gathered at Beatrice OWF suggests "*these species are not displaced by offshore wind farms".* Natural England strongly disagree with this interpretation of the evidence, see our previous comment, NE Ref: B33. The Applicant goes on to state, *"evidence suggests that although auk species are somewhat sensitive to displacement, the effects are short-term, and studies indicate auk habituation to offshore windfarms."* Natural England consider it to be quite clear that there is insufficient evidence to draw **any** broadly applicable conclusions relating to habituation of auks to OWFs over time and would urge restraint in making unsubstantiated claims relating to birds potentially being habituated to OWFs in the region. Finally, we note that some recent studies that do not present such an optimistic view of auk displacement impacts have		

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			not been considered. E.g., Peschko *et al* (2024) found displacement impacts could be occurring over much greater distances (~20km) than are considered by best practice impact assessments in English waters (2km).		
	B49	[APP-098], 1.5.3.25	Natural England are concerned that the range of predicted collision impacts presented in the Step 1 assessment tables of the HRA Stage 2 ISSA Part 3 (SPAs and Ramsars) are not based on the results of CRM calculated using the SNCB advised model parameters. We note also that, *"Throughout the document, outputs have been presented alongside other parameter values (e.g. Oszanlav-Harris et al., 2023; Skov et al., 2018) to capture the uncertainty in various parameter values."* We again highlight the inherently confusing nature of the assessments resulting from the concurrent presentation of a number of different assessment scenarios.	The Applicant should clarify which collision estimates have been propagated through the assessment. Natural England reiterate that we will only consider the conclusions of assessments that follow SNCB guidance and therefore seek an updated assessment which clearly presents CRM outputs based on all SNCB advised parameters.	
In- combination	B50	[APP-098], Table 1.23	Kittiwake impact is totalled across displacement and collision.	Natural England request that kittiwake collision and displacement impacts are presented separately. This will facilitate their incorporation into future in-combination assessments, noting that Natural England NRW do not currently	

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				advise displacement is assessed for this species.	
	B51	[APP-098]	Natural England do not consider the in-combination assessment to be sufficiently robust.	Please see the comments and advice detailed in our key concerns, NE Ref: 36.	
Have the impacts been avoided/reduced by the use of appropriate mitigation?	B52	[APP-023] 5.8.1.3	Natural England note that the Applicant makes a commitment to a 34m lower tip height, which we broadly welcome. However, Natural England would highlight that the 22m limit stated is the tip height above mean high water spring tide. Thus, the comparison is inappropriate as the Applicant's tip height of 34m is above the lowest astronomical tide (LAT).	Natural England advise that the blade tip height is stated above HAT to enable appropriate comparison.	
	B53	[APP-098], Table 1.6	With respect to vessel management plans, the Applicant commits to *"The development of and adherence to an Offshore EMP which will include measures to minimise disturbance to rafting birds from transiting vessels."*	Natural England advise that if vessel movements are expected to transit through the Liverpool Bay SPA then they should strictly adhere to pre-existing shipping routes to reduce the risk of additional disturbance to wintering red-throated diver and common scoter. The levels of existing shipping traffic, as well as red-throated diver and common scoter density distribution in those areas may require consideration to ascertain the likely additional impacts of vessel movements associated with the project.	

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Relevant and Written Representations)	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
	B54	[APP-023], General	The Applicant has not proposed any post-consent monitoring in relation to offshore ornithology. We note that throughout the documents the Applicant has highlighted knowledge and evidence gaps. However, in the absence of post-consent monitoring, these gaps cannot be addressed. Data acquired during post-consent monitoring could be used to validate predictions and assumptions made within the application and also help to detect unforeseen effects and address uncertainty. This is particularly valuable for receptors not usually the subject of post-construction monitoring e.g. manx shearwater.	We advise that the Applicant should commit to post-consent monitoring in relation to key offshore ornithology receptors, drawing on SNCB advice regarding potential risks and Natural England's Phase IV post-consent monitoring and environmental considerations in our Best Practice Advice. We advise that Natural England should be consulted on the suitability of any post-consent monitoring proposed.	
Assessment Conclusions	B55	[APP-098]	While we are in general agreement with the Applicant that their project-alone impacts are low, Natural England do not currently consider it appropriate to comment on the assessment conclusions. This is due to a number of methodological issues. We would particularly highlight the issues arising from deviations from SNCB advice in the assessment of displacement and collision, and especially the consideration of historic impacts in the cumulative and in-combination assessments.	Natural England advise that full consideration of our comments is reflected in an updated assessment.	

References

Peschko, V., Schwemmer, H., Mercker, M., Markones, N., Borkenhagen, K. and Garthe, S., 2024. Cumulative effects of offshore wind farms on common guillemots (Uria aalge) in the southern North Sea-climate versus biodiversity?. *Biodiversity and Conservation*, *33*(3), pp.949-970.

Reed, T.E., Harris, M.P. and Wanless, S., 2015. Skipped breeding in common guillemots in a changing climate: restraint or constraint?. *Frontiers in Ecology and Evolution*, *3*, p.1.

Annex 1

Proposed methodology for 'gap-filling' the Irish Sea R4 cumulative & in-combination assessments

At present, Natural England do not consider that AEOI can be ruled out beyond reasonable scientific doubt for several species/SPA combinations at Round 4 Irish Sea projects. This is due in part to a lack of appropriate consideration of impacts arising from pre-existing OWFs. This presents a clear consenting risk and would ideally be resolved prior to examination. Natural England consider that some estimate of impact must be attributed to all projects screened in to cumulative and in-combination assessments to reduce or eliminate this risk which arises in some cases simply from a lack of provision of relevant information.

A basic approach is suggested to generate indicative numbers for currently 'unknown' displacement and collision impact estimates, depending on the level of data available for the relevant projects. It is acknowledged that the approach detailed below is flawed. However, the intention is simply to enable an informed expert judgement to be made on the likelihood of risk with respect to AEOI, and thus the necessity of assessing this risk in more detail.

It is of note that some OWFs screened into the assessments may be nearing end-of-life with limited (or no) overlap with the proposed project. It would be appropriate to consider timelines and determine if any of these sites can be screened out.

Where it is necessary to 'gap-fill' for a particular development, the following methods are proposed.

Displacement

1. Review the submitted environmental statement. It is accepted that displacement mortality estimates may not be presented. However, if there is abundance data, utilise this to populate project-specific displacement matrices for relevant species. We also suggest review of the Round 4 plan-level HRA to determine if any suitable estimates are presented therein.

If no abundance data available…

2. Use a nearby windfarm with a published estimate of mortality arising from displacement as a proxy. Scale this estimate according to the relative area of the two arrays and appropriate buffers.

Collision

1. Review the submitted environmental statement. It is accepted that collision mortality estimates may not be presented. However, if there is abundance data, utilise this to run project-specific CRMs according to current best practice for relevant species. We also suggest review of the Round 4 plan-level HRA to determine if any suitable estimates are presented therein.

If no abundance data available…

2. Use a nearby windfarm with a published estimate of mortality arising from collision as a proxy. Scale this estimate according to the relative number of turbines in the two arrays. The difference in the turbine specifications should be considered to determine if this method is likely to over or underestimate impact.
3.

In the absence of any relevant site-specific data for a given development from which estimates of displacement or collision mortality can be derived, Natural England consider that the relatively clustered nature of OWFs in the Irish Sea lends itself to the alternative approach of using a site within a 'cluster' as the proxy to base the scaling of impacts upon. This could be carried out for multiple sites simultaneously if the same proxy is used.

If >1 nearby sites to a given development requiring “gap-filling” have data, the most appropriate proxy site according to location, data quality & comparability should be selected. Alternatively, consideration of multiple sites could be discussed further.

If, having generated estimates as detailed above, the total impacts lead to cumulative and/or in-combination increases in baseline mortality of >1% it will be necessary to undertake a more rigorous assessment of estimated impacts at projects where gap-filling has been necessary.

We suggest further engagement with relevant SNCBs on this point if required.

If a more rigorous assessment is considered necessary, the best available bird density estimates and known array footprint + buffers and consented turbine parameters should be used to generate refined project specific assessments of displacement and collision mortality. If baseline characterisation data are not available for a given “gap-filling” project, MERP, strategic VAS of OWF areas, or the recent Welsh Atlas data could be considered (links and references available on request).

Annex 2

Highly Pathogenic Avian Influenza (HPAI) outbreak in seabirds and Natural England advice on impact assessment (specifically relating to offshore wind) September 2022

1. We are currently unclear what the short, medium and long-term effects of the 2022 HPAI outbreak will be on seabird colony abundance and vital rates (productivity and survival), though impacts at some English colonies in 2022 were likely substantial (e.g. emerging indications of estimates include adult mortality in ~50% of the UK's only roseate tern colony at Coquet Island SPA, and ~10% of Sandwich terns at the North Norfolk Coast SPA). We do not know the extent of population resilience – for instance, how many non-breeding birds might replace adults dying from HPAI in 2022 in future breeding seasons.

2. We expect HPAI to remain a threat to UK breeding seabirds (and terrestrial species of birds, especially perhaps wintering waterbirds) for the foreseeable future. It will take several years for data to be gathered on abundance, mortality and productivity, so we will need to work with imperfect knowledge in the interim.

3. The species understood to be of greatest relevance for imminent impact assessment of offshore wind farms in England are black-legged kittiwake, Sandwich tern, northern gannet, great black-backed gull, common guillemot and razorbill.

4. We expect seabird data collected prior to summer 2022 (approx. June) to remain a valid representation of 'typical' seabird distribution and density, as this was before mass mortality events began to take place. (At this point, we assume affected colonies will recover in the short or long term, depending on available recruits to colonies, scale of further outbreak, and other factors). Data collected at sea from summer 2022 onwards will need discussion with Natural England, to understand how the species and colonies of concern, and their density at sea at certain times, may have been affected by HPAI. We welcome engagement with developers actively engaged in data collection through the Evidence Plan process.

5. Implications for data collection planned for projects beyond Round 4 will largely be siteand species-specific, and we recommend careful interpretation of results in consultation with Natural England. As the duration and severity of the epidemic is unknown and evidence will continue to accumulate over time, an iterative approach seems likely to be required.

6. Broadly, we expect any changes in abundance at colonies to be reflected proportionately in the at sea data. That is, it is reasonable to assume distribution patterns will remain broadly similar, but densities to change accordingly.

7. This assumption means that the scale of impact is likely to remain in proportion to the size of the colony. For instance, if a population were reduced by 10% then we would expect 10% fewer collisions. However, where a population has been significantly depleted, it should be considered whether an equivalent level of impact would have greater implications for the newly reduced population.

8. This would also reflect the likely need to ensure that the sea areas that support SPA (Special Protection Area) seabird colonies provide suitable conditions to restore populations where HPAI impacts have reduced population sizes, rather than simply maintain them. Natural England will aim to provide conservation advice that reflects any such changes.

9. Given the significant uncertainties about the health and resilience of seabird colonies introduced by HPAI, Natural England is likely to further emphasise the need to continue with a risk-based approach to its advice on additional impacts from development, particularly where populations have been significantly impacted. This is to ensure that the impacts of HPAI are not compounded by those from development. 21 9. This approach is also likely to be taken to compensation discussions. We are likely to recommend that the nature, scope and scale of compensatory measures reflect the uncertainties around population trends, recovery and resilience introduced by HPAI.

10. We need much more data, and urgently need all concerned with seabird conservation and related developments to fund monitoring of key variables at important colonies, so that collectively we can make best decisions about impact and its effects in the face of the threat from HPAI.

11. Natural England will shortly publish its advice to Defra underpinning an English Seabird Conservation and Recovery Plan, which includes direct recommendations for seabird recovery, some relating to disease as well as seabird monitoring.

12. We must work collectively to ensure that seabird populations are made more resilient to the type of catastrophic event caused by HPAI. This includes delivering the actions relating to feeding, breeding and survival as outlined in Natural England's recommendations to Defra in the England Seabird Conservation and Recovery Plan

Annex 3

NE and NRW interim advice regarding demographic rates, EIA scale mortality rates and reference populations for use in offshore wind impact assessments

NE and NRW interim advice regarding demographic rates, EIA scale mortality rates and reference populations for use in offshore wind impact assessments

Overview

Recent discussions between Natural England (NE), Natural Resources Wales (NRW), and several developers regarding EIA scale seasonal reference populations and 1% baseline mortality thresholds for EIA scale assessments have highlighted inconsistencies in approaches and issues with some of the underlying data. In response NE/NRW have formulated the following interim recommendations around these issues to assist projects with assessments and by providing a consistent approach to all projects, reduce the risk of these issues complicating upcoming Examinations. Some of this material has already been provided in response to individual queries.

It would be beneficial for all parties to reflect the advice prior to Applications being submitted, however we recognise that for some developers, submission timescales may mean it is challenging to incorporate this advice. We recommend case-specific discussions with NE/NRW case teams to establish the best way forward.

Issues Identified

We are now aware of several incorrect default immature survival rates within the NE/JNCC PVA tool, which may influence baseline PVA models and stable age class proportions used in the calculation of population level weighted mean mortality rates that inform 1% baseline mortality thresholds. The Marine Industry Group (MIG) birds subgroup have recently commissioned a project to review and update the demographic rates provided by Horswill & Robinson (2015) and we anticipate the outcomes of this work will be available in spring 2024. However, we wanted to make developers and their consultants aware of the incorrect values and provide an interim solution.

NE advice for estimating seasonal reference populations for EIA, particularly during the breeding season, which underpin maximum annual population numbers, has also been questioned by several projects. We would like to take this opportunity to clarify our position and provide a standard set of numbers which we advise should be used for EIA scale assessments.

Demographic rates for use in calculating weighted mean survival/mortality rates for EIA and for PVAs

Several of the default global immature survival rates provided in the JNCC/NE PVA tool are incorrect as they represent compound values, across immature age classes, taken from Horswill & Robinson (2015), rather than age specific values. This issue has been identified for common tern, northern fulmar, razorbill, Atlantic puffin, and Arctic skua. We have corrected the compound rates in Table 1 below, and we recommend that these rates should ideally be used wherever the respective default values would have been for PVA or calculation of weighted mean mortality rates.

The associated standard deviations (SDs) presented alongside these default survival rate estimates will also be incorrect and some do not have a default SD provided in the PVA tool. Here our advice is

to use a proxy based on data for the same species where we have an age-specific survival rate or, noting the PVA tool does not allow a blank or zero SD, to use a very small value (i.e. 0.001)).

