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MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Applicant's Response to IP submissions submitted at Deadline 4

Deadline: 5

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Image of an offshore wind farm

www.morganandmona.com/morgan

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Glossary

Term	Meaning
Applicant	Morgan Offshore Wind Limited.
Department for Energy Security and Net Zero (DESNZ)	The Department for Energy Security and Net Zero (DESNZ) is focused on the energy portfolio from the former Department for Business, Energy and Industrial Strategy (BEIS).
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Project (NSIP).
Environmental Statement	The document presenting the results of the Environmental Impact Assessment (EIA) process for the Morgan Offshore Wind Project.
Expert Working Group (EWG)	Expert working groups set up with relevant stakeholders as part of the Evidence Plan process
Marine licence	The Marine and Coastal Access Act 2009 requires a marine licence to be obtained for licensable marine activities. Section 149A of the Planning Act 2008 allows an applicant for a DCO to apply for a 'deemed' marine licence as part of the DCO process.
Maximum Design Scenario (MDS)	The scenario within the design envelope with the potential to result in the greatest impact on a particular topic receptor, and therefore the one that should be assessed for that topic receptor.
Morgan Array Area	The area within which the wind turbines, foundations, inter-array cables, interconnector cables, offshore export cables and offshore substation platforms (OSPs) forming part of the Morgan Offshore Wind Project will be located.
Morgan Offshore Wind Project: Generation Assets	This is the name given to the Morgan Generation Assets project as a whole (includes all infrastructure and activities associated with the project construction, operations and maintenance, and decommissioning).
Morgan Offshore Wind Project: Generation Assets PEIR	The Morgan Generation Assets Preliminary Environmental Information Report (PEIR) that was submitted to The Planning Inspectorate (on behalf of the Secretary of State) for the Morgan Offshore Wind Project: Generation Assets.
Morgan Offshore Wind Project: Generation Assets Scoping Report	The Morgan Scoping Report that was submitted to The Planning Inspectorate (on behalf of the Secretary of State) for the Morgan Offshore Project: Generation Assets.
Morgan and Morecambe Offshore Wind Farms: Transmission Assets	The transmission assets for the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm. This includes the Offshore Substation Platforms (OSPs), interconnector cables, Morgan offshore booster station, offshore export cables, landfall site, onshore export cables, onshore substations, 400kV grid connection cables and associated grid connection infrastructure such as circuit breaker infrastructure (as defined in the Morgan and Morecambe Offshore Wind Farms: Transmission Assets PEIR).
National Policy Statement (NPS)	The current national policy statements published by the Department for Energy Security & Net Zero in 2024.
Offshore Substation Platform (OSP)	The offshore substation platforms located within the Morgan Array Area will transform the electricity generated by the wind turbines to a higher voltage allowing the power to be efficiently transmitted to shore.
Wind turbines	The wind turbine generators, including the tower, nacelle and rotor.
The Planning Inspectorate	The agency responsible for operating the planning process for NSIPs.

Acronyms

Acronym	Description
ADDs	Acoustic Deterrent Devices
AEoI	Adverse Effects on Integrity
AEoSI	Adverse Effect on Site Integrity
AGA	Aerodrome and Ground Aids
ASSI	Areas of Special Scientific Interest
CAA	Civil Aviation Authority
CBRA	Cable Burial Risk Assessment
CEA	Cumulative Effects Assessment
CMS	Construction Method Statement
CNS	Communication, Navigation and Surveillance
CRM	Collision Risk Modelling
CSIP	Cable Specification and Installation Plan
cUXO	Confirmed Unexploded Ordnance
DAS	Digital Aerial Survey
dDCO	Draft Development Consent Order
DCO	Development Consent Order
DEFRA	Department for Environment, Food and Rural Affairs
DESN	Department for Energy Security and Net Zero
dML	Deemed Marine Licence
DME	Distance Measuring Equipment
EIA	Environmental Impact Assessment
EMF	Electromagnetic Fields
EMP	Environmental Monitoring Plan
EPS	European Protected Species
ES	Environmental Statement
EWG	Expert Working Group
ExA	Examining Authority
HRA	Habitat Regulations Assessment
INNS	Invasive Non Native Species
IoM TSC	Isle of Man Territorial Sea Committee
IoS	Isles of Scilly
IPMP	In Principle monitoring Plan
ISH2	Issue Specific Hearing 2
MCA	Maritime and Coastguard Agency

Acronym	Description
MCAA	Marine and Coastal Access Act
MDS	Maximum Design Scenario
MLAT	MultiLATeration
MMMP	Marine mammal Mitigation Plan
MMO	Marine Management Organisation
MNR	Marine Noise Registry
MNRs	Marine Nature Reserves
MPCP	Marine Pollution Control Plan
MREDs	Marine Renewable Energy Devices
NAS	Noise Abatement Systems
NATS	National Air Traffic Services
NDB	Non-Directional Beacon
NERC	Natural Environment and Rural Communities
NFFO	National Federation of Fishermen's Organisation
NPS	National Policy Statement
NRW	National Resources Wales
NSIPs	Nationally Significant Infrastructure Projects
NWRRF	North West Regional Research Framework
OFLCP	Outline Fisheries Liaison Coexistence Plan
OOMP	Offshore Operations and Maintenance Plan
OSP	Offshore Substation Platform
PDA	Project Development Area
PEIR	Preliminary Environmental Information Report
PSR	Primary Surveillance Radar
PTS	Permanent Threshold Shift
RADAR	Radio Detection And Ranging
RCS	Radar Cross Section
RU	Remote Unit
SAC	Special Area of Conservation
SELcum	Cumulative Sound Exposure Level
SELss	Single strike Sound Exposure Level
SFF	Scottish Fishermen's Federation
SNCB	Statutory Nature Conservation Body
SoCG	Statement of Common Ground
SPAs	Special Protected Areas

Acronym	Description
SSR	Secondary surveillance radar
TCE	The Crown Estate
TTS	Temporary Threshold Shift
UK	United Kingdom
UKHO	United Kingdom Hydrographic Office
UWSMS	Underwater Sound management Strategy
UXO	Unexploded Ordnance
VHF	Very High Frequency
VMS	Vessel Monitoring System
WCSP	West Coast Sea Products
WSI	Written Scheme of Investigation
WTGs	Wind Turbine Generations

Units

Unit	Description
km	Kilometre
m	Meters

1 Applicant's response to IP D4 submissions

1.1 Introduction

1.1.1.1 Following Deadline 4, Morgan Offshore Wind Limited (the Applicant), has taken the opportunity to review each of the submissions received from stakeholders.

1.1.1.2 Details of the Applicant's response to each of the Interested Party's (IP) submissions are set out in the subsequent sections of this document and its annex.

1.1.1.3 The Applicant has numbered the responses to submissions in line with the Planning Inspectorate's document library with subsequent paragraph numbering.

1.1.1.4 Following annex was produced to support the Applicant's response:

- S_D5_4.1: Annex 4.1 to Applicant's Response to Orsted IPs submission

2 RESPONSES TO IP'S D4 SUBMISSION

2.1 Isle of Man Government (Territorial Sea Committee)

Table 2.1: REP4-039,REP4-040 – Isle of Man Government (Territorial Sea Committee).

Reference	Isle of Man Territorial Sea Committee's submission	Applicant's response
REP4-040.1	**Isle of Man Territorial Sea Committee** **Technical Safeguarding Assessment** **Scope** This report is a bespoke technical assessment of the impact of two proposed windfarms on the Communication, Navigation and Surveillance, CNS, equipment operated by the Isle of Man Airport.	The Applicant acknowledges the industry expertise of NATS Safeguarding Office in undertaking this type of assessment on behalf of third party operators (in this case, the Isle of Man Airport).
REP4-040.2	Details of the proposed turbines and the CNS equipment to be assessed were provided by the airport.	The Applicant notes the IoM TSC's response.
REP4-040.3	No attempt has been made to estimate the operational significance of any technical impact identified. It is felt this can only properly be determined by specialists at the airport who are actively engaged in providing the required air traffic service.	The Applicant considers this a welcome acknowledgement. It is the responsibility of the operational specialists at Isle of Man Airport to undertake this assessment prior to lodging an objection. CAP764 (CAA Guidance and Policy on Wind Turbines) makes it clear that to justify an objection in planning, the aviation stakeholder must determine if the impact on the communications, navigation or surveillance equipment has a detrimental impact on the air traffic service it provides. This has not been undertaken. However, the Applicant does accept that there is potential for a material impact to the PSR and has therefore provided an agreed requirement that protects against impacts to air traffic services at Ronaldsway. This wording allows for the mitigation of other impacts (such as MLATS or VHF comms) should further evidence that they will arise be demonstrated in due course.
REP4-040.4	**Development details** The proposed Mona and Morgan windfarms are large offshore developments to be located in the Irish Sea to the South-East of the Isle of Man.	The Applicant notes the IoM TSC's response.
REP4-040.5	The turbine locations have not been finalised, however is not expected that the precise locations of the turbines	The Applicant notes the IoM TSC's response.

Reference	Isle of Man Territorial Sea Committee's submission	Applicant's response
	within the overall development boundaries will change the conclusions of the report significantly.	
REP4-040.6	Where required to undertake an assessment a set of representative turbine locations have been used; these are detailed in Appendix B and shown in the diagram below. For the purposes of any assessment covered by this report the turbines are all assumed to be 207 m to hub and 367 m to tip.	The Applicant notes the IoM TSC's response.
REP4-040.7	Refer to the IoM TSC submission for Figure 1 'Representative Turbine Locations'.	The Applicant notes the IoM TSC's response.
REP4-040.8	**Assessment required** Details of the equipment to be assessed were provided via email by the airport and include: • An ATCR33SE Primary Radar • Three Air-ground-air Radio Sites • A distributed MLAT System comprising 19 locations • The instrument landing systems for runways 26 and 08.	The Applicant notes the IoM TSC's response.
REP4-040.9	The diagrams below show the locations of the equipment to be assessed. Refer to the IoM TSC submission for Figure 2 'On-airfield CNS equipment' and Figure 3 'Remote CNS equipment'.	The Applicant notes the IoM TSC's response.
REP4-040.10	**Radar Technical Assessment** 3.1.1. False Tracks Using the theory as described in Appendix A and the turbine specific propagation profiles it has been determined that the terrain screening available will not adequately attenuate the signal, and therefore all the proposed turbines would return sufficient power to cause false primary plots to be generated. Not every turbine will generate a false plot every scan however they are likely to be of sufficient	First sentence: agreed. Second sentence: The Applicant agrees that not every turbine will generate a false plot every scan but questions the certainty of the false plots leading to the creation of false PSR tracks. The Applicant acknowledges that this may happen, not that it would happen.

Reference	Isle of Man Territorial Sea Committee's submission	Applicant's response
	frequency that they lead to the creation of false PSR tracks that would be displayed to controllers.	
REP4-040.11	3.1.2. Track Seduction Alongside these turbine-generated false tracks the underlying false plots can also lead to a phenomenon known as track seduction which is when a mature aircraft track overflying the area appears to deviate from its actual path because the radar mistakenly attributes one or more of the false plots to the aircraft track.	The Applicant notes the IoM TSC's response.
REP4-040.12	3.1.3. Probability of detection A reduction in the radar's probability of detection is also anticipated in the airspace directly above the turbines as the radar clutter suppression algorithms raise thresholds and track processing struggles to handle the mix of real/false plots. The extent of this area will depend on the radar's internal cell sizes and will extend beyond the windfarms themselves as once real aircraft tracks are lost they may take multiple scans to re-establish upon leaving the affected area.	The Applicant agrees that there may be a reduction in the radar's probability of detection in the airspace directly above the turbines, which is intrinsically linked to the Applicant's acceptance that there is potential for a material impact to the PSR. As noted in response to REP4-040.3, the Applicant has therefore provided an agreed requirement that protects against impacts to air traffic services at Ronaldsway, including impacts on the PSR.
REP4-040.13	3.1.4. Shadowing For turbines of this scale there will be a shadow cast behind the turbine where plot detection and accuracy is likely to be degraded. At this range the shadow zone will not extend far beyond the turbine and be limited to very low altitude and therefore shadowing is not deemed to be a significant factor.	Agreed.
REP4-040.14	**Navigational aid assessment** The components of the instrument landing system; two localisers, two glide paths, a DME and an NDB were assessed against the criteria from ICAO EUR Doc 015. This document provides restricted areas for turbine development in the vicinity of these types of equipment.	Agreed.
REP4-040.15	For the DME the restricted area only runs out to 3 km, and all of the turbines are comfortably outside this.	Agreed.

Reference	Isle of Man Territorial Sea Committee's submission	Applicant's response
REP4-040.16	For the NDB the criteria are even less restrictive and again all the proposed turbines lie outside both the range and slope restrictions.	Agreed.
REP4-040.17	The localisers and glide path criteria extend significantly further however the turbines are still comfortably clear of the restricted areas as shown below.	Agreed.
REP4-040.18	Refer to the IoM TSC submission for Figure 3 'Localisers and glide path restricted area criteria'.	The Applicant notes the IoM TSC's response.
REP4-040.19	**Radio Communication Assessment** CAP-670 Appendix A to GEN 02 provides the basis for air-ground radio assessments of turbines in the United Kingdom. The CAP-670 methodology involves two phases; an initial zonal assessment based on turbine classification and, if required, a more detailed carrier to interference ratio assessment.	The Applicant notes the IoM TSC's response.
REP4-040.20	The CAP-670 turbine classifications range from "Small" to "Large Industrial" based on turbine characteristics such as hub and tip height.	The Applicant notes the IoM TSC's response.
REP4-040.21	Unfortunately the largest turbine class tops out at 158 m to tip which is less than half the size of the turbines being proposed and therefore the published red/amber/green volumes of the zonal assessment are not applicable.	Agreed.
REP4-040.22	It is possible to assume "Amber" and to scale the more detailed carrier to interference, C/I, ratio assessment by using the formula provided to calculate a bi-static RCS outside the range provided in CAP670 tables 4 and 5.	Agreed.
REP4-040.23	Modelling 172 turbines is very computationally intensive and as these will not likely be the final locations this would not yield a definitive result in any case.	The Applicant notes the IoM TSC's response.
REP4-040.24	It was therefore decided to model the best (Mona T16) and worst (Morgan T11) case turbine to get a feel for	The Applicant notes the IoM TSC's response.

Reference	Isle of Man Territorial Sea Committee's submission	Applicant's response
	the likely volume of impact with the caveat that the cumulative effect of multiple turbines may inflate these volumes somewhat.	
REP4-040.25	Simulating a receiver at 1,000 ft yielded shadows directly behind the turbines and potential degradation at longer ranges out to the maximum range of the radio.	Noted. The Applicant welcomes this assessment – while it demonstrates some potential impact at 1000 ft above mean sea level, it is noted that aircraft are required to keep 500 ft above obstacles and the wind turbine tips will be at 1204 ft amsl – so the lowest altitude at which aircraft would transit the windfarms is over 1700 ft amsl. Further, aircraft flying at 1000 ft amsl at the edge of Isle of Man Airport's VHF coverage are unlikely to be receiving an air traffic service from the airport. It should also be noted that the CAP670 C/I modelling is worst case and assumes a wind turbine fully facing the AGA equipment. The prevailing wind direction (SW) in the Irish Sea mean that the Morgan and Mona turbines will rarely be fully facing the AGA equipment but rather will be facing away from the AGA equipment.
REP4-040.26	Refer to the IoM TSC submission for Figure 4 'AGA C/I <23 dB at 1,000 ft'.	The Applicant notes the IoM TSC's response.
REP4-040.27	At 2,000 ft the shadows are smaller and the long-range effects reduced to the fringes of cover where radio contact is likely intermittent anyway.	Noted. The limited impact at 2000 ft is of significance given the position noted above at REP4-040.25, whereby it is identified that the lowest transit height is over 1700 ft amsl. The Applicant also welcomes the acknowledgement that effects will be at fringes of cover. The Applicant considers that these comments reflect that, in reality, there will be no material reduction in the ability to provide VHF related air traffic services. However, as stated earlier, the requirement provided allows for resolution of such matters should they arise.
REP4-040.28	Refer to the IoM TSC submission for Figure 5 'AGA C/I <23 dB at 2,000 ft.	The Applicant notes the IoM TSC's response.
REP4-040.29	By 3,000 ft the shadow zone from each turbine has reduced further and no impact is predicted other than directly in the vicinity of each turbine.	The Applicant notes the IoM TSC's response.
REP4-040.30	Refer to the IoM TSC submission for Figure 6 'AGA C/I <23 dB at 3,000 ft'	The Applicant notes the IoM TSC's response.
REP4-040.31	By 5,000 ft the Mona T16 impact disappears entirely although the impact from Morgan T11 can theoretically be seen in simulations up to 9,000 ft.	The Applicant notes the IoM TSC's response.
REP4-040.32	**MLAT Assessment**	Agreed.

Reference	Isle of Man Territorial Sea Committee's submission	Applicant's response
	The distributed nature of the MLAT means that by design it is more resilient to distributed obstructions such as those proposed however there is very little formal guidance published on this topic.	
REP4-040.33	The Eurocontrol "How to assess the potential impact of Wind Turbines Surveillance Sensors" guidelines document is silent on this topic but does have specific sections on SSR shadowing that can be read across to MLAT performance.	Agreed.
REP4-040.34	In Annex D the guidelines justify an SSR protection range of 16 km (i.e. turbines out-with 16 km do not constitute a problem) based on a predicted 3 dB shadow zone of 1600 m x 45 m being operationally tolerable. Their analysis based on 1030 MHz and a 6 m diameter turbine tower.	The Applicant notes the IoM TSC's response.
REP4-040.35	To simulate the MLAT and larger offshore turbines 1090 MHz was used alongside an 8 m diameter turbine tower. The results vary with the distance between remote unit, RU, and turbine but the horizontal extent was always within the range of 2670 m x 56 m to 2900 m x 58 m.	The Applicant notes the IoM TSC's response.
REP4-040.36	The shadow zones for the 3 RU down the East coast of the island are shown below.	The Applicant notes the IoM TSC's response.
REP4-040.37	Refer to the IoM TSC submission for Figure 7 'MLAT Shadow zones from Meary Veg, Carnane and Ballasaig.	The Applicant notes the IoM TSC's response.
REP4-040.38	In order for the MLAT to be degraded the shadow zones from a sufficient number of RU's need to overlap such that the overall system cannot resolve the aircraft's position.	The Applicant notes the IoM TSC's response.
REP4-040.39	As can be seen from the following plot, based on the representative Morgan layout, the shadows rarely overlap and this situation would only be improved by including the coverage from additional RU's.	Noted. This is a key modelling finding. Figure 8 clearly shows virtually no overlap of shadows – and zooming in on Figure 7 demonstrates similar findings.

Reference	Isle of Man Territorial Sea Committee's submission	Applicant's response
REP4-040.40	Refer to the IoM TSC submission for Figure 8 'Morgan MLAT Shadow zones from Meary Veg, Carnane and Ballasaig.	The Applicant notes the IoM TSC's response.
REP4-040.41	In summary the turbines will cause shadows on individual RU's leading to holes in their coverage however as a whole the MLAT network should be relatively tolerant to obstructions of this nature. Any effects that are seen will be limited to the area in and around the turbines at low level altitudes equivalent to the heights of the turbines themselves.	Agreed. The Applicant considers this is a key conclusion. While there may be impacts on individual MLAT Remote Units, the distributed nature of MLAT provides resilience to any such individual impacts where the impact zones do not overlap. No meaningful overlap is demonstrated here. Further, it is a key recognition that if there were any impact, it would be limited to the area in and around the turbines, at turbine height. As noted above, aircraft must retain a 500 ft vertical and lateral separation from the turbines. Given these conclusions the Applicant considers that there is no demonstrated reduction in the ability to deliver air traffic service in relation to the MLAT assets. However, as before, it is noted that the broad reaching nature of the proposed requirement will ensure that should issues relating to MLAT be demonstrated in due course TSC will have recourse.
REP4-040.42	**Conclusions** **Navigational Aids** No impact is expecting on any of the airport's navigational aids.	Agreed.
REP4-040.43	**Surveillance** On the primary radar, false plots and detection problems will significantly degrade performance in the volume directly above the area around where the turbines are located. A less severe performance impact may also be felt over a wider area where track re-establishment issues manifest themselves.	Agreed. The Applicant confirms that this is why it is engaged on potential strategic PSR mitigation options with the Isle of Man Airport and has provided a requirement that will ensure mitigation of impacts on the PSR can be resolved post-consent, as the exact technical nature and means of delivery of mitigation cannot be known at this time.
REP4-040.44	On the MLAT the turbines will cause shadows on individual RU's leading to holes in their coverage however as a whole the MLAT network should be relatively tolerant to obstructions of this nature. Any effects that are seen will be limited to the area in and	Agreed. The Applicant considers that this clearly demonstrates that there is no technical impact on the MLAT system around the proposed wind farms. Further, as noted in CAP764, any impact on communications, navigation or surveillance equipment must have a detrimental impact on the air traffic service provided by the objection aviation stakeholder. As noted above, aircraft must retain 500 ft vertical and lateral separation from the turbines, such as the lowest altitude aircraft receiving

Reference	Isle of Man Territorial Sea Committee's submission	Applicant's response
	around the turbines at low level altitudes equivalent to the heights of the turbines themselves.	an air traffic service from the airport would be over 1700 ft amsl. There is no basis for an MLAT objection by Isle of Man Airport.
REP4-040.45	**Communications** Current guidance does not extend to turbines of this size however existing assessment techniques can scaled and conclusions drawn. Using the CAP670 C/I technique it appears there could be degradation in AGA signal quality in the area around and behind the turbines at low altitude but that this reduces as the height above the turbines increases.	Noted. While NATS' CAP670 C/I assessment demonstrates some potential impact at 1000 ft amsl above mean sea level, it is noted that aircraft are required to keep 500 ft above obstacles and the wind turbine tips will be at 1204ft amsl – so the lowest altitude at which aircraft would transit the windfarms is over 1700 ft amsl. Further, aircraft flying at 1000 ft amsl at the edge of Isle of Man Airport's VHF coverage are unlikely to be receiving an air traffic service from the airport. It should also be noted that the CAP670 C/I modelling is worst case and assumes a wind turbine fully facing the AGA equipment. The prevailing wind direction (SW) in the Irish Sea mean that the Morgan and Mona turbines will rarely be fully facing the AGA equipment but rather will be facing away from the AGA equipment.
REP4-040.46	**Primary RADAR False Plots** Refer to the IoM TSC submission for equations.	The Applicant notes the IoM TSC's response.
REP4-040.47	**Secondary RADAR Reflections** Refer to the IoM TSC submission for equations.	The Applicant notes the IoM TSC's response.
REP4-040.48	**Shadowing** When turbines lie directly between a RADAR and an aircraft not only do they have the potential to absorb or deflect enough power such that the signal is of insufficient level to be detected on arrival. It is also possible that azimuth determination, whether this done via sliding window or monopulse, can be distorted giving rise to inaccurate position reporting.	The Applicant notes the IoM TSC's response.
REP4-040.49	**Terrain and Propagation Modelling** All terrain and propagation modelling is carried out by a software tool called HTZ Communications (version 2024.2). All calculations of propagation losses are carried out with HTZ Communications configured to use the ITU-R 526 propagation model.	The Applicant notes the IoM TSC's response.
REP4-040.50	**Morgan**	The Applicant notes the IoM TSC's response.

Reference	Isle of Man Territorial Sea Committee's submission	Applicant's response
	A 100 turbine layout provided to NATS in 2021 has been used. Refer to the IoM TSC submission for table of coordinates.	
REP4-040.51	**Mona** A 72 turbine layout provided to the airport by the developer specifically for this assessment has been used. Refer to the IoM TSC submission for table of coordinates.	The Applicant notes the IoM TSC's response.
REP4-040.52	**Isle of Man Territorial Sea Committee ISH2 Action Points** Please find below our response to Action point no. 19. We have previously responded regarding action point no. 15.	The Applicant notes the IoM TSC's response.
REP4- 039.1	**Response to Action point no. 19** **No 19. Comment on the Applicant's response to ExQ1 MO1.17 [REP3-006] regarding the five proposed Ramsar Sites on the Isle of Man.** Potential Ramsar sites were identified in a project with a contractor working with Crown Dependency and Overseas Territory governments. One of these (Ballaugh Curragh) has been designated and the others remain as site proposals, but not yet formally put forward for designation, though requiring consideration of national protection measures (e.g. ASSI) alongside Ramsar designation. They therefore do show where there is international level interest, but have not been given full protection across those areas. With regard to designated sites, we previously noted that there are Areas of Special Scientific Interest with designated coastal cliff breeding bird interest, including seabirds,	The Applicant welcomes and notes the IoM TSC's response. The Applicant has submitted a clarification note in response to HAP-ISH2-20 which provides further information on the IoM Ramsar sites (S_D5_3.2) and will form an appendix to HRA Stage 2 information to support an appropriate assessment Part Three: Special Protection Areas and Ramsar Site assessments (APP-098).

Reference	Isle of Man Territorial Sea Committee's submission	Applicant's response
	which haven't been listed as sites of national interest for ornithology, but also pointed out that some of our biggest seabird colonies are not currently designated as ASSIs, as this programme is not completed. The Applicant therefore included all of the Manx colonies in coastal sections within the apportioning chapter on ornithology (Volume 4, Annex 5.5). Additionally, as identified by the Applicant, the coastal potential Ramsar sites are covered within the Isle of Man Marine Nature Reserves (MNRs) which were covered in the ES. We are therefore content that an appropriate view has been given to these colonies within the Statement, which indicates no LSE and therefore concur with the Applicant's response to ExQ1 MO1.17.	