Table 1: Suggested corrections to immature survival rates provided as default values in NE/JNCC PVA tool.

Species	Age specific default survival rate	*n* age classes immature compound rate applies to	Correction applied	Recommended age class specific survival rates
Northern fulmar	0.26 (SD 0.15)	8	=0.26^(1/8)	0.845
Common tern	0.441 (SD 0.006)	3	=0.441^(1/3)	0.761
Razorbill	0.630 (SD na)	2	=0.630^(1/2)	0.794
Atlantic puffin	0.709 (SD 0.18)	3	=0.709^(1/3)	0.892
Arctic skua	0.346 (SD na)	4	=0.346^(1/4)	0.767

We note that this issue may explain some of the poor baseline PVA model validation that has been reported for some species such as razorbill and Atlantic puffin and will also have influenced mean weighted survival rates used to generate 1% baseline mortality thresholds for EIA for respective species.

Whilst we note that a project to review and update demographic rates is currently underway, in the interim, we advise that current projects (e.g. Extensions, Round 4 and Celtic Sea FLOW demonstrator projects) use the above rates for relevant species in EIA scale assessments and for relevant PVAs, as the best available evidence.

Mortality rates for use in EIA scale assessments

NE/NRW have used the corrected survival rates provided above, in combination with other demographic rate data from Horswill & Robinson (2015), to derive stable age structures from PVA models. The proportions of birds in each age-class were used to weight associated survival rates which were then summed to generate a weighted mean survival rate for use in the calculation of 1% natural baseline mortality thresholds for use in EIA for key species. Table 2 shows a worked example for black-legged kittiwake using a productivity rate of 0.69 from Horswill & Robinson (2015), and the listed survival rates in Table 2, to inform a deterministic PVA model run using the JNCC/NE PVA tool to derive the proportions of each age class in a stable population.

Table 2. Worked example of the calculation of a weighted mean mortality rate for use in EIA scale assessments for black-legged kittiwake.

Parameter	Age class					Weighted mean survival (sum of weighted survival rates)	Mean mortality (=1 - weighted mean survival rate)
	0-1	1-2	2-3	3-4	Adult		
Survival rate (Horswill & Robinson 2015)	0.790	0.854	0.854	0.854	0.854		
Proportion of population (derived from deterministic PVA tool run)	0.170	0.132	0.111	0.093	0.493		
Weighted survival rate (=Survival rate*prop of pop)	0.134	0.113	0.095	0.079	0.421	**0.842**	**0.158**

Where there is insufficient demographic data to derive a weighted mean (i.e. insufficient age specific survival rate data), the adult survival rate was used as this is precautionary (i.e. resulting in a lower

mortality rate and associated 1% baseline mortality threshold). Table 3 below provides our recommended mortality rates for use in EIA scale assessments.

Table 3. Suggested productivity and mortality rates to use when estimating 1% baseline natural mortality rate thresholds for EIA. For any species not listed, please consult NE or NRW.

Species	Productivity rate used in PVA to inform age-class proportions (Horswill & Robinson 2015)	Recommended mortality rate for use in EIA scale assessments	Note on default mortality rates (all data taken from Horswill & Robinson 2015)
Arctic skua	0.487	0.1482	Weighted mean
Great skua	0.651	0.1900	Weighted mean
Lesser black-backed gull	0.530	0.1237	Weighted mean
Herring gull	0.920	0.1724	Weighted mean
Great black-backed gull	1.139	0.0969	Weighted mean using herring gull 0-1 year class survival rates as precautionary
Black-legged kittiwake	0.690	0.1577	Weighted mean
Little gull	NA	0.2000	Adult rate - precautionary - please consult NE or NRW
Sandwich tern	0.702	0.2446	Weighted mean
Common tern	0.764	0.1728	Weighted mean
Arctic tern	NA	0.1630	Adult rate - precautionary - please consult NE or NRW
Little tern	NA	0.2000	Adult rate - precautionary - please consult NE or NRW
Common guillemot	0.672	0.1405	Weighted mean
Razorbill	0.570	0.1302	Weighted mean
Atlantic puffin	0.617	0.1190	Weighted mean
Red-throated diver	0.571	0.2277	Weighted mean
Northern fulmar	0.419	0.1113	Weighted mean
Manx shearwater	NA	0.1300	Adult rate - precautionary - please consult NE or NRW
Northern gannet	0.700	0.1866	Weighted mean
Common scoter	1.838	0.2283	Weighted mean
Great cormorant	1.985	0.2476	Weighted mean
European shag	1.303	0.2764	Weighted mean

EIA scale reference populations

NE and NRW acknowledge that it remains difficult to define populations for EIA scale assessments where there are likely to be varying degrees of mixing and connectivity over different spatial scales in different seasons. However, we currently recommend use of the largest appropriate spatial scale during the non-breeding season, when birds are generally expected to represent a mix from the included colonies. The colonies within the defined region may also be subject to impacts during the breeding season, contributing to cumulative impact totals. Thus, we consider it is not appropriate to consider project alone impacts on a different/reduced spatial scale which might be related to specific colony connectivity that is generally considered for HRA.

Based on this logic NE and NRW currently recommend the following estimation of EIA reference populations in each season based on Biologically Defined Minimum Population Sizes (BDMPS) derived in Furness (2015). The maximum seasonal population should be used for EIA scale assessment when considering the population level effects of annual project alone and cumulative impacts.

For the breeding season, the reference population should consider the breeding population located within the relevant regional BDMPS defined in Furness (2015) that the project sits within plus non-breeders and immature birds. The population is likely to originate from a much wider range of colonies (not just SPA colonies) and may include young immature birds spending the summer in their wintering area as well as immatures loosely associated with local colonies (Furness 2015). As there is a lack of evidence to support calculations of the number of juveniles, immatures and non-breeding birds that remain in their wintering areas into the breeding season, the breeding population should be derived from the relevant BDMPS tables in Appendix A of Furness (2015) by summing the adult and immature population estimates for all colonies that sit within the relevant regional BDMPS. Please see Tables 4 and 5 below for worked examples for northern gannet for 'UK western waters' and Atlantic puffin for 'UK North Sea and Channel waters'.

Table 4: Worked example of the calculation of the northern gannet 'UK western waters' breeding season reference population (all information taken from Appendix A: Tables 15 or 17 of Furness (2015)).

Population	Most recent count	Breeding adults	Immatures	Total
Sule Skerry & Sule Stack	2004	9,350	7,574	16,924
North Rona & Sula Sgeir	2004	18,450	14,944	33,394
St Kilda	2004	119,244	96,588	215,832
Ailsa Craig	2004	54,260	43,951	98,211
Grassholm	2009	78,584	63,653	142,237
UK western non-SPA colonies	2004	9,000	7,290	16,290
TOTAL		*288,888*	*234,000*	***522,888***

Table 5: Worked example of the calculation of the Atlantic puffin 'UK North Sea and Channel' breeding season reference population calculation (all information taken from Appendix A: Table 68 of Furness (2015)).

Population	Most recent count	Breeding adults	Immatures	Total
Hermaness, Saxavord	2002	47,322	49,215	96,537
Foula	2000	45,000	46,800	91,800
Noss	2007	1,604	1,668	3,272
Fair Isle	2012	21,412	22,268	43,680
Hoy	2000	7,000	7,280	14,280
North Caithness Cliffs	2000	1,952	2,030	3,982
East Caithness Cliffs	1999	548	570	1,118
Forth Islands	2008-10	124,462	129,440	253,902
Farne Islands	2013	79,924	83,121	163,045
Coquet Island	2013	24,688	25,676	50,364
Flamborough & Filey	2008	1,916	1,993	3,909
UK North Sea non-SPA colonies	2000	70,000	72,800	142,800
TOTAL		*425,828*	*442,861*	***868,689***

Furness (2015) provides non-breeding/migration BDMPS population estimates which we advise should be considered when defining the maximum BDMPS population for EIA scale assessments. Table 6 below sets out the seasonal BDMPS population estimates for each species and highlights the

largest BDMPS values that should be used in the calculation of 1% baseline natural mortality thresholds for annual project alone and cumulative assessments.

Table 6: Species seasonal BDMPSs per relevant BDMPS region, with largest seasonal BDMPS for use in annual assessments highlighted yellow. For any species not listed, please consult NE or NRW.

Species	Relevant regional BDMPS	Breeding season BDMPS	Autumn/post-breeding BDMPS*	Winter/non-breeding BDMPS*	Spring/pre-breeding BDMPS*
Arctic skua	UK Western waters	684	5,286	-	5,286
	UK North Sea & Channel	2,343	6,427		1,228
Great skua	UK Western waters	2,013	16,336	1,389	25,091
	UK North Sea & Channel	41,077	19,556	142	8,483
Lesser black-backed gull	UK Western waters	240,750	163,305	41,159	163,305
	UK North Sea & Channel	51,233	209,006	39,313	197,482
Herring gull	UK Western waters	217,167	-	173,299	-
	UK North Sea & Channel	324,887	-	466,510	-
Great black-backed gull[1]	UK south-west & Channel	13,424	-	17,742	-
	UK North Sea	25,917	-	91,398	-
	UK West of Scotland waters	28,119	-	34,380	-
Black-legged kittiwake	UK Western waters & Channel	245,234	911,585	-	691,526
	UK North Sea	839,456	829,938	-	627,814
Sandwich tern	UK Western waters	8,247	10,762	-	10,762
	UK North Sea & Channel	31,629	38,050	-	38,050
Common tern	UK Western waters	11,210	64,660	-	64,660
	UK North Sea & Channel	28,753	144,900	-	144,900
Arctic tern	UK Western waters	49,846	71,399	-	71,399
	UK North Sea & Channel	102,254	163,929	-	163,929
Little tern	UK Western waters	1,269	1,601	-	1,601
	UK North Sea & Channel	4,114	3,523	-	3,523
Common guillemot	UK Western waters	1,145,528	-	1,139,218	-
	UK North Sea & Channel	2,045,078	-	1,617,305	-
Razorbill	UK Western waters	198,969	606,915	341,423	606,915
	UK North Sea & Channel	158,031	591,875	218,621	591,875
Atlantic puffin	UK Western waters	1,482,791	-	304,557	-
	UK North Sea & Channel	868,689	-	231,958	-
Red-throated diver[2]	UK Western waters & Channel	-	4,761	-	4,761
	UK North Sea	-	13,276	-	13,276
	SW England & Channel	-	-	1,152	-
	NW England & Wales	-	-	1,658	-
	West of Scotland	-	-	861	-
	SW North Sea	-	-	10,178	-
	NW North Sea	-	-	1,524	-
Northern fulmar	UK Western waters & Channel	629,594	828,194	556,366	828,194
	UK North Sea	836,186	957,499	568,733	957,499
Manx shearwater[3]	UK Western waters & Channel	1,821,518	1,580,895	-	1,580,895
	UK North Sea	26	8,507	-	8,507
Gannet	UK Western waters	522,888	545,952	-	661,886

Species	Relevant regional BDMPS	Breeding season BDMPS	Autumn/post-breeding BDMPS*	Winter/non-breeding BDMPS*	Spring/pre-breeding BDMPS*
	UK North Sea & Channel	400,326	456,299	-	248,385
Great cormorant	UK West of Scotland waters	11,640	-	7,049	-
	UK Wales & south-west England waters	9,539	-	9,604	-
	UK south-west North Sea & Channel waters	10,863	-	9,520	-
	UK north-west North Sea	6,567	-	6,013	-
European shag	UK West of Scotland waters	37,311	-	37,363	-
	UK Wales & south-west England waters	12,918	-	13,075	-
	UK south-west North Sea & Channel waters	5,738	-	4,347	-
	UK north-west North Sea	40,110	-	41,501	-

* Non-breeding season BDMPSs from Furness (2015)

[1] Note that Furness did not split UK Western Waters non-SPA colonies into individual BDMPSs. Thus, we have taken the approach here to use the Seabird 2000 data to roughly allocate adult breeding bird counts to each BDMPS and derive the proportions found in each BDMPS. These proportions have been used to divide the UK Western Waters non-SPA total breeding and immature numbers accordingly between the two smaller BDMPS regions.

[2] Note Furness (2015) lists additional smaller BDMPSs for red-throated diver in the winter/non-breeding to those for the migration seasons. However, when considering annual impacts, the migration BDMPSs are the largest, even if the winter/non-breeding BDMPSs falling within the larger migration ones are summed.

[3] Note Furness (2015) does not provide a split of non-SPA colonies by BDMPS. However, using the results of Seabird 2000, we have allocated 14 adults and 12 immatures (26 birds), from a small colony on Shetland, to the UK North Sea BDMPS.

Whilst we note that the data included in Furness (2015) is outdated, we currently advise that we do not consider it appropriate to mix contemporary colony specific population estimates with historic population estimates within the BDMPS report as changes at one colony may be offset or compounded by those at others. The SNCBs are currently exploring potential funding opportunities to update the BDMPS report to address this issue. We also acknowledge that the above approach and values provided in Table 5 have limitations (including a lack of evidence to support calculations of the number of juveniles, immatures and non-breeding birds that remain in their wintering areas into the breeding season), nevertheless we currently consider it represents best-practice given the available evidence.

References

Furness, R.W. (2015) *Non-breeding season populations of seabirds in UK waters: Population sizes for Biologically Defined Minimum Population Scales (BDMPS)*. Natural England Commissioned Reports, Number 164.

Horswill, C. & Robinson, R.A. (2015) *Review of Seabird Demographic Rates and Density Dependence*. JNCC Report No. 552. JNCC, Peterborough.

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

Morgan Offshore Wind Project: Generation Assets

Appendix C to the Relevant Representations of Natural England

Marine Mammals

For:

The construction and operation of the Morgan Offshore Wind Project: Generation Assets located approximately 37km from the Northwest English Coast in the Irish Sea.