2.2 Marine Management Organisation

Table 2.2: REP4-041 – Marine Management Organisation.

Reference	Marine Management Organisation's submission	Applicant's response
REP4-041.1	**Comments on responses to Examining Authorities (ExA) Questions (ExQ) 1** The MMO has reviewed the Applicants response to the ExQ1 (REP3-006) and has provided comments on relevant points in Table 1 below. **GEN 1.8** **MMO's Deadline 4 Response** The MMO has reviewed the Offshore In-Principle Monitoring Plan and the Mitigation Monitoring Schedule and has provided detailed comments in sections 3 and 4. The MMO notes the Applicant has referred to the standard monitoring requirements informed by MMO (2014). The MMO would highlight to both the Applicant and the ExA that there is an ongoing project on standardising monitoring data. The MMO's is currently working to standardise the collecting and reporting of offshore wind environmental monitoring data in English waters. To do this, the MMO identified receptors and types of monitoring for which an agreed approach to data collection already exists. We are currently validating the standards that we have identified through engagement with industry, SNCBs, and The Crown Estate. We will then work with case teams to implement these standards, so that they become the default approach to data collection. Standardisation will only be applied to receptors where agreed standards exist, and standardisation would deliver benefits. Through the project, we will also identify areas where further work needs to be done to agree standards. The project is unlikely to be concluded by the end of this Examination. However, the MMO is currently looking at the potential to include updates within the condition or the plan to ensure all windfarms will abide by the agreed standardised requirements and would welcome any comments from the Applicant.	The Applicant notes the MMO's response and the Applicant will continue to engage with the MMO.

Reference	Marine Management Organisation's submission	Applicant's response
REP4-041.2	**GEN 1.9** **MMO's Deadline 4 Response** The MMO has requested that an assessment of the prevalence/abundance of sediment bound paint flakes pre- and post-construction would further our understanding of this potential impact on benthic ecology. However, the MMO notes that no further assessment of this impact has been proposed. Adequate sampling of the pre-construction condition is a pre-requisite for robust comparison with post-construction condition and the MMO requests the Applicant to seek opportunities for collaboration between researchers and industry to ensure that the opportunity to investigate this relatively recently identified potential impact to benthic ecology (see Tagg et al. 2024) is not missed. The MMO understands the Applicant is not going to do this. At this stage the MMO would encourage the Applicant to consider this additional monitoring to provide information for the industry as a whole. Furthermore, the MMO welcomes the Applicant's commitment to review suitable imagery acquired during monitoring related to maintenance activities for the presence of Invasive Non-Native Species (INNS) which will allow for an assessment of unambiguous INNS. However, the presence of cryptic INNS will not be adequately assessed through review of this imagery alone. The MMO notes that no significant effect from INNS was predicted within the Environmental Statement because of the Applicants commitment to adopt measures which act to reduce the likelihood of introduction of INNS. However, should INNS be identified during review of the imagery, the MMO requests that the Applicant reconsiders the collection of samples to: 1) confirm species identification and; 2) understand the fouling assemblage more fully to include cryptic INNS.	The Applicant notes the MMO's response and directs the MMO to their Response to the Examining Authority's Written Questions at Deadline 4 (see REP3-037.3 of REP4-007) which refers to the full responses provided in the Applicant's Deadline 3 response to the MMO's written submission at Deadline 2 (see REP2-029.44 and REP2-029.45 of REP3-004). The Applicant notes that these matters are now agreed in the Statement of Common Ground between the Applicant and the MMO (REP3-028) and therefore considers these matters resolved.
REP4-041.3	**GEN 1.14** **MMO's Deadline 4 Response** The MMO has reviewed the Applicant's Deadline 2 submission (REP2-006) regarding the North West Marine Plan Policy Assessment and confirms that the assessment is appropriate and has satisfied the MMO's request. The MMO thanks the Applicant for providing the Marine Plan Policy Assessment in a standalone document which has addressed all relevant policies within the North West Marine Plan Policy, and has signposted the relevant documents for further information.	The Applicant notes and welcomes the MMO's response.

Reference	Marine Management Organisation's submission	Applicant's response
REP4-041.4	**Decommissioning** **GEN 1.21** **MMO's Deadline 4 Response** The MMO notes that decommissioning will not be consented as part of the DCO and a new marine licence will be required. To assist with the holistic review of the project and understanding of the conclusions within the Environmental Statement the MMO believes that an outline plan would be beneficial at this stage. The MMO will provide an update to the Applicant as soon as possible to enable discussions outside of the written process and will provide the ExA with an updated position for Deadline 5.	The Applicant notes the MMO's response. The Applicant reiterates the response provided in REP3-006 that an outline plan is not appropriate at this stage. There is no condition requiring a decommissioning plan to be submitted to the MMO within the deemed Marine Licences of the draft DCO and that is consistent with recently made offshore wind farm DCOs. There is a requirement for a written decommissioning programme pursuant to section 105(2) of the Energy Act 2004 within the draft DCO. The Applicant has previously submitted that a separate legislative regime is in place under the Energy Act 2004 to control the decommissioning process for offshore renewable energy installations and therefore it is not considered necessary or appropriate to duplicate this through consents issued under the Planning Act 2008; therefore no outline decommissioning plan is considered to be necessary for inclusion with this application (REP3-006).
REP4-041.5	**Commercial Fisheries** **CF 1.1** **MMO's Deadline 4 Response** The MMO welcomes the updates to the OFLCP and Offshore In-Principle Monitoring Plan actioned by the Applicant to include scallop monitoring. The MMO understands that this will be secured in the deemed marine licences in schedules 3 and 4 under condition 20(1)(c), which will include submission to the MMO. The MMO will keep a watching brief on if any further updates are requested by interested parties. The MMO is going to discuss this with the IoM TSC to understand the requirements of monitoring and if the information in the current monitoring report provides enough information for all parties to be satisfied of what monitoring will take place. Noting the detailed methodology will be discussed post consent. In addition to this the MMO notes commercial fisheries monitoring has not been standard in many offshore wind projects and is reviewing the requirement and how these would be processed, should the impacts show more impact than what was predicted within the ES. As per the comments in CF1.7 on the OFLCP the MMO will not act as an arbitrator in relation to compensation and welcome this inclusion within the document. The MMO will provide an update in due course.	The Applicant notes the MMO's response regarding discussions with the IoMTSC on the scallop monitoring and awaits their submission at Deadline 5. The final Fisheries and Liaison Co-existence Plan (FLCP) will be prepared and submitted to MMO for approval post-consent, as secured in the deemed marine licences (dML) in Schedules 3 and 4 of the draft DCO (REP4-013). The Outline FLCP makes it clear that the MMO would not act as an arbitrator as discussed with the MMO, and, the MMO will confirm that the final FLCP has been developed in accordance with the Outline FLCP. The Applicant highlights that the Outline FLCP submitted at Deadline 4 (REP4-022) states that the Scallop Mitigation Zone (SMZ) shall cover a minimum area of 34 km^2, an indicative location of the SMZ is presented in Figure 1.3 of REP4-022. At Deadline 5, the Applicant can confirm that the minimum size is now definitive and has also given consideration to a maximum extent of the SMZ. Please also see our response at Deadline 5 regarding the size of the SMZ (CF 2.2 of S_D5_5). Regarding if impacts (to scallop) are more than predicted in the Environmental Statement, the Applicant has responded to the ExA Question CF 2.1 at Deadline 5 and the Applicant directs the MMO to that response in S_D5_5.3.
REP4-041.6	**CF 1.7** **MMO's Deadline 4 Response**	The Applicant notes and welcomes the MMO's response.

Reference	Marine Management Organisation's submission	Applicant's response
	The MMO thanks the Applicant for providing clarification that the MMO will not act an arbitrator or be involved in any commercial negotiations with any association/ organisation, and/ or individual fisheries stakeholders. This comment is found in 1.3.3.2 of the updated FLCP.	
REP4-041.7	**DCO Draft Development Consent Order (DCO)** **Parts 1 and 2** **DCO 1.1** **MMO's Deadline 4 Response** The MMO thanks the Applicant for providing the requested changes to the updated draft DCO and notes the required changes made the paragraph 9. The MMO may provide further comments to the Applicant and then the ExA in due course. **DCO 1.2** **MMO's Deadline 4 Response** The MMO welcomes the update to article 7 and has noted the comments from the Applicant and will review these and provided details comments direct to the Applicant and then to the ExA at Deadline 5. The MMO has added further comments on this article below. As there is potential for the MMO not to be consulted, this will impact our duty as the regulatory authority of the dMLs. Even where the MMO must be consulted, there is no provision for the MMO's comments to be adhered to, therefore there is no power to the MMO to complete its regulatory duty. As a matter of public law, the MMO does not think the Order can contain a provision transfer of Benefit of the dML as is being proposed. PA 2008 Section 120(3) should read against Section 120(4) and Part 1 of Schedule 5, which the MMO thinks limits what the Order can contain to provisions which deem a marine licence to be granted under the order and to the conditions that should be deemed attached to that licence. The MMO does not consider this to be sufficiently wide as to allow the inclusion of provisions which transfer the Benefit of the Order. If the Order cannot contain a dML transfer provision for the reasons set out, then it cannot exclude Section 72 of Marine and Coastal Access Act 2009 (MCAA 2009) in the way proposed as Section 120(5) is limited to	**DCO 1.1** The Applicant notes and welcomes the MMO's response. **DCO 1.2** Please see the Applicant's response to the Examining Authority's second written Questions DCO 2.2. The drafting of article 7 of the draft DCO is lawful, justified and well-precedented.

Reference	Marine Management Organisation's submission	Applicant's response
	applying/modifying/excluding only those statutory provisions which relate to any matter for which a provision may be made in the order. Overall, the MMO continues to raise objection to Article 7 and will provide further comments to the Applicant as soon as possible and follow that to the ExA at each deadline.	
REP4-041.8	**Schedule 1 – Authorised Development** **DCO 1.3** **MMO's Deadline 4 Response** The MMO has reviewed the updated draft DCO (REP3-014) and notes the inclusion of the following wording for maximum pile hammer energies in paragraph 2 of Schedule 2: *5) In the event that driven or part-driven pile foundations are proposed to be used, the hammer energy used to drive or part-drive the pile foundations must not exceed—* *(a) 4,000kJ in respect of pin pile foundations at up to 16 locations; and* *(b) 3,000kJ in respect of any other foundations.* The MMO welcomes this update and considers that the specification of maximum pile hammer energy in Schedule 2 Part 2 secures that sound generated from piling does not exceed that assessed within the ES.	The Applicant notes and welcomes the MMO's response and considers this matter resolved.
REP4-041.9	**DCO 1.9** **MMO's Deadline 4 Response** The MMO understands similar conditions have been included on other offshore wind DCOs either within the DCO or dML or both. As the requirements are already secured within the DCO the MMO questions the benefit of the duplication of including these within the dML but is happy to discuss these requirements with DIO, NATS and the Applicant.	The Applicant agrees with the MMO that there is no benefit to the duplication of these provisions within the dML. These are suitably controlled by the inclusion of a requirement in the DCO, where non-compliance would be a criminal offence. There is therefore no need to include them again within the dMLs.
REP4-041.10	**DCO 1.10** **MMO's Deadline 4 Response**	The Applicant notes and welcomes the MMO's response and considers this matter resolved.

Reference	Marine Management Organisation's submission	Applicant's response
	The MMO has noted the amendments actioned by the Applicant regarding paragraph 9 in Schedules 3 and 4 of the draft DCO (REP2-011) and thanks the Applicant for making the requested amendment. The MMO may provide further comments to the Applicant and then the ExA in due course.	
REP4-041.11	**Schedules 3 & 4 – draft Deemed Marine Licences** **DCO 1.13** **MMO's Deadline 4 Response** The MMO will provide an update to the Applicant as soon as possible to enable discussions outside of the written process and will provide the ExA with an updated position for Deadline 5.	The Applicant notes the MMO's response and awaits any further comments.
REP4-041.12	**DCO 1.14** **MMO's Deadline 4 Response** The MMO has reviewed the updated draft DCO (REP3-014) and welcome this alongside the comments on transfer of benefit, the MMO is reviewing this paragraph and will provide comments to the Applicant as soon as possible to continue discussions outside the written process and will provide an update to the ExA at Deadline 5.	The Applicant notes the MMO's response and awaits any further comments.
REP4-041.13	**DCO 1.15** **MMO's Deadline 4 Response** The MMO will review the Applicants response to our DL3 comments to this question.	The Applicant's latest substantive comments on this point are set out in comments in REP3-037.100 to REP3-037.104 in document REP4-006.
REP4-041.14	**DCO. 1.16** **MMO's Deadline 4 Response** The MMO has noted the updated wording and thanks the Applicant for the amendment.	The Applicant notes and welcomes the MMO's response.
REP4-041.15	**DCO 1.18** **MMO's Deadline 4 Response**	The Applicant responded to this within REP4-007 (at item REP3-037.16) confirming that all monitoring is captured within the Offshore IPMP, as requested by the MMO. The Applicant considers this matter resolved.

Reference	Marine Management Organisation's submission	Applicant's response
	The MMO will review the Applicants response to our DL3 comments to this question.	
REP4-041.16	**DCO 1.20** **MMO's Deadline 4 Response** The MMO looks forward to reviewing the Construction method statement scheduled for Deadline 4.	The Applicant notes the MMO's response. The Outline Construction Method Statement has been submitted into the Examination at Deadline 4 (REP4-032) and therefore considers this matter resolved.
REP4-041.17	**DCO 1.21** **MMO's Deadline 4 Response** The MMO awaits an update from the Applicant regarding comments raised by the MMO at Deadline 3 regarding Condition 20(1)(f) and/or Condition 20(2) in response to the ExQ.	The Applicant updated the draft DCO at Deadline 4 to reflect the requests by the MMO. The Applicant therefore considers this matter resolved.
REP4-041.18	**DCO 1.23** **MMO's Deadline 4 Response** The MMO will review the Outline Environmental Management Plan at Deadline 4 and will look to provide comments by Deadline 5.	The Applicant notes the MMO's response. The Outline Offshore Environmental Management Plan has been submitted into the Examination at Deadline 4 (REP4-018), and therefore considers this matter resolved.
REP4-041.19	**DCO 1.24** **MMO's Deadline 4 Response** As per the MMO's response to ExQ DCO 1.24, the MMO will be looking for the Applicant to provide the following: an outline PEMP and an update to Condition 20(1)(e) to read as follows: *"a project environment management plan which accords with the outline project environment management plan, which shall be submitted to the MMO at least six months prior to commencement of the authorised scheme or the relevant part thereof, to include details of"* It would be beneficial to include this as part of the plan so it was clear that the Isle of Man would receive this plan.	The Applicant updated the draft DCO at Deadline 4 to require under condition 20(1)(e) that the offshore environmental management plan submitted to the MMO for approval had to accord with the outline environmental management plan. The Applicant has at Deadline 5 updated the timescales for submission to six months, as per the request from the MMO. There are minor differences in the way that the condition is worded within the draft DCO to align with the structure of condition 20 as a whole, but the Applicant considers the substantive points the same. The Applicant therefore considers this matter resolved.
REP4-041.20	**DCO 1.25** **MMO's Deadline 4 Response** As stated in the MMO's response to ExQ DCO 1.25, The MMO always prefers any exclusions zones or additional mitigation to be required to be clear on the	The Applicant has now updated the OFLCP to make the SMZ section more definitive, therefore removing any potential for subjectivity or uncertainty in the discharge of the plan post-consent. This follows on from discussions with the MMO and further representations from the fisheries stakeholders.

Reference	Marine Management Organisation's submission	Applicant's response
	face of the dML and not within a plan. However, any plan and its contents is enforceable and would be approved by the MMO in consultation with interested parties prior to the start of construction. The MMO has concerns on the SMZ only being indicative at this stage and any outstanding comments from Interested parties. If the SMZ is finalised a standalone outline plan could be beneficial. The MMO notes that the Applicant states that the inclusion of the SMZ within the fisheries liaison and co-existence plan (FLCP) is appropriate. In addition to this the MMO notes a scallop mitigation zone has not been standard in many offshore wind projects and is reviewing the requirement and how this would be processed, should the final area not be agreed at this stage. The MMO believes that the zone should be agreed during the determination process. The MMO will provide an update in due course.	The updated OFLCP submitted at Deadline 5 (S_D5_13) now confirms the minimum area for the SMZ (34 km^2) and a definitive location of the SMZ. Additionally, the Applicant following further discussions with the MMO has also considered the maximum extent of the SMZ, which would be 37 km^2 and would extend to the Order Limits in the western part of the Array Area. The final SMZ will therefore be either the minimum (34 km^2) or maximum (37 km^2) extent, depending on peripheral turbine installation. If it is the maximum extent, this can only be at the discretion of the Applicant, as informed by post consent detailed site investigation surveys that will feed into the final design process, and turbine procurement process. Under this maximum extent scenario, there will be no surface or subsurface infrastructure in this part of the Array Area. This has also been reflected in the update OFLCP submitted at Deadline 5 (S_D5_13).
REP4-041.21	**DCO 1.27** **MMO's Deadline 4 Response** i) Without prejudice to the comments on UXO activities, the MMO is content with two separate conditions this is because the MMO understands that the activities do not take place at the same time as the UXO investigations and clearance activities take place prior to the seabed work for any piling. ii) The MMO does not believe that separate documents are required at this stage. As long as all the information requested from the MMO and interested parties is in the final outline MMMP and it is clear which mitigation is for Piling vs UXO activities. iii) The MMO is content for the SNCB to be included as a consultee. iv) The MMO has no objection to including consultation with the IoM government in any condition. v) The MMO is content with the current drafting Condition 28(3) states that the Applicant must adhere to the MMMP (final document post consent) while doing construction monitoring, whereas condition 20(h) is the submission of the MMMP In accordance with the outline MMMP.	The Applicant wishes to highlight that it has reviewed and amended the DCO at Deadline 5 in response to feedback from the MMO that conditions controlling UXO and piling activities should be separated throughout. The Applicant considers that this is now addressed in the updated draft DCO (S_D5_7).

Reference	Marine Management Organisation's submission	Applicant's response
REP4-041.22	**Marine Fish & Shellfish Ecology** **MFS 1.2** **MMO's Deadline 4 Response** The MMO has previously highlighted that in the Applicant's UWN assessment, the modelled 135 dB noise contour for behavioural responses in herring (as per Hawkins et al. 2014), fully overlapped with high intensity herring spawning grounds to the southeast of the Isle of Man, and partially overlapped with high intensity herring spawning grounds to the north and northeast of the Isle of Man. The updated UWN modelling to predict the range of impact for physiological effects in cod provided in Annex 3.1, shows that physiological effects of TTS in cod (as presented in Figure 1.3) extend over much of the high intensity cod spawning ground. At present, the UWSMS strategy only contains a high-level commitment to explore noise abatement options, which does not constitute an explicit and enforceable strategy for reducing the range of noise impacts. Until such time that the Applicant produces an alternative piling noise reduction strategy under the UWSMS (which the Applicant has indicated will be done post-consent), the recommended seasonal piling restrictions represent the only actionable and enforceable mitigation option currently on the table for mitigating the significant impacts to spawning cod and herring which were identified in the ES. The MMO considers that the recommended seasonal piling restrictions are not disproportionate to the ecological risk and represent a necessary, and the only available, safeguard against significant impacts to spawning cod and herring from unmitigated piling associated with this project.	The Applicant has continued discussions on the approach to mitigation of underwater sound with the MMO and other statutory bodies and welcomes continued engagement between the parties post Examination and during the post consent phase. The Applicant would reiterate the commitment being made to reduce effects on spawning cod and herring from piling operations to minimise the risk, as identified during the pre-Application phase, to these receptors. The UWSMS outlines how these risks would be minimised in line with mitigation hierarchy, with section 1.7 outlining how the project design would be refined from the Maximum Design Scenario to the final project, including final number of foundations to be piled, refined hammer energies at particular locations, duration of piling and piling programme (including details of what work may be undertaken during sensitive periods for fish spawning). This final design would be discussed with the MMO and other stakeholders to determine whether further mitigation is required for the relevant receptors. Section 1.8.2 of the UWSMS outlines the measures which could be employed if required and includes minimising work during the sensitive periods for cod and herring (these could be combined with spatial phasing) and use of Noise Abatement Systems to reduce the magnitude of noise emitted into the marine environment if required. The requirement for specific mitigation (should these be required following final design) would be discussed and agreed with the MMO. The piling operations would not be able to commence until the MMO approve the UWSMS as detailed in condition 22 of each dML within the draft DCO (S_D5_7). Notwithstanding the project alone conclusion, the Applicant is committed to reducing the contribution of the Morgan Offshore Wind Farm Generation Assets to the cumulative effect, which will also reduce project alone effects on cod spawning, as set out in section 1.8.2 of the UWSMS (e.g. through temporal phasing or Noise Abatement Systems). The Applicant has updated the UWSMS to clarify this point that mitigation and project refinements would also be targeted at the cod spawning season. The Applicant has provided further detail on cod spawning period in REP4-010 which suggests peak spawning for cod occurs in March. The Applicant will discuss this further with the MMO and will update the UWSMS accordingly to account for this, noting that the UWSMS is an outline document and will be further updated post consent.

Reference	Marine Management Organisation's submission	Applicant's response
REP4-041.23	MFS 1.3 **MMO's Deadline 4 Response** Offshore Wind Farm (OWF) turbines being installed in UK waters today are significantly larger than those installed several years ago. Wind farms generally have a long operational lifespan and may consequently produce a prolonged source of underwater noise, although monitoring and measurement data is limited (Mooney et al., 2020). Hawkins (2022) identified that the operation of wind turbines generate substrate vibration known as "ground roll". This vibration may travel great distances, creating particle motion and sound pressure in the water, particularly at low frequencies. The MMO considers that sounds during the operational phase would not be expected to differ significantly from anthropogenic background noise and therefore minimal impact would be inferred. Increases in vibration at the seabed and changes to particle motion or pressure waves could elicit a response in some shellfish and there may be some potential of chronic impacts especially at lower frequencies (Hawkins & Popper, 2016). However, there is currently little documented evidence of direct impact on shellfish receptors from operational noise and limited consensus on how to assess the impacts. Quantifying and understanding the underwater sound scape could give insight to changes that occur at the phases of construction and operation which can feed into analysis of any population monitoring outcomes pre and post project. The MMO considers that the justification given by the Applicant in Table 3.8 of the ES is acceptable for scoping out impacts to fish from continuous UWN from wind turbine operations. Popper et al., (2014) provides the most current, empirical sound exposure guidelines for fish for various UWN sources including for impulsive noise generated by pile driving as well as for continuous noises. There is evidence for auditory tissue effects or temporary threshold shift (TTS) caused by continuous sound may occur in species with very high hearing sensitivity (clupeids) however in the studies cited, the full replacement of the sensory hair cells which hearing-sensitive fish use to detect sound recovered in a number of days following exposure to the continuous sound. Popper et al., goes on to state that in several species of fishes lacking specializations for sound pressure detection (elasmobranchs), studies showed no TTS in response to long term noise exposure. Popper et al., also include that continuous noise may change fish behaviour (e.g., induce avoidance, alter swimming speed and direction, and alter schooling behaviour) but that the	The Applicant acknowledges and welcomes the agreement on the scoping out of this impact from further assessment.

Reference	Marine Management Organisation's submission	Applicant's response
	studies which note these effects lack quantification of the exposure sound levels. More study is needed in this particular area for more definite conclusions to be drawn about the significance of the effect which continuous noise generated by operational turbines has on fish of different hearing abilities. In comparison with impulsive underwater noise generated by pile driving and unexploded ordnance activities, the introduction of continuous noise from turbine operation does not constitute a significant concern to the wellbeing of fish or shellfish species as fatal effects and mortal injuries are not expected, and effects to hearing ability (TTS) are largely temporary. The MMO is content for the impact pathway of continuous underwater sound from wind turbine operation to be scoped out of further assessment.	
REP4-041.24	MFS 1.6 **MMO's Deadline 4 Response** With regards to Shellfish, the MMO considers that construction activities and decommissioning which result in habitat loss or disturbance would be considered 'long-term' due to the timeframe for seabed and sediment composition to return to original being typically longer than a commercial shellfish lifespan. Impact on more sedentary shellfish species maybe considered higher as they are less nomadic and often related to certain substrate types for most of their life cycle. The monitoring activities planned to pre and post construction will shed more light onto this parameter for the shellfish species within the area and inform future actions. The MMO notes that Natural England agrees with the ExA that more persistent impacts from habitat disturbance, may be considered long term. However, there remains an argument for EIA impacts to still be considered temporary. This is because following cessation of disturbance, there is evidence that fish populations can recover and without further seabed disturbance be maintained over the operational phase of the windfarm and/ or post decommissioning. Therefore, Natural England advised that any further habitat disturbance impacts from decommissioning should be considered as a separate discrete impact. The MMO notes that Natural England has determined that mitigation measures for loss of supporting habitat for fish and shellfish are not required for this project.	The Applicant acknowledges the response from the MMO on this point and notes that no further action is required to close out this point and is therefore resolved.
REP4-041.25	**Marine Mammals**	The Applicant notes the response. The Applicant re-iterates the response to MM 1.2 (REP3-006) that it is considered highly unlikely that a UXO would

Reference	Marine Management Organisation's submission	Applicant's response
	MM 1.2 **MMO's Deadline 4 Response** The MMO understands that UXO clearance will be undertaken at separate project stages and that there will be no scenario where piling activities are taking place at the same time as UXO clearance. It may be necessary to restrict or control concurrent piling and UXO clearance activities to reduce the risk of potential impact from adverse effects of underwater noise. For example, in the case of the Southern North Sea Special Area of Conservation (SAC), such activities are controlled/managed to ensure that noise thresholds are not breached. The cumulative effects of multiple projects involving piling and UXO clearance may be significant, especially when these activities occur simultaneously. At this stage the MMO does not believe this is required.	be found unexpectedly during the construction phase, however the Applicant clarifies if this scenario arose, no piling would be carried out. In addition, the Applicant is not located within or near a Special Area of Conservation. The nearest site is the North Anglesey Marine/Gogledd Môn Forol Special Area of Conservation (SAC), which is 28.2 km from the Morgan Array Area and Natural Resources Wales have confirmed no adverse effects on integrity of this SAC.
REP4-041.26	MM 1.3 **MMO's Deadline 4 Response** The MMO has no comments to add, it is up for the Applicant to be content that all required licensable activities are within the dML.	The Applicant notes the MMO's response.
REP4-041.27	MM 1.5 **MMO's Deadline 4 Response** The MMO agrees that there is currently no defined threshold criteria for the masking of biological sounds. However, the MMO does not agree that there is insufficient evidence to evaluate masking. In this situation, the MMO requests the Applicant discusses the potential risks of masking and refers to the relevant peer-reviewed literature. For instance, Erbe et al. (2016) and Erbe et al. (2019) to review their understanding of masking in marine mammals, and the effects of ship/vessel noise on marine mammals including masking.	The Applicant highlights that the ExA posed this question to the MMO, Natural England and Natural Resources Wales (NRW). As per the Applicant's Response to IPs response to Examining Authority's Written Questions (REP4-007) the Applicant refers to their response to point MM 1.5 at Deadline 3 regarding the lack of published criteria and directs the ExA to NE's response at Deadline 3 (REP3-048.13 in S_D4_5 Applicants response to IPs responses to EXQ1 F01) which agrees that there is limited evidence to inform an assessment on masking and to the response by NRW (A) at Deadline 3 (REP3-051.10) which states that they are satisfied with the Applicant's assessment of masking. Paragraph 4.9.1.2 in Volume 4, Chapter 2 Marine Mammals (AS-010) highlighted there are four agreed zones of influence, which includes masking, and states there is insufficient scientific evidence to properly evaluate masking and no relevant threshold criteria to enable a quantitative assessment. The Applicant highlights that the MMO agrees with the Applicant that there is no threshold against which to assess masking of biological sounds. The Applicant has considered masking (such as

Reference	Marine Management Organisation's submission	Applicant's response
		hindering prey capture) where relevant within sections assessing the sensitivity of marine mammal receptors to behavioural disturbance, but it is not possible to assess masking alone quantitatively and robustly in the absence of agreed thresholds. The Applicant also carried out a detailed literature review which considered the effect of vessels on marine mammals (see PD1-010) and highlighted this did not change the outcome of the assessments in Volume 4, Chapter 2 Marine Mammals (AS-010). Therefore the Applicant has completed as full an assessment as possible and is standard practice and sufficient for the EIA. The Applicant highlights the assessment methodology was agreed through the Expert Working Group process (see Table 4.5 in Volume 4, Chapter 2 Marine Mammals (AS-010)). The assessment methodology is also considered agreed by the MMO as set out in the SoCG between Morgan Offshore Wind Limited and the MMO (REP3-028) (the MMO deferred to relevant SNCBs). The request for further discussion of masking was not highlighted during the EWG process or during S42 consultation. The Applicant has reviewed Erbe *et al*. (2019) and highlights that, whilst the paper has useful information on studies of masking in mysticetes and pinnipeds, the authors conclude that understanding on the potential effects of watercraft noise is still lacking and a number of knowledge gaps remain. Similarly, Erbe *et al.* (2016) reviews the understanding and potential framework of assessment of masking in marine mammals, but the authors highlight predicting masking is complex and difficult given the variety of factors that must be accounted for, and more research is needed (particularly before masking can be incorporated into regulation strategies or approaches for mitigation). Therefore, the Applicant considers that whilst the studies by Erbe *et al.* provide useful literature on the effects of masking, it does not propose accepted approaches to the evaluation of masking (rather highlights research recommendations needed). The Applicant therefore considers that the inclusion of these papers in Volume 4, Chapter 2 Marine Mammals (AS-010) would not have made a material difference to the outcome of the assessment and is not required. The Applicant has developed the UWSMS to address the potential impacts on marine mammals (and fish) species.
REP4-041.28	MM 1.8 **MMO's Deadline 4 Response**	The Applicant notes and welcomes the MMO's response.

Reference	Marine Management Organisation's submission	Applicant's response
	The MMO advise that the Soloway and Dahl (2014) is widely accepted with regards to the UXO High Order Clearance Sound Modelling, despite its age.	
REP4-041.29	MM 1.12 **MMO's Deadline 4 Response** As discussed in the MMO's response to ExQ1, the MMO is aware of multiple mitigation options for both piling (such as bubble curtains) and UXO clearances (low order techniques) and the MMO understands these will be finalised post consent through the MMMP. The MMO is aware that Defra are actively considering updating marine noise policy, and that an announcement is likely to be made in the near future. The policy direction is towards an expectation that all offshore wind developers carrying out pile driving activity in English waters should 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. The MMO will update the ExA on any policy changes. MM 1.13 **MMO's Deadline 4 Response** The MMO advises that there is a possibility that an animal fleeing the sound of construction/maintenance vessels (or indeed piling/ UXO clearance) from one project might find themselves within the zone of influence of another project. The MMO therefore considers that this should be adequately assessed within the cumulative assessment.	The Applicant notes the MMO's response and directs the MMO to our previous responses on the use of noise abatement systems (NAS) (e.g. Applicant's response to the MMO with respect to REP3-037.58 and REP3-037.60 in REP4-009). The Applicant reiterates that the use of NAS will be considered in the context of any potential forthcoming changing government policy with respect to management of underwater sound in the marine environment as part of the development of the UWSMS post consent. This approach ensures that concerns regarding underwater sound impacts can be fully addressed with appropriate and proportionate measures implemented, where necessary, based upon the final project design and construction schedule and taking account of underwater sound policy at that time.
REP4-041.30	**MM 1.18** **MMO's Deadline 4 Response** The MMO has noted the Applicant's position and will review the Defra policy alongside the Applicants position once the policy issued by Defra.	The Applicant notes the MMO's response.
REP4-041.31	**European Protected Species Licences** **MM 1.24** **MMO's Deadline 4 Response** The MMO is content that the Applicant will submit any necessary EPS licence applications post consent. The approval of the EPS licence requires more	The Applicant notes that this response is as per submitted by the MMO at Deadline 3 in response to the ExA written questions (REP3-037.31) to which the Applicant provided a response at Deadline 4 (REP4-007). With respect to the use of NAS the Applicant refers the MMO to our response

Reference	Marine Management Organisation's submission	Applicant's response
	detail in relation to the design and any required mitigation. The MMO would highlight that the EPS has different legislative requirements in providing consent and the test for mitigation could be considered higher. Therefore, as per our comments in REP1-053 the MMO strongly advises that NAS is committed to at this stage.	above to MMO's Deadline 4 response MM1.12 (REP4-041.29) and to REP3-037.31 in REP4-007 (as above).
REP4-041.32	**Marine Physical Processes and Benthic Ecology** **MP 1.5** **MMO's Deadline 4 Response** Until the information is provided, the MMO is unable to advise with certainty on the likelihood of secondary scour occurring and where it does what the significance will be. The MMO is aware in some wind farm locations this has been higher than others but without further examples in relation to the location of Morgan OWF no further conclusions can be given or confidence in the information provided to date.	The Applicant notes the MMO's response and directs the MMO to their Response to the Examining Authority's Written Questions at Deadline 4 (see REP3-037.32 of REP4-007) which confirms that the Applicant has previously provided further detail on the assessment of seabed scour in the Applicant's Response to Relevant Representations (PD1-017, RR026.D.18). Additional information on the provision of scour protection to minimise secondary scour is in the Applicant's Response MP1.5 of ExAQ1 submitted at Deadline 3 (REP3-006). Based on the MMO's response to this Examining Authority Written Question at Deadline 3 (see REP3-037), the Applicant was anticipating that the MMO would provide an update at Deadline 4 in response to the further detail provided by the Applicant. The Applicant looks forward to receiving this at Deadline 5.
REP4-041.33	MP 1.6 **MMO's Deadline 4 Response** The MMO has reviewed the Site Characterisation Report and is content with the assessment of the Array disposal site. The MMO is currently designating disposal sites and once these references are identified will request these are included within the dML.	The Applicant notes the MMO's response and directs the MMO to their Response to the Examining Authority's Written Questions at Deadline 4 (see REP3-037.33 of REP4-007).
REP4-041.34	MP 1.7 **MMO's Deadline 4 Response** The MMO is satisfied with the amendments to the in-principle monitoring plan and mitigation and monitoring schedule regarding benthic receptors. In summary, scheduled pre- and post-construction surveys will include ecological monitoring such as review of seabed imagery to assess the presence of Invasive Non-Native Species (INNS) and the diversity of the colonising assemblage around seabed infrastructure. The MMO welcomes this commitment which will enable early detection and monitoring of INNS and colonising fauna.	The Applicant welcomes the MMO's response and notes that this matter is now agreed in the Statement of Common Ground between the Applicant and the MMO (REP3-028) and therefore this matter is resolved.

Reference	Marine Management Organisation's submission	Applicant's response
REP4-041.35	MP 1.10 **MMO's Deadline 4 Response** The MMO notes the commitment to monitoring the colonisation of novel hard structures contained within the Offshore In-Principle Monitoring Plan with the monitoring approach listed as: *Use of scheduled pre and post construction surveys to include ecological monitoring such as reviewing any suitable DDV data available for the identification of colonisation.*	The Applicant notes the MMO's response.
REP4-041.36	MP 1.12 **MMO's Deadline 4 Response** The MMO is currently reviewing the Applicants' response and will provide an update at Deadline 5.	The Applicant notes that the MMO will respond to this at Deadline 5.
REP4-041.37	**2. Comments on the Update Draft Development Consent Order (REP3-013)** **MMO's Deadline 4 Response** The MMO notes that a new sub paragraph has been added to Schedule 3 and Schedule 4, condition 23, sub-paragraph (6) which states: *6) The total number of UXO cleared as part of the authorised scheme in this licence and the authorised scheme in licence 2 taken together must not exceed 13 (whether undertaken under this licence or licence 2).* The MMO welcomes these updates. The MMO understands there is concerns from NE and JNCC in relation to UXO being included within the dML. As set out within The MMO's DL2 response we would prefer UXO to be undertaken under a separate licence. This is to ensure all effect at the time of completion are taken into account. We understand the Applicant's position that the DCO should be a 'one stop shop' for all required licences and UXO clearance should be included. The MMO is currently discussing this with NE and JNCC to understand the	The Applicant has at Deadline 5 updated each of the dMLs within the draft DCO such that they authorise the low order clearance of UXO only. This responds to comments made by the Joint Nature Conservation Committee [within REP3-035] that their concerns relate primarily to high order clearance of UXO. Any high order clearance, if required, would be undertaken under a separate marine licence.

Reference	Marine Management Organisation's submission	Applicant's response
	concerns and will provide an update to the Applicant and then the ExA as soon as possible.	
REP4-041.38	REP2- 029.100 **MMO's Deadline 4 Response** The MMO notes that the Applicant has made the following changes to Article 7 in the DCO submitted at Deadline 3: Paragraph (4) has been amended as follows: *(4) The Secretary of State shall must consult the MMO before giving consent to the transfer or grant to another person of the benefit of the provisions of licence 1 or licence 2* Paragraph (11) has been amended as follows: *(11) Section 72(7) and (8) of the 2009 Act do not apply to a transfer or grant of the benefit of the provisions of licence 1 or licence 2 to another person by the undertaker pursuant to an agreement under this article. save that the MMO may amend any deemed marine licence granted under Schedule 3 or Schedule 4 of the Order to correct the name of the undertaker to the name of a transferee or lessee under this article 7 (benefit of the Order).* The MMO still maintains its position regarding Article 7 (Benefit of the Order). As stated in REP2-029, the MMO objects to the provisions relating to the process of transferring and/or granting the deemed marine licences set out in the draft DCO at Article 7. Currently, with the inclusion of Article 7, there is power whereby the undertaker can: a. Transfer to another person ("the transferee") any or all of the benefit of the provisions of this Order (including the deemed marine licences); or b. Grant to another person ("the lessee") for a period agreed between the undertaker and the lessee any or all of the benefit of the provisions of the Order (including the deemed marine licences). The DCO does state that the Secretary of State's consent to the transfer or grant of a dML is not required and thus there is no requirement for consultation with the MMO prior to the undertaker making that transfer or grant where: a. The transferee or lessee is the holder of a licence under section 6 of the 1989 Act (licences authorising supply etc.); or b. The transferee or lessee is a holding company or subsidiary of the	Please see the Applicant's response to the Examining Authority's second written Questions DCO 2.2 (S_D5_5). The drafting of article 7 of the draft DCO is lawful, justified and well-precedented.

Reference	Marine Management Organisation's submission	Applicant's response
	undertaker; or c. The time limits for claims for compensation in respect of the acquisition of land or effects upon land under this Order have elapsed and— i. no such claims have been made, ii. any such claim has been made and has been compromised or withdrawn, iii. compensation has been paid in final settlement of any such claim, iv. payment of compensation into court has taken place in lieu of settlement of any such claim, or v. it has been determined by a tribunal or court of competent jurisdiction in respect of any such claim that no compensation is payable. As there is potential for the MMO not to be consulted, this will impact our duty as the regulatory authority of the dMLs. Even where the MMO must be consulted, there is no provision for the MMO's comments to be adhered to, therefore there is no power to the MMO to complete its regulatory duty. As a matter of public law, the MMO does not think the Order can contain a provision transfer of Benefit of the dML as is being proposed. PA 2008 Section 120(3) should read against Section 120(4) and Part 1 of Schedule 5, which the MMO thinks limits what the Order can contain to provisions which deem a marine licence to be granted under the order and to the conditions that should be deemed attached to that licence. The MMO does not consider this to be sufficiently wide as to allow the inclusion of provisions which transfer the Benefit of the Order. If the Order cannot contain a dML transfer provision for the reasons set out, then it cannot exclude Section 72 of Marine and Coastal Access Act 2009 (MCAA 2009) in the way proposed as Section 120(5) is limited to applying/modifying/excluding only those statutory provisions which relate to any matter for which a provision may be made in the order. Overall, the MMO continues to raise objection to Article 7 and will provide further comments to the Applicant as soon as possible and follow that to the ExA at each Deadline.	
REP4-041.39	**REP2-029.22** **MMO's Deadline 4 Response** The MMO notes that at DL2 the Applicant has amended the wording of Schedule 3 and Schedule 4 paragraph 9 in the DCO to	At Deadline 3 the Applicant updated paragraph 9 of the draft DCO to include the wording requested by the MMO at paragraph 2.3.1 of its written representation [REP2-029]. The Applicant therefore considers this matter resolved.

Reference	Marine Management Organisation's submission	Applicant's response
	"9. Any amendments to or variations from the approved details, plans or schemes must be in accordance with the principles and assessments set out in the environmental statements. Such agreement may only be given where it has been demonstrated to the satisfaction of the MMO that it will not give rise to any materially new or materially different environmental effects from those assessed in the environmental statement." At Deadline 3 the MMO advised that this was not sufficient to settle the point. However, the MMO notes that the Applicant has amended the DCO at Deadline 3 to alter the definition of the word materially in Article 2 (interpretation) to the following. *"maintain" includes inspect, upkeep, repair, adjust or alter the authorised development, and remove, reconstruct or replace any part of the authorised development, to the extent assessed in the environmental statement; and any derivative of "maintain" is to be construed accordingly"* The MMO will provide comments to the Applicant as soon as possible on this issue and will provide the ExA with confirmation at Deadline 5. RR-020.24	
REP4-041.40	**MMO's Deadline 4 Response** The MMO notes that Paragraph 7 of part 1 now states: *Section 72(7) and (8) of the 2009 Act do not apply to a transfer or grant of the benefit of the provisions of licence 1 or licence 2 to another person by the undertaker pursuant to an agreement under this article save that the MMO may amend any deemed marine licence granted under Schedule 3 or Schedule 4 of the Order to correct the name of the undertaker to the name of a transferee or lessee under this article 7 (benefit of the Order).* The MMO does not agree with this and will provide further comments at Deadline 5.	Please see the Applicant's response to the Examining Authority's second written Questions DCO 2.2 (S_D5_5). The drafting of article 7 of the draft DCO and this corresponding provision are lawful, justified and well-precedented.
REP4-041.41	REP2-029.25 **MMO's Deadline 4 Response**	The Applicant has updated the draft DCO at Deadline 5 to require a six month submission period for plans and documents to be submitted for the discharge of conditions. As this was the period requested by the MMO, the Applicant considers this matter to now be resolved.

Reference	Marine Management Organisation's submission	Applicant's response
	The MMO will engage with the Applicant and other interested parties for a without prejudice position on timescales for each document to try and get to an agreement before the end of Examination.	
REP4-041.42	**REP2-029.28** **MMO's Deadline 4 Response** The MMO welcomed the Applicants response at Deadline 2 however noted that this requested change had not been made in the latest updated version of the Draft DCO submitted by the Applicant at Deadline 3. This issue is still outstanding and the MMO will look to see updates on this at Deadline 4.	This update was made to the draft DCO at Deadline 4 and the Applicant now considers this matter resolved.
REP4-041.43	REP2-029.29 **MMO's Deadline 4 Response** The MMO aims to have an update on this point W/C 16 December 2024. At which point the MMO will inform the Applicant and include in the MMO's formal Deadline 5 Submission.	Please also see the Applicant's response to the Examining Authority's second written Question GEN 2.9 in respect of adaptive management (S_D5_5.1) .
REP4-041.44	REP2-029.30 **MMO's Deadline 4 Response** The MMO notes that paragraph 9 in Schedules 3 and 4 of the DCO states: *9) Any amendments to or variations from the approved details, plans or schemes must be in accordance with the principles and assessments set out in the environmental statements. Such agreement may only be given where it has been demonstrated to the satisfaction of the MMO that it is unlikely to or will not give rise to any materially new or materially different environmental effects from those assessed in the environmental statement* The MMO will provide comments to the Applicant as soon as possible on this issue and will provide the ExA with confirmation at Deadline 5.	The Applicant notes that paragraph 9 of the draft DCO is the wording requested by the MMO at paragraph 2.3.1 of its written representation [REP2-029]. The Applicant therefore considers this matter resolved.
REP4-041.45	REP2-029.31 **MMO's Deadline 4 Response**	The Applicant notes the MMO's response and awaits their update at Deadline 5.

Reference	Marine Management Organisation's submission	Applicant's response
	The MMO is meeting the Applicant on 19 December 2024 and will provide further comments to be discussed and will provide an updated position at Deadline 5.	
REP4-041.46	**Comments on the Offshore In-Principle Monitoring Plan (REP2-013)** **3.1 Benthic comments** 3.1.1. The MMO is satisfied with the amendments to the Offshore In-Principle Monitoring Plan (IPMP) regarding benthic receptors. The MMO notes that scheduled pre and post construction surveys will include ecological monitoring such as review of seabed imagery to assess the presence of Invasive Non-Native Species (INNS) and the diversity of the colonising assemblage around seabed infrastructure. The MMO welcomes this commitment which will enable early detection monitoring of INNS and colonising fauna.	The Applicant welcomes the MMO's response and notes that this matter is now agreed in the Statement of Common Ground between the Applicant and the MMO (REP3-028) and is therefore resolved.
REP4-041.47	**3.2. Coastal Processes Comments** 3.2.1. The MMO is satisfied, based on the physical process information in the Environmental Statement that the plan for monitoring of local bedforms, in Table 1.3 of the Offshore In-Principle Monitoring Plan, is reasonable and proportionate.	The Applicant notes and welcomes the response from the MMO and considers that this matter is now closed.
REP4-041.48	**3.3. Fisheries Comments** 3.3.1. The MMO notes that there are no specific pre- or post-construction monitoring plans for fish ecology receptors detailed in the Offshore In-Principle Monitoring Plan. The MMO is content, based on the classification of habitat suitability for herring and sandeel presented in the ES and subsequent addendums to the ES, that seabed sediments within the Morgan Array area are generally not high value as herring spawning habitat or sandeel supporting habitat. The MMO would therefore not expect to see any dedicated monitoring with respect to fish ecology receptors.	The Applicant notes and welcomes the MMO's response and the matter is resolved.
REP4-041.49	3.3.2. Regarding commercial fisheries, the MMO notes that the Applicant proposes post-construction monitoring of cables and their burial status to identify any areas of cable exposure and reduce snagging risk through periodic monitoring surveys of cable burial and protection. Additionally, the Applicant also proposes to monitor the loss or restriction of access to fishing grounds to identify whether there are any changes to fishing activity within the Morgan Array Area. This would be done through annual reviews of vessel	The Applicant notes and welcomes the MMO's response.

Reference	Marine Management Organisation's submission	Applicant's response
	monitoring (VMS) and landings data for first five years of operations and maintenance phase to identify whether there are any changes to fishing activity. The MMO considers that the monitoring commitments are appropriate and recommends continues engagement with the National Federation of Fishermen's Organisation (NFFO) and fishing communities via a fisheries liaison officer.	
REP4-041.50	**3.4. Shellfisheries Comments** 3.4.1. The MMO is satisfied with the amendments to the In-Principle Monitoring Plan with regards to shellfish. The MMO notes that the in-principle monitoring includes the commitment to monitoring scallop populations pre- and post-construction through dredge survey and a Fisheries Liaison and Coexistence Plan as part of an Offshore Environmental Management Plan secured through the dMLs. The MMO considers that this would assist in validating predictions made within the Environmental Impact Assessment relating to any impacts of the construction and aim to provide a more comprehensive evidence base.	The Applicant notes and welcomes the MMO's response.
REP4-041.51	3.4.2. The MMO notes that in point 1.8.1.1 of the In-Principle Monitoring Plan it states that "the Applicant has committed to monitoring of queen scallop within and around the Morgan Array Area". The MMO requests that this is updated to include King Scallop (Pecten Maximus) within this area.	The In-Principle Monitoring Plan will be updated at Deadline 5 to include monitoring of King Scallop.
REP4-041.52	3.4.3 Similarly, the MMO requests that point 1.8.2. is amended to include King Scallop (*Pecten Maximus*) within this area alongside Queen scallop (*Aequipecten opercularis*).	The In-Principle Monitoring Plan will be updated at Deadline 5 to include monitoring of King Scallop.
REP4-041.53	**3.5. Underwater Sound Comments** 3.5.1. The MMO notes that Table 1.6 in Section 1.9 summarises the in-principle monitoring proposed for marine mammals. Of relevance, the document sets out the following points: • Monitoring approach: Measurements of underwater sound generated by the installation of the first four piled foundations of each piled foundation type and associated marine mammal monitoring, to be set out in the marine mammal mitigation protocol (MMMP)	The Applicant notes the MMO's response.

Reference	Marine Management Organisation's submission	Applicant's response
	• Monitoring objective: To ensure the level of underwater sound generated from percussive piling is not greater than predicted, and if relevant establish the efficacy of any relevant mitigation (such as NAS) • Rationale: To ensure that impacts on marine mammal receptors will not be worse than predicted it is necessary to be confident that the piling noise sound levels are within the levels predicted in the ES. It may (if relevant) also serve to provide information on the efficacy of any mitigation.	
REP4-041.54	3.5.2. The MMO notes that obtaining measurements of underwater sound generated by the installation of the first four piled foundations of each piled foundation type is standard practice for offshore wind farm developments to date. The MMO is currently reviewing the condition for collection of these results and may request an update in due course. The MMO requests that at least 2 of the first four piles of each foundation are the worst-case scenario piles and this is updated within the plan. The MMO notes that the objective of the noise monitoring is to test the validity of the predictions made in the ES. If the monitoring suggests that the noise levels may exceed those predicted, then the MMO may take remedial action. The MMO requests that an underwater sound monitoring plan or scope of works is to be developed which sets out further details of the proposed monitoring and methodologies.	The Applicant welcomes the engagement from the MMO on this matter and as agreed during our meeting the Applicant will update the Commitments register (REP4-025) and the In-Principle Monitoring Plan (REP2-013) at Deadline 5, to reflect this update with the new DCO wording (condition 28(2)(b)) (S_D5_7 Draft Development Consent Order F07). As discussed with the MMO the DCO condition 28(2)(b) has been updated to state the monitoring will include measurements of underwater sound generated by the installation of the first four piles of each piled foundation type to be installed, and measurements of underwater sound generated by the installation of the first two piles where it is anticipated hammer energies greater than 3,000kJ may be required for installation.
REP4-041.55	**4. Comments on the Mitigation and monitoring schedule (REP2-015)** **4.1. Benthic comments** 4.1.1. The MMO is satisfied with the amendments to the Mitigation and Monitoring Schedule regarding benthic receptors. The MMO notes that scheduled pre and post construction surveys will include ecological monitoring such as review of seabed imagery to assess the presence of Invasive Non-Native Species (INNS) and the diversity of the colonising assemblage around seabed infrastructure. The MMO welcomes this commitment which will enable early detection monitoring of INNS and colonising fauna.	The Applicant welcomes the MMO's response and notes that this matter is now agreed in the Statement of Common Ground between the Applicant and the MMO (REP3-028) and therefore resolved.
REP4-041.56	**4.2. Coastal Processes Comments** 4.2.1. The MMO is satisfied, based on the physical process information in the Environmental Statement that the plan for monitoring of local bedforms in Table 1.1 in the Mitigation and Monitoring Schedule is reasonable and proportionate.	The Applicant notes and welcomes the response from the MMO and considers that this matter is now closed.