Planning Inspectorate Reference: EN010136

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10 July 2024

Appendix C – Marine Mammals

In formulating these comments, the following documents have been considered:

- [APP-022] F2.4 Volume 2, Chapter 4 Marine mammals
- [APP-028] F3.3.1 Volume 3, Annex 3.1 Underwater sound technical report
- [APP-052] F4.4.1 Volume 4, Annex 4.1 Marine mammals technical report
- [APP-066] J11 Offshore in-principle monitoring plan
- [APP-068] J13 Outline underwater sound management plan
- [APP-072] J17 Outline marine mammal mitigation protocol
- [APP-076] J6 Mitigation and monitoring schedule
- [APP-096] E1.1 HRA Stage 2 Information to support an appropriate assessment Part 1 – Introduction
- [APP-097] E1.2 HRA Stage 2 Information to support an appropriate assessment Part: Special Areas of Conservation Assessments

1. Natural England's Advice and Recommendations

A summary of Natural England's key concerns in relation to Marine Mammals is set out in Table 1. Our detailed advice and recommendations are presented in further detail in Table 2.

2. Noise Abatement Systems

Natural England note that the Outline Marine Mammal Mitigation Protocol (MMMP) provides a summary of potential mitigation measure (primary and tertiary) to reduce the potential of injury and is not intended to identify specific mitigation measures that will be implemented during pile-driving, UXO and geophysical operations. We also note that the Outline Underwater Sound Management Strategy (UWSMS) aims to address both injury and disturbance and consider secondary mitigation measures to ensure any residual effects from the project are reduced to a non-significant level.

However, Natural England strongly advises that the Applicant fully commits to using noise abatement as mitigation, for driven or part-driven piles or for UXOs of any size needed to be detonated with high order techniques. NAS are proven to reduce the level of noise generated at source and its propagation through the marine environment. As the noise levels are reduced at or close to the source, the range, and area over which noise-related impacts occur will be reduced significantly.

We are aware that Defra will be publishing a marine noise policy paper soon (announced at MMO workshop, 13th March 2024) which will include the expectation that all offshore wind pile driving activity in English waters will be required to demonstrate that they have utilised best endeavours to deliver noise reductions through the use of primary and/or secondary noise mitigation methods in the first instance from January 2025. We expect that the majority of piling from 2025 onwards will not be able to go ahead without noise abatement in place, for the following reasons: The large-scale piling campaigns for offshore wind projects risk causing injury and disturbance offences to marine mammals of European Protected Species (EPS), therefore developers typically apply for a wildlife licence to exempt them from an offence under the regulations. A licence can only be granted where the regulator is satisfied that the required legislative tests are met, such as that there is no other satisfactory alternative. We expect it to be increasingly difficult for projects to demonstrate that noise abatement is not a satisfactory alternative. Projects that do not use noise abatement therefore risk not meeting the legislative test needed in order to be granted a wildlife licence.

Glossary of Acronyms and Abbreviations

AEOI	Adverse Effect On Integrity
ADD	Acoustic Deterrent Device
CEA	Cumulative Effect Assessment
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
DCO	Development Consent Order
dML	Deemed Marine Licence
EIA	Environmental Impact Assessment
EPS	European Protected Species
ES	Environmental Statement
ExA	Examining Authority
HRA	Habitats Regulation Assessment
iPCoD	Interim Population Consequences of Disturbance Model
IPMP	In-Principle Monitoring Plan
JNCC	Joint Nature Conservation Committee
LSE	Likely Significant Effect
MDS	Maximum Design Scenario
MMOs	Marine Mammal Observers
NAS	Noise Abatement System
NE	Natural England
NEQ	Net Explosive Quantity
OOOMP	Outline Offshore Operation and Maintenance Plan
O&M	Operation and Maintenance
OEMP	Offshore Environmental Management Plan
OWF	Offshore Wind Farm
OSS	Offshore Substation
PAM	Passive Acoustic Monitoring
PEIR	Preliminary Environmental Information Report
PTS	Permanent Threshold Shift
RAG	Red, Amber, Green
RIAA	Report to Inform Appropriate Assessment
SBP	Sub-Bottom Profiler
SNCB	Statutory Nature Conservation Body
SPA	Special Protected Area
SAC	Special Area of Conservation
UWSMS	Underwater Sound Management Strategy
UXO	Unexploded Ordinance
WCS	Worst Case Scenario
ZoI	Zone of Influence

Table 1 Summary of Key Issues – Marine Mammals

NE Ref	Summary of Key Concerns	Natural England's Recommendations to Resolve Issues.	Risk
C1	Natural England have concerns on the assessment methodology. We see the issues as follows: • Dual effect categories in the assessment matrix where in certain cases non-significant and significant effects can result from the same combination of magnitude and sensitivity. It is generally accepted that the assessment should follow the precautionary principle thus further justification is needed when lower effect categories are chosen. Or, ideally, dual categories in the matrix should be avoid. • Terminology used to base the conclusions of the assessment is not defined thus there is uncertainty as to what spatial or temporal scale terms such 'short term', 'medium term', long term', "temporary", "small scale", "regional', 'highly localised' mean.	Natural England advise the assessment methodology be revised	
C2	Natural England has concerns regarding the conclusion of *negligible* magnitude for injury and disturbance to marine mammals, especially harbour porpoises, from elevated underwater sound due to piling activities.	Revise the assigned magnitude scores in relation to injury and disturbance form piling activity.	
C3	Natural England notes that there is over-reliance in the assessment on Acoustic Deterrent Devices (ADDs) as a key mitigation tool to prevent the injury while the impact of the additional noise produced by ADDs has not been taken into the consideration. The large scale ADDs use may cause unintended cumulative consequences. This is particularly relevant to harbour porpoises which have high energetic demands. We advise that the onus should be on reducing the noise at the source as a priority (please see our advice below on Noise Abatement Systems (NAS)). Furthermore, we advise that careful consideration needs to be given when choosing the right type of ADD to be used in order to balance prevention of injury with production of unnecessary noise with potential negative effects.	If relying on ADDs as a main mitigation tool to reduce the risk of injury, the impact of additional noise produced by ADDs, and any unintended consequences, should be acknowledged and considered in the assessment which is especially important for harbour porpoises and cumulative assessment.	
C4	Natural England does not support use of scare charges for UXO clearance thus we advise that this measure is not considered in the final Marine Mammal Mitigation Protocol (MMMP).	Remove the use of scare charges for UXO clearance from the final MMMP.	

NE Ref	Summary of Key Concerns	Natural England's Recommendations to Resolve Issues.	Risk
C5	Standard industry measures (such as Marine Mammal Observers (MMOs), Passive Acoustic Monitoring (PAM) and Acoustic Deterrent Devices (ADDs)) are intended to minimise the risk of injury, thus they cannot be used as a justification to conclude that there will be no significant disturbance of the species.	Mitigation measures aimed to reduce disturbance should be considered instead of relying on measures for reducing the risk of injury. This needs to be revised throughout the assessment.	
C6	The inter-related effects have potential to create a more significant effect on a receptor than if just assessed in isolation. Thus, this assessment needs to be given the appropriate credence and the outcomes of the inter-related effects assessment should be presented in the marine mammal chapter. We note the 'light touch' approach of the assessment (Volume 2, Chapter 15: Inter-related effects, Table 15.9) especially when it comes to assessment of disturbance. We disagree with the outcome of the assessment for receptor-led effects.	Include the outcomes of the inter-related effects assessment in this report. In particular, the receptor-led effects from disturbance should be assessed adequately.	
C7	Natural England strongly advises the Applicant to commit to using noise abatement (NAS) as mitigation during construction. Noise abatement systems are proven to reduce the level of noise generated by piling and its propagation through the marine environment. As the noise levels are reduced at or close to the source, the range and area over which noise-related impacts occur will be reduced significantly. We are aware that Defra will be publishing a marine noise policy paper soon (announced at MMO workshop, 13th March 2024) which will include the expectation that all offshore wind pile driving activity in English waters will be required to demonstrate that they have utilised best endeavours to deliver noise reductions through the use of primary and/or secondary noise mitigation methods in the first instance from January 2025. We expect that the majority of piling from 2025 onwards will not be able to go ahead without noise abatement in place.	We strongly advise that the Applicant fully commits to using NAS as mitigation to reduce both injury and disturbance to marine mammals receptors during the construction activities (i.e. piling and high order UXO clearance).	
C8	Natural England notes that the Applicant did not propose monitoring for marine mammals within the Mitigation and Monitoring Schedule document and the Offshore In-principle Monitoring Plan.	The Applicant should compile an in-principle monitoring plan for marine mammals. Detailed requirements for In-Principal monitoring (IPMP), can be found in: Offshore Wind Marine Environmental Assessments: Best Practice	

NE Ref	Summary of Key Concerns	Natural England's Recommendations to Resolve Issues.	Risk
	We do not agree that because no significant impacts are predicted, no monitoring is required. Marine mammal monitoring should be undertaken in addition to the standard monitoring of underwater noise generated from the piling of the first four piles. Further detailed discussion is required on the monitoring plans.	Advice for Evidence and Data Standards Phase IV: Expectations for monitoring and environmental requirements at the post-consent phase. This document outlines Natural England's recommendations for an effective IPMP and should be considered when planning monitoring post-consent.	

Table 2 Natural England's Detailed Advice and Recommendations – Marine Mammals

Natural England's Key Considerations	**Natural England's Advice**				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
Baseline Characterisation - Document(s) Used: [APP-052] F4.4.1 Volume 4, Annex 4.1 Marine mammals technical report					
Survey Data Acquisition	C9	1.5.19.3	Natural England does not agree with the approach of using 100km and 50km buffer regions for grey seal and harbour seal respectively in order to determine connectivity with the Morgan Generation Assets based upon average foraging ranges for the two species. These distances do not have any ecological meaning as there are no haul out sites within the project area. Natural England previously advised that the maximum foraging distances from Carter *et al.*, 2022 are used to determine the connectivity from an identified haul out site and the project area.	Natural England previously raised this issue during the PEIR stage and it has not been addressed. We do not now anticipate any material changes would be made to the baseline.	
Environmental Impact Assessment - Document Used: [APP-022] F2.4 Volume 2, Chapter 4 Marine mammals; [APP-072] J17 Outline marine mammal mitigation protocol; [APP-068] J13 Outline underwater sound management plan; [APP-076] J6 Mitigation and monitoring schedule; [APP-066] J11 Offshore in-principle monitoring plan					
Identified impacts	C10	Vol 2.4	We note that Unexploded Ordinance (UXO) clearance is included as a licenced activity in the DCO/marine licence (which includes high order clearance). However, we advise that a separate licence is sought for UXO clearance due to the lack of information available and the over precaution that must be incorporated into the impact assessment at this stage. For example, the most likely maximum size of UXO to be encountered is expected to be 130kg Net Explosive Quantity (NEQ), however, it also states the size of device could range between 25kg and 907kg as an absolute maximum. Without further information on what size of devices will proceed to clearance stage, the assessment (and associated mitigation protocols) must consider the worst-case scenario presented	Note	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			within the Environmental Statement (ES) (907kg) and describe mitigation measures that will reduce those predicted impacts. We agree that the UXO clearance should be included in the assessment at this stage as it represents a holistic approach including all noisy activities.		
Methodology	C11	Table 4.5	Natural England has concerns regarding the assessment matrix and double outcome categories of significance. Such an approach needs further justification with explanation of how the conclusions of the assessment are reached, especially in scenarios where non-significant and significant effects can result from the same combination of magnitude and sensitivity (e.g. high sensitivity and low magnitude result in minor and moderate effects). It is generally accepted that the assessment should follow the precautionary principle in which case moderate effects should be concluded unless a robust evidence and strong justification is provided to argue contrary.	Revise the assessment matrix and/or include a strong justification to support the conclusions of non-significant effects.	
	C12	Table 4.29	Natural England has concerns regarding the conclusion of *negligible* magnitude for injury and disturbance to marine mammals, especially harbour porpoises, from elevated underwater sound due to piling activities. We note that this conclusion has been reached taking into account primary and tertiary mitigation measures (including 30 minutes ADD activation) as outlined in the Marine Mammal Mitigation Protocol (MMMP). However, piling noise itself has additional physiological impacts on cetaceans which have not been considered here. As outlined in the study by Yang *et al* (2021) (https://www.frontiersin.org/articles/10.3389/fmars.2021.60673	The assigned magnitude scores in relation to injury and disturbance form piling activity should be revised with clearer definitions and further justification provided.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			6/full) which sheds light on the potential impact of pile driving-like sounds on the endocrine and immune systems in cetaceans: " *If the stressor lasts only for a brief time, the cortisol upsurge contributes to keep normal physiologic function when the animal is controlling the effects of the stressor (e.g., fleeing unpleasant sounds causing foraging area abandonment). However, if cortisol levels persist elevated for extended period of time (exposure to high or cumulative noise levels for days to months), the high hormone levels can have negative effects on immune response, growth, and reproduction (Fair and Becker, 2000), causing the animal to potentially become more vulnerable when other stressors are present, such as microorganism infection, prey scarcity and competition.* With this in mind, we cannot agree with the conclusion that there no residual risk of injury and as such the magnitude of *negligible* is not precautionary enough to take into account the entirety of possible impacts that can lead to injury. Thus, Natural England advise that assigned magnitude scores for piling are revised accordingly. We note that the assigned magnitude in the previous iteration of the assessment presented at PEIR was *low* thus we ask for further justification why this score has been downgraded. At PEIR, Natural England stated that "we do not agree that assigned magnitude *low* is appropriate for Permanent Threshold Shift (PTS) as it is irreversible injury. As per magnitude definition (Table 9.11 …"*the impact would lead to permanent effects on individuals*"…), the more appropriate score would *medium".*		