Reference	Marine Management Organisation's submission	Applicant's response
REP4-041.57	**4.3. Fisheries Comments** 4.3.1. The MMO notes that most of the primary mitigation measures detailed in Table 1.3 are taken from the Marine Mammal Mitigation Protocol (MMMP) and so are targeted towards mitigating significant impacts to marine mammals, although the MMO recognises that some of these measures may also provide some protection to fish from significant disturbance.	The Applicant acknowledges the comments made from the MMO on this point and has updated the Commitments Register (S_D5_14 Commitments Register F04) ensuring clarity on the measures which are and are not relevant to fish and only those with a potential benefit to fish are highlighted as such. The Applicant would note that while many of the measures set out in the MMO response are not effective for fish, these measures are also not necessary to ensure no significant injury effects on fish and shellfish (though they may have some minor benefit).
REP4-041.58	4.3.2. The MMO is content with primary mitigation measures 3.1 – 3.5 and tertiary mitigation measure 3.8. However, the MMO requests that the Applicant outlines how these measures are will act as mitigation measures for fish.	See response to REP4-041.57.
REP4-041.59	4.3.3. The MMO notes that for many of the measures outlined in measure 3.8, it is not clear how the mitigation strategies provided (for example, employing Marine Mammal Observers or deploying Acoustic Deterrent Devices and 'soft-start charges') will provide protection to fish. The MMO requests that the Applicant reviews the measures outlined in Table 1.3 and clarifies how each measure specifically provides mitigation to significant disturbances to fish using peer-reviewed literature to illustrate the effectiveness of the measure for fish.	See response to REP4-041.57.
REP4-041.60	4.3.4. Regarding the use of 'soft-start charges' or 'fish scare charges', the MMO notes that there is little peer-reviewed evidence that these measures effectively clear fish from the works area. Evidence on the use of 'fish scare charges' suggest they likely cause additional damage to marine life with no evidence of a fleeing response reported in the literature (Koschinski 2011, Keevin 1998). The MMO considers that the assumption that a fish will flee from the source of noise is overly simplistic as it overlooks factors such as fish size and mobility, biological drivers, and philopatric behaviour which may cause an animal to remain/return to the area of impact. The MMO does not support the use of 'fish scare charges' due to the lack of evidence as to their efficacy and the potential for additional harm to fish receptors. The Applicant should also note that the efficacy of Acoustic Deterrent Devices on fish is also uncertain (Putland and Mensinger 2019).	The Applicant notes and welcomes the comments from the MMO on this point and accepts that these should not be specified as mitigation measures for fish receptors (nor are they necessary to avoid significant effects on fish and shellfish receptors). Please see response to REP4-041.57. The Applicant has updated the Commitments Register (REP4-025) to clarify which measures are likely to be effective for fish and shellfish. The Applicant highlights that soft start 'scare' charges will only be considered if high order clearance is required (see detail in paragraph 1.8.5.1 in the Outline MMMP (S_D5_10 Outline marine mammal mitigation protocol F03)), which will be subject to a separate marine licence following the removal of high order UXO from the DCO.
REP4-041.61	4.3.5. The MMO is content with primary mitigation measures 3.6 and 3.7 which are consistent with measures implemented for similar offshore wind projects. Tertiary mitigation measures 3.9 – 3.11 detail the development of an Offshore	The Applicant notes and welcomes the MMO's response and therefore considers this matter resolved.

Reference	Marine Management Organisation's submission	Applicant's response
	Environmental Management Plan (EMP) for managing the release of contaminants and the spread of non-native invasive species. The EMP will also outline protocols for contracted vessel operators to manage the risks to basking sharks from vessel-based operations. The MMO considers that these are acceptable measures and are consistent with measures implemented for similar offshore wind projects.	
REP4-041.62	4.3.6. Regarding the Underwater Sound Management Strategy (UWSMS) listed in measures 3.8 and 3.12 of Table 1.3, the MMO has previously raised concerns in relation to this document at Deadline 3. The UWSMS represents a live document provided within the application with the full strategy to be developed post-consent which the MMO is supportive of. However, the UWSMS does not outline a specific strategy, technology or approach for reducing the range of impact from underwater noise (UWN) on cod and herring and therefore the MMO does not consider that the commitment to develop the UWSMS alone is sufficient to remove the need for seasonal piling restrictions during the cod and herring spawning seasons.	With respect to the UWSMS and the potential need for seasonal restrictions, the Applicant has provided a detailed response in the response to REP4-041.85 and REP4-041.90 (MMO response REP2-029.9 and REP2-029.15, respectively). See also the Applicant's response to the ExA's Second Written Questions (S_D5_5 Applicant's Response to Examining Authority's Written Questions (ExQ2) F01) with respect to seasonal restrictions.
REP4-041.63	4.3.7. The MMO notes that the UWSMS includes a provision that the Application should consider the use of noise abatement systems (NAS) as mitigation to reduce the range of impact from piling UWN for sensitive receptors. Bubble curtains and other noise abatement technologies are widely used within marine and offshore industries. The procurement of these technologies is typically required years in advance of works commencing and the Applicant should be considering at this stage what NAS will be required to reduce the UWN disturbance to fish species to within acceptable levels. Given that ground-strengthening of multiple locations using piles will still be required if the Applicant chooses gravity base foundations over piled foundations, it is highly likely that the foundation installation stage of construction will require at least some piling activity. The MMO requests that the Applicant develops an appropriate noise abatement strategy now so that where piling is necessary, the appropriate UWN modelling will have been undertaken well in advance and the necessary noise reduction required to reduce noise disturbance to acceptable levels will have been fully assessed and understood. The MMO directs the Applicant to section 4 of the MMO's Deadline 3 Submission which details the evidence required in order to remove the recommended seasonal piling restrictions for cod and herring.	With respect to the UWSMS and the potential need for seasonal restrictions, the Applicant has provided a detailed response in the response to REP4-041.85 and REP4-041.90 (MMO response REP2-029.9 and REP2-029.15, respectively). See also the Applicant's response to the ExA's Second Written Questions (S_D5_5 Applicant's Response to Examining Authority's Written Questions (ExQ2) F01) with respect to seasonal restrictions.
REP4-041.64	4.3.8. The MMO notes that tangible evidence has not yet been presented which details the specific measures (including the use of Noise Abatement	With respect to the UWSMS and the potential need for seasonal restrictions, the Applicant has provided a detailed response in the response

Reference	Marine Management Organisation's submission	Applicant's response
	Systems (NAS)) which will be used to reduce UWN emissions to within acceptable levels relative to the herring spawning ground near the Isle of Man, and relative to the cod spawning grounds which occupy much of the Irish Sea region. At this stage no tangible evidence of specific measures for reducing the range of impact from piling noise relative to sensitive fish receptors (spawning cod and herring) has been presented and therefore The MMO's request for seasonal piling restrictions during the herring (September to October, inclusive), and cod (January – April inclusive) spawning seasons must remain as conditions on the dML until sufficient evidence of noise reduction strategies has been provided by the Applicant.	to REP4-041.85 and REP4-041.90 (MMO response REP2-029.9 and REP2-029.15, respectively). See also the Applicant's response to the ExA's Second Written Questions (S_D5_5 Applicant's Response to Examining Authority's Written Questions (ExQ2) F01) with respect to seasonal restrictions.
REP4-041.65	**4.4. Shellfisheries Comments** 4.4.1. The MMO is satisfied with the amendments to the Mitigation and Monitoring Schedule regarding shellfisheries however requests that point 3.13 in the Mitigation and Monitoring Schedule is amended to include King Scallop (Pecten Maximus) alongside Queen scallop (Aequipecten opercularis).	The Mitigation and monitoring schedule has been renamed as the 'Commitments register' and was submitted at Deadline 4 by the Applicant (REP4-021). Co91 includes monitoring of Queen scallop and consideration of presence of King scallop) in and around the Morgan Array Area for up to five years post-construction with annual reporting.
REP4-041.66	4.4.2. The MMO also requests minor amendments to the Environmental Statement Fish and Shellfish Ecology Chapter Vol 2, Chapter 3, 3.5.5. The MMO requests that the Applicant includes Latin names in the first paragraph for King Scallop (Pecten Maximus) and Queen scallop (Aequipecten opercularis) for clarity, this is to be repeated for point 3.5.1.2.	The Applicant does not intend to submit an update of the Fish and shellfish ecology chapter (APP-021) into the Examination as these amendments are considered to be minor.
REP4-041.67	4.4.3. In Environmental Statement Fish and Shellfish Ecology Chapter Vol 2, Chapter 3, Table 3.11, King Scallop (Pecten Maximus) and Queen scallop (Aequipecten opercularis) are not included in the table for spawning grounds, however as noted in Section 5 of our Deadline 3 submission (REP3-037) and in an email to the Applicant dated 31 October 2024 for these species, locations of fished stocks or fishery footprint may serve as a useful proxy for spawning areas for more sedentary shellfish species therefore the potential spawning areas for these shellfish species (See spawning model in Close et al., 2024 and refer to stock assessments within the Irish Sea as previously referenced) Nephrops norvegicus should also be included as is a fishery and spawning ground within the wider area.	The Applicant has provided a response on this point in REP4-010 (response to REP3-037.83) to resolve these points.
REP4-041.68	4.4.4. The MMO agrees with the mitigation measures summarised in the Mitigation and Monitoring Schedule.	The Applicant notes and welcomes the MMO's response.

Reference	Marine Management Organisation's submission	Applicant's response
REP4-041.69	**4.5. Underwater Noise Comments (See Cefas comments for responses to ExA)** 4.5.1. The MMO considers that the Mitigation and Monitoring Schedule summaries the mitigation measures relevant to marine mammals, as per Table 1.4 in Section 1.5 of the document. The MMO agrees that it is appropriate that a Marine Mammal Mitigation Protocol (MMMP) will be developed and adhered to for piling activities, the clearance of Unexploded Ordnance (UXO) and geophysical surveys. This considers this standard practice.	The Applicant notes and welcomes the MMO's response.
REP4-041.70	4.5.2. The MMO is also aware that an Underwater Sound Management Strategy (USMS) will also be developed and adhered to, as well as an Offshore Environmental Management Plan (EMP). The MMO will review these documents and provide comments on their suitability.	The Applicant notes and welcomes the MMO's response.
REP4-041.71	4.5.3. The Mitigation and Monitoring Schedule also refers to Offshore in Principle Monitoring Plan which sets out that measurements of underwater sound generated by the installation of the first four piled foundations of each piled foundation type and associated marine mammal monitoring, will be undertaken. Comments on the In-Principle Monitoring Plan can be found in section 3.	The Applicant notes and welcomes the MMO's response.
REP4-041.72	**5. Comments on Annex 3.1 (REP3-005)** 5.1. The MMO thanks the Applicant for the submission of Annex 3.1 which contains updated sound modelling, requested by the MMO at Deadline 2, in response to issues surround Underwater Noise.	See response to REP4-041.79 (MMO reference: REP2-029.3) noting no further action. With respect to the UWSMS and the potential need for seasonal restrictions, the Applicant has provided a detailed response in the response to REP4-041.85 and REP4-041.90 (MMO response REP2-029.9 and REP2-029.15, respectively).
REP4-041.73	5.2. The MMO highlights that cod and herring are both Group 3 fish with a swim bladder involved in hearing, and it is unclear what the Applicant is referring to by Group 4 fish. In Popper et al., (2014) fish hearing classifications are not explicitly categorised as numbered groups, there are 3 hearing categories (fish with no swim bladder, fish with a swim bladder not involved in hearing and fish with a swim bladder involved in hearing). In this sense, fish with a swim bladder involved in hearing might be presented as group 3 hearing sensitivity, being the third category listed in Table 7.2 of Popper et al. (2014) but there is no 'Group 4 hearing category fish'. Popper et al. (2014) discusses the 3 classifications of hearing ability in fish, but also includes the hearing ability of turtles, then eggs and larvae. The MMO recognises that the Applicant	Refer to the Applicants response provided in REP4-041.72.

Reference	Marine Management Organisation's submission	Applicant's response
	is not discussing turtles or eggs and larvae specifically in Annex 3.1 and therefore there is no reason for any mention of 'Group 4 hearing category fish'. The MMO requests that the Applicant stop using this incorrect terminology, as cod and herring are both 'Group 3' fish with a swim bladder involved in hearing.	
REP4-041.74	5.3. The MMO notes that Figures 1.1 and 1.3 in Annex 3.1 show the correct modelled noise contours for mortality (207 SELcum), recoverable injury (203 SELcum), and TTS (186 SELcum) as per Popper et al. (2014) for static group 3 fish in response to single piling with a 4,400 kJ hammer energy (maximum hammer energy for this project). These contours are included alongside the Applicant's original incorrect modelled contours for comparison. The Applicant concludes that *"the changes in threshold contour represent a reduction in overlap with areas of herring, and cod low and high intensity, spawning grounds, but do not represent a meaningful change in the assessment of the impact of underwater sound from piling activities".*	Refer to the Applicants response provided in REP4-041.72.
REP4-041.75	5.4. The MMO remains in disagreement with the Applicant's conclusion for the project alone assessment of underwater sound impacts to cod as being minor adverse and therefore not significant in EIA terms. The updated modelling provided in Figure 1.3 of Annex 1.3 shows that physiological TTS effects in cod extend over much of the cod high intensity spawning ground surrounding the Morgan OWF site. The MMO therefore considers that impacts to cod from UWN are significant for the project alone and for the project cumulatively with other projects.	Refer to the Applicants response provided in REP4-041.72. With respect to significance of effect and relevant mitigation, see the Applicant's responses to REP4-041.85 and REP4-041.90 (MMO responses REP2-029.9 and REP2-029.15, respectively).
REP4-041.76	5.3. The MMO further notes that Figures 1.1 and 1.2 are presented on different scales (Figure 1.1 has a more zoomed in scale of 20km whereas Figure 1.3 has a scale of 30km) which will influence how different the contours seem. The MMO also notes that the range of effect for TTS in cod shown by the modelling in Figure 1.3 extends over a larger portion of the cod spawning grounds remains large enough to continue to be a source of concern with regard to impacts to cod from piling noise. The MMO agrees with the Applicant's conclusion that the updated modelling does not present a significantly different range of impact to that assessed in the ES. The provision of this updated modelling does not change the MMO's position on the Underwater Sound Management Strategy (UWSMS) or the MMO's recommendation that seasonal piling restrictions during the cod and herring spawning seasons should be conditioned onto the dML for this project until such time that noise reduction strategies are provided and reviewed as part of the UWSMS.	Refer to the Applicants response provided in REP4-041.72.

Reference	Marine Management Organisation's submission	Applicant's response
REP4-041.77	**6. MMO Response to the Applicant's Response to IP submissions submitted at Deadline 2 (REP3-004)** 6.1. The MMO has reviewed the Applicants response to the MMO's comments from Table 2.1 within document ref REP3-004 and has provided a response in the below Table 3. **Table 3. MMO response to the Applicants response to the MMO's Deadline 2 submission** **REP2-029.1** **MMO Comments at Deadline 2** Comments on Pre-Examination Procedural Deadline Submissions PD1-006 Applicant's response to Relevant Representation from Marine Management Organisation: Fish and Shellfish 4.6.5 (Annex 3.1) The MMO notes that the modelled 207 dB re 1µPa SPLpk contour has been presented, based upon the Popper et al. (2014) threshold for mortality and potential mortal injury to eggs and larvae for a 5.5 metre (m) diameter pin pile and the maximum hammer energy of 4,400 kilojoules (kJ) as requested. The MMO thanks the Applicant for this. **Applicants Response** *Applicants DL3 response: The Applicant welcomes MMOs responses and the engagement from MMO. The Applicant notes the MMO's Written Submission regarding the provision of mapped contours for eggs and larval mortality with thanks. No action is required by the Applicant.* **MMO Response** Agreed	The Applicant notes and welcomes the response from the MMO and that this matter is now resolved.
REP4-041.78	**REP2-029.2** **MMO Comments at Deadline 2** Regarding Figure 1.1 of Annex 3, the MMO notes, from the clarified modelling, the range of impact for mortality and potential mortal injury to cod eggs and larvae from the source of piling is 394m. Although eggs and larval mortality will occur at points where piling takes place across the array, as demonstrated by Figure 1.1, this represents a small area of impact relative to the wider extent of the mapped high intensity cod spawning ground and the MMO is content that	The Applicant notes and welcomes the response from the MMO and that this matter is now resolved.

Reference	Marine Management Organisation's submission	Applicant's response
	the level of impact demonstrated by Figure 1.1 is acceptable and has no further comments to make at this time **Applicants Response** Applicants DL3 response: The Applicant notes the MMO's Written Submission regarding the acceptability of impact ranges for cod eggs and larvae with thanks. No action is required by the Applicant. **MMO Response** Agreed	
REP4-041.79	**REP2-029.3** **MMO Comments at Deadline 2** In relation to Section 1.2.2 of Annex 3.1 which relate to the contour decibel levels presented in Figures 3.8, 3.9, 3.10 and 3.11 of the fish ecology chapter, the MMO does not agree with the approach of deriving the modelled underwater noise (UWN) contours form the SELss metric to provide a visual representation of the relevant SELcum thresholds. Please refer to response RR-020.55 in Table 1 for further details **Applicants Response** The Applicant notes the MMO's Written Submission and has provided updated contour plots in S_D3_3.1 Annex 3.1 to the Applicant's response to Written Representations from the MMO F01, showing contours for Temporary Threshold Shift (TTS), Recoverable Injury and Mortality for Group 3 and 4 static fish receptors in the SELcum metric. These contour plots are less conservative than those used for the fish and shellfish underwater sound assessment [APP-021] and showed a slight decrease compared to the original assessment, but the areas affected have not significantly changed overall and therefore the assessment conclusions remains the same. **MMO Response** The MMO thanks the Applicant for the provision of the information contained within Annex 3.1, which was provided by the Applicant at Deadline 3. The MMO notes that the Applicant has provided corrected modelling of the cumulative sound exposure level (SELcum) thresholds for mortality, recoverable injury, and temporary threshold shift (TTS) for group 3 hearing category fish as described by Popper et al. (2014) in relation to herring and	The Applicant acknowledges the response from the MMO on this point (and detailed comments on Annex 3.1 (REP4-041.72) and notes that no further action is required to close out outstanding discussions on noise contours used in the assessment and this matter is resolved.

Reference	Marine Management Organisation's submission	Applicant's response
	cod spawning grounds. The Applicant has also correctly treated fish as a static receptor for the purpose of modelling and assessing underwater sound impacts. The MMO thanks the Applicant for providing this modelling following comments raised in previous deadlines. This response also applies to REP2-029.6, REP2-029.11 and REP2-029.12, where the Applicant directs the MMO to their response to REP2-029.3 to answer these representations.	
REP4-041.80	**REP2-029.4** **MMO Comments at Deadline 2** In relation to Section 1.2.3 of Annex 3.1, the MMO thanks the Applicant for clarifying that the UWN contours presented in Figure 3.14 of the fish ecology chapter display single point piling for a hammer energy of 3,000 kJ to demonstrate the behavioural ranges associated with this lower hammer energy which will represent the maximum hammer energy at 75% of piling. The MMO notes that the Applicant also highlights UWN contours for the behavioural range of impact in cod at their spawning grounds associated with the maximum hammer energy (4,400 kJ) are presented in Figure 3.5. **Applicants Response** The Applicant notes the MMO's Written Submission regarding provision of underwater sound contours relating to behavioural ranges for the lower hammer energy of 3,000 kJ, along with those for the maximum hammer energy of 4,400 kJ. No action is required by the Applicant. **MMO Response** Agreed	The Applicant notes and welcomes the response from the MMO and that this matter is now resolved. .
REP4-041.81	**REP2-029.5** **MMO Comments at Deadline 2** For the reasons outlined in response RR-020.56 in Table 1 below, the MMO considers that the studies are not appropriate for the purpose of defining a threshold to model behavioural responses in cod at their spawning grounds. The MMO is not aware of a quantitative threshold which would be suitable for the purpose of modelling behavioural responses in wild Atlantic cod. However, cod are broadcast spawners with pelagic larvae so are not reliant on particular seabed habitats for reproduction in the same way that herring are. This means that cod have the ability to move throughout the	See response to REP4-041.90 (MMO reference: REP2-029.15).

Reference	Marine Management Organisation's submission	Applicant's response
	spawning ground and undertake spawning, without their ability to spawn being impaired if they cannot reach a specific area or habitat due to excessive noise disturbances. As Figure 1.1 demonstrates, the high and low intensity cod spawning grounds are quite extensive in the region, and, therefore, behavioural responses to UWN in cod are less of a concern than they are for herring, as in theory, cod could move away from the affected area and spawn elsewhere within their spawning ground. In this sense, the physiological risks to cod from UWN are of greater concern. **Applicants Response** The Applicant notes the MMO's Written Submission regarding behavioural thresholds for and spawning ecology of cod. A detailed response regarding assessment of behavioural effects to cod is provided in the Applicant's response to REP2-MMO.15. Please refer to the Applicant's response to REP2-029.3 which provides updated injury contour plots for cod in the SELcum metric to allow further interrogation of the potential for physiological effects. These contours are less conservative than the contours used within the fish and shellfish underwater sound assessment, and the areas impacted decreased slightly compared to the original assessment, but did not change significantly overall and therefore the assessment conclusion remains the same. The Applicant considers this issue is now resolved with the information set out in S_D3_3.1, Annex 3.1 to the Applicant's response to Written Representations from the MMO F01, providing the requested clarification from the MMO **MMO Response** Please see MMO comments in section 5 and responses to REP2-029.15 of this Deadline submission.	
REP4-041.82	**REP2-029.6** **MMO Comments at Deadline 2** The MMO requests that the range of impact from UWN based on the thresholds for Group 3 fish with high hearing sensitivity for mortality and potential mortal injury (207 cumulative sound exposure level (SELcum)), recoverable injury (203 SELcum), and TTS (186 SELcum), as per the pile driving threshold guidelines described by Popper et al. (2014), are presented so that the physiological risks to cod can be assessed. **Applicants Response**	See response to REP4-041.79 (MMO reference: REP2-029.3).

Reference	Marine Management Organisation's submission	Applicant's response
	Please refer to the Applicant's response to REP2-029.3. **MMO Response** Please see MMO response to REP2-029.3	
REP4-041.83	**REP2-029.7** **MMO Comments at Deadline 2** In relation to Sections 1.2.4 and 1.2.5 of Annex 3.1, the MMO thanks the Applicant for clarifying that a pile diameter of 5.5m has been used in modelling the impacts of underwater sound from piling on fish. The MMO is content with the maximum design scenario (MDS) used and has no further comments to make on this matter at this present time **Applicants Response** The Applicant notes the MMO's Written MMO Response Submission regarding confirmation of the pile diameter used for underwater sound modelling with thanks. No action is required by the Applicant. **MMO Response** Agreed	The Applicant notes and welcomes the response from the MMO.
REP4-041.84	**REP2-029.8** **MMO Comments at Deadline 2** In relation to Section 1.2.6 of Annex 3.1, as per the MMO comments in response RR020.57 in Table 1, the MMO supports the commitment to develop the underwater sound management strategy (UWSMS). However, the MMO does not consider that this commitment alone is sufficient to remove the need for a seasonal piling restriction during the cod spawning season (January to April inclusive). Given that modelling for the range of impact for physiological effects (mortality and potential mortal injury, recoverable injury, and TTS, as per the pile driving threshold guidelines described by Popper et al. (2014)) with regard to cod has not been provided, the MMO deems that it is not appropriate to remove the recommended restriction. As per the MMO comments in RR-020.55 of Table 1, the MMO requests that the Applicant presents the range of impact from UWN based on the thresholds for Group 3 fish with high hearing sensitivity for mortality and potential mortal injury (207 cumulative sound exposure level (SELcum)), recoverable injury (203 SELcum), and TTS (186 SELcum) so that the risk to adult cod which may be spawning in the vicinity of the array can be	With respect to the comments from the MMO on provision of the requested modelling of the range of impact for physiological effects for cod, see response to REP4-041.79, which confirms no further actions are required on this. The Applicant has provided further detail on cod spawning period in REP4-010 which suggests peak spawning for cod occurs in March. The Applicant will discuss this further with the MMO and will update the UWSMS accordingly to account for this, noting that the UWSMS is an outline document and will be further updated post consent.