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
	C13	Vol 2.4	Natural England notes that there is over-reliance in the assessment on ADDs as a key mitigation tool to prevent the injury while the impact of the additional noise produced by ADDs has not been taken into the consideration. New evidence suggested that ADDs may evoke both startle, flight and cardiac responses which may impact blood-gas management, breath-hold capability, energy balance, stress level and increase risk of by-catch (Elmegaard *et al*, 2023). Thus, large scale ADDs use may cause unintended cumulative consequences. This is particularly relevant to harbour porpoises which have high energetic demands. We advise that the onus should be on reducing the noise at the source as a priority (please see our advice below on NAS). Furtehrmore, we advise that careful consideration needs to be given when choosing the right type of ADD to be used in order to balance prevention of injury with production of unnecessary noise with potential negative effects.	If relaying on ADDs as a main mitigation tool to reduce the risk of injury, the impact of additional noise produced by ADDs and any unintended consequences should be acknowledged and considered in the assessment, which is especially important for harbour porpoises and cumulative assessment.	
	C14	4.9.2.168	Natural England notes the statement that the main objective of the Outline underwater sound management strategy (UWSMS) is to reduce the magnitude of impact of piling such that any residual significant effects from the project alone are reduced to a non-significant level. However, the Applicant has assessed the magnitude of the impacts as mostly *negligible* for PTS and *low* for disturbance resulting in non-significant effects. Thus, there are currently no residual effects.	Revise the objective of the UWSMS so it is relevant to the assessment.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			We advise that the Applicant revises the objective of the UWSMS.		
	C15	4.9.4.5; 4.9.4.23; 4.9.4.35	Baseline suggests a total of 3,166 and 640 vessels passing through the Morgan Array Area and Morgan marine mammal area per year respectively, mainly concentrated within main shipping routes (located predominantly around the outer borders of the project area (Figure 4.24). It was estimated that there will be an additional 1,929 installation vessel movements during the construction phase within the Morgan Array Area thus there will be a significant increase in traffic in the area outside of the shipping lanes. We also note that the estimated number of animals disturbed by vessels is based on the static impact radii (Table 4.44) thus the conclusions of the assessment are not based on the realistic scenarios. As such, we advise that this assessment is revised, particularly the magnitude, taking into account the increase in the number of vessels in the project area compared to baseline as well as sensitivity of harbour porpoise to vessel noise. This is of particular importance for cumulative assessment with other projects. Furthermore, we do not agree with the statement: "*Given the existing levels of vessel activity in the Morgan shipping and navigation study area it is expected that marine mammals could tolerate the effects of disturbance…"* considering that the tolerance threshold levels of harbour porpoises to vessel disturbance are not known, claims such as this cannot be made.	Revise the assessment for disturbance from elevated underwater sound due to vessel use and other (non-piling) sound producing activities.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			N.B. The same comment applied to HRA Stage 2 Information to support an appropriate assessment, paragraph 1.6.4.315.		
	C16	Table 4.48	Natural England notes that the predicted disturbance ranges for Sub-bottom profilers (SBPs) and vibro-coring are 17.3km and 8.8km respectively. However, no mitigation measures have been discussed for these large disturbance ranges. Natural England advises that geophysical and geotechnical surveys are included in the MMMP and UWSMS and appropriate measures considered to mitigate disturbance over such large ranges. Also, they need to be appropriately assessed for cumulative impacts of disturbance (Table 4.55)	Consider appropriate mitigation measures to mitigate the large impact ranges as a result of the SBP and vibro-coring activities.	
	C17	4.9.6.16	Natural England disagrees that a period of several months can be considered as a "*very short duration*". Also, we find it confusing that in the next paragraph, the same period of time is referred to as "*medium term duration*". Thus, the terms used for temporal impacts need to be clearly defined and universally applied across the assessment.	Define the terms to describe both temporal and spatial impacts and apply them consistently across the assessment.	
	C18	4.9.8.16	Inconsistency in the approach when assigning the sensitivity score for effects on marine mammals due to changes in prey availability. Minke whale has been assigned *medium* due to being particularly vulnerable to potential effects on herring. Paragraph 4.9.8.1 states that harbour porpoise and harbour seal may be particularly vulnerable to changes in prey availability while they are assigned sensitivity score *low*.	Due to the vulnerability of harbour porpoise and harbour seal to changes in prey availability, their assigned sensitivity score should be medium.	
	C19	4.9.4.39	If basing the assessment on the statement that "*all marine mammals are deemed to have some tolerance to disturbance",* robust evidence needs to be provided to support it. Given the	Provide evidence to support this statement.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			difference in hearing threshold of different marine mammal species as well as other variables that may impact their response to disturbance, such generalised statement is misleading.		
	C20	4.10.1.3	Natural England recommend application of the tiered approach for cumulative assessment as outlined in the Natural England Best Practice Guidelines Phase III document. We advise that the same Tier system is used for HRA as well.	Refer to Natural England Best Practice Guidelines Phase III	
	C21	Table 4.54 - Significance of effect	The standard industry measures (i.e. MMO, PAMS, ADDs) are primarily aimed at reducing the potential of injury, not disturbance, thus they cannot be used to justify the *'low'* magnitude assigned for behavioural disturbance from UXO clearance. Thus, Natural England disagrees with the conclusion related to behavioural disturbance from elevated underwater sound during UXO clearance.: "*With standard industry measures applied, the magnitude of the cumulative impact for all species is deemed to be low and the sensitivity of the receptor is considered to be low."*	Mitigation measures aimed at reducing the risk of injury cannot be used as a justification for non-significant effects of disturbance. This needs to be revised throughout the assessment.	
	C22	Table 4.56	Given the cumulative number of vessels across all projects as well as large disturbance ranges for some vessels of up to 20km, Natural England does not agree with the assigned magnitude score '*low*' for disturbance from elevated underwater sound due to vessel use and other (non-piling) sound producing activities.	Revise the assessment accordingly.	
	C23	4.13	The inter-related effects have the potential to create a more significant effect on a receptor than if just assessed in isolation. Thus, this assessment needs to be given the appropriate credence and the outcomes of the inter-related effects	Include the outcomes of the inter-related effects assessment in this report. In particular, the receptor-led effects from disturbance	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			assessment should be presented in the marine mammal chapter. We note the 'light touch' approach of the assessment (Volume 2, Chapter 15: Inter-related effects, Table 15.9) especially when it comes to assessment of disturbance. We disagree with the outcome of the assessment for receptor-led effects.	should be assessed adequately.	
Have the impacts been avoided/reduced by the use of appropriate mitigation?	C24	1.1.2.3	Outline Marine Mammal Mitigation Protocol: The PAM guidance was updated in December 2023 (JNCC 2023). This updated version should be used to inform the final MMMP.	Updated PAM guidance should be used to inform the final MMMP: JNCC guidance for the use of Passive Acoustic Monitoring in UK waters for minimising the risk of injury to marine mammals from offshore activities | JNCC Resource Hub	
	C25	1.6.6.1	Outline Marine Mammal Mitigation Protocol: Natural England does not support implementation of UXO soft start using a sequence of small explosive charges as a suitable mitigation measure thus we advise that this measure is not considered in the Final MMMP. The applicant should actively work towards reducing the sound at source not adding additional noise as a form of mitigation. Thus, we advise that the mention of the UXO soft start is removed from the final MMMP.	Revise the MMMP to remove the use of scare charges.	
	C26	1.6.1.2	Natural England notes that a conservative mitigation zone of 1,700 m has been identified for piling. This range will be difficult to monitor with the standard MMO and PAM methods,	Natural England is happy to engage with the Applicant to discuss the appropriate	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			thus thoughtful consideration needs to be given to the technologies that can effectively monitor this range.	monitoring strategies/technologies for this size of mitigation zone.	
	C27	1.7.2.3	We disagree with the statement: "*The PTS onset ranges will be further reduced by application of ADDs…".* The purpose of the ADD is to encourage animals to leave the area of the impact before the commencement of the activity, in this case piling, not to reduce the impact of the sound itself. In order to reduce the noise at the source, NAS needs to be employed.	Natural England strongly advises the implementation of NAS be considered to reduce the noise at source and reduce the reliance on ADDs.	
	C28	Figure 1.2	Piling mitigation flow chart lacks detail e.g. duration of the ADD activation; breaks of less than 10min need to be monitored by MMO/PAM to make sure no marine mammals are in the mitigation zone prior to re-commencement of piling; procedures for ADDs during the break.	Provide further detail in the MMMP.	
	C29	Figure 1.3	Natural England notes that a 30 minute duration of ADD activation has been proposed at this stage. We advise that this is revised and agreed post-consent in agreement with SNCBs. Moreover, Natural England do not agree that NAS should be used exclusively for UXO changes larger than 130kg as this is not in line with the current policy plus this technology is routinely used for smaller charges. The applicant should commit to reduce the noise at the source as far as possible.	Update the MMMP with consideration of use of NAS for UXO charges smaller then 130kg.	
	C30	1.9.2.2	There is no requirement to use ADDs during the geophysical surveys. Thus, this mitigation should not be considered for these activities.	Update MMMP accordingly.	
	C31	General	Natural England welcomes the proposed Outline Underwater Sound Management Strategy (UWSMS) aimed at reducing the risk of injury and disturbance to marine mammal receptors to an acceptable level.	Note	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			We note that the strategy is currently presented as high-level and that various secondary mitigation measures for piling and UXO clearance will be considered including NAS in order to support the conclusions of "not significant effects". However, we expect that the Applicant commits fully to using NAS. At this stage, we are not content with the tentative approach e.g. "*… these potential* *Measures [NAS] will be considered as an option under the Underwater* *sound management strategy (Document Reference J13) post consent, if required."*(Table 4.5). Natural England is happy to work with the Applicant to further develop the strategy and to finalise it post-consent. We agree with the intention to secure the strategy within the dMLs in the Draft DCO.		
	C32	Table 1.5	Natural England notes that the Mitigation and Monitoring Schedule document only includes primary and tertiary mitigation measures, and there is no mention of monitoring for marine mammals within the Offshore In-principle Monitoring Plan. Natural England advises that the in-principle monitoring plan should include monitoring for marine mammals. Such monitoring should examine the assumptions made within the marine mammal assessment and identify monitoring that seeks to validate one or more of these. Consideration should be given to the areas of the assessment where assumptions have been made and where the project could contribute to filling	Compile in-principle monitoring plan for marine mammals and engage with NE to provide project-specific advice.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			knowledge gaps that would inform the project's assessment, such as areas of high uncertainty or low confidence. We do not agree that because no significant impacts are predicted, no monitoring is required. Marine mammal monitoring should be undertaken in addition to the standard monitoring of underwater noise generated from the piling of the first four piles. Further detailed discussion is required on the monitoring plans. Detailed requirements for In-Principal monitoring (IPMP), can be found in: Offshore Wind Marine Environmental Assessments: Best Practice Advice for Evidence and Data Standards Phase IV: Expectations for monitoring and environmental requirements at the post-consent phase. This document outlines Natural England's recommendations for an effective IPMP and should be considered when planning monitoring post-consent.		
	C33	Vol 3.1	Natural England defers to CEFAS as the underwater noise specialists to comment on the Underwater Noise Technical Report.	To note.	
HRA - Document Used: [APP-096] E1.1 HRA Stage 2 Information to support an appropriate assessment Part 1 – Introduction; [APP-097] E1.2 HRA Stage 2 Information to support an appropriate assessment Part: Special Areas of Conservation Assessments;					
Screening	C34	General	Please note that it is Natural England's remit to provide advice on the assessment in so much as it relates to SACs in English waters. We defer to the relevant SNCBs on the appropriate approach for assessing SACs outside English waters.	Note	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
	C35	General	Terms *short, medium* and *long term* are used throughout the document without much clarity as to what lengths of time they refer to. Given that the duration of the impact is often used as a basis for the assessment conclusions, these terms need to be clearly defined and their context provided in terms of the life span of the species being impacted. Also, terms *local, regional, highly localised* are used while referring to relatively large distances without clear demarcation what constitutes a local or regional scale. For example, 'highly localised' is used to refer to the entire Morgan Array Area which is 280km^2, thus we disagree that this area constitutes 'highly localised'. We also note that within the ES methodology chapter there is a statement: "*Topic-specific definitions for these categories are provided in each of the topic chapters",* however, we have not seen these definitions within the marine mammal chapter.	Include the definitions for spatial and temporal impacts in the marine mammal chapter.	
	C36	1.6.4.59	We note that iPCoD modelling for bottlenose dolphin was carried out for 25 years period. Our advice at PEIR was that the results are presented for shorter periods alongside 25 years and that those periods are also considered in the assessment (e.g. the first 6 years, based on the Favourable Conservation Status (FCS) reporting period). This comment applies to all instances where iPCoD modelling was used.	iPCoD modelling should be presented for shorter period of time and those results should be considered in the assessment.	
	C37	1.6.4.220	Natural England does not agree with the conclusion regarding the pre-construction site investigation surveys: "…*all geotechnical and geophysical surveys will be of a very short duration (over a period of several months), activities are likely to be intermittent and animals are expected to recover quickly after cessation of the survey activities*.".	Review and take into consideration the new findings related to displacement caused by SBP surveys and identify appropriate mitigation.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			Natural England does not consider that a period of several months can be considered a '*very short duration'*. In addition, new data collected in Wales is showing that SBP surveys cause displacement of harbour porpoises at least 4 days after the cessation of the survey activity which is much longer than published responses to seismic surveys or pile driving (N.B. the displacement could had been much longer but the data was not collected past day 4). The data collected during this study have shown that SBP surveys cause marked and prolonged reduction in acoustic porpoise detection (Veneruso *et al*. 2024). Thus, full credence needs to be given to this new data in the assessment especially given very large disturbance ranges (17.3km). We advise that appropriate mitigation is considered for these surveys within the MMMP and UWSMP.	*Veneruso, G. Cordes, L., Gordon, H. and Le Vay, L.. (2024). Harbour porpoise detections decline in response to a scientific seismic survey during site characterization of a tidal energy development: considerations for Environmental Impact Assessments. European Cetacean Society Conference, Sicily, 2024.*	
In- combination	C38	1.4.5	Natural England advise the tiered approach should be used for the in-combination assessment as outlined in the Natural England Best Practice Guidelines Phase III document.	Refer to Natural England Best Practice Guidelines Phase III, Table 11.1	
	C39	Table 1.127	We note that the total number of animals disturbed as a result of elevated underwater sound during piling for each tier is missing in the table. The numbers of animals per project/tier should be summed to get the total number of animals disturbed and what proportion of the relevant MU that constitutes (e.g. Morgan Generation Assets and Transmission Assets have the potential to affect up to 5.5% of the CIS MU for harbour porpoises; Tier 1 projects could disturb up to 15.36% of CIS MU, etc). Thus, there is a potential that more than 20% of the CIS MU population of harbour porpoise may be disturbed at any one	Natural Englnad advises the Applicant commit to the adoption of NAS to ensure no AEoI to harbour porpoise SACs from in-combination disturbance effects.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			time from all projects in-combination. Whilst we acknowledge no spatial overlap between the Project and the Bristol Channel Approaches SAC, our concern is whether this level of in-combination disturbance could impact the ability of harbour porpoise to remain a viable component of the site (Conservation Objective 1). This supports the necessity to commit to NAS as a mitigation method in order to reduce the distance ranges and decrease the proportion of animals disturbed.		
	C40	Table 1.142; general	Natural England does not agree with the statement made in Table 1.142: "*It is assumed that whilst some ecological functions could be inhibited in the short-term due to behavioural disturbance …(e.g. cessation of feeding), these are reversible on recovery of harbour porpoise hearing and therefore not considered likely to lead to any long-term effects on the individual".* On contrary, a study by Yang *et al*, (2021) (https://www.frontiersin.org/articles/10.3389/fmars.2021.606736/full) suggests that the long term effect of stress caused by noise can lead to effect on the individual. Thus, such conclusions are not based on the evidence and cannot be used to justify no significant disturbance.	Natural England advises these conclusions be revisited and reconsidered.	
	C41	1.6.5.49	Considering the behavioural ecology of bottlenose dolphins i.e. a highly social species living in medium to large groups that very rarely occur solitary, the estimated number of dolphins impacted by piling in-combination with other projects, cannot be considered as an over-estimate and highly precautionary.	Consider ecology of the species in the assessment in order to come to robust conclusions of the magnitude of the impacts.	
Have the impacts been	C42	Table 1.56	We note that the mitigation measures to minimise disturbance to marine mammals included within the Offshore EMP are only	Consider appropriate measure for all other (non-piling) sound	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
avoided/reduced by the use of appropriate mitigation?			relevant to the transiting vessels. Thus, these measures are not sufficient to address the overall disturbance from elevated underwater sound due to other (non-piling) sound producing activities.	producing activities, not just transiting vessels.	
	C43	Table 1.1.42; General	Standard industry measures (such as MMOs, PAM and ADDs) are intended to minimise the risk of injury, thus they cannot be used as a justification to conclude that there will be no significant disturbance of the species.	Mitigation measures aimed to reduce disturbance should be considered instead of relying on measures for reducing the risk of injury. This needs to be revised throughout the assessment.	

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES

2010

Morgan Offshore Wind Project: Generation Assets

Appendix D to the Relevant Representations of Natural England

Physical Processes

For:

The construction and operation of the Morgan Generation Offshore Wind Farm located approximately 37km from the Northwest English Coast in the Irish Sea.

Planning Inspectorate Reference: EN010136

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10 July 2024

Appendix D – Physical Processes

In formulating these comments, the following documents have been considered:

- [APP-096] E1.1 Morgan Gen HRA Stage 2 ISAA Part 1 – Introduction
- [APP-097] E1.2 Morgan Gen HRA Stage 2 ISAA part 2 - SAC assessments
- [APP-099] E1.4 Morgan Gen HRA Stage 1 Screening report
- [APP-100] E1.5 Morgan Gen HRA integrity matrices
- [APP-101] E2 Morgan Gen Marine Conservation Zone screening report
- [APP-010] F1.3 Volume 1, Chapter 3: Project description
- [APP-012] F1.5 Volume 1, Chapter 5: Environmental impact assessment methodology
- [APP-013] F2.1 Volume 2, Chapter 1: Physical processes
- [APP-033] F4.1.1 Volume 4, Annex 1.1: Physical processes technical report

1. Natural England's Advice and Recommendations

A summary of Natural England's key concerns in relation to Physical Processes is set out in Table 1. Our detailed advice and recommendations are presented in further detail in Table 2.

Glossary of Acronyms and Abbreviations

AEOI	Adverse Effect On Integrity
CEA	Cumulative Effect Assessment
CBRA	Cable Burial Risk Assessment
DCO	Development Consent Order
DML	Deemed Marine Licence
EIA	Environmental Impact Assessment
ES	Environmental Statement
ExA	Examining Authority
INNS	Invasive Non-Native Species
HRA	Habitats Regulation Assessment
LSE	Likely Significant Effect
MCZ	Marine Conservation Zone
MCZA	Marine Conservation Zone Assessment
MDS	Maximum Design Scenario
MPCP	Marine Pollution Contingency Plan
NE	Natural England
OOOMP	Outline Offshore Operation and Maintenance Plan
O&M	Operation and Maintenance
OPEMP	Outline Project Environmental Management Plan
OWF	Offshore Wind Farm
OSPAR Convention	Convention for the Protection of the Marine Environment of the North-East Atlantic
OSS	Offshore Substation
PEIR	Preliminary Environmental Information Report
PEMP	Project Environmental Management Plan
RAG	Red, Amber, Green
RIAA	Report to Inform Appropriate Assessment
SNCB	Statutory Nature Conservation Body
SPA	Special Protected Area
SAC	Special Area of Conservation
SPM	Suspended Particulate Matter
SSC	Suspended Sediment Concentration
SSS	Side Scan Sonar
UXO	Unexploded Ordinance
WCS	Worst Case Scenario
WTG	Wind Turbine Generator
ZoI	Zone of Influence

Table 1 Summary of Key Issues – Physical processes

NE Ref	Summary of Key Concerns	Natural England's Recommendations to Resolve Issues.	Risk
D1	In most cases Natural England agrees with the position on WCS, except the following: • Maximum Design Scenario (MDS) for sandwave clearance impact width for inter-array and interconnector cables; and • Cable crossings; • MDS figures for cable protection during construction; and • MDS figures for maintenance of cables and offshore infrastructure during operation and maintenance phase.	Natural England advises the Applicant to provide the necessary updated project parameters, evidence and assessment in updated Application documents as discussed in detailed comments	
D2	Natural England agrees that on the basis of the evidence presented that the baseline description of physical processes through the desktop review of existing literature and existing data sources, project specific surveys and numerical modelling baseline scenarios are sufficient to appropriately characterise the study area. Additionally, we agree with the numerical modelling approach and scenarios conducted in relation to hydrodynamics, waves and sediment transport to inform the potential changes in the Morgan Generation physical processes study area arising from the construction, operation and decommissioning.	Natural England advises that unless there are significant changes to project design parameters we will provide no further comment on data during examination.	
D3	Natural England advises that the following potential pressures/impacts have not been considered/assessed or that further information is required: • See those listed in the WCS section above; • Boulder clearance; • UXO clearance;	Natural England advises that an updated ES chapter is submitted which includes and assesses these pressures/impacts across the EIA as discussed in detailed comments.	

NE Ref	Summary of Key Concerns	Natural England's Recommendations to Resolve Issues.	Risk
	• Impacts of seabed scour due to the presence of windfarm infrastructure during the operation and maintenance phase; and • Impacts due to cable and infrastructure repair during the operation and maintenance phase.		
D4	Natural England advises that further consideration of the mitigation hierarchy is required to ensure that environmental impacts are reduced as much as possible, including but not exclusively: • Commitment to remove infrastructure at the time of decommissioning.	Natural England advises that all embedded mitigation measures proposed are secured in the DCO/dML. In addition to the mitigation proposed by the Applicant, we advise that further mitigation in considered by the Applicant as discussed in the detailed comments.	
D5	Natural England advises that as per Offshore Wind Best Practice guidance on 'Tiers' and inclusion of projects within in-combination assessments; that further plans/projects should be included within the assessment.	Natural Egland advises that the CEA is updated to include all projects which are having ongoing impacts to marine process and those where there is sufficient evidence in the public domain to undertake an assessment.	

Table 2 Natural England's Detailed Advice and Recommendations – Physical processes

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
Project Parameters - Documents Used: [APP-010] F1.3 Volume 1, Chapter 3: Project description, [APP-013] F2.1 Volume 2, Chapter 1: Physical processes,					
Project Description	D6	[APP-010]	We advise that further detail is required in the project description to inform the Maximum Design Scenario (MDS) and Environmental Impact Assessment (EIA). Please see detailed comments in relevant headings of this	N/a	
Natural England's Position on Worst Case Scenario or Scenarios	D7	[APP-010] Table 3.4 [APP-013] Table 1.13	**MDS for sandwave clearance impact width for inter-array and interconnector cables** – Natural England acknowledges and welcome that the Applicant has reduced the MDS parameters for sandwave clearance and seabed preparation in the Morgan array area during the pre-application phase from 104m to 80m for intermarry cables, but remains unchanged at 104m for interconnector cables.. Despite the reduction, this seems to be an exceptionally large impact width in comparison to other projects of a similar scale. Natural England queries if the width MDS parameters are realistic?	Natural England advises that further evidence is required to support the realistic MDS parameters as set out in the DCO/dML.	
	D8	[APP-013]	**Cable crossings** – Natural England notes that there is limited information pertaining to cable crossings. In [APP-	To better understand any potential disruption to marine processes, Natural England advises that further information	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
		Table 1.13	013] the MDS parameters are given as up to 10 cable crossings, with a height of 4m, width of 36m and length of up to 80m. There is no information on location of crossings, volume of cable protection to be used in relation to crossings or impacts from sediments plumes (unless this is elsewhere in the ES). Additionally, no cross-section or plan schematics of cable crossing layout, it would be helpful if these could be provided and updated in the final ES.	on cable crossings is provided in line with best practice guidance as set out in Natural England's Best Practice Guidance Phase III. Namely: • Method(s) to be used; • Specific locations (informed by acoustic data); • Total area of impact; • Overlap with MPA(s); • Habitats impacted • Presence of sensitive species and habitats; • Where applicable total volume of external cable protection; • Method(s) (as it generally requires external cable protection the points above also apply); and • Impacts from sediment plumes. Once this is provided we believe that this matter can be readily resolved	
	D9	[APP-013] Table 1.13	Natural England notes that the application states that cable and infrastructure repair will be necessary, but there is limited information on MDS figures for cable repairs and WTG/OSP maintenance e.g. seabed footprint disturbed due to cable repair and infrastructure maintenance, sediment	Natural England advises that further information on MDS figures for cable protection and cable and WTG/OSP maintenance should be provided in the final Application. Namely:	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			displaced during cable repair and reburial etc. We advise that cable and infrastructure repair have the potential to impact physical processes e.g. through increases in Suspended Sediment Concentrations (SSCs). Without the full MDS figures, it is difficult to understand the magnitude of this impact. (Please also see comment D17).	• Footprint of seabed disturbed due to cable and WTG/OSP maintenance; and • Sediment displaced during cable repair and reburial. Ideally this information would also be included within an Outline Operation and Maintenance Plan and submitted into examination	
Baseline Characterisation - Document(s) Used: [APP-013] F2.1 Volume 2, Chapter 1: Physical Processes, [APP-033] F4.1.1 Volume 4, Annex 1.1: Physical processes technical report					
Survey Data Acquisition	D10		Natural England agrees that the baseline description of physical processes through the desktop review of existing literature and existing data sources, project specific surveys and numerical modelling baseline scenarios are sufficient to appropriately characterise the study area. Therefore, we advise that unless there are significant changes to project design parameters we will provide no further comment on data during examination.	N/A	
Data Gaps	D11	[APP-013]	Natural England notes that there are site-specific surveys referenced throughout the chapter which have not been provided with the ES reports.	Natural England advises that all refence documents should be presented into examination.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
		Vol 4, Appendix 1.1	• Guardline (2022); • XOcean (2022); and • Furgo (2022). We advise that these should be provided to ensure there are no issues with the EIA as presented		
Analysis, Modelling and Reporting	D12	[APP-013] [APP-033]	Natural England agrees with the numerical modelling approach and scenarios conducted in relation to hydrodynamics, waves and sediment transport to inform the potential changes in the Morgan Generation physical processes study area arising from the construction, operation and decommissioning. Therefore, we advise that unless there are significant changes to project design parameters, we will provide no further comment on data during examination.	N/A	
Environmental Impact Assessment - Document Used: [APP-010] F1.3 Volume 1, Chapter 3: Project description, [APP-012] F1.5 Volume 1, Chapter 5: Environmental impact assessment methodology [APP-013] F2.1 Volume 2, Chapter 1: Physical processes, [APP-033] F4.1.1 Volume 4, Annex 1.1: Physical processes technical report					
Identified impacts	D13	[APP-013], Section 1.6.2	Natural Egland notes that the impact assessment criteria section states that *"Physical processes are not generally receptors in themselves; they may be a pathway by which coastal features may*	Natural England requests that the Applicant confirms all physical processes have been identified and therefore assessed.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			be impacted or a pathway for indirect impacts on other receptors." However, we highlight that there are a number of physical processes receptors within the study area, including designated sites and sandbanks/sandwaves.		
	D14	[APP-010] [APP-013], Table 1.13	Natural England notes that the total spoil volume due to sandwave clearance and seabed preparation amounts to 18,236,920m^3 in the Morgan Generation array area. We acknowledge that the material cleared from the sandwave will be sidecast, allowing the sediment to be readily available for supply of sandwave recovery. Sandwave reformation will depend on a variety of factors. Given the active sediment transport in the study area and the availability of recharge material, we advise that consideration should be given to sandwave recovery monitoring in post-installation surveys. This would also validate assumptions made in the ES, i.e. in Table 1.13 of [APP-013] which states that sandwave reformation would occur, but there is no further indication on timings for recovery. We encourage the Applicant to consider monitoring the recovery of sandwaves in the Morgan	Natural England would welcome and encourage the Applicant to consider future monitoring of benthic and physical processes to be included as a commitment to review whether the seabed has recovered from construction activities. In this case, we advise monitoring the recovery of sandwaves. We note that geophysical surveys may be required as a condition of the marine licence. We therefore advise that the surveys should have adequate scope to include long term impact monitoring in the geophysical surveys in order to monitor recovery of the seabed. Appropriate survey design and power analysis should be conducted to ensure that adequate data is collected for long term comparisons of the effect of change compared to baseline data.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			array study area, please also see comment (ref: D19).		
	D15	[APP-013], Table 1.13	Natural England notes that Unexploded Ordnance (UXO) clearance has not been considered for impacts on physical processes. UXO clearance can lead to pressures such as abrasion/disturbance of the substrate on the surface of the seabed, changes in suspended solids, smothering etc. We advise that the Application should provide sufficient information to assess the potential impacts	Natural England advises that physical process impacts due to UXO clearance should be considered and assessed within updated Application documents.	
	D16	[APP-013], Table 1.13	Natural England notes that the impacts of seabed scour due to the presence of windfarm infrastructure during the operation and maintenance phase has not been included as an impact.	Natural England advises that this impact should be considered and assessed by the Applicant and included in the updated application documents.	
	D17	[APP-013], Section 1.9.2	Natural England notes that the Application states that cable and infrastructure repair will be necessary but there is limited information on impact pathways arising from the maintenance activities. We advise that cable and infrastructure repair have the potential to impact physical processes e.g. through increases in Suspended Sediment	Natural England advises that further information is required from the Applicant before we can fully advise on the potential impacts. This additional information and associated assessment should be provided within updated Application documents. In particular: • Footprint of seabed disturbed due to cable and WTG/OSP maintenance; and	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			Concentrations (SSCs). Without the full MDS figures, it is difficult to understand the magnitude of this impact.	• Sediment displaced during cable repair and reburial.	
	D18	[APP-013], Section 1.9.2.5	Natural England requested further information from the Applicant regarding impacts to the wider marine environment and sediment transport budget as a result of sediment extraction in order to stabilise conical gravity based foundations. We are also aware there have been similar proposals for the Mona Array and therefore have concerns relating to the cumulative loss of sediment in the wider area. We requested that the following points should be covered in the ES: • Clarification of total material to be used in conical gravity based foundations; • Detailed methodology of proposal including impacts on sediment transport budget in the wider environment; • Further information on alternative options for ballast; and • Further information on what will happen to the material used as ballast at decommissioning.	Natural England requests that further information is provided on the fate of the ballast material at the time of decommissioning. Ideally this would be included in an Outline Decommissioning Plan and submitted to support the consenting phase. Additionally, we advise that further information is provided on the ballast proposal in-combination with the Mona Offshore Wind Farm Project proposals.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
	D19	[APP-013], Section 1.9.2.5	Natural England notes that the Applicant has stated that 7,000m^3 of sediment per foundation may be sequestered as ballast within the gravity base foundation with a maximum total volume of 490,000m^3. Natural England queries this calculation, if the MDS for number of gravity based foundations is 98 then this would equate to 7,000m^3 x 98 = 686,000m^3.	Natural England advises the Applicant checks these figures and ensures that correct volumes are included in any assessment and the DCO/DML.	
	D20	[APP-013], Table 1.15	Natural England notes that there are several projects which seem to be missing from the CEA Table, namely: • Awel Y Mor Offshore Wind Farm; • Mersey Tidal Power Project; • Liverpool Bay aggregate production area (Area 457); • Site Z Disposal Area; • HyNet - Carbon Capture Storage Licence (CS004) We advise that these projects are either in pre-application stages or have submitted their relevant applications and have the potential to interact with Morgan Generation Assets.	Natural England advises that the Applicant should review the projects taken forward into the CEA and update the assessment accordingly.	
Have the impacts been avoided/reduced by the use of appropriate mitigation?	D21	[APP-013],	Natural England acknowledges the commitment of the Applicant to develop and adhere to an Offshore Construction	Natural England advises that pre construction geotechnical data should be used to inform the CBRA. We also advise	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
		Table 1.14	Method Statement (CMS), which will include a Cable Specification Installation Plan (CSIP), incorporating a Cable Burial Risk Assessment (CBRA).	that Natural England should be consulted on the suitability of the CMS ahead of commencement activities. This should be secured in the DCO/dML.	
	D22	[APP-013], Table 1.14	Natural England advises that it is key that all mitigation measures are secured in any consent issued. Whilst we understand there is a commitment to implementing them, it cannot be fully understood at this stage the level of mitigation some measures may be able to provide.	Natural England advises that all embedded mitigation measures proposed should be agreed prior to consent and secured in the DCO/dML.	
	D23	[APP-013], Sections 1.97, 1.11.6	Natural England has concerns relating to the lack of future data analysis to test predictions made within the impact assessment. We note that future monitoring is encouraged in National Policy Statement (as recognised in the NPS for Renewable Energy Infrastructure (EN-3) 3.8.98). We would welcome and encourage the commitment from the Applicant to consider this further, in order to inform the baseline of future projects and their alone and in-combination assessments.	Natural England would welcome and encourage the Applicant to consider future monitoring of benthic and physical processes to be included as a commitment to review whether priority habitats/species and morphological features such as sandbanks has recovered from construction activities and these are secured in an In Principle Monitoring Plan. We note that geophysical surveys may be required as a condition of the marine licence. We therefore advise that the surveys should have adequate scope to include long term impact monitoring, with a particular focus on sandwave recovery.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
	D24	[APP-013], Table 1.13, etc.	Natural England notes that the Applicant is proposing to leave scour and cable protection *in-situ*. We advise that regardless of legislation or being outside of designated sites, the Applicant should aim to remove infrastructure. Decommissioning should aim to remove infrastructure to avoid irreversible (permanent) habitat loss, thus returning the seabed habitat to its pre-developed baseline status as required by OSPAR.	Natural England advises that the Applicant considers using scour and cable protection which is more readily removable at the time of decommissioning. We would welcome and encourage this to be secured as a commitment. Ideally this would also be included in an Outline Decommissioning Plan submitted to support the consenting phase. We highlight that it is a requirement to prepare a decommissioning programme under Section 105 of the Energy Act 2004.	
HRA - Document Used: • [APP-096] E1.1 Morgan Gen HRA Stage 2 ISAA Part 1 – Introduction; • [APP-097] E1.2 Morgan Gen HRA Stage 2 ISAA part 2 - SAC assessments; • [APP-099] E1.4 Morgan Gen HRA Stage 1 Screening report; and • [APP-100] E1.5 Morgan Gen HRA integrity matrices.					
Assessment Conclusions	D25	[APP-097]	Natural England are in broad agreement that the relevant sites have been screened in and an appropriate HRA methodology has been used to assess the project in relation to physical processes. However, we advise that the projects outlined in comment (ref: D16) of this Appendix should be included and reflected in the final CEA and in-combination assessments.	Natural England will provide further comment once in-combination assessments have been updated	
MCZ Assessment - Document Used: [APP-101] E2 Morgan Gen Marine Conservation Zone screening report					