Reference	Marine Management Organisation's submission	Applicant's response
	appropriately assessed. **Applicants Response** The Applicant notes the MMO's Written Submission regarding the Underwater Sound Management Strategy and seasonal restrictions. Please refer to the response to REP2-029.3 for the provision of updated contour plots showing injury ranges from Popper et al. (2014) with respect to cod spawning grounds in the SELcum metric. The Applicant and the MMO are continuing to engage on the need for seasonal restrictions and management of the effects of piling noise during fish spawning periods through the UWSMS. The Applicant welcomes the MMO support regarding the commitment to develop the underwater sound management strategy (UWSMS). **MMO Response** As detailed in the MMO's Deadline 3 submission, there is a possibility to refine decisions of a piling restriction covering the whole of the cod spawning season, provided that the correct evidence is supplied to support refinement. The MMO awaits the provision of the requested modelling of the range of impact for physiological effects (mortality and potential mortal injury, recoverable injury, and temporary threshold shift (TTS), as per the pile driving threshold guidelines described by Popper et al. (2014)) with regard to cod. The MMO further requested a discussion which draws upon suitable peer-reviewed sources and data which provides supporting evidence that cod spawning activity peaks in February and March. The MMO provided a list of relevant papers which could be used to inform this discussion. The MMO will review this information when provided by the Applicant during the Examination process and will provide a response at the earliest opportunity.	
REP4-041.85	**REP2-029.9** **MMO Comments at Deadline 2** The MMO is of the opinion that it is acceptable for the UWSMS to be developed and mitigation options to be explored post-consent, with input from stakeholders, but the requested piling restrictions for cod and herring must be conditioned onto the dML as a minimum and should only be varied or	The Applicant welcomes the agreement from the MMO that the UWSMS can be developed and mitigation options be explored post-consent. The Applicant would reiterate the commitment being made to reduce effects on spawning cod and herring from piling operations to minimise the risk, as identified during the pre-Application phase, to these receptors. The UWSMS (APP-068) outlines how these risks would be minimised in line with mitigation hierarchy, with section 1.7 of the UWSMS outlining how the

Reference	Marine Management Organisation's submission	Applicant's response
	amended once satisfactory evidence that the range of impact from UWN has been reduced is provided for review and deemed acceptable. The MMO is also content to review any new wording on these conditions to allow for flexibility to be built in. See MMO responses RR-020.59 and RR-020.60 for details of why the Applicant's commitment to developing the UWSMS is not sufficient evidence to remove the recommended seasonal piling restrictions for cod and herring at this stage **Applicants Response** The Applicant notes the MMO's Written Submission regarding the Underwater Sound Management Strategy and seasonal restrictions. The Applicant maintains that the most appropriate approach to manage the risk of potential underwater sound impacts is through development and implementation of the UWSMS, in collaboration with the MMO, as per the response to REP2-029.8 above. Notwithstanding this, the Applicant recognises and welcomes the ongoing engagement with the MMO on this matter, with the updated modelling presented in S_D3_3.1 Annex 3.1 to the Applicant's response to Written Representations from the MMO F01 expected to facilitate progression on this matter **MMO Response** The MMO supports the commitment to develop the UWSMS and is content for this to be developed post-consent, however, a specific strategy, technology or approach for reducing the range of impact from UWN on cod and herring has not been outlined, and therefore the MMO does not consider that the commitment to develop the UWSMS alone is sufficient to remove the need for seasonal piling restrictions during the cod and herring spawning seasons. At this stage, no tangible evidence of specific measures for reducing the range of impact from piling noise relative to sensitive fish receptors (spawning cod and herring) has been presented and therefore The MMO's recommendations of seasonal piling restrictions during the herring (September to October, inclusive), and cod (January – April inclusive) spawning seasons must remain as conditions on the DCO and dML until sufficient evidence of noise reduction strategies has been provided by the Applicant. The MMO is content for the UWSMS to be finalised post-consent but until such time that mitigation strategies are put forward under the UWSMS and the efficacy of these measures has been assessed, The MMO's recommended seasonal piling restrictions must be conditioned within the dML. These restrictions may be	project design would be refined from the Maximum Design Scenario to the final project, including final number of foundations to be piled, refined hammer energies at particular locations, duration of piling and piling programme (including details of what work may be undertaken during sensitive periods for fish spawning). This final design would be discussed with the MMO and other stakeholders to determine whether further mitigation is required for the relevant receptors. Section 1.8.2 of the UWSMS outlines the measures which could be employed if required and includes minimising work during the sensitive periods for cod and herring (these could be combined with spatial phasing) or use of Noise Abatement Systems if required to reduce the magnitude of noise emitted into the marine environment. The requirement for specific mitigation (should these be required following final design) would be discussed and agreed with the MMO. The piling operations would not be able to commence until the MMO approve the UWSMS as detailed in condition 22 of the DCO (S_D5_7). The MMO therefore retain full control of the final measures to be included in the approved version of the UWSMS. Notwithstanding the project alone conclusion, the Applicant is committed to reducing the contribution of the Morgan Offshore Wind Farm Generation Assets to the cumulative effect, which will also reduce project alone effects on cod spawning, as set out in section 1.8.2 of the UWSMS (e.g. through temporal phasing or Noise Abatement Systems). The Applicant has updated the UWSMS to clarify this point that mitigation and project refinements would be targeted at the cod spawning season. The Applicant has provided further detail on cod spawning period at REP4-010 which suggests peak spawning for cod occurs in March. The Applicant has also included the peak spawning periods for herring as well as cod, if seasonal considerations for piling are deemed necessary as mitigation in the final UWSMS (S_D5_12 Outline UWSMS F02). The Applicant will discuss this further with the MMO and the updates in the UWSMS, noting that the UWSMS is an outline document and will be further updated post consent.

Reference	Marine Management Organisation's submission	Applicant's response
	revised post-consent upon the provision of acceptable evidence. Following the submission of the requested information the MMO may be able to work with the Applicant to be able to refine the seasonal piling restriction for cod and herring.	
REP4-041.86	**REP2-029.11** **MMO Comments at Deadline 2** PD1-008 Applicant's response to Relevant Representation from Marine Management Organisation: Fish and Shellfish 4.6.12 (Annex 3.3)The MMO does not consider the approach, as detailed in Annex 3.3, to modelling UWN impact ranges for mortality and potential mortal injury, recoverable injury, and TTS is acceptable based on their justification that the contours currently presented "are derived from the contours generated for the single strike sound exposure level (SELss) metric to provide a representation of the relevant cumulative sound exposure level (SELcum) thresholds". This approach is unnecessary as Popper et al. (2014) clearly defines evidence-based thresholds for mortality and potential mortal injury, recoverable injury, and TTS effects in fish, based on the SELcum metric so there is no need for the inference of new thresholds from the SELss metric **Applicants Response** Please refer to the Applicant's response to REP2-029.3. **MMO Response** The MMO thanks the Applicant for the provision of the information contained within Annex 3.1, which was provided by the Applicant at Deadline 3. The MMO is content with the Applicant's response and has no further comments to make.	The Applicant notes and welcomes the response from the MMO.
REP4-041.87	**REP2-029.12** **MMO Comments at Deadline 2** It is important that Figures are provided which present the correct thresholds for the range of impact from UWN based on the thresholds for Group 3 fish with high hearing sensitivity for mortality and potential mortal injury (207 cumulative sound exposure level (SELcum)), recoverable injury (203 SELcum), and TTS (186 SELcum) based on the pile driving threshold guidelines described by Popper et al. (2014). This key evidence is needed in	See response to REP4-041.79 (MMO reference: REP2-029.3).

Reference	Marine Management Organisation's submission	Applicant's response
	order to assess the risk of physiological injuries to adult spawning cod from UWN appropriately. **Applicants Response** Please refer to the Applicant's response to REP2-029.3. **MMO Response** Please see MMO response to REP2-029.3	
REP4-041.88	**REP2-029.13** **MMO Comments at Deadline 2** The MMO is content that nursery grounds for cod and herring are not shown within Figures 3.8, 3.9 and 3.10 and 3.11 given how widespread these areas are. The MMO is also content with the Applicant's justification that temporary avoidance of affected nursery ground areas is poses less of a risk to the reproductive success of herring and cod than avoidance of spawning grounds **Applicants Response** The Applicant notes the MMO's Written Submission regarding cod and herring nursery grounds with thanks. No action is required by the Applicant. **MMO Response** Agreed.	The Applicant notes and welcomes the response from the MMO.
REP4-041.89	**REP2-029.14** **MMO Comments at Deadline 2** In relation to Section 1.2.2 and 1.2.3 of Annex 3.3 regarding herring; the MMO thanks the Applicant for restating that the assessment of behavioural effects to herring in response to UWN from piling is underpinned by the use of a sound level of 135 dB re 1µPa2 .s SELss, as per Hawkins et al., (2014). The MMO notes the Applicant's objections to using the 135 dB threshold of Hawkins et al., (2014), but given an absence of other peer-reviewed empirical evidence of behavioural responses in clupeid fishes to support an alternative threshold for impulsive noise, Hawkins et al., (2014) is still considered the best available scientific evidence by the MMO. Please see MMO response RR-020.56 in Table 1 as to why the studies by Doksæter et al., (2012) and McCauley et al., (2000) are not suitable for the purpose of defining a threshold for modelling behavioural responses in Atlantic herring at their spawning grounds. The MMO further thanks the Applicant for recognising that the 135 dB threshold of Hawkins et al., (2014) is the more precautionary of the two proposed	The Applicant notes and welcomes the response from the MMO.

Reference	Marine Management Organisation's submission	Applicant's response
	thresholds. The MMO notes clarified UWN modelling maps for behavioural responses in herring relative to the Isle of Man herring spawning ground, for single piling with a 4,400 kJ hammer energy and with a 3,000 kJ hammer energy. **Applicants Response** The Applicant notes the MMO's Written Submission regarding herring behavioural criteria and clarification regarding the modelling of single piling for 4,400 kJ and 3,000 kJ with thanks. No action is required by the Applicant **MMO Response** Agreed	
REP4-041.90	**REP2-029.15** **MMO Comments at Deadline 2** In relation to Section 1.2.2 and 1.2.3 of Annex 3.3 regarding cod; the MMO notes the assessed range of behavioural impact for cod using a sound level of 160 dB re 1µPa SPLpk as the response threshold. Clarified UWN modelling maps for behavioural responses in cod relative to their spawning ground, based on a 160 dB re 1µPa SPLpk response threshold have also been presented. Please see MMO response RR-020.56 in Table 1 as to why the studies by Doksæter et al., (2012) and McCauley et al., (2000) are not suitable for the purpose of defining a threshold for modelling behavioural responses in cod at their spawning grounds. The limitations of these studies are also relevant to cod. The MMO requests that appropriate modelling using the Popper et al. (2014) criteria should be presented. **Applicants Response** The Applicant notes the MMO's Written Submission regarding defining behavioural criteria for cod. Doksæter et al. (2012) and McCauley et al. (2000) are two of a range of studies referenced to provide an indication of suitable criteria for assessing cod behaviour, with other studies also begin factored into this. The sound level of 160dB re 1µPa SPLpk was first presented to stakeholders, with rationale for using this noise level, at Expert Working Group 02 in November 2022 (APP-090), with no objections raised in applying these criteria for the assessment of behavioural effects to cod. This was also	See the Applicant's response to REP4-041.85 (MMO response REP2-029.9). The Applicant would reiterate the commitment being made to reduce effects on spawning cod from piling operations to minimise the risk to this receptor. Notwithstanding the project alone conclusion, the Applicant is committed to reducing the contribution of the Morgan Offshore Wind Farm Generation Assets to the cumulative effect, which will also reduce project alone effects on cod spawning, as set out in section 1.8.2 of the UWSMS (e.g. through temporal phasing or Noise Abatement Systems). The Applicant has updated the UWSMS to clarify this point that mitigation and project refinements would be targeted at the cod spawning season.

Reference	Marine Management Organisation's submission	Applicant's response
	presented in the Preliminary Environmental Information Report (Morgan Offshore Wind Limited, 2023) with no objections raised in Section 42 consultation responses (APP-088). The Applicant notes the MMO comments regarding the application of Popper et al. (2014) criteria to assess behavioural effects to cod. Popper et al. (2014) does not provide quantitative criteria to support behavioural assessment for fish, only qualitative criteria. The Applicant has sought to take a more precautionary approach than adopting the TTS threshold as a proxy for behavioural effects and as set out above the noise level used to inform the assessment (i.e. 160dB re 1µPa SPLpk criteria) was drawn from a range of literature sources to provide a precautionary indication of potential for behavioural effects to cod. It is the Applicant's understanding that the points of difference in relation to cod behavioural responses (and noise levels associated with them) would not make a material difference to the conclusions of the impact assessment. Volume 2, Chapter 3: Fish and shellfish ecology (APP-021), which concluded that there is a risk of an effect of moderate significance, which is significant in EIA terms, on cod spawning when the Morgan Generation Assets is considered cumulatively with other projects in the Irish Sea. As such, the Applicant has included cod as a key species in the UWSMS and has acknowledged that mitigation will be required to reduce the magnitude of the impact of underwater noise from piling on cod during their spawning season. These measures are set out in section 1.8 of the UWSMS. The MMO acknowledge that it is acceptable for the UWSMS to be developed and mitigation options to be explored post-consent, although discussions are continuing with respect to the mitigation measures to be included in the UWSMS during Examination. **MMO Response** The MMO highlights that, contrary the Applicant's response to REP2-029.15, comments on the acceptability of applying a sound level of 160dB re 1µPa SPLpk for modelling behavioural responses in fish have been raised by the MMO. The MMO is also aware that the behavioural response thresholds described by Popper et al. (2014) are qualitative and therefore cannot be numerically modelled. The MMO notes that the Applicant is correct that physiological effects to cod from UWN from piling are of greater concern to the MMO than behavioural effects. The MMO has detailed that high and low intensity cod spawning	

Reference	Marine Management Organisation's submission	Applicant's response
	grounds are extensive in the region. Cod are also broadcast spawners with pelagic larvae which means they have the ability to move throughout their spawning grounds and undertake spawning without their ability to spawn being impaired if they cannot reach a specific spawning area or habitat due to excessive noise disturbances. The MMO partly agrees with the Applicant's conclusion that there is a risk of an effect of moderate significance to cod from piling within the Morgan OWF array, but the MMO highlights to the Applicant that the range of effect for physiological effects of TTS in cod, (shown in Figure 1.3 of Annex 3.1) extends over 20km from the noise source and covers much of the high intensity cod spawning ground. For this reason, the risk of an effect to cod from piling within the Morgan OWF array is significant for both the project alone and cumulative with other projects in the Irish Sea. The MMO supports that cod is included in the UWSMS as a key species of concern.	
REP4-041.91	**REP2-029.16-31** Please see Table 1 *[MMO response to Applicant's response to ExQ1]* of this submission for the MMO's current position regarding the DCO and dML's	The Applicant has responded in REP4-041.7 to REP4-041.21.
REP4-041.92	**REP2-029.34** **MMO Comments at Deadline 2** **Coastal Processes** The Applicant's response to the request for extent estimations is reasonable: the scour protection will depend on the foundation type that has not been agreed on yet. The MMO requests that the Applicant explicitly states that the comment RR-020.36 will be addressed or please refer to a relevant document that already addresses it. **Applicants Response** The Applicant can confirm that the detail of design and construction will be outlined within the Offshore Construction Method Statement (CMS) developed in consultation with MMO. This will include an assessment of the magnitude of scour in comparison to the volumes of scour protection at the locations where it is proposed. This is secured within the DCO dMLs (REP2-011, S_D2_7) under Schedules 3 and 4, Part 2, condition	The Applicant notes the response from the MMO.

Reference	Marine Management Organisation's submission	Applicant's response
	20(1)(d)(ii). The Applicant considers that this provides clarity that comment RR-020.36 will be addressed in the Offshore CMS and that this matter is now closed. **MMO Response** The MMO is reviewing the Applicant's response and will provide a response as soon as possible.	
REP4-041.93	**REP2-029.35** **MMO Comments at Deadline 2** The Applicant cites another report (ABPmer, 2023) saying that there is limited amount of sediment to be scoured, hereby limiting the maximal scour depth. Furthermore, and similarly to RR-020.36, the final design has not been agreed, so they cannot calculate potential scour. The MMO is content that the Applicant will submit an Offshore Construction Method Statement (CMS) developed in consultation with MMO and construction cannot commence until the CMS is submitted and approved by the MMO. The MMO will look to include this as a condition on the dML. **Applicants Response** The Applicant welcome this Written Submission from MMO and notes that development and agreement of an Offshore CMS is secured within the DCO dML (S_D3_6 Draft DCO F05) under Schedules 3 and 4, Part 2, condition 20(1)(d). **MMO Response** The MMO welcomes this update and has no further comments at this stage.	The Applicant notes and welcomes the response from the MMO and considers that this matter is now resolved.
REP4-041.94	**REP2-029.37** **MMO Comments at Deadline 2** **Dredge and Disposal** The MMO notes that the Applicant will provide a draft decommissioning plan for the Morgan Generation Assets to be submitted with the decommissioning programme prior to construction commencing. The MMO is content with this provided that the decommissioning programme is updated during the Morgan Generation Assets lifespan to take account of changing good practice and new technologies and that the scope of the decommissioning works are determined by the relevant legislation and guidance at the time of decommissioning	The Applicant does not consider that an outline decommissioning plan is necessary to be submitted at this stage, for the reasons set out within its response to GEN 1.21 in REP3-006, as set out at ISH 2 (see paras. 94 – 99 in REP4-006) and as stated in point REP3-049.79 of REP4-009.

Reference	Marine Management Organisation's submission	Applicant's response
	Applicants Response The Applicant welcomes the MMO's Written Submission that the draft decommissioning plan should be submitted prior to commencing construction, and can confirm that the decommissioning programme will be updated during the Morgan Generation Assets lifespan to take account of changing good practice and new technologies and that the scope of the decommissioning works are determined by the relevant legislation and guidance at the time of decommissioning. **MMO Response** The MMO notes that decommissioning will not be consented as part of the DCO and a new marine licence will be required but to assist with the holistic review of the project and understanding of the conclusions within the Environmental Statement believe that an outline plan would be beneficial at this stage. The MMO is hoping to have an update for Deadline 5 and will liaise with the Applicant on this requirement in between deadlines.	
REP4-041.95	REP2-029.39 **MMO Comments at Deadline 2** The MMO notes the Applicant's response and further states that, in line with OSPAR guidance, properties of the chemicals paints and coatings used should be notified to the MMO for approval prior to use. This request was incorporated into the MMOs Relevant Representation RR-020.41 regarding the Mitigation and Monitoring Schedule **Applicants Response** Schedules 3 and 4, Part 2, Condition 18(2) of the dMLs within the draft DCO (REP2-011) require that any coatings and treatments are suitable for use in the marine environment and are used in accordance with guidelines approved by the Health and Safety Executive and the Environment Agency Pollution Prevention Control Guidelines. Condition 20(1)(e)(ii) further requires the offshore Environmental Management Plan to include details of a chemical risk assessment, including information regarding how and when chemicals are to be used, stored and transported in accordance with recognised best practice guidance. **MMO Response**	The Applicant welcomes the MMOs response and engagement on this matter.

Reference	Marine Management Organisation's submission	Applicant's response
	The MMO welcomes the confirmation. The MMO is currently reviewing Condition 18(2) to ensure it aligns with the current chemical assessment approach and will provide an update for Deadline 5 and will liaise with the Applicant on any updates between deadlines.	
REP4-041.96	**REP2-029.41** **MMO Comments at Deadline 2** The MMO welcomes the confirmation of the collection storage and methodology to be undertaken for the analysis of samples by relevant validated laboratories. In addition, The MMO notes a good description of the analysis for trace heavy metals analysis showed the results would be appropriate for use with comparison to England's agreed action levels for dredged material. The MMO is continuing to discuss the disposal site designation with the Applicant so this can be stipulated within the dML and will provide the ExA an update in due course. **Applicants Response** The Applicant welcomes the MMO's confirmation that the information provided by the Applicant (PD1-017) has demonstrated that the methods of analysis for trace heavy metals are appropriate for use with comparison to England's agreed action levels for dredged material. The Applicant therefore considers that matter to now be closed. **MMO Response** The MMO has passed the disposal site information on to Cefas who will designate the site. The MMO will inform the Applicant when this has been actioned and request any amendments to the dML conditions required to ensure disposal site compliance.	The Applicant notes the response from the MMO.
REP4-041.97	REP2-029.44 **MMO Comments at Deadline 2** Benthic Ecology An assessment of the prevalence / abundance of sediment bound paint flakes pre- and post-construction would further our understanding of this potential impact on benthic ecology. However, the MMO notes that no further assessment of this impact has been proposed. This is in line with other similar developments where Applicants have not been required to undertake additional monitoring or research. Adequate sampling of the pre-construction condition is a pre-requisite for robust comparison with post-construction	The Applicant notes the MMO's response and directs the MMO to their Response to the Examining Authority's Written Questions at Deadline 4 (see REP3-037.3 of REP4-007) which refers to the full response provided in the Applicant's Deadline 3 response to the MMO's written submission at Deadline 2 (see REP2-029.44 of REP3-004). The Applicant notes that this matter is now agreed in the Statement of Common Ground between the Applicant and the MMO (REP3-028) and therefore the matter is resolved.

Reference	Marine Management Organisation's submission	Applicant's response
	condition and the MMO requests the Applicant to seek opportunities for collaboration between researchers and industry to ensure that the opportunity to investigate this relatively recently identified potential impact to benthic ecology (see Tagg et al. 2024) is not missed. The MMO have advised the Applicant that MMO.BE.5 in the Statement of Common Ground (SoCG) can be changed to 'agreed' as there is an agreement to the scoping of impacts for the EIA for Benthic Subtidal and Intertidal Ecology **Applicants Response** The Applicant welcomes the MMO's confirmation that they are in agreement with the scoping of impacts in Volume 2, Chapter 2: Benthic subtidal ecology The Applicant welcomes the MMO's confirmation that they are in agreement with the scoping of impacts in Volume 2, Chapter 2: Benthic subtidal ecology **MMO Response** The MMO notes that this request has not been standard on other offshore wind development. As projects are getting larger and studies are taking place further impacts have been identified and it would be welcomed if these were taken into account. The MMO suggests that as a developer these are taken forward with industry as a whole to ensure the polluter pays principle is applied.	
REP4-041.98	**REP2-029.45** **MMO Comments at Deadline 2** The MMO welcomes the Applicant's commitment to review suitable imagery acquired during monitoring related to maintenance activities for the presence of Invasive Non-Native Species (INNS) which will allow for an assessment of unambiguous INNS. However, the presence of cryptic INNS will not be adequately assessed through review of this imagery alone. The MMO notes that no significant effect from INNS was predicted within the Environmental Statement because of the Applicants commitment to adopt measures which act to reduce the likelihood of introduction of INNS. However, should INNS be identified during review of the imagery, the MMO requests that the Applicant reconsiders the collection of samples to: 1) confirm species identification and; 2) understand the fouling assemblage more fully to include cryptic INNS **Applicants Response**	The Applicant welcomes the MMO's response and notes that this matter is now agreed in the Statement of Common Ground between the Applicant and the MMO (REP3-028) and the matters are resolved.

Reference	Marine Management Organisation's submission	Applicant's response
	The Applicant notes the MMO's comments with regards to cryptic invasive non-native species (INNS). The Applicant can confirm that, should the monitoring related to INNS as outlined in the Offshore in-principle monitoring plan (REP2-013) detect the presence of INNS, the Applicant will commit to considering the feasibility of collecting samples of the communities colonising the seabed infrastructure for further analysis of INNS. The Applicant would note, however, that the feasibility of the collection of such samples would be dependent on the technical specifications of the equipment available at the time to undertake the surveys as well as health and safety considerations. The Applicant will however commit to exploring this as an adaptive management measure which would be discussed with the MMO as part of the development of the monitoring plan post-consent secured within the DCO dMLs (S_D3_6 Draft DCO F05) under Schedules 3 and 4, Part 2, condition 20(1)(c) **MMO Response** The MMO is satisfied with the amendments to the Offshore In-Principle Monitoring Plan (IPMP) regarding benthic receptors. The MMO notes that scheduled pre and post construction surveys will include ecological monitoring such as review of seabed imagery to assess the presence of Invasive Non-Native Species (INNS) and the diversity of the colonising assemblage around seabed infrastructure. The MMO welcomes this commitment which will enable early detection monitoring of INNS and colonising fauna	
REP4-041.99	**REP2-029.46** **MMO Comments at Deadline 2** **Fish ecology** The Applicant has noted the observations made and provided clarification that the parameters used to define the Maximum Deign Scenarios (MDS) for each impact assessment carried out in the ES are selected from the project design envelope to represent the with the maximum effect for a particular impact and receptor topic. This is acceptable and the MMO thanks the Applicant for clarifying this **Applicants Response** The Applicant notes the MMO's Written Submission regarding clarification of the Maximum Design Scenarios (MDS) with thanks. No action is required by the Applicant, and this matter is considered closed	The Applicant notes and welcomes the response from the MMO.

Reference	Marine Management Organisation's submission	Applicant's response
	MMO Response Agreed	
REP4-041.100	**REP2-029.49** **MMO Comments at Deadline 2** The MMO is content that the MDS for impacts to fish receptors from UWN as a result of piling is appropriate **Applicants Response** The Applicant notes the MMO's Written Submission confirming that the MMO is content with the MDS for underwater sound impacts from piling with thanks. This matter is considered closed. **MMO Response** Agreed	The Applicant notes and welcomes the response from the MMO.
REP4-041.101	**REP2-029.50** **MMO Comments at Deadline 2** The Applicant has clarified that they have two scenarios which cover OSP foundation installation. The first is that four OSPs with four-legged jacket foundations, requiring three piles per leg would be deployed (leading to a total of 48 piles installed), the second scenario is that a single OSP with a six-legged jacket foundation requiring three piles per leg would be installed (resulting in a total of 18 piles installed). The MMO is therefore content that the MDS for the piling of OSPs is appropriate and thanks the Applicant for providing clarification. **Applicants Response** The Applicant notes the MMO's Written Submission regarding clarification of the MDS with thanks. No action is required by the Applicant, and this matter is considered closed **MMO Response** Agreed	The Applicant notes and welcomes the response from the MMO.
REP4-041.102	**REP2-029.53** **MMO Comments at Deadline 2** The Applicants response has not resolved the issue. In Figures 3.8, 3.9, 3.10 and 3.11 of the fish ecology chapter of the ES, thresholds for mortality and	The Applicant notes and welcomes the response from the MMO and looks forward to receiving MMO comments at Deadline 5.

Reference	Marine Management Organisation's submission	Applicant's response
	potential mortal injury, recoverable injury, and TTS are presented which were not consistent with the pile driving threshold guidelines described by Popper et al. (2014). The Applicant justifies this by outlining that the contours modelled "are derived from the contours generated for the single strike sound exposure level (SELss) metric to provide a representation of the relevant cumulativesound exposure level (SELcum) thresholds". However, this approach is unnecessary and departs from normal practice. Popper et al. (2014) clearly defines evidence based thresholds for mortality and potential mortal injury, recoverable injury, and TTS effects in fish, based on the SELcum metric so there is no need for the Applicant to infer new thresholds from the SELss metric. Further, it appears that different thresholds for the same effect have been inferred in the different figures; for example, Figure 3.10 displays a TTS contour of 145 dB for a static receptor whereas Figure 3.11 displays noise contours of 142 dB for TTS for a static receptor. The MMO requests that the modelling outputs presented in Figures 3.8, 3.9, 3.10 and 3.11 of the fish ecology chapter be amended. The MMO requests that the Applicant presents the range of impact from UWN based on the thresholds for Group 3 fish with high hearing sensitivity for mortality and potential mortal injury (207 cumulative sound exposure level (SELcum)), recoverable injury (203 SELcum), and TTS (186 SELcum) as per the pile driving threshold guidelines described by Popper et al. (2014). **Applicants Response** Please refer to the Applicant's response to REP2-029.3 **MMO Response** The MMO thanks the Applicant for the provision of the information contained within Annex 3.1, which was provided by the Applicant at Deadline 3. Annex 3.1 is currently being reviewed by the MMO. An update will be provided to the Applicant and the ExA by Deadline 5.	
REP4-041.103	**REP2-029.54** **MMO Comments at Deadline 2** The MMO acknowledges the clarification that the assessment of behavioural effects in herring at their spawning ground in response to piling noise, is based on the maximum range of behavioural effect modelled which uses the appropriately precautionary 135 dB re 1µPa2.s, as per Hawkins et al. (2014). The MMO notes The MMO acknowledges the clarification that the assessment of behavioural effects in herring at their spawning ground in response to piling	The Applicant notes and welcomes the response from the MMO and notes this matter is now resolved.

Reference	Marine Management Organisation's submission	Applicant's response
	noise, is based on the maximum range of behavioural effect modelled which uses the appropriately precautionary 135 dB re 1µPa2.s, as per Hawkins et al. (2014). The MMO notes **Applicants Response** The MMO acknowledges the clarification that the assessment of behavioural effects in herring at their spawning ground in response to piling noise, is based on the maximum range of behavioural effect modelled which uses the appropriately precautionary 135 dB re 1µPa2.s, as per Hawkins et al. (2014). The MMO notes The MMO acknowledges the clarification that the assessment of behavioural effects in herring at their spawning ground in response to piling noise, is based on the maximum range of behavioural effect modelled which uses the appropriately precautionary 135 dB re 1µPa2.s, as per Hawkins et al. (2014). The MMO notes **MMO Response** The MMO is content with the Applicants response and agrees that no further action is required.	
REP4-041.104	**REP2-029.55** **MMO Comments at Deadline 2** The MMO supports the commitment to develop an Underwater Sound Management Strategy (UWSMS) to manage the effects of underwater sound to nonsignificant levels to ensure no residual significant effect. This commitment alone is not sufficient to remove the need for a seasonal piling restriction during the herring spawning season (September to October, inclusive) which was recommended in MMO-RR-020 in order to protect spawning herring, and their eggs and larvae, from UWN disturbances during the spawning season. Both Figures 3.4 and 3.6 from the fish ecology chapter show that the UWN contours for the 135 dB behavioural response threshold as per Hawkins et al. (2014), fully overlap with the high intensity herring spawning grounds in the southeast of the Isle of Man, and partially overlap with the high intensity herring spawning grounds in the north and northeast of the Isle of Man. Given that no tangible mitigation strategies (using noise abatement technologies or otherwise) for reducing the range of behavioural effects in herring at their spawning ground from UWN, appear to have been outlined in detail at this point in the process, the MMO considers that it is not appropriate to remove the requested restriction. Given the availability of effective alternatives to unmitigated piling – i.e. noise abatement measures to reduce	See response to REP4-041.83 (MMO reference: REP2-029.8).

Reference	Marine Management Organisation's submission	Applicant's response
	noise at source - unmitigated pile driving cannot be justified on the basis that there are no realistic alternatives. Noise abatement measures would reduce the range of potential impact from UWN on sensitive species and habitats, an issue which is especially pressing given the wider context of the current expansion of offshore wind developments in the Irish Sea. To ensure adequate preparations are made and potential delays avoided, The MMO states that it is in the Applicant's interest to plan for and to incorporate noise abatement measures at the earliest opportunity. The MMO is content for the UWSMS to be finalised post-consent, however, removing the recommended restriction on piling during the herring spawning season would be premature as the Applicant has yet to present any evidence of the specific measures (including the use of Noise Abatement Systems (NAS)) which will be used to reduce UWN emissions to within acceptable levels relative to the herring spawning ground. Until such evidence is presented, the MMO's strongly believes and requests that a seasonal piling restriction is necessary in order to protect spawning herring, and their eggs and larvae, during the spawning season (September to October, inclusive) and that the restriction remains on the face of the dML. The implementation of adequate noise abatement strategies may remove the need for seasonal piling restrictions, however the Applicant must demonstrate that the range of impact from UWN in relation to spawning herring is adequately reduced. In relation to the Site Integrity Plan (SIP) (North Sea) the MMO would highlight that this process was set out for a specific reason for in-combination impacts only, any concerns to the project alone were discussed and agreed/concluded at the consenting stage. At this stage the impacts on fish for Morgan OWF is for the project alone and therefore it is not the same and the need for a restriction still stands without the evidence requested. The Principle of the UWSMS was agreed during the Evidence Plan Process, however this did not include all the required information and the MMO requires further information to be confident that a conclusion of no impact can be agreed without specific details. The MMO welcomes further discussion on the seasonal restriction wording to include flexibility within the condition, including that of the UWSMS **Applicants Response** The Applicant notes and welcomes the MMO's Written Submission regarding the Underwater Sound Management Strategy (UWSMS) and seasonal restrictions. The Applicant and the MMO held a meeting regarding underwater sound impacts on 24/10/2024, and further discussions are ongoing in relation to the potential requirement of seasonal restrictions or noise abatement	

Reference	Marine Management Organisation's submission	Applicant's response
	systems to reduce effects on spawning herring during the period indicated. The Applicant awaits the forthcoming Defra marine noise policy and will provide a detailed response **MMO Response** See MMO response to REP2-029.8	
REP4-041.105	**REP2-029.60** **MMO Comments at Deadline 2** It has been clarified that all references to the Morgan Generation Assets in the CEA UWN assessment are based upon installation of 454 pin piles with a maximum hammer energy of up to 4,400 kJ. The MMO is content that the Applicant's response appropriately addresses MMO concerns. **Applicants Response** The Applicant notes the MMO's Written Submission regarding confirmation of the piling scenario assessed within the underwater sound Cumulative Effects Assessment (CEA) for Morgan Generation Assets with thanks. No action is required by the Applicant, and this matter is considered closed. **MMO Response** Agreed	The Applicant notes and welcomes the response from the MMO.
REP4-041.106	**REP2-029.61** **MMO Comments at Deadline 2** It has been clarified that all references to the Morgan Generation Assets in the CEA UWN assessment are based upon installation of 454 pin piles with a maximum hammer energy of up to 4,400 kJ. The MMO is content that the Applicant's response appropriately addresses MMO concerns. **Applicants Response** The Applicant notes the MMO's Written Submission regarding confirmation of the piling scenario assessed within the underwater sound Cumulative Effects Assessment (CEA) for Morgan Generation Assets with thanks. No action is required by the Applicant, and this matter is considered closed. **MMO Response**	The Applicant notes and welcomes the response from the MMO.

Reference	Marine Management Organisation's submission	Applicant's response
	Agreed	
REP4-041.107	**REP2-029.62** **MMO Comments at Deadline 2** The MMO is generally content that the Applicant's CEA is sufficiently precautionarily and supports their conclusion of a predicted moderate adverse effect for sound-sensitive species, cod and herring, which is significant in EIA terms and requiring mitigation. The MMO therefore determines that the following points within the Applicant's SoCG can be amended from 'ongoing point of discussion' to 'agreed': MMO.FSF.9 MMO.FSF.10 MM.FSF.11 **Applicants Response** The Applicant notes the MMO's Written Submission regarding confirmation that the CEA for underwater sound from piling is sufficiently precautionary and welcomes the updated status to points MMO.FSF.9 to 11 of the Statement of Common Ground (REP1-035) as agreed **MMO Response** No further action required.	The Applicant notes and welcomes the response from the MMO.
REP4-041.108	**REP2-029.64** **MMO Comments at Deadline 2** The MMO is content with the Applicant's conclusion that seabed sediments within the Morgan Array area are generally not high-value as herring spawning habitat, and that the area to the north of the Morgan boundary has been appropriately recognised by the Applicant as a herring spawning ground. The MMO does not consider that further action is necessary. **Applicants Response** *The Applicant notes the MMO's Written Submission confirming agreement that seabed sediments within the Morgan Array Area are generally not high value as herring spawning habitat with thanks, and considers this matter closed.* **MMO Response** Agreed.	The Applicant notes and welcomes the response from the MMO.

Reference	Marine Management Organisation's submission	Applicant's response
REP4-041.109	**REP2-029.65** **MMO Comments at Deadline 2** The MMO agrees that the characterisation of sandeel potential habitat is sufficient to inform the EIA. Effects of temporary habitat loss and physical disturbance to sandeel habitat may occur during construction of the wind farm, although this will likely be limited to the area where suitable sediments are located. Although the evidence presented thus far shows that the Morgan Array area overlies a matrix of preferred, marginal, as well as some unsuitable sediment types for sandeel, given the wider availability of seabed substrates that are suitable as sandeel habitat outside the array area, the MMO is content that the magnitude of temporary habitat loss and physical disturbance during construction of the wind farm is unlikely to result in significant adverse effects on sandeels in the area. The MMO is of the opinion that the evidence presented is sufficient to amend points MMO.FSF.2, FSF.6 and MMO.FSF.7 of the Applicant's SoCG from 'ongoing point of discussion' to 'agreed'. The Applicant's broad approach to characterisation of the baseline environment for fish and shellfish is appropriate. **Applicants Response** *The Applicant notes the MMO's Written Submission confirming agreement that the characterisation of sandeel potential habitat is sufficient to inform the EIA with thanks, and considers this matter closed.* **MMO Response** Agreed.	The Applicant notes and welcomes the response from the MMO and notes this matter is now resolved.
REP4-041.110	**REP2-029.67** **MMO Comments at Deadline 2** The MMO recognises that the Applicant defined an appropriately large study area and provided a full characterisation of fish ecology receptors in the fish and shellfish ecology technical report. Nonetheless, it would be helpful in, in future applications, tables similar to Table 3.11 included all key sensitive fish receptors within the vicinity of the project works which were being carried forwards for further assessment rather than those which immediately overlap the project array. This will provide a neat presentation for reviewers which makes clear the key sensitive fish receptors which the Applicant has highlighted as being of particular interest within their application **Applicants Response**	The Applicant notes and welcomes the response from the MMO.

Reference	Marine Management Organisation's submission	Applicant's response
	The Applicant notes the MMO's Written Submission confirming agreement with the fish and shellfish ecology study and baseline characterisation area presented within Volume 4, Annex 3.1: Fish and shellfish ecology technical report (APP-051) and acknowledges the advice provided for future applications with thanks. The Applicant considers this matter closed. **MMO Response** Agreed.	
REP4-041.111	**REP2-029.68** **MMO Comments at Deadline 2** The MMO's original comment related to the mischaracterisation of impacts to fish from permanent habitat loss as 'long term' habitat loss which implies temporary loss or change to habitats over an undefined but 'long-term' period of time. Where scour protection, turbine foundations or other project infrastructure is not removed following the end of the project's lifetime, this would represent a permanent alteration to the habitat. The Applicant's response is that "long term habitat loss is considered to represent permanent habitat loss", in which case the MMO requests that the term permanent habitat loss is more representative of what the Applicant means and is assessing **Applicants Response** The Applicant notes the MMO's Written Submission and agrees that permanent habitat loss from scour and cable protection left in situ during the decommissioning phase has been assessed as set out within section 3.9.5 of Volume 2, Chapter 3: Fish and shellfish ecology (APP-021). The Applicant is content to use this term to describe these impacts as recommended by the MMO. Impacts related to turbine foundations have been categorised as long term as these will be removed during the decommissioning phase of the project and are therefore excluded from the permanent habitat loss total presented in paragraph 3.9.5.31 of Volume 2, Chapter 3: Fish and shellfish ecology (APP-021). **MMO Response** With regards to Shellfish, the MMO considers that construction activities and decommissioning which result in habitat loss or disturbance would be considered 'long-term' due to the timeframe for seabed and sediment composition to return to original being typically longer than a commercial shellfish lifespan. Impact on more sedentary shellfish species maybe	The Applicant notes and welcomes the response from the MMO and notes this matter is resolved.

Reference	Marine Management Organisation's submission	Applicant's response
	considered higher as they are less nomadic and often related to certain substrate types for most of their life cycle. The monitoring activities planned to pre and post construction will shed more light onto this parameter for the shellfish species within the area and inform future actions. The MMO notes that Natural England agrees with the ExA that more persistent impacts from habitat disturbance, may be considered long term. However, there remains an argument for EIA impacts to still be considered temporary. This is because following cessation of disturbance, there is evidence that fish populations can recover and without further seabed disturbance be maintained over the operational phase of the windfarm and/ or post decommissioning. Therefore, Natural England advised that any further habitat disturbance impacts from decommissioning should be considered as a separate discrete impact. The MMO notes that Natural England has determined that mitigation measures for loss of supporting habitat for fish and shellfish are not required for this project.	
REP4-041.112	**REP2-029.82** **MMO Comments at Deadline 2** Underwater Noise The MMO has reviewed the following document: Annex3.2_Morgan Gen Response to RR020_MMO_UWS_4.9.5 TO 4.9.9 regarding the assessment of simultaneous piling, and the MMO thanks the Applicant for this information. This additional evidence is welcomed for transparency and completeness, as it was not clear in the original underwater noise assessment why various assumptions and choices had been made. The MMO advises that it would be helpful for future reporting if such information is included within the main underwater noise assessment. **Applicants Response** The Applicant notes and welcomes the MMO's Written Submission. **MMO Response** No further comment	The Applicant notes and welcomes the response from the MMO.
REP4-041.113	**REP2-029.90** **MMO Comments at Deadline 2**	The Applicant welcomes the MMO's confirmation that they are content that the discussions will continue in the development of the UWSMS (AP-068) and MMMP (REP4-020).

Reference	Marine Management Organisation's submission	Applicant's response
	Outline Marine Mammal Mitigation Protocol (MMMP)The MMO notes that the UWSMS is a live document which will be updated through discussions with stakeholders, and, if NAS is required, will include this detail clearly in the final MMMP and UWSMS. As per MMO's original comment, the MMO requests that NAS (bubble curtain) is required for ALL high order clearance, and it is in the interest of the Applicant to plan for this at the earliest opportunity. The MMO would also highlight that this is consistent with the standard requirements within the conditions for all 2024 and 2025 UXO marine licences. **Applicants Response** The Applicant notes the MMO's Written Submission. The Applicant re-iterates that the Applicant will follow any published guidelines on noise abatement at the time the UWSMS (APP-068) is finalised. As highlighted by the MMO, the UWSMS (APP-068) is a live document which will be updated through discussions with stakeholders, and if there is a requirement to use NAS, the Applicant will include this detail clearly in the final UWSMS (and the final MMMP), which will be discussed with stakeholders and agreed with MMO prior to commencement of construction. The Applicant highlights the discussion held with the Applicant, the MMO, Cefas and Natural England (24/10/2024) in which REP2-029.90 was raised. Following this discussion it is the Applicant's understanding that the MMO consider that the development and finalisation of the MMMP and UWSMS (APP-068) are considered sufficient to manage appropriate mitigation for UXO clearance, and that the development and finalisation of these documents, in consultation with relevant stakeholders should be sufficient to allow this point to be closed **MMO Response** The MMO notes the Applicants response. The MMO is content that the discussions will continue in the development of the UWSMS & MMMP. However, at this stage the MMO notes that some of the mitigation is known. As per the Defra interim position statement low order should be standard mitigation on UXO. It is the MMO's position that for high order UXO clearances bubble curtains must be used regardless of the size and this should be reflected within the plans at this stage. The MMO also notes that JNCC and NE have concerns on UXO being included in the dML. The MMO is discussing this with the interested parties to understand these concerns and will provide an update in due course.	The Applicant has now reconsidered their position with respect to UXO clearance following review of the latest successful clearances using low order clearance techniques and stakeholder feedback and has taken the decision to remove high order clearance from the DCO. Therefore, any clearance of UXOs referred to in the draft dML will be for low order methods only and aligns with the Interim Joint UXO clearance position statement. Should high order clearance be required this will be subject to a separate licence application and will follow the forthcoming policy.

2.3 Natural England

Table 2.3: REP4-042, REP4-043– Natural England.

Reference	Natural England's submission	Applicant's response
REP4-042.1	1. **Deadline 3 Submissions** Natural England has reviewed the relevant documents submitted by the Applicant at Deadline 3. Please find an update of Natural England's position regarding these documents in Table 1 below, including anticipated timing of responses. In addition, Natural England is also submitting the following detailed responses, signposted from Table 1, within the following thematic appendices: •EN01036 493734 - Morgan Offshore Wind Project: Generation - Appendix I4 - Natural England's Risk and Issues Log Deadline 4.	The Applicant notes Natural England's response.
REP4-042.2	2. Applicant's Deadline 3 submissions in relation to Offshore Ornithology Similar to our Deadline 3 response [REP3-046], we highlight that ornithology documents supplied by the Applicant at Deadline 3 ([REP3-018] S_D3_9 – Inclusion of Awel y Mor in Cumulative Assessments – Clarification Note, [REP3-019] S_D3_10 - Review of Cumulative Effects Assessment and In-Combination Assessment: Offshore ornithology and [REP3-020] S_D3_11 - Kittiwake apportioning clarification note) essentially serve as additional stress-testing of the Applicant's conclusions against our advice on specific aspects of the impact assessment, in isolation from each other. We have discussed and provided advice on the required updated assessments with the Applicant during an Expert Working Group (EWG) meeting held on 13 November 2024. The Applicant has advised that they will be presenting ornithology data in a tabulated or spreadsheet format and submitting this at Deadline 5. Natural England will review these at Deadline 5 and we defer further comments on ornithology until the subsequent deadline.	The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16 Ornithological assessment clarification data F01). From the engagement with Natural England between Deadline 4 and 5 it is anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC.
REP4-042.3	3. **Issue Specific Hearing 2 Action Point 21** As noted in our response to the Examiner's Question HRA 1.1 (REP3-048) Natural England considers the risk of adverse effects on the SPAs listed is	The Applicant welcomes Natural England's response that the risk of adverse effects on the SPAs listed is generally low, and that the submission of a derogation case and in-principle compensatory measures is unlikely to be necessary. The Applicant has submitted the information requested by

Reference	Natural England's submission	Applicant's response
	generally low, and that the submission of in-principle compensatory measures for English SPAs is unlikely to be necessary. Since Deadline 3 we have met with the Applicant to discuss what is required in order to resolve this issue (EWG dated 13 November 2024 and project meeting dated 03 December 2024). Whilst Adverse Effects on Integrity (AEoI) are unlikely, at present it is not possible for Natural England to definitively rule out AEoI until the Applicant has addressed the issues identified with their impact assessment. Further submissions from the Applicant are expected to aid resolution. The Applicant has confirmed they will submit an updated Outline Offshore Environmental Management Plan, expected at Deadline 4, and tabulated ornithology impact parameters which are expected at Deadline 5. Subject to the Applicant addressing our key points in these submissions, we believe this issue should be resolvable without the need for a derogation case.	Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16 Ornithological assessment clarification data F01). From the engagement with Natural England between Deadline 4 and 5 it is anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC. The Applicant anticipates from the meeting held on 8th January 2025 that Natural England will be able to confirm a conclusion of no AEoI alone and in-combination.
REP4-042.4	4. **Inclusion of UXO clearance in the DCO - Schedules 3 and 4 – Paragraph 2(f) Licencing of Unexploded Ordnance clearance** Natural England note that UXO clearance continues to be included as a licensable activity within the draft DCO (dDCO). Natural England disagrees with the approach of including UXO clearance in the dDCO and have previously flagged this to the Examining Authority in the Natural England Risk and Issue log submitted at deadline 1 (C10). We would like to reiterate that we do not consider it appropriate for UXO clearance to be included as a licensed activity in the DCO. We have requested further information from the Applicant regarding the exact number, size, location and clearance methods to be used if they wish to secure UXO clearance within the DCO, however we understand this information cannot currently be provided and a full assessment of the impacts of the UXO to be cleared cannot be undertaken at this time. Therefore, a standalone Marine Licence should be sought from MMO post-consent, once UXO surveys have been undertaken and the above information is available. It should also be noted that a European Protected Species (EPS) licence is also likely to be required for UXO clearance works, which will be applied for post-consent as again, the additional information outlined above is currently unavailable. We would like to draw the Examining Authority's attention to the submission by JNCC at Deadline 5 of the Mona Offshore Wind Farm Examination (REP4-086) which sets out a detailed explanation of why UXO clearance	The Applicant note's Natural England's comment. Since the last deadline, the Applicant has committed to using low order techniques for UXO clearance. Clearance by low order techniques has had increased success over recent years. Following review of the latest successful clearance using low order techniques on other UK projects and in light of Natural England's concerns, the Applicant has taken the decision to remove high order clearance from the draft DCO. Therefore, any clearance of UXOs referred to in the draft dML will be for low order methods only and high order UXO clearance will not be authorised under the DCO. Should high order UXO be required this will be licensed under a separate marine licence.