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
Assessment Conclusions	D26	[APP-097]	Natural England are in broad agreement that the relevant sites have been screened in and an appropriate MCZ Assessment methodology has been used to assess the project in relation to physical processes. However, we advise that the projects outlined in comment (ref: D16) of this Appendix should be included and reflected in the final CEA and in-combination assessments.	Natural England will provide further comment once in-combination assessments have been updated	

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES

2010

Morgan Offshore Wind Project: Generation Assets

Relevant Representations of Natural England

Fish and Shellfish Ecology

For:

The construction and operation of the Morgan Generation Offshore Wind Farm located approximately 37km from the Northwest English Coast in the Irish Sea.

Planning Inspectorate Reference: EN010136

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10 July 2024

Appendix E – Fish and Shellfish Ecology

In formulating these comments, the following documents have been considered:

- [APP-021] F2.3 Fish and Shellfish Ecology
- [APP-099] E1.4 HRA Stage 1 Screening report
- [APP-028] F3.3.1 Underwater Sound Technical Report
- [APP-051] F4.3.1 Fish and Shellfish Ecology Technical Report
- [APP-072] J17 Outline Marine Mammal Mitigation Protocol

Glossary of Acronyms and Abbreviations

DCO	Development Consent Order
dML	Deemed Marine Licence
ES	Environmental Statement
EIA	Environmental Impact Assessment
HRA	Habitats Regulations Assessment
OMMMP	Outline Marine Mammal Mitigation Protocol
NE	Natural England
TTS	Temporary Threshold Shift

1. Natural England's Advice and Recommendations

A summary of Natural England's key concerns in relation to Fish and Shellfish Ecology is set out in Table 1. Our detailed advice and recommendations are presented in further detail in Table 2.

Table 1 Summary of Key Issues – Fish and Shellfish Ecology

NE Ref	Summary of Key Concerns	Natural England's Recommendations to Resolve Issues.	Risk
E1	Natural England do not agree with the use of the Outline Marine Mammal Mitigation Protocol (OMMMP) methods of soft starts and ramp ups as a means of mitigation for fish species.	Do not include these measures as appropriate mitigation for impacts to fish species.	

Table 2 Natural England's Detailed Advice and Recommendations – Fish and Shellfish Ecology

Natural England's Key Considerations	**Natural England's Advice**				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
HRA and EIA- Document Used: [APP-021] F2.3 Fish and Shellfish Ecology; [APP-072] J17 Outline Marine Mitigation Protocol; [APP-099] E1.4 HRA Stage 1 Screening report					
Screening and Identified impacts	E2	Vol 2.3 Vol 1.4	Natural England acknowledges and agrees with the findings of no or negligible impacts to Annex II fish species.	No further comment.	
Have the impacts been avoided/reduced by the use of appropriate mitigation?	E3	Vol 17	Natural England do not agree with the use of the Outline Marine Mammal Mitigation Protocol (OMMMP) methods of soft start and ramp up as a means of mitigation for fish species. This mitigation is designed primarily for cetaceans and seals that regularly exhibit consistent fleeing behaviours, i.e. detect noise and move away from the area of influence. The few studies investigating fish fleeing responses do not show consistent, directional fleeing out of the area of influence. Fish responses to underwater noise are highly variable, and rarely directional (e.g. shoaling in place, or in haphazard directions, flinching or fleeing into shelter).	Do not include these measures as appropriate mitigation for impacts to fish species.	
	E6	Vol 3.3.1 Table 1.33	Whilst underwater noise modelling has been conducted to determine noise thresholds for impacts to fish as both moving and static receptors, it is Natural	No further comments. See above comment for reasoning.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			England's view that fish should only be considered as static receptors when modelling underwater sound thresholds and assessments should be based on the static animal modelling results.		
	E7	Vol 3.3.1 Table 1.33	Further to the above comment, whilst it is useful to display TTS range (23,900m) for fish in a tabular format, it would be more useful to have a site contour map displaying the array red line boundary, designated sites and this range to allow Natural England to visually assess proximity to protected sites more easily.	Provide a contour map for TTS range.	

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

Morgan Offshore Wind Project: Generation Assets

Appendix F to the Relevant Representations of Natural England

Benthic Subtidal Ecology

For:

The construction and operation of the Morgan Offshore Wind Project: Generation Assets located approximately 37km from the Northwest English Coast in the Irish Sea.

Planning Inspectorate Reference: EN010136

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10 July 2024

Appendix F – Benthic Subtidal Ecology

In formulating these comments, the following documents have been considered:

- [APP-096] E1.1 Morgan Gen HRA Stage 2 ISAA Part 1 - Introduction
- [APP-097] E1.2 Morgan Gen HRA Stage 2 ISAA part 2 - SAC assessments
- [APP-098] E1.3 Morgan Gen HRA stage 2 ISAA Part 3 SPA and Ramsar site assessment
- [APP-099] E1.4 Morgan Gen HRA Stage 1 Screening report
- [APP-100] E1.5 Morgan Gen HRA integrity matrices
- [APP-101] E2 Morgan Gen Marine Conservation Zone screening report
- [APP-010] F1.3 Volume 1, Chapter 3: Project description
- [APP-012] F1.5 Environmental impact assessment methodology
- [APP-020] F2.2 Benthic subtidal ecology
- [APP-050] F4.2.1 Benthic subtidal ecology technical report
- [APP-076] J6 Mitigation and monitoring schedule
- [APP-066] J11 Offshore in-principle monitoring plan
- [APP-067] J12 Morgan array area site characterisation report
- [APP-070] J15 Measures to minimise disturbance

1. Natural England's Advice and Recommendations

A summary of Natural England's key concerns in relation to Benthic Subtidal Ecology is set out in Table 1. Our detailed advice and recommendations are presented in further detail in Table 2.

Glossary of Acronyms and Abbreviations

AEOI	Adverse Effect On Integrity
BRA	Biosecurity Risk Assessment
CEA	Cumulative Effect Assessment
CBRA	Cable Burial Risk Assessment
DCO	Development Consent Order
DML	Deemed Marine Licence
EIA	Environmental Impact Assessment
ES	Environmental Statement
ExA	Examining Authority
INNS	Invasive Non-Native Species
HRA	Habitats Regulation Assessment
LSE	Likely Significant Effect
MCZ	Marine Conservation Zone
MCZA	Marine Conservation Zone Assessment
MDS	Maximum Design Scenario
MPCP	Marine Pollution Contingency Plan
NE	Natural England
OOOMP	Outline Offshore Operation and Maintenance Plan
O&M	Operation and Maintenance
OPEMP	Outline Project Environmental Management Plan
OWF	Offshore Wind Farm
OSPAR Convention	Convention for the Protection of the Marine Environment of the North-East Atlantic
OSS	Offshore Substation
PEIR	Preliminary Environmental Information Report
PEMP	Project Environmental Management Plan
RAG	Red, Amber, Green
RIAA	Report to Inform Appropriate Assessment
SNCB	Statutory Nature Conservation Body
SPA	Special Protected Area
SAC	Special Area of Conservation
SPM	Suspended Particulate Matter
SSC	Suspended Sediment Concentration
SSS	Side Scan Sonar
UXO	Unexploded Ordinance
WCS	Worst Case Scenario
WTG	Wind Turbine Generator
ZoI	Zone of Influence

Table 1 Summary of Key Issues – Benthic Subtidal Ecology.

NE Ref	Summary of Key Concerns	Natural England's Recommendations to Resolve Issues.	Risk
F1	In most cases Natural England agrees with the position on WCS, except the following: • Maximum Design Scenario (MDS) for sandwave clearance impact width for inter-array and interconnector cables; and • Cable crossings; • MDS figures for cable protection during construction; and • MDS figures for maintenance of cables and offshore infrastructure during operation and maintenance phase.	Natural England advises the Applicant to provide the necessary updated project parameters, evidence and assessment in updated Application documents as discussed in detailed comments.	
F2	Impacts on SPAs and SACs: Natural England notes that the Applicant's current assessments of pressures/impacts on supporting benthic habitats for mobile Special Protection Area (SPA) and Special Areas of Conservation (SACs) features and impacts to prey availability lacks rationale and robustness.	Natural England advises that full consideration of the likely nature, extent, duration, and significance of impacts upon SPA and SAC supporting habitats is required to inform a robust assessment of the likely impacts upon designated ornithological and marine mammal features.	
F3	Natural England advises that all proposed mitigation measures are secured in any consent issued. In addition to mitigation proposed by the Applicant, we advise that further consideration is given to the following mitigation measures for benthic subtidal ecology: • Commitment to remove infrastructure at the time of decommissioning.	Natural England advises that all embedded mitigation measures proposed are secured in the DCO/dML. In addition to the mitigation proposed by the Applicant, we advise that further mitigation in considered by the Applicant as discussed in the detailed comments.	
F4	Future monitoring should be secured, in the DCO, to test assumptions made in the ES. As per our response to the physical processes chapter, monitoring should be	Natural England would welcome and encourage the Applicant to consider future monitoring of benthic and physical processes to be included as a commitment to review whether the seabed has recovered from	

NE Ref	Summary of Key Concerns	Natural England's Recommendations to Resolve Issues.	Risk
	secured for sandwave recovery and of scouring around turbines.	construction activities. In this case, we advise monitoring the recovery of sandwaves.	