Reference	Natural England's submission	Applicant's response
	should be authorised under a standalone Marine Licence post-consent rather than within the DCO. Natural England are fully aligned with the advice provided by JNCC and consider the same advice to be applicable to the Morgan Offshore Wind Farm Examination.	
REP4-043.1	**A1/A5** 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 through High Order Detonations have not been included. **Update at Deadline 2** The Applicant has provided the maximum volume of scour protection in the draft DCO and dMLs. However, maximum area of scour and maximum volume and area for cable protection have still not been provided. The number and size of UXOs that can be detonated through High Order Detonations have not been included. Therefore no change to our position at Deadline 2. **Update at Deadline 3** No change **Update at Deadline 4** Natural England welcomes the updates to the DCO and dMLs which include the maximum volume and area for scour and cable protection. However, the Applicant has only provided the total number of UXO cleared under one licence. We understand the information required to undertake a full assessment is not currently available. We reiterate that UXO clearance should not be included in as a licensed activity in the DCO. See heading 4 of our cover letter for Deadline 4.	Following review of the latest successful clearance using low order techniques on other UK projects, and in light of Natural England's concerns, the Applicant has taken the decision to remove high order detonation from the draft DCO. However, the Applicant retains their position of including UXO clearance (using low order methods only) in the DCO and the rationale provided within the Applicant's response to the Deadline 2 IP submissions still holds (please see REP2-029.19 of REP3-004). Indeed, Natural England's Relevant Representation states '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' and therefore the Applicant deems the same approach should be taken for the DCO. The Applicant considers that there is an appropriate level of detail within the current assessments to enable low order UXO clearance to be included within the DCO. The Applicant notes that approval of the final Underwater Sound Management Strategy and a Marine Mammal Mitigation Protocol (MMMP) by the MMO will be required prior to undertaking low order UXO clearance works. These stages are where the key information relating to the control of any potentially significant effects will be documented. The Applicant therefore considers this matter can be resolved.
REP4-043.2	**A2/A9** 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, six months is now considered an appropriate period.	The Applicant maintains that four months is justified for the Morgan Generation Assets development, based on the detailed outline management plans that have been submitted through the application and due to the fact that these are plans that are quite standard for a mature industry in offshore wind. Notwithstanding this, the Applicant has agreed to amend the draft

Reference	Natural England's submission	Applicant's response
	Update at Deadline 2 In the response to Relevant Representations document (ref: PD1-017), the Applicant has responded to this comment and stated they will discuss with Natural England and the MMO on timescales. However, no further updates have been provided into Examination from the Applicant on this matter. Therefore, no change to our position at Deadline 2. **Update at Deadline 3** No change **Update at Deadline 4** No change.	DCO at Deadline 5 (S_D5_7) to require a six month period for submission, as requested by Natural England. Following these amendments, the Applicant considers this matter resolved.
REP4-043.3	**A3/A8** There is no condition requiring an updated Offshore Operations and Maintenance Plan (OOMP) be submitted, with the SNCB consulted prior to approval. 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. **Update at Deadline 2** We note that condition 13(3) of each dMLs and draft DCO require that an OOMP is submitted, with SNCB consulted prior to approval and must provide for review and resubmission every three years during the operational phase. However, the condition does not secure that no cable protection should be deployed later than 10 years post-construction. Therefore our concerns have been partially resolved at Deadline 2. **Update at Deadline 3** No change **Update at Deadline 4** No change.	The Applicant has repeatedly set out its position in response to this comment, most recently at Deadline 4 in the Applicant's Response to IP submissions submitted at Deadline 3 (REP4-009). Natural England has not responded in any detail to justify or explain its position. In the absence of any further comment from Natural England, the Applicant has nothing further to add.
REP4-043.4	**A4/A11** 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	The Applicant has previously provided a response to this point (please see the Applicant's response at Deadline 4 REP4-009, REP3-047.9). The Applicant has held further discussion with Natural England (on 8th January 2025) on why it does not consider Ornithological monitoring is merited for this particular development. The arguments made by the Applicant were in

Reference	Natural England's submission	Applicant's response
	Update at Deadline 2 No change **Update at Deadline 3** We acknowledge the updated IPMP submitted by the Applicant at deadline 2 (REP2-013). Our full response is provided in Appendix H3. This addresses our monitoring comments regarding physical processes and benthic and subtidal ecology. However, our comments surrounding monitoring for marine mammals and offshore ornithology remain unresolved at deadline 3. **Update at Deadline 4** No change	line with those presented throughout the examination to date. The Applicant confirms that Natural England were not able to engage in detail on this discussion point such as regarding project specific justification for monitoring of the Morgan Generation Assets and how this monitoring request links to the EIA and ISAA assessments of significant and adverse effects in the meeting, but they agreed to take the matter away and consider further. The Applicant looks forward to the response from Natural England on this. The Applicant is in discussions with Natural England to arrange a meeting prior to Deadline 6.
REP4-043.5	**A6** 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), as it is a key metric for the potential impact on marine mammals and fish. **Update at Deadline 2** The Applicant has amended condition 20(1)(d)(iii) of each deemed marine licence in schedules 3 and 4 of the draft DCO to secure that piling methods are specified and submitted for approval as part of the construction method statement. However, maximum hammer energy has not been provided as requested. Therefore no change to our position at Deadline 2. **Update at Deadline 3** No change **Update at Deadline 4** Natural England welcomes the update to the DCO to include the maximum hammer energies as 4000 kJ for pin piled foundations and 3000 kJ for any other piled foundation type. Therefore, this issue has been resolved at Deadline 4.	The Applicant welcomes and notes this point is now resolved in Natural England's response.
REP4-043.6	**A7** Micro-siting around features of conservation importance, such as reef of Annex I quality, is a standard mitigation. We recommend that the	The Applicant has updated the wording in the deemed Marine Licences (dMLs) within the draft DCO at Deadline 5 (S_D5_7) to include the amended wording proposed by Natural England regarding reef habitats of

Reference	Natural England's submission	Applicant's response
	requirement to consider micro siting around features of conservation importance is secured within the dMLs. **Update at Deadline 2** No change **Update at Deadline 3** No change **Update at Deadline 4** Natural England welcomes the addition to Schedule 3, condition 20(1)(a)(v). However, we request that the wording is changed to: 'relating to any benthic habitats of conservation, ecological or economic importance constituting **reef habitats of principal importance as listed under Section 41 of the NERC Act**.' Following this change to the wording, this issue can be readily resolved.	principal importance as listed under Section 41 of the NERC Act (see Schedule 3, condition 20(1)(a); Schedule 4, condition 20(1)(a)). The Applicant considers that its response now fully addresses Natural England's comments.
REP4-043.7	**A10** The Underwater Sound Management Strategy will need to be supplied for both piling and UXO detonation. A minimum of two documents for each licence. 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. Therefore, Natural England requests condition 22 require the plans to be submitted no later than 6 months and no sooner than 9 months prior to the activity. **Update at Deadline 2** No change **Update at Deadline 3** No change **Update at Deadline 4** No change	As set out in the response to relevant representations (point RR-026.A.12 in document PD1-017), the Applicant considers that the specification of timings in the manner suggested is too prescriptive to be included within the relevant condition of the dMLs. This would provide a window of just three months to submit the plan, and even a short delay in commencement of activities would render the approved plan invalid based on the suggested amendment. However, due to Natural England requests the Applicant has updated the DCO to allow for a six month determination period as set out in response REP4-043.2. The Applicant therefore considers this matter can be resolved.
REP4-043.8	**Offshore Ornithology** **B1** "Natural England do not consider the Cumulative Effects Assessment (CEA)	The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16 Ornithological assessment clarification data F01). From the engagement with Natural England between Deadline 4 and 5 it is

Reference	Natural England's submission	Applicant's response
	to be sufficiently robust due to the lack of quantitative consideration of some historic projects. The Applicant has not followed SNCB advice on this matter. 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 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. **Update at Deadline 2** No change - additional material on this point was submitted at Deadline 1 which NE will respond to at Deadline 3 **Update at Deadline 3** Progressed but not resolved. NE have provided advice on the Applicant's CEA gap-filling of historical projects note [REP1-010] in Appendix B3. The results of this exercise have been used to 'stress test' the Applicant's conclusions. We advise that the results of this gap filling exercise should also be used to update the project's impact assessments. **Update at Deadline 4** No change - we await the proposed submission of additional material from the Applicant.	anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC following their response on this discussion point (meeting held 8th January 2025). The Applicant anticipates from the meeting held on 8th January 2025 that Natural England will be able to confirm a conclusion of no AEoI alone and in-combination at Deadline 5.
REP4-043.9	**B2** "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. Key issues are the use of appropriate flying bird density data, not using SNCB preferred flight speed parameters and using specific displacement and mortality rates of auks, rather than the SNCB advised ranges.	The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16 Ornithological assessment clarification data F01). From the engagement with Natural England between Deadline 4 and 5 it is anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC.

Reference	Natural England's submission	Applicant's response
	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." **Update at Deadline 2** No change - additional material on this point was submitted at Deadline 1 which NE will respond to at Deadline 3 **Update at Deadline 3** Progressed but not resolved. The Applicant has provided further information on this point [REP1-011, REP1-012 and REP2-021]. NE have provided comments on this in Appendix B3. We advise that updated impact assessments that take full account of SNCB advice in a holistic manner are submitted into the Examination within an updated ES. **Update at Deadline 4** No change - we await the proposed submission of additional material from the Applicant.	
REP4-043.10	**B21** Natural England advise that the Applicant's chosen methodology for calculating density estimates does not follow best practice guidance. Further, we do not consider it appropriate to take an average of confidence limits. The Applicant should present an updated assessment in line with Natural England's advice on this matter. **Update at Deadline 2** No change **Update at Deadline 3** Progressed but not resolved. NE provided recommendations to resolve this issue within our RRs (REP-026, comment ref: B21). The Applicant's response to our RR's (PD1-017, comment ref: RR-026.B62) does not address our concerns, therefore no change to our position at Deadline 3. **Update at Deadline 4** No change	The Applicant has previously provided a response to this point (please see the Applicant's response to RR-026.B.57, RR026.B.62 and RR-027.9 in PD1-017 and REP1-056.12 in REP2-005). The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16 Ornithological assessment clarification data F01). From the engagement with Natural England between Deadline 4 and 5 it is anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC.

Reference	Natural England's submission	Applicant's response
REP4-043.11	**B22** "Natural England highlight that the estimates calculated using SNCB advised parameters should be progressed through all stages of the assessment. 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. " **Update at Deadline 2** No change **Update at Deadline 3** NE provided recommendations to resolve this issue within our RRs (REP-026, comment ref: B22). The Applicant's response to our RR's (PD1-017, comment ref: RR-026.B63) and does not address our concerns, therefore no change to our position at Deadline 3. NE would highlight that the confidence intervals associated with collision estimates (including those for the SNCB advised input parameters) should be used throughout the assessment to assess the full range of potential effects. This approach should be employed to ensure screening sites for LSE is precautionary. **Update at Deadline 4** No change	The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16 Ornithological assessment clarification data F01). From the engagement with Natural England between Deadline 4 and 5 it is anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC. The Applicant has previously provided a response to this point (please see the Applicant's response to RR-026.B.57, RR026.B.62 and RR-027.9 in PD1-017, REP1-056.12 in REP2-005 and REP3-049.16 in REP4-009).
REP4-043.12	**B26** Natural England advise that Seabirds Count data be used for apportioning to colonies in the breeding season. The Applicant should present an updated assessment using Seabirds Count data. For apportioning in the non-breeding season, the Applicants approach remains appropriate. **Update at Deadline 2** No change - additional material on this point was submitted at Deadline 1 which NE will respond to at Deadline 3 **Update at Deadline 3** Progressed but not resolved. The Applicant has provided further information	The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16 Ornithological assessment clarification data F01). From the engagement with Natural England between Deadline 4 and 5 it is anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC.

Reference	Natural England's submission	Applicant's response
	on this point (REP1-011, REP1-012 and REP2-021). NE have provided comments on this in Appendix B3. **Update at Deadline 4** No change	
REP4-043.13	**B27** The Applicant has followed a method developed by Hornsea Project Two to undertake kittiwake age apportioning which SNCBs do not support. Natural England reiterate the SNCB advice provided to the EWG, that we do not agree with the use of this method. 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. **Update at Deadline 2** No change **Update at Deadline 3** Natural England advises that the Applicant's response (RR-026.B.68 and RR-027.27 [PD1-017] does not address our initial advice. We reiterate that the SNCBs do not support the Applicant's methodology for kittiwake age apportioning. We continue to advise that the Applicant use the 84.11% of adults recorded in the Morgan site-specific DAS data to undertake kittiwake age apportioning and submit this into Examination. **Update at Deadline 4** We acknowledge that the Applicant has submitted a kittiwake apportioning clarification note into examination at Deadline 3 [REP3-019]. We have discussed and advised on the required updated assessments with the Applicant. Therefore, we will provide further comments in response to any additional material at the relevant deadline.	The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16 Ornithological assessment clarification data F01). From the engagement with Natural England between Deadline 4 and 5 it is anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC.
REP4-043.14	**B31** 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	The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16 Ornithological assessment clarification data F01). From the

Reference	Natural England's submission	Applicant's response
	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. **Update at Deadline 2** No change **Update at Deadline 3** No change **Update at Deadline 4** No change	engagement with Natural England between Deadline 4 and 5 it is anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC.
REP4-043.15	**B32** 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). 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. **Update at Deadline 2** No change **Update at Deadline 3** Natural England advise that the findings of the CEA gap fill exercise should be considered throughout the project's impact assessment. This may necessitate an updated PVA for the in-combination impact on great black-backed gull at the Isles of Scilly SPA to clarify the level of potential impact. **Update at Deadline 4** No change	The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16 Ornithological assessment clarification data F01). From the engagement with Natural England between Deadline 4 and 5 it is anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC.
REP4-043.16	**B33** 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).	The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16 Ornithological assessment clarification data F01). From the engagement with Natural England between Deadline 4 and 5 it is

Reference	Natural England's submission	Applicant's response
	Natural England do not agree with the Applicant's interpretation of this evidence, and 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 therefore advise that SNCB guidance is followed throughout the assessments so we can provide our advice into the Examination. **Update at Deadline 2** No change - additional material on this point was submitted at Deadline 1 which NE will respond to at Deadline 3. **Update at Deadline 3** The Applicant has provided further information on this point (REP1-011). NE have provided comments on this in Appendix B3. We advise that our initial position on this remains unchanged until our concerns have been fully addressed. The Applicant has not provided apportioned impacts across the full range of displacement and mortality rates advised by SNCBs. **Update at Deadline 4** No change	anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC.
REP4-043.17	**B36** "Our pre-application advice detailed a pragmatic hierarchical method to 'gap-fill' the Irish Sea cumulative & in-combination assessments, given the number of historic projects in the Irish Sea (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 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	The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16 Ornithological assessment clarification data F01). Although the Applicant's view remains that no further assessment is required, the Applicant agreed with Natural England during a meeting on 08 January 2025 that it shall include the Barrow Offshore Wind Farm, North Hoyle Offshore Wind Farm and Rhyl Flats Offshore Wind Farm in the S_D5_16 Ornithological assessment clarification data F01 submitted at Deadline 5. From the engagement with Natural England between Deadline 4 and 5 it is anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC. The Applicant anticipates from the meeting held on 8th January 2025 that Natural England will be able to confirm a conclusion of no AEoI alone and in-combination.

Reference	Natural England's submission	Applicant's response
	cumulative or in-combination impacts presented. **Update at Deadline 2** No change - additional material on this point was submitted at Deadline 1 which NE will respond to at Deadline 3. **Update at Deadline 3** Progressed but not resolved. NE have provided written comments on the Applicant's CEA gap-filling of historical projects note [REP1-010] in Appendix B3. The findings of this note and other 'stress-testing' assessments now need to be incorporated into a fully-updated impact assessment. **Update at Deadline 4** In Progress: Natural England acknowledges the Applicant's submission Review of Cumulative Effects Assessment and In-Combination Assessment (REP3-019). We have discussed and advised on the required updated assessments with the Applicant. Therefore, we will provide further comments in response to any additional material at the relevant deadline.	
REP4-043.18	**B37** 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. **Update at Deadline 2** No change **Update at Deadline 3** No change **Update at Deadline 4** No change	The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16 Ornithological assessment clarification data F01). From the engagement with Natural England between Deadline 4 and 5 it is anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC.
REP4-043.19	**B41** 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 Applicant submitted the Outline Offshore Environmental Management Plan (EMP) at Deadline 4 (REP4-018) and anticipates that the inclusion of Annex E within this plan ('Measures to minimise disturbance to marine mammals and rafting birds from transiting vessels'), which accords with

Reference	Natural England's submission	Applicant's response
	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. **Update at Deadline 2** No change **Update at Deadline 3** NE notes and welcomes the request from the ExA to the Applicant to provide an Outline Offshore EMP. We advise that the adoption of best practice vessel operations as per Natural England's Best Practice Protocol (Appendix B3 of RR-026). Once this mitigation is secured within the Outline Offshore EMP and submitted into Examination, it is likely that we can agree that an AEoI from operation and vessel movements can be ruled out. We will revisit this comment when the Applicant provides an Outline Offshore EMP. **Update at Deadline 4** Natural England acknowledges that the Applicant intends to submit an Outline Offshore Environmental Management Plan (EMP) at Deadline 4. We will revisit this comment at Deadline 5.	Natural England's best practice protocol on displacement advice, addresses Natural England's remaining concerns. The Applicant notes that Natural Resources Wales confirmed (within REP3-051, reference HRA 1.11) that 'based on the adoption of best practice vessel operations to minimise disturbance we would consider it is likely that an AEoSI from operation and maintenance vessel movements can be ruled out for these features of the [Liverpool Bay] SPA'. From the engagement with Natural England between Deadline 4 and 5 it is anticipated that this will be confirmed at Deadline 5.
REP4-043.20	**B47** Natural England do not consider the Applicant's use of single values of 50% displacement and 1% mortality 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, and advise that the project fully considers the SNCB advised ranges of displacement and mortality rates in all assessments. **Update at Deadline 2** No change - additional material on this point was submitted at Deadline 1 which NE will respond to at Deadline 3. **Update at Deadline 3** Progressed but not resolved. The Applicant has provided further	The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16 Ornithological assessment clarification data F01). From the engagement with Natural England between Deadline 4 and 5 it is anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC.

Reference	Natural England's submission	Applicant's response
	information on this point (REP1-011). NE have provided comments on this in Appendix B3. We advise that our initial position on this remains unchanged until our concerns have been fully addressed. The Applicant has not provided apportioned impacts across the full range of displacement and mortality rates advised by SNCBs. **Update at Deadline 4** No change	
REP4-043.21	**B48** Natural England are not persuaded that the evidence on displacement effects presented is sufficient to justify the Applicants position. We highlight that a comprehensive evidence review has not been undertaken and the interpretation of some evidence is questionable. Natural England advise that a range of displacement rates should be considered (30-70%) throughout the assessments. **Update at Deadline 2** No change - additional material on this point was submitted at Deadline 1 which NE will respond to at Deadline 3. **Update at Deadline 3** Progressed but not resolved, see update at B47 above. **Update at Deadline 4** No change	The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16 Ornithological assessment clarification data F01). From the engagement with Natural England between Deadline 4 and 5 it is anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC.
REP4-043.22	**B49** 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 Ramsar's) are not based on the results of CRM calculated using the SNCB advised model parameters. 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. **Update at Deadline 2** No change - additional material on this point was submitted at Deadline 1 which NE will respond to at Deadline 3.	The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16 Ornithological assessment clarification data F01). From the engagement with Natural England between Deadline 4 and 5 it is anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC.

Reference	Natural England's submission	Applicant's response
	Update at Deadline 3 Natural England are content that CRM undertaken using SNCB advised model parameters has been presented. However, we continue to request that the impacts predicted using the SNCB advised approach to CRM are very clearly highlighted throughout the submitted documents and form the basis of any updated assessments. **Update at Deadline 4** No change	
REP4-043.23	**B53** 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. **Update at Deadline 2** No change **Update at Deadline 3** See update at B41 above. **Update at Deadline 4** Natural England acknowledges that the Applicant intends to submit an Outline Offshore Environmental Management Plan (EMP) at Deadline 4. We will revisit this comment at Deadline 5.	Please see response to REP4-043.19 above.
REP4-043.24	**B54** The Applicant has not proposed any post-consent monitoring in relation to offshore ornithology. 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.	The Applicant has previously provided a response to this point (please see the Applicant's response at Deadline 4 REP4-009, REP3-047.9). The Applicant has held further discussion with Natural England (on 16th December 2024 and 8th January 2025) on why it does not consider ornithological monitoring is merited for this particular development. The arguments made by the Applicant were in line with those presented throughout the Examination to date. The Applicant confirms that Natural England were not in a position to be able to provide a justification as to why they consider monitoring of the Morgan Generation Assets is necessary and

Reference	Natural England's submission	Applicant's response
	Update at Deadline 2 No change **Update at Deadline 3** No change. Please see appendix H3 for our response. Natural England would welcome further engagement once the Applicant has proposed ornithological monitoring within the IPMP. **Update at Deadline 4** No change	how this monitoring request links to the EIA and ISAA assessments of significant and adverse effects in the meeting, but they agreed to take the matter away and consider further. The Applicant looks forward to the response from Natural England on this and any further engagement that follows. Natural England's best practice guidance (Parker *et al.,* 2022) states that "*there is a clear and urgent need to move towards strategic, joined up projects, that enable longer term/larger scale monitoring that employ methodological and sampling regimes required to answer key questions with suitable statistical power".* The Applicant agrees with this statement and would highlight that this is especially relevant to the Morgan Generation Assets which are located in an area of limited importance for seabirds (please see the response referenced above). The Applicant already contributes to a number of strategic evidence gathering programmes including OWEC, MOTUS and ECOWind and is committed to continued support to these projects as set out in the response REP1-054.27 in REP2-005. The NPS and MMO 2014 guidance is clear that monitoring is appropriate for significant impacts and adverse effects. It is disproportionate to require monitoring when no adverse effects are concluded (please see GEN 2.9 in S_D5_5).
REP4-043.25	**B55** 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. **Update at Deadline 2** No change **Update at Deadline 3** No change **Update at Deadline 4**	The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16 Ornithological assessment clarification data F01). From the engagement with Natural England between Deadline 4 and 5 it is anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC.

Reference	Natural England's submission	Applicant's response
	We highlight that the additional documents supplied at Deadline 3 by the Applicant, have essentially stress-tested the Applicant's conclusions against our advice on specific aspects of the impact assessment, in isolation from each other. We have discussed and advised on the required updated assessments with the Applicant. Therefore, we will provide further comments in response to any additional material at the relevant deadline.	
REP4-043.26	**Marine Mammals** **C1, C11 & C35** "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. The assessment methodology be revised." **Update at Deadline 2** No change **Update at Deadline 3** NE support the ExA's request (MM 1.11) to the Applicant to provide further information. NE will consider this point further after we have received additional information at the relevant deadline. Therefore, our position remains unchanged at deadline 3. **Update at Deadline 4** No change	The Applicant notes that Natural England's response has not changed at Deadline 4. However, the Applicant provided a response to the ExA Q1 (MM1.11) at the Deadline 3 submission (REP3-006) and maintains their position. The Applicant requests that Natural England review their response in respect of this additional information previously provided.
REP4-043.27	**C2 & C12** "Natural England has concerns regarding the conclusion of negligible	The Applicant notes that Natural England's response has not changed at Deadline 4. The Applicant provided a response at the Deadline 4

Reference	Natural England's submission	Applicant's response
	magnitude for injury and disturbance to marine mammals, especially harbour porpoises, from elevated underwater sound due to piling activities. 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". Revise the assigned magnitude scores in relation to injury and disturbance form piling activity." **Update at Deadline 2** No change **Update at Deadline 3** Without Noise Abatement Systems (NAS) being deployed, it is NE's view that the magnitude scores, in relation to injury and disturbance from piling activity, cannot be concluded as negligible. The Applicant should provide robust evidence for the reasoning behind choosing this category of magnitude. Our position remains unchanged. **Update at Deadline 4** No change	submission (REP4-009) which maintains their position and welcomes a response from Natural England to this latest submission. The Applicant highlights that appropriate mitigation measures have been put in place and will be managed via the final MMMP and final UWSMS and outline versions of these documents (S_D5_10 and S_D5_12 respectively) have been consulted on with the relevant stakeholders. Following engagement with Natural England between Deadline 4 and Deadline 5, the Applicant expects Natural England to be able to confirm this issue has been resolved.
REP4-043.28	**C3 & C13** 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 onus should be on reducing the noise at the source as a priority (please see our advice below on Noise Abatement Systems (NAS)). Furthermore, careful consideration needs to be given when choosing the right type of ADD to be used 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	The Applicant notes that Natural England's response has not changed at Deadline 4. The Applicant provided a response at the Deadline 4 submission (REP4-009) which maintains their position, and welcomes a response from Natural England to this latest submission. The Applicant has updated the Marine Mammal Mitigation Protocol (MMMP) at Deadline 5 (document reference S_D5_10) to explain that the prospective effectiveness of ADDs on the primary marine mammal species expected in the area will be conducted at the post-consent stage and will consider carefully the ADD duration to balance the risk of injury with any potential further disturbance from the ADD itself to ensure a proportionate and judicial application of this measure. Following engagement with Natural England between Deadline 4 and Deadline 5, the Applicant expects Natural England to be able to confirm this issue has been resolved.

Reference	Natural England's submission	Applicant's response
	which is especially important for harbour porpoises and cumulative assessment. **Update at Deadline 2** No change **Update at Deadline 3** No change **Update at Deadline 4** No change	
REP4-043.29	**C4** "Natural England does not support use of scare charges for UXO clearance thus we advise that this measure is removed from the final Marine Mammal Mitigation Protocol (MMMP)". **Update at Deadline 2** No change **Update at Deadline 3** No change **Update at Deadline 4** No change	The Applicant notes that Natural England's response has not changed at Deadline 4. The Applicant provided a response at the Deadline 4 submission (REP4-009) maintaining their position, however, since this Deadline the Applicant has removed high order UXO clearance from the DCO and therefore the use of scare charges will not be required to be consented as part of the DCO. The Applicant would welcome a response from Natural England to this latest update. The Applicant highlights, however, that the use of scare charges is included in the outline MMMP (updated at Deadline 5 S_D5_10) in the event that high order clearance may be required and, in such an instance, a separate marine licence will be sought.
REP4-043.30	**C5, C21 & C43** Standard industry mitigation measures 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. **Update at Deadline 2** No change **Update at Deadline 3** No change	The Applicant notes that Natural England's response has not changed at Deadline 4. The Applicant provided a response at the Deadline 4 submission (REP4-009) and maintains their position, and welcomes a response from Natural England to this latest submission.

Reference	Natural England's submission	Applicant's response
	Update at Deadline 4 No change	
REP4-043.31	**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. 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). **Update at Deadline 2** No change **Update at Deadline 3** No change **Update at Deadline 4** No change	The Applicant notes that Natural England's response has not changed at Deadline 4. The Applicant provided a response at the Deadline 4 submission (REP4-009), and welcomes a response from Natural England of this latest submission. In addition, with respect to UXO clearance the Applicant has now taken the decision to remove high order UXO clearance from the DCO and therefore the use of NAS would not be required for low order clearance. Removal of high order clearance is reflected in the draft DCO (S_D5_7)) and in relevant documents including the outline MMMP (S_D5_10), the outline UWSMS (S_D5_12), and the Commitments Register (previously titled the Mitigation and Monitoring Schedule) (S_D5_14) submitted at Deadline 5. The Applicant discussed the forthcoming underwater sound policy regarding NAS during the meeting held on 8 January 2025. As the policy remains unpublished the Applicants position remains that the current wording within the UWSMS is the most appropriate and pragmatic means to deal with this matter (Row REP4-041.29 and REP4-041.113 in Table 2.2 in S_D5_4 Applicant's Response to IP submissions submitted at Deadline 4_F01). The Applicant is trying to arrange a meeting in January 2025 with Natural England to discuss the marine mammal outstanding matters.
REP4-043.32	**C8 & C32** 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. We do not agree that because no significant impacts are predicted, no monitoring is required. Marine mammal monitoring should be undertaken in	The Applicant notes that Natural England's response has not changed at Deadline 4. The Applicant provided a response at the Deadline 4 submission (REP4-009) which maintains their position, and welcomes a response from Natural England to this latest submission.