Table 2 Natural England's Detailed Advice and Recommendations – Benthic Subtidal Ecology

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
Project Parameters - Document(s) Used: [APP-020] F2.2 Benthic subtidal ecology; [APP-050] F4.2.1 Benthic subtidal ecology technical report					
Project Description	F5	Vol 2.2. General	We advise that further detail is required in the project description to inform the Maximum Design Scenario (MDS) and Environmental Impact Assessment (EIA). Please see detailed comments in relevant headings of this table	N/a	
Natural England's Position on Worst Case Scenario or Scenarios	F6	Vol 2.2 Table 2.16	**MDS for sandwave clearance impact width for inter-array and interconnector cables** – Natural England acknowledges and welcome that the Applicant has reduced the MDS parameters for sandwave clearance and seabed preparation in the Morgan array area during the pre-application phase from 104m to 80m for intermarry cables, but remains unchanged at 104m for interconnector cables. Despite the reduction, this seems to be an exceptionally large impact width in comparison to other projects of a similar scale. Natural England queries if the width MDS parameters are realistic?	Natural England advises that further evidence is required to support the realistic MDS parameters as set out in the DCO/dML.	
	F7		**Cable crossings** – Natural England notes that there is limited information pertaining to cable crossings. In [APP-013] the MDS parameters are given as up to 10 cable crossings, with a height of	To better understand any potential disruption to marine processes and benthic habitats, Natural England advises that further information on cable crossings is provided in line with best practice	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			4m, width of 36m and length of up to 80m. There is no information on location of crossings, volume of cable protection to be used in relation to crossings or impacts from sediments plumes (unless this is elsewhere in the ES). Additionally, no cross-section or plan schematics of cable crossing layout, it would be helpful if these could be provided and updated in the final ES.	guidance as set out in Natural England's Best Practice Guidance Phase III. Namely: • Method(s) to be used; • Specific locations (informed by acoustic data); • Total area of impact; • Overlap with MPA(s); • Habitats impacted • Presence of sensitive species and habitats; • Where applicable total volume of external cable protection; • Method(s) (as it generally requires external cable protection the points above also apply); and • Impacts from sediment plumes. Once this is provided, we believe that this matter can be readily resolved	
Baseline Characterisation - Document(s) Used: [APP-020] F2.2 Benthic subtidal ecology; [APP-050] F4.2.1 Benthic subtidal ecology technical report					
Survey Data Acquisition	F8	Vol 2.2 Vol 4.2.1	Natural England agrees that the data included in the baseline characterisation for benthic ecology is sufficient to characterise the study area. Therefore, unless there is a change in the project design parameters, we will provide no further comment on the data during examination.	N/A	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
Data Gaps	F9	Vol 2.2 1.7.1	Natural England notes that there are site-specific surveys referenced throughout the chapter which have not been provided with the ES reports. It would be useful to see these reports: Guardline (2022); XOcean (2022); and Furgo (2022). We advise that these should be provided to ensure there are no issues with the EIA as presented.	Natural England advises that all refence documents should be presented into examination. Please provide these reports or a link to them in the updated ES.	
Environmental Impact Assessment - Document Used: [APP-020] F2.2 Benthic subtidal ecology; [APP-050] F4.2.1 Benthic subtidal ecology technical report					
Identified impacts	F10	Vol 2.2 Table 2.16	Natural England notes that boulder clearance is proposed within the footprint of other installation activities. We advise that impacts should be minimised as much as possible, with consideration being given to the deposition locations in similar habitat type and avoiding sensitive habitats such as Habitats of Principal Importance listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.	Natural England advise that this is considered further by the Applicant and updated in the ES accordingly. And any mitigation measures to minimise the impacts secured within the DCO/dML or within a named plan.	
Methodology	F11	Vol 2.2 General	Impacts on SPAs: Natural England notes that the Applicant's current assessments	Natural England advises that full consideration of the likely nature, extent,	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
			of pressures/impacts on supporting benthic habitats for Special Protection Area (SPA) and Special Areas of Conservation (SACs) features and impacts to prey availability lacks rationale and robustness.	duration, and significance of impacts upon SPA and SAC supporting habitats is required to inform a robust assessment of the likely impacts upon designated ornithological and marine mammal features.	
Have the impacts been avoided/reduced by the use of appropriate mitigation?	F12	MMMP 1.4.3; BSEC Vol 4 Annex 2.1; Vol 6 Table 1.3; Draft DCO Section 23	Natural England welcomes the commitment to implementation of a mitigation hierarchy with the UXO clearance which will also reduce benthic impacts. Natural England also notes that the UXO clearance method statement will be secured in the dML/ Draft DCO and should be agreed pre-construction in consultation with the relevant SNCB. Therefore, unless there is a change in the project design parameters, we will provide no further comment on the data during examination.	N/A	
	F13	Vol 2.2 Table 2.17	Natural England acknowledges the commitment of the Applicant to develop and adhere to an Offshore Construction Method Statement (CMS), which will include a Cable Specification Installation Plan (CSIP), incorporating a Cable Burial Risk Assessment (CBRA).	Natural England advises that pre construction geotechnical data should be used to inform the CBRA. We also advise that Natural England should be consulted on the suitability of the CMS ahead of commencement activities. This should be secured in the DCO/dML.	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
	F14	Vol 2.2 General	Natural England has concerns relating to the lack of future data analysis to test predictions made within the impact assessment. We note that the such future monitoring is encouraged in National Policy Statement (as recognised in the NPS for Renewable Energy Infrastructure (EN-3) 3.8.98). We would welcome and encourage the commitment from the Applicant to consider this further, in order to inform the baseline of future projects and their alone and in-combination assessments.	Natural England would welcome and encourage the Applicant to consider future monitoring of benthic and physical processes to be included as a commitment to review whether priority habitats/species and the seabed morphological features such as sandbanks has recovered from construction activities, and these are secured in an In Principle Monitoring Plan.	
	F15	Vol 2.2 Table 2.16	Natural England advises that the Applicant needs to consider the potential impacts from UXO detonation on benthic habitats and/or mitigation measures for making the UXO safe without impacting on benthic habitats.	Further detail is required on the potential impacts of UXO detonation on benthic habitats and/or mitigation measures to prevent impacts to benthic habitats.	
	F16	Vol 2.2 Table 2.16	Natural England We notes that the Applicant is proposing to leave scour and cable protection *in-situ*. We advise that regardless of legislation or being outside of designated sites, the Applicant should aim to remove infrastructure. Decommissioning should aim to remove infrastructure to avoid irreversible (permanent) habitat loss, thus returning the seabed habitat to its pre-developed baseline status as required by OSPAR.	Natural England advises that the Applicant considers using scour and cable protection which is more readily removable at the time of decommissioning. We would welcome and encourage this to be secured as a commitment. Ideally this would also be included in an Outline Decommissioning Plan submitted to support the consenting phase. We highlight that it is a requirement to prepare	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
				a decommissioning programme under Section 105 of the Energy Act 2004.	
HRA - Document Used: Volume 1.4 Morgan Gen HRA stage 1 screening report; [APP-020] F2.2 Benthic subtidal ecology					
Screening	F17	Vol 1.4 section 1.3.2.15	Natural England agrees that the approach used for determining LSE on European sites with Annex I habitats as features is appropriate. Therefore, unless there is a change in the project design parameters, we will provide no further comment on the Habitat Regulations during examination.	N/A	
	F18	Vol 2 Section 1.5.2.3	Natural England agrees with the conclusions of the MCZ screening for benthic habitat features of MCZs. Therefore, unless there is a change in the project design parameters, we will provide no further comment on the MCZ assessment during examination.	N/A	
In- combination	F19	Vol 2.2 General	Natural England agrees that appropriate plans and projects have been identified. Therefore, unless there is a change in the project design parameters, we will provide no further comment on other plans and projects during examination.	N/A	

Natural England's Key Considerations	Natural England's Advice				
Relevant and Written Representations	**NE Ref**	**Ref**	**Comment**	**Recommendation**	**Risk (RAG)**
Have the impacts been avoided/reduced by the use of appropriate mitigation?	F20	Vol 2.2 Table 2.17	Natural England acknowledge the implementation of a Biosecurity Risk Assessment and an Invasive Non-Native Species (INNS) Management Plan to be conditioned within the Offshore EMP which will be secured as a condition of the deemed Marine Licence(s) within the draft DCO. As the following plans are mitigation measures, these should be considered at the time of consent: - Biosecurity Risk Assessment - Outline EMP - Marine Pollution Control Plan (MPCP)	To inform consenting, these plans should be provided as part of the application and submitted into Examination.	
MCZ Assessment - Document Used: Volume 2 Marine Conservation Zone screening report					
Screening	F21	Vol 2	Natural England agrees with the MCZ screening conclusions. Therefore, unless there is a change in the project design parameters, we will provide no further comment on MCZs during examination.	N/A	

Annex 1: Cable protection paper

Natural England advice on cable protection assessment for offshore windfarms and inclusion in marine licenses

Natural England (NE) has drafted this note in order to provide clarity on how we consider cable protection to be covered in marine licences, and what information needs to be provided in an assessment to support those licences. The advice applies to all marine license applications for cable protection, at various stages of the project lifecycle, not just those considered under the NSIP consenting process. Much of the advice is also applicable to interconnector cables. This is intended to complement the Marine Management Organisation's (MMO) position on scour and cable protection licensing requirements during the Operation and Maintenance (O&M) phase.

Section 1: Application stage

In the Environmental Statement (ES) for a project there must be a full assessment of the worst-case scenario for cable protection to enable a decision to be made regarding the impacts of a project over the lifetime and in combination with other impacts and activities. In the case of European Marine sites (SACs and SPAs) the assessment must contain sufficient information to allow it to be ascertained (by the process of "appropriate assessment,"[1] and beyond reasonable scientific doubt) whether the project will have an adverse effect on the integrity of the site. If an absence of adverse effect on integrity cannot be demonstrated – see footnote 2.

It is acknowledged that the worst-case scenario used for lifetime predictions is not the most desirable environmentally and, as more project specifics and environmental data emerge post-consent, the structure of plans and proposals can be amended to allow for the impacts to be reduced. This is in line with the avoid-reduce-mitigate hierarchy, which should be followed in relation to environmental impacts.

Not everything that is assessed in the Environmental Statement is permitted through the Deemed Marine Licence (DML) for the project, as some aspects require further updating and consultation (i.e. requirement to provide a scour and cable protection installation plan pre-construction, which sets out what is actually permitted). However, provision of the full project lifecycle information in the Environmental

Statement at this stage is required to inform and support the decision making for the project and to provide a level of comfort that the lifetime impacts have been considered.

Where cable protection is proposed within an SAC or SPA it should be assumed that there will be a likely significant effect due to lasting habitat loss from the cable protection and an “appropriate assessment” would need to demonstrate that there would not be an adverse effect from the proposal. This is likely to be challenging in an SAC designated for its benthic habitats, therefore all alternatives will need to be fully explored. If it is not possible to avoid an adverse effect, then the derogations route under Article 6(4) of the Habitats Directive[2] could be considered. Similarly, a Marine Conservation Zone (MCZ) assessment would be requirement where cable protection was proposed in an MCZ. For clarity and to fit with subsequent marine licensing requirements, Natural England advise that this information should be presented separately for the following phases with the impacts assessed for each phase and together in total:

Amount of cable protection to be laid during the construction phase[3] of the project.

Amount of cable protection required for the maintenance of that laid during construction over the lifetime of the project.

Amount of additional/ new cable protection that may be required to protect assets that become exposed during operation of the windfarm.

Total amount of cable protection to be left in situ at the time of decommissioning (this may be the total of the above).

For cable protection to be laid during construction under the DML, an in-principle scour and cable protection plan should be provided as part of the application. This should be updated and resubmitted pre-construction and should reflect up to date information informed by any new survey data, the cable burial risk assessment and additional information in relation to a navigation risk assessment and alternatives. Use of cable protection which leads to lasting habitat loss should be the final consideration after other alternatives have been exhausted and must be minimised as much as possible to reduce environmental impacts.

Where impacts are within a Marine Protected Area (MPA[4]), the assessment should consider the total amounts of cable protection proposed to be laid across the phases outlined above as an area and percentage of the MPA ***feature*** to be impacted. The significance of the proposal then needs to be considered against the Conservation Objectives for the site. Natural England's position paper on 'Small Scale Losses' sets out what is required by the Applicant to demonstrate that there are no Adverse Effects on site Integrity (AEoI).

Natural England will advise that a condition should be applied to all DMLs with wording similar to that outlined below, which will require return of information in relation to the as-built scenario, including the location, volume, area and coordinates of the cable protection laid.

Not more than 4 months following completion of the construction phase of the authorised scheme, the undertaker must provide the MMO and the relevant statutory nature
conservation bodies with a report setting out details of the cable protection used for the authorised scheme.
(2) The report must include the following information—
(a) location of the cable protection.
(b) volume and area of cable protection; and
(c) any other information relating to the cable protection as agreed between the MMO and the undertaker.
(3) For any subsequent deployments of cable protection following the completion of construction, the undertaker will provide an updated report as defined in (1) and (2) not more than 4 months following deployment of the cable protection.

Section 2: Construction and maintenance

The period of construction finishes when developers notify the MMO of the end of construction. However, there will need to be agreement on what is considered the construction period given that this could stretch several years. The cable protection laid during the period of construction is permitted under the DML and restricted to total volumes within the DML, although every effort should be made to minimise these volumes going into construction through the avoid-reduce-mitigate hierarchy.

As outlined above, the in-principle scour and cable protection plan provided during the application phase should be updated and resubmitted pre-construction and should reflect up to date information informed by any new survey data, the cable burial risk assessment and additional information in relation to a navigation risk assessment and alternatives.

Natural England considers it is permissible to maintain cable protection that was placed at time of construction for the lifetime of the project through an Operations and Maintenance plan by adding additional cable protection to that which was laid during construction. We support the MMO's position that under an operations and maintenance plan submitted under the DCO maintenance material placement cannot exceed the seabed footprint of the cable protection laid during construction. As per the MMO's advice various timescales and information requirements will apply to these plans. A condition requiring return of information in relation to the as built scenario including the location, volume, area and coordinates of the cable protection laid should be secured as part of these plans.

Section 3: Operational phase

Natural England considers that any new/additional cable protection to be laid during the operational lifetime of the windfarm is not permitted under the DML and requires a separate marine licence. We acknowledge that there is a desire for longer term licences and support the MMO's position that 10-year licences can be considered for laying of additional cable protected in areas outside MPAs.

This is not to say that cable protection will not be permitted over the lifetime of the project (out with MPAs); but a separate marine licence process (to that of the DCO/DML) is advised to ensure that proposals can be adequately assessed using up to date information on which to base the assessment (which may be several years after the Environmental Statement data was collected), and enable sufficient transparency of decision making and stakeholder consultation. Data less than 5 years old will be required to support laying of additional cable protection along with descriptions of the seabed habitat and information regarding what cable protection has been laid to date. Justification will need to be made as to why cable protection is necessary considering risk and alternatives and every effort made to minimise amounts required to reduce environmental impact.

The amount of cable protection proposed in the new licence application should not be more than that assessed overall in the ES and should ideally be reduced to reflect the reduction in parameters from the Rochdale Envelope. Any reduction in design parameter should be reflected in this licence e.g. decreased number of cables installed therefore proportionally less cable protection is permitted to reflect this.

Should the volumes proposed be greater than that assessed in the ES at the time of consenting then it will be necessary to redo the assessment for cable protection that was undertaken in the ES with up-to-date information and parameters to inform the licence application.

Section 4: Cable protection within MPA during the operational phase of a project

Natural Egland considers that replenishment of cable protection/scour prevention over the life time of the projects which doesn't increase the footprint of existing protection and is outside of benthic designated sites may be considered on a case by case basis as part of the DCO/dML.

Natural England advises that a precautionary approach is taken to cable protection within MPAs with each campaign of cable protection requiring a new marine licence along with a full assessment. This is for a number of reasons including that our understanding of impacts, the habitat that is there and its condition evolves over time as well as changes in law. Therefore, each time new cable protection is to be laid it will require a new assessment and an Appropriate Assessment or Marine Conservation Zone assessment.

Where further cable protection is proposed within an SAC or SPA during the operational phase of a project, it should be assumed that there will be a likely significant effect due to lasting habitat loss from the cable protection and an "appropriate assessment" would need to demonstrate that there would not be an adverse effect from the proposal. This is likely to be challenging in an SAC designated for its benthic habitats, therefore all alternatives will need to be fully explored. If it is not possible to avoid an adverse effect, then the derogations route under Article 6(4) of the Habitats Directive (see footnote 2) could be considered. Similarly, a Marine Conservation Zone (MCZ) assessment would be requirement where cable protection was proposed in an MCZ.

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

Morgan Offshore Wind Project: Generation Assets

Appendix G to the Relevant Representations of Natural England

Other Plans

For:

The construction and operation of the Morgan Offshore Wind Project: Generation Assets located approximately 37km from the Northwest English Coast in the Irish Sea.

Planning Inspectorate Reference: EN010136

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10 July 2024

Appendix G – Other Marine Plans

In compiling this response, the following documents have been considered:

- [APP-010] F1.3 Volume 1, Chapter 3: Project description;
- [APP-020] F2.2 Volume 2.2 Benthic Subtidal Ecology;
- [APP-105] J3 Grid Connection and Cable Detail Statement;
- [APP-079] J9 Outline Offshore Operations and Maintenance Plan (OOMP); and
- [APP-066] J11 Offshore In Principle Monitoring Plan (IPMP).

Glossary of Acronyms and Abbreviations

CBRA	Cable Burial Risk Assessment
CMS	Construction Method Statement
CSIP	Cable Specification Installation Plan
DCO	Development Consent Order
dML	Deemed Marine Licence
ES	Environmental Statement
EIA	Environmental Impact Assessment
HRA	Habitats Regulations Assessment
INNS	Invasive Non Native Species
IPMP	In Principle Monitoring Plan
MCZ	Marine Conservation Zone
NE	Natural England
NERC Act	Natural Environment and Rural Communities Act
O&M	Operations and Maintenance
OEMP	Offshore Environmental Management Plan
OOMP	Outline Offshore Operations and Maintenance Plan (OOMP)
WTG	Wind Turbine Generator

Summary

These comments pertain to the plans submitted as part of volume J (Additional Information and Outline Plans), where these relate to the offshore aspects. We advise that these comments should be read in conjunction with our comments, key concerns and stipulations within the various thematic chapters and the DCO/dML.

Natural England note that many of these plans are outline plans, which will be developed post consent. We advise that as part of the consenting process sufficient clarity and information should be provided to allow the potential environmental impacts to be fully understood, as well as how these will be mitigated and monitored. Where sufficient detail is not provided at this stage, it is unclear how the finalised post consent plan will be checked against the assessments made in the ES, MCZ Assessment, and HRA. We also advise that in this situation there is a risk to the Applicant that further requirements in relation to mitigation and monitoring may be raised post-consent, which is likely to draw out the process of signing off such plans.

We advise that evidence is provided across these plans which demonstrates lessons learnt from previous projects.

Detailed comments

NE Ref	Section	Comment	Recommendations	RAG
Document used: [APP-066] J11 Offshore in Principle Monitoring Plan (IPMP)				
G1	Executive Summary	We advise that this is the first time Natural England has had sight of the IPMP, and that we have not been involved in its development.	We look forward to working with the Applicant to defining the parameters of the plan to ensure it is fit for purpose.	
G2	IPMP	In providing our advice Natural England is drawing on our wealth of experience of post-consent monitoring discussions and implementation. We strongly advise that rather than focusing on the exact details of the surveys, and as highlighted by the Applicant, the IPMP should set out the fundamental hypotheses/questions that will be tested by the monitoring based on the outcomes of the HRA, EIA and address issues of uncertainty and/or residual impacts. In addition, Natural England highlights that, while there is agreement that IPMPs are finalised post consent based on project design and timescales; this should not limit updating and agreeing the IPMP prior to consent. Lessons have been learnt since the development of the IPMP for other offshore wind projects, drawing on ongoing and recurring post- consent discussions with developers on ecological monitoring requirements and survey effort required in order demonstrate key predictions of the Environmental Statement (ES) and/or Habitats Regulations Assessment (HRA).	Because this is a fundamental plan relating to all project phases - Natural England will submit detailed advice on the offshore IPMP at Deadline 1. We will continue to work on this plan with the Applicant through the Examination process.	

G3	DCO	Natural England is concerned with how the purpose of the monitoring is conditioned within the DCO. We advise that the DCO/dML conditions should ensure that the monitoring is relevant to the issues raised, and that adaptive management is secured should post-construction monitoring identify impacts that are significantly outside of those predicted in the Application.	Natural England will work with the developer to ensure that all monitoring conditions are sufficiently fit for purpose.	

NE Ref	Section	Comment	Suggestions	RAG
Document used: [APP-010] F1.3 Volume 1, Chapter 3: Project description; [APP-105] J3 Grid Connection and Cable Detail Statement; [APP-020] F2.2 Volume 2.2 Benthic Subtidal Ecology				
G4	General	Natural England advises that a key consideration is that the type of scour protection used will be removable upon decommissioning. Natural England advises that options that involve introducing plastic to the marine environment have the potential to degrade during the lifetime of the project and raise concerns with regards to marine pollution.	We advise further consideration is given to this issue and that the Applicant seeks to identify the most sustainable and removable form of scour protection.	
G5	General	Natural England advises that we should be consulted on the final scour prevention and cable protection plan and the requirements for future surveys.	We advise that consultation of Natural England on this plan is stipulated in the DCO.	
G6	General	We advise the Applicant considers lessons learnt from other wind farm projects in relation to potential scour and cable exposure, particularly around Wind Turbine Generations (WTGs).	We advise that industry experience regarding these matters is considered and evidenced within the plan.	
G7	General	Natural England advises that the Applicant should produce a decommissioning plan that outlines all decommissioning options (maintain, full removal and partial removal). These options can be assessed and refined closer to the time of decommissioning itself in consultation with Natural England. Natural England reserves its position until a draft plan is submitted at which point we will provide further advice.	We advise that the Applicant should produce an Outline Decommissioning Plan submitted to support the consenting phase. The plan should outline all decommissioning options (maintain, full removal and partial removal). We highlight that it is a requirement to prepare a	

			decommissioning programme under Section 105 of the Energy Act 2004.	
G8	Volume 2.2 Table 2.17	We acknowledge the commitment of the Applicant to develop and adhere to an Offshore Construction Method Statement (CMS), which will include a Cable Specification Installation Plan (CSIP), incorporating a Cable Burial Risk Assessment (CBRA). Natural England recommends that the developer provides more detail on cable protection, scour protection and cable burial within further outline plans that Natural England will be consulted on.	We recommend that the Applicant provides further detail on cable protection, scour protection and cable burial which would ideally be included in the final version of the CBRA. We advise that the CBRA should be informed by geotechnical data to further understand the scour and cable protection requirements to ensure that a realistic worst-case scenario is presented.	
G9	J3 Section 1.7 F1.3 3.5.9.7-3.5.9.11	Natural England notes that many different cable protection methodologies are included within the Cable Detail and Grid Connection Statement; some of which are not conducive to minimising the impact footprint and maximising recovery, as committed to in the mitigation measures. Therefore, we advise that it is critical that engineering decisions include a hierarchy of the different methodologies and their relative environmental impacts, and that these work areas are progressed in tandem. We advise that the options for scour prevention and cable protection should be limited to those which sufficiently meet both engineering and ecological requirements and this is agreed as part of the consenting phase. Natural England advise that post-installation/decommissioning recovery will need to be demonstrated by monitoring, particularly for methods where full recovery has not been achieved previously in similar sedimentary conditions.	We advise the Applicant refines the scour prevention and cable protection options included within the outline plan for 'J3 grid connection and cable detail statement'.	
G10	General	Natural England understand that the Offshore Environmental Management Plan (OEMP) will be produced prior to construction and will be developed following the detailed design process. We advise that until these details are fully understood Natural England cannot	We advise that an outline OEMP is submitted into examination and that Natural England are	

		provide final comment on the suitability of the management measures proposed. Therefore, we advise that more detail is provided within an outline plan and submitted into examination to provide the information needed to appraise the suitability of management measures proposed. We advise a holistic approach to the final plan to bring together all agreed measures across the ES and to ensure that the contractor is fully aware of all commitments.	consulted on the final version prior to construction.	
G11	Marine Pollution Contingency Plan	We advise that pollution incidents, reports, and situation updates should be emailed to the Natural England Marine Incidents Mailbox: marineincidents@naturalengland.org.uk. We note that a Marine Pollution Contingency Plan will be included within the Offshore EMP. Therefore, we cannot comment on the suitability of the measures to be included at this point.	We advise this contact is added to the plan. We advise that an outline OEMP is submitted into examination and that Natural England are consulted on the final version prior to construction.	
G12	Biosecurity Risk Assessment and INNS Management Plan	We note that the Offshore EMP will include a Biosecurity Risk Assessment and INNS Management plan. We advise that until this plan has been produced, we cannot comment on the suitability of the measures to be included.	We advise that an updated plan is submitted into examination and that Natural England are consulted on the final version prior to construction.	

NE Ref	Section	Comment	Suggestions	RAG
Document used: [APP-079] J9 Outline Offshore Operations and Maintenance Plan (OOMP)				
G13	Volume 9 section 1.4	Natural England understands that this is an outline plan, which will be developed post consent. We advise that clarity should be provided regarding how the potential impacts of the finalised plan will be checked against the assessments made in the ES, MCZ Assessment, HRA etc. We advise that sufficient information should be provided at the pre-consent stage to allow operations and maintenance (O&M) activities to be fully assessed.	We advise that this plan is developed further pre-consent to provided sufficient certainty in the accuracy of what is included in the assessments.	
G14	Volume 9 Table 1.2	Whilst some activities have been deemed as licensable, but not included in this application – such as additional cable protection -	Natural England advise that sufficient information needs to be	

		we advise that all reasonably predictable activities should be considered within the ES at the pre-consent stage, and sufficient data should be gathered to avoid the need for further licences unless something unpredictable occurs. The Applicant should be aware that depending on the situation a non-material or material amendment to the DCO/dML may be required. In relation to unpredictable works, we advise that the Applicant seeks to understand what may have been required on other offshore wind projects to date to inform their predictions at the pre-consent stage. We also advise including a definition of what constitutes emergency work.	gathered regarding likely O&M requirements at the consenting stage, to minimise the requirements for unexpected further licences.	
G15	General Comment	We advise undertaking required monitoring and recording and in turn this should be used to inform 5 yearly reviews of the activities, which Natural England wish to be consulted on.	We advise this is stipulated and is a condition of the DCO/dML.	
G16	General Comment	We advise that deployment of scour/cable protection under the DCO should be no later than 10 years post construction. Permission for any further cable protection works after that time should be sought through a new Marine Licence.	The Applicant should update the dMLs to secure the maximum period of ten years post construction for deployment of cable protection.	
G17	General Comment	Where seabed disturbance is necessary and use of equipment such as jack-up vessels are required, the Applicant should provide details showing how they will ensure the avoidance of sensitive features such as Habitats of Principal Importance listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act and Annex I features (as identified in the benthic and fish ecology chapters). We advise that consideration needs to be given to ongoing data collection required to inform micro-siting of activities during the lifetime of the project.	We advise this is considered and further details provided as part of the consenting phase.	
G18	General Comment	Natural England would support reburial where exposure has occurred, or where cable repair/replacement is required, over the placement of rock protection. This would potentially allow recovery following reburial, whereas the addition of scour protection would lead to permanent habitat change/loss.	We advise that the Applicant includes a cable burial hierarchy which makes reburial the priority.	

G19	General Comment	We note that there is currently no information on how the impacts of O&M works will be monitored. We advise that clarity is needed on this.	We advise that the Applicant considers this further in an updated plan.	