Reference	Natural England's submission	Applicant's response
	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. 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 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. **Update at Deadline 2** No change **Update at Deadline 3** No change. We acknowledge the inclusion of the updated In Principle Monitoring Plan and Mitigation and Monitoring Schedule submitted at Deadline 2 (REP2-013). See Deadline 3 Appendix H3 for our response. **Update at Deadline 4** No change	
REP4-043.33	**C30** There is no requirement to use ADDs during the geophysical surveys. Thus, this mitigation should not be considered for these activities and the MMMP updated accordingly **Update at Deadline 2** No change **Update at Deadline 3** No change **Update at Deadline 4** No change	The Applicant notes that Natural England's response has not changed at Deadline 4. The Applicant provided a response at the Deadline 4 submission (REP4-009) which maintains their position, and welcomes a response from Natural England to this latest submission. The Applicant re-iterates that the inclusion of ADDs during geophysical/site-investigation surveys has been removed as a mitigation option in the outline Marine Mammal Mitigation Protocol (MMMP). The Applicant therefore considers this matter can be resolved.
REP4-043.34	**C37** Natural England disagrees with the conclusion regarding the pre-construction site investigation surveys.	The Applicant notes Natural England's response, and welcomes the clarification that there are currently no other mitigation options available for Sub-Bottom Profile (SBP) surveys, besides those outlined in the JNCC

Reference	Natural England's submission	Applicant's response
	Natural England does not consider that a period of several months can be considered a 'very short duration'. New data collected in Wales by Veneruso et al. 2024 should be given credence 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. **Update at Deadline 2** No change **Update at Deadline 3** The Applicant should follow the JNCC guidelines for mitigation as a minimum. We welcome the Examiner's request (MM 1.23) for the applicant to identify appropriate mitigation measures that could be included in a future iteration of the outline MMMP. We look forward to reviewing the Applicant's response to this question and hope this issue can be resolved. **Update at Deadline 4** Natural England acknowledges that there are currently no other mitigation options available for SBP surveys, besides those outlined in the JNCC guidelines, for minimising the risk of injury to marine mammals from geophysical surveys (JNCC, 2017). However, the issue with the large disturbance ranges and potential displacement of harbour porpoises (Veneruso et al., 2024) remains. Thus, there is a need for monitoring to fill the knowledge gap on the impact of SBP surveys on harbour porpoises. We therefore advise that monitoring should be considered with the aim to collected data before, during and after SBP surveys to examine changes in the baseline. Inclusion of this monitoring in the IPMP would resolve this issue.	guidelines, for minimising the risk of injury to marine mammals from geophysical surveys (JNCC, 2017). The Applicant re-iterates that the impact assessment for injury and disturbance from elevated underwater sound generated from site investigation survey sources (see section 4.9.6 of Volume 2, Chapter 4: Marine mammals (AS-010)) concluded that there was no potential for significant effects as a result of site investigation survey sources (including Sub-Bottom Profilers (SBP)). As such, the Applicant is confident that the inclusion of monitoring (of behavioural responses to SBPs) in the In-Principle Monitoring Plan is disproportionate to the risk, highlighting also that the site-investigation surveys at the Morgan Generation Assets are not a licensable activity and that there is no precedent for undertaking monitoring of SBP surveys for any other site investigation surveys (in relation to any type of offshore project). Following engagement with Natural England between Deadline 4 and Deadline 5, the Applicant expects Natural England to be able to confirm this issue has been resolved.
REP4-043.35	**Physical Processes** **D1** Not all worse case scenarios for marine process are agreed. Applicant to provide the necessary updated project parameters, evidence and assessment in updated Application documents. **Update at Deadline 2** In the response to Relevant Representations document (PD1-017, comment ref: RR-026.D.9), the Applicant confirmed further reduction of interconnector cable sandwave clearance width from 104m to 80m. We note this update	The Applicant directs Natural England to the Applicant's Response to IP submissions submitted at Deadline 4 (REP4-009, REP3-049.46) where the Applicant confirmed that the refinement to the project parameters detailed in the response to Relevant Representations document (PD1-017, RR-026.D.9) will be captured in Table 1.13 and Section 1.9.2 of an updated Volume 2, Chapter 1 Physical processes (APP-013) to be submitted Deadline 6.

Reference	Natural England's submission	Applicant's response
	has been reflected through the total disposal captured within updates to Schedules 3 and 4, Condition 2(g) of the Draft DCO at Deadline 1. NE welcomes this update but advises this should also be captured and updated in the ES named plan or technical document and carried through into any assessment. Therefore our concerns have not been resolved at Deadline 2. **Update at Deadline 3** No change **Update at Deadline 4** No change	
REP4-043.36	**D3** Natural England advises that not all potential pressures/impacts have been considered/assessed. Updated ES chapters should be submitted which includes and assesses these pressures/impacts across the EIA. **Update at Deadline 2** We note that any changes to the MDS parameters for sandwave clearance should be reflected in an updated version of the ES. Therefore, our position remains unchanged. **Update at Deadline 3** No change **Update at Deadline 4** No change	The Applicant directs Natural England to the Applicant's Response to IP submissions submitted at Deadline 4 (REP4-009, REP3-049.47) where the Applicant confirmed that the refinement to the project parameters detailed in the response to Relevant Representations document (PD1-017, RR-026.D.9) will be captured in Table 1.13 and Section 1.9.2 of an updated Volume 2, Chapter 1 Physical processes (APP-013) to be submitted Deadline 6.
REP4-043.37	**D4** Further consideration of the mitigation hierarchy is required to ensure that environmental impacts are reduced as much as possible. And All embedded mitigation measures proposed should be secured in the DCO/dML. **Update at Deadline 2** No change **Update at Deadline 3**	The Applicant directs Natural England to the Applicant's Response to IP submissions submitted at Deadline 4 (REP4-009, REP3-049.48) where the Applicant confirmed that the Mitigation and monitoring schedule, now referred to as the Commitments Register, has been revised to include consideration of cable protection which facilitates removal to resolve the matters raised (REP4-025, S_D4_16). The Applicant therefore considers this matter can be resolved.

Reference	Natural England's submission	Applicant's response
	No change - NE notes that the Applicant have not adopted further mitigation measures as advised in our previous advice and/or secured adequate mitigation measures for marine processes. Therefore, the Applicant's response in RR-026.D.6 does not address our concerns. **Update at Deadline 4** No change	
REP4-043.38	**D6** We advise that further detail is required in the project description to inform the Maximum Design Scenario (MDS) and Environmental Impact Assessment (EIA). **Update at Deadline 2** No change **Update at Deadline 3** No change **Update at Deadline 4** No change	The Applicant directs Natural England to the Applicant's Response to IP submissions submitted at Deadline 4 (REP4-009, REP3-049.49) where the Applicant confirmed that the refinement to the project parameters will be captured in an updated Volume 1, Chapter 3 Project description (APP-010) to be submitted at Deadline 6.
REP4-043.39	**D7** "Natural England queries if the width MDS parameters are realistic for sandwave clearance? Natural England advises that further evidence is required to support the realistic MDS parameters as set out in the DCO/dML. " **Update at Deadline 2** We note that any changes to the MDS parameters for sandwave clearance should be reflected in an updated version of the ES. Therefore, our position remains unchanged. **Update at Deadline 3** No change **Update at Deadline 4** No change	The Applicant directs Natural England to the Applicant's Response to IP submissions submitted at Deadline 4 (REP4-009, REP3-049.50) where the Applicant confirmed that the refinement to the project parameters will be captured in an updated Volume 1, Chapter 3 Project description (APP-010) to be submitted at Deadline 6.
REP4-043.40	**D8** Further detail on the cable crossing design parameters and impacts	The Applicant directs Natural England to the Applicant's Response to IP submissions submitted at Deadline 4 (REP4-009, REP3-049.51).

Reference	Natural England's submission	Applicant's response
	assessment are required. These should be in with Natural England's Best Practice Guidance Phase III. Once this is provided we believe that this matter can be readily resolved **Update at Deadline 2** We note the Applicant's response to our Relevant Representations on this matter (PD1-017, comment ref: RR-026.D.10). We recognise that the Applicant has provided some further detail, however we continue to advise that the Applicant should include further details at the consenting stage on locations of cable crossings to provide confidence to competent authorities. **Update at Deadline 3** Unresolved: NE's initial advice still stands, as a matter of best practice, projects should include all the relevant information on cable crossings in line with Natural England's Best Practice Guidance Phase III at the consenting stage. This includes the locations of crossings as outlined in our Relevant Representation (PP-026, D8). Indicative crossing locations should be provided to demonstrate with certainty that there will be no significant impacts to marine processes. Once this demonstrated and the Applicant has committed to provide final cable crossing details within the CSIP secured in the DCO/dML from NE's perspective, this issue can be readily resolved. **Update at Deadline 4** No change	The Applicant reiterates that the physical processes modelling study undertaken included cable protection and cable crossings across the Morgan Array Area (Figure 1.65 of Volume 4, Annex 1.1: Physical processes technical report (APP-033)). The locations were selected to represent the MDS for changes to physical processes particularly with regards to considering the potential for impacts on neighbouring Marine Conservation Zones (MCZ), i.e. modelled cable crossings were concentrated in the northern half of the Morgan Array Area and along the north and northeast boundary closest to the MCZ. The Applicant is, therefore, confident that the MDS for the impact of cable crossings on both physical processes and benthic subtidal ecology has been assessed in Volume 2, Chapter 1: Physical processes (APP-013) and Volume 2, Chapter 2: Benthic subtidal ecology (APP-020), respectively. The Applicant raised the outstanding benthic and physical processes matters during our engagement between Deadline 4 and 5 and it is anticipated from discussions that many of these matters will be resolved at Deadline 5. Further meetings have been discussed following Deadline 5 for any remaining matters if required. The Applicant has engaged with Natural England on this matter and awaits Natural England's comments at Deadline 5.
REP4-043.41	**D9/D17** Further detail to inform MDS figures for cable repairs and WTG/OSP maintenance e.g. seabed footprint disturbed due to cable repair and infrastructure maintenance, sediment displaced during cable repair and reburial and any associated cable protection is required. Ideally this information would also be included within an Outline Offshore Operation and Maintenance Plan (OOMP) and submitted into Examination. **Update at Deadline 2** No change - we note the Applicant's response but our position remains that MDS for cable repairs and WTG/OSP maintenance should be included within an Outline OOMP and submitted into Examination.	The Applicant directs Natural England to the Applicant's Response to IP submissions submitted at Deadline 4 (REP4-009, REP3-049.52). The Applicant raised the outstanding benthic and physical processes matters during our engagement between Deadline 4 and 5 and it is anticipated from discussions that many of these matters will be resolved at Deadline 5. Further meetings have been discussed following Deadline 5 for any remaining matters if required. The Applicant welcomes a response from Natural England to this latest submission.

Reference	Natural England's submission	Applicant's response
	Update at Deadline 3 We reiterate that all of the MDS figures for cable protection and cable and WTG/OSP maintenance should be provided in the ES, named plan or technical document and carried through into any assessment. Namely: •Footprint of seabed disturbed due to cable and WTG/OSP maintenance; and •Sediment displaced during cable repair and reburial. This information should also be included within an Outline OOMP and submitted into Examination. **Update at Deadline 4** Natural England welcomes the inclusion of the footprint of impacted seabed in DCO. However, our other comments still remain unresolved.	
REP4-043.42	**D11** "Natural England notes that there are site specific surveys referenced throughout the chapter which have not been provided with the ES reports. We advise that these should be provided to ensure there are no issues with the EIA as presented. Update at Deadline 2 No change **Update at Deadline 3** No change - These reports were used to inform the Applicant's assessments. Therefore our advice is that the reports should be submitted into Examination to enable future projects/interested parties to access. **Update at Deadline 4** No change	The Applicant directs Natural England to the Applicant's Response to IP submissions submitted at Deadline 3 (REP3-006, REP2-033.56) and reiterates that all relevant information from the Gardline (2022) and XOcean (2022) documents has been summarised in Volume 4, Annex 1.1: Physical processes technical report (APP-033) and Volume 4, Annex 2.1: Benthic subtidal ecology technical report (APP-050), as appropriate. The Applicant can confirm that these documents do not contain any new information that changes the benthic subtidal ecology baseline or any of the conclusions of the assessments presented in Volume 2, Chapter 2: Benthic subtidal ecology (APP-020). The Applicant has discussed this during a meeting and Natural England confirmed that the documents have been received and therefore considers the matter closed.
REP4-043.43	**D13** Natural England requests that the Applicant confirms all physical processes and impact pathways have been identified and therefore assessed. **Update at Deadline 2** No change - please see comment 1 of this log. **Update at Deadline 3** No change **Update at Deadline 4**	The Applicant directs Natural England to the Applicant's Response to IP submissions submitted at Deadline 4 (REP4-009, REP3-049.54) where the Applicant reiterated that all physical processes have been identified and assessed as detailed in the Applicant's Response to Relevant Representations (PD1-017, RR-026.D.15). The Applicant also confirmed that the refinement to the project parameters will be captured in Table 1.13 and Section 1.9 of an updated Volume 2, Chapter 1 Physical processes (APP-013) to be submitted at Deadline 6.

Reference	Natural England's submission	Applicant's response
	No change	
REP4-043.44	**D15** Natural England advises that physical process impacts due to UXO clearance should be considered and assessed within updated Application documents. **Update at Deadline 2** No change **Update at Deadline 3** In Progress: NE notes that the ExA has requested the Applicant to undertake a UXO clearance assessment based on the maximum UXO clearance of 907kg high order explosion and provide a worst case assessment for physical processes and benthic subtidal ecology receptors. NE welcomes this request and will submit a response to the Applicant's response at Deadline 5 if required. **Update at Deadline 4** No change - Further evidence is required to demonstrate a) the comparability of UXO clearence and sandwave levelling impacts on marine processes and b) that the WCS is fit for purpose.	The Applicant directs Natural England to the Applicant's Response to IP submissions submitted at Deadline 4 (REP4-009, REP3-049.56) where the Applicant confirmed that the assessments provided in these responses in relation to UXO clearance will be captured in Table 1.13 and Section 1.9 of an updated Volume 2, Chapter 1 Physical processes (APP-013) to be submitted at Deadline 6.
REP4-043.45	**D16** 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. **Update at Deadline 2** No change **Update at Deadline 3** No change: Please see our Deadline 3 response to ExQ MP1.5 Appendix K3. **Update at Deadline 4** No change	Regarding secondary scour the Applicant has previously provided further detail on the assessment of seabed scour in the Applicant's Response to Relevant Representations (PD1-017, RR-026.D.18). Additional information on the provision of scour protection to minimise secondary scour is supplied in the Applicant's Response MP1.5 of ExAQ1 submitted at Deadline 3 (REP3-006). In response MP1.5 of ExAQ1 submitted at Deadline 3 (REP3-006) the Applicant confirmed that at the detailed design stage the magnitude of potential scour in relation to the proposed measures will be balanced. Where scour protection measures are to be furnished, they will be subject to engineering design to ensure they minimise as much as practical the occurrence of scour. Additionally, the Applicant confirmed that the detail of design and construction will be outlined within the Offshore Construction Method Statement (CMS) developed in consultation with MMO.

Reference	Natural England's submission	Applicant's response
REP4-043.46	**D18** "Further information on the impacts to the wider marine environment and sediment transport budget as a result of sediment extraction in order to stabilise conical gravity-based foundations and disposal of ballast at the time of decommissioning is required. Ideally the latter 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. " **Update at Deadline 2** No change **Update at Deadline 3** No change: Please see our Deadline 3 response to ExQ MP1.3 Appendix K3. **Update at Deadline 4** No change	The Applicant reiterates that during the decommissioning of gravity bases and the removal of ballast material, including sand sequestered during construction, will not be released back into the local system and beneficial-use of the material will be considered. The specific approach will be set out in a decommissioning programme as secured within Requirement 5 under Schedule 2 of the draft DCO (REP4-013, S_D4_8). This may include onshore disposal, disposal at a licenced offshore disposal site or potentially of beneficial use in the marine or intertidal environment i.e. ensuring there are no significant negative impacts on designated sites. A draft decommissioning programme will be submitted prior to construction commencing (APP-010, paragraph 3.11.1.1).
REP4-043.47	**D19** The Applicant to check and confirm figures for ballast within the gravity base foundation and ensures that correct volumes are included in any assessment and the DCO/dML. **Update at Deadline 2** No change **Update at Deadline 3** In Progress: The Applicant has confirmed the MDS and the worst-case scenario is the one presented in the ES. However, we maintain that the volume of material required for ballast should be secured within the DCO/dMLs.	The Applicant notes Natural England's written submission and welcomes that this matter is now 'Green' in the Risk and Issues Log and therefore resolved (REP4-043).

Reference	Natural England's submission	Applicant's response
	Natural England welcomes the inclusion, in the DCO, of the maximum volume of extracted seabed material to be used in gravity base foundations as 490,000 m3. Therefore, this issue has been resolved at Deadline 4. **Update at Deadline 4** Natural England welcomes the inclusion, in the DCO, of the maximum volume of extracted seabed material to be used in gravity base foundations as 490,000 m3. Therefore, this issue has been resolved at Deadline 4.	
REP4-043.48	**D22** Natural England advises that all embedded mitigation measures proposed should be agreed prior to consent and secured in the DCO/dML. " **Update at Deadline 2** No change **Update at Deadline 3** No change: There remains insufficient mitigation measures proposed for physical processes. To assist Applicant we provided potential mitigation options which could be explored/adopted to resolve this matter in our RR/WR [RR-026]. **Update at Deadline 4** No change	The Applicant directs Natural England to the Applicant's Response to IP submissions submitted at Deadline 4 (REP4-009, REP3-049.48) where the Applicant confirmed that the Mitigation and monitoring schedule, now referred to as the Commitments Register, has been revised to include consideration of cable protection which is readily removeable (REP4-025)). The Applicant raised the outstanding benthic and physical processes matters during our engagement between Deadline 4 and 5 and it is anticipated from discussions that many of these matters will be resolved at Deadline 5. The Applicant welcomes a response from Natural England to this latest submission.
REP4-043.49	**D24** Regardless of legislation or being outside of designated sites, the Applicant should aim to remove infrastructure at the time of decommissioning 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. **Update at Deadline 2** We note that the Applicant will produce a draft decommissioning programme prior to construction. However, our comments around using	The Applicant directs Natural England to the Applicant's Response to IP submissions submitted at Deadline 4 (REP4-009, REP3-049.62). The Applicant can confirm that the Mitigation and Monitoring Schedule, now referred to as the Commitments Register (REP4-025) has been updated to address this outstanding comment from Natural England with regards to the potential for the use of cable and scour protection which is of such a nature that it may be more readily removable at decommissioning. The Applicant raised the outstanding benthic and physical processes matters during our engagement between Deadline 4 and 5 and it is anticipated from discussions that many of these matters will be resolved at Deadline 5. The Applicant welcomes a response from Natural England to this latest submission.

Reference	Natural England's submission	Applicant's response
	removable scour and cable protection, and securing this as a commitment remain. We also advise that an Outline Decommissioning Plan is provided as part of the consenting phase **Update at Deadline 3** No change **Update at Deadline 4** No change	
REP4-043.50	**Fish and Shellfish Ecology** **E1 & E3** 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. We do not include these measures as appropriate mitigation for impacts to fish species. **Update at Deadline 2** NE acknowledges that the Final MMMP will be developed in consultation with relevant stakeholders, including NE. However, we advise that the Schedule of Mitigation and related documents should be updated during the consenting phase. **Update at Deadline 3** No change **Update at Deadline 4** No change	The Applicant has updated the Mitigation and Monitoring Schedule, now referred to as the Commitments Register (REP4-025) at Deadline 4 to address this outstanding comment from Natural England. This clarifies that the use of soft start piling and ramp up measures may not be effective for all fish species and that these measures are not specifically required to avoid significant injury effects on fish receptors. From engagement with Natural England between Deadline 4 and 5 and it is anticipated these matters will be resolved at Deadline 5. The Applicant welcomes a response from Natural England to this latest submission.
REP4-043.51	**Update at Deadline 4** **F1** Not all worse case scenarios for benthic ecology are agreed. Applicant to provide the necessary updated project parameters, evidence and assessment in updated Application documents. **Update at Deadline 2** In the response to Relevant Representations document (PD1-017, comment ref: RR-026.D.9), the Applicant confirmed further reduction of interconnector cable sandwave clearance width from 104m to 80m. We note this update	The Applicant directs Natural England to their Response to Natural England's submission at Deadline 3 (see REP3-049.64 of REP4-009) in which the Applicant commits to updating the relevant sections of Volume 2, Chapter 2: Benthic subtidal ecology (APP-020) to incorporate the reduced parameters for sandwave clearance for interconnector cables as detailed in the response to Relevant Representations document (PD1-017, RR-026.F.6). The updated chapter will be submitted at Deadline 6.

Reference	Natural England's submission	Applicant's response
	has been reflected through the total disposal captured within updates to Schedules 3 and 4, Condition 2(g) of the draft DCO at Deadline 1. NE welcomes this update but advises this should also be captured and updated in the ES named plan or technical document and carried through into any assessment. Therefore our concerns have not been resolved at Deadline 2. **Update at Deadline 3** "No change: NE notes that the Applicant claims the reduction in MDS parameters for sandwave clearance does not change the conclusions of the EIA assessment for benthic subtidal ecology. We maintain that any updates to the MDS parameters should be provided in an updated ES named plan or technical document, and carried through into any assessment, to be considered secured and provide clarity for future reference. **Update at Deadline 4** No change	
REP4-043.52	**F3** 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. **Update at Deadline 2** No change **Update at Deadline 3** We note that the Applicant intends on securing decommissioning activities through separate standalone marine licenses at the relevant time. NE requests that a commitment is made to remove infrastructure at the time of decommissioning. **Update at Deadline 4** No change	The Applicant directs Natural England to their Response to Natural England's submission at Deadline 3 (see REP3-049.66 of REP4-009). The Applicant welcomes a response from Natural England to this latest submission. The Applicant has raised the benthic ecology and physical processes points at a meeting held 8 January 2025 and Natural England stated that many of the points will be resolved at Deadline 5. The Applicant is arranging a meeting to discuss any outstanding matters in January 2025 to resolve for Deadline 6. The Applicant therefore considers the matter closed but awaits confirmation from Natural England at Deadline 5.
REP4-043.53	**F5** Further detail is required in the project description to inform the Maximum Design Scenario (MDS) and Environmental Impact Assessment (EIA).	The Applicant directs Natural England to their Response to Natural England's submission at Deadline 3 (see REP3-049.68 of REP4-009) confirming that the refinement to the project parameters will be captured in

Reference	Natural England's submission	Applicant's response
	Update at Deadline 2 We note that any changes to the MDS parameters for sandwave clearance should be reflected in an updated version of the ES. Therefore, our position remains unchanged. **Update at Deadline 3** No change: All parameters should be included in the Project Description, not just in relation to sandwave levelling to inform MDS and EIA **Update at Deadline 4** No change	an updated Volume 1, Chapter 3 Project description (APP-010) to be submitted at Deadline 6.
REP4-043.54	**F6** "Natural England queries if the width MDS parameters are realistic for sandwave clearance? Natural England advises that further evidence is required to support the realistic MDS parameters as set out in the DCO/dML. " **Update at Deadline 2** We note that any changes to the MDS parameters for sandwave clearance should be reflected in an updated version of the ES. Therefore, our position remains unchanged. **Update at Deadline 3** No change: NE notes that the Applicant claims the reduction in MDS parameters for sandwave clearance does not change the conclusions of the EIA assessment for benthic subtidal ecology. We maintain that any updates to the MDS parameters should be provided in an updated ES named plan or technical document, and carried through into any assessment, to be considered secured and provide clarity for future reference. **Update at Deadline 4** No change	Please see the Applicant's response to REP4-043.51 above.
REP4-043.55	**F7** "Further detail on the cable crossing design parameters and impacts assessment are required. These should be in with Natural England's Best Practice Guidance Phase III.	The Applicant directs Natural England to their Response to Natural England's submission on this matter at Deadline 3 (see REP3-049.70 of REP4-009).

Reference	Natural England's submission	Applicant's response
	Once this is provided we believe that this matter can be readily resolved" **Update at Deadline 2** No change **Update at Deadline 3** Unresolved: NE's initial advice still stands, as a matter of best practice, projects should include all the relevant information on cable crossings in line with Natural England's Best Practice Guidance Phase III at the consenting stage. This includes the locations of crossings as outlined in our Relevant Representation (PP-026, D8). Indicative crossing locations should be provided to demonstrate with certainty that there will be no significant impacts to marine processes. Once this is demonstrated, and given the Applicant has committed to provide final cable crossing details within the CSIP secured in the DCO/dML, from NE's perspective, this issue can be readily resolved. **Update at Deadline 4** No change	As noted in REP4-043.40 above, the Applicant reiterates that the physical processes modelling study undertaken included cable protection and cable crossings across the Morgan Array Area (Figure 1.65 of Volume 4, Annex 1.1: Physical processes technical report (APP-033)). The locations were selected to represent the MDS for changes to physical processes particularly with regards to considering the potential for impacts on neighbouring MCZs. The Applicant is, therefore, confident that the MDS for the impact of cable crossings on both physical processes and benthic subtidal ecology has been assessed in Volume 2, Chapter 1: Physical processes (APP-013) and Volume 2, Chapter 2: Benthic subtidal ecology (APP-020), respectively, both of which concluded there would be no significant effect on the relevant receptors. The Applicant raised the outstanding benthic and physical processes matters during our engagement between Deadline 4 and 5 and it is anticipated from discussions that many of these matters will be resolved at Deadline 5. Further meetings have been discussed following Deadline 5 for any remaining matters if required. The Applicant welcomes a response from Natural England to this latest submission.
REP4-043.56	**F9** "Natural England notes that there are site specific surveys referenced throughout the chapter which have not been provided with the ES reports. We advise that these should be provided to ensure there are no issues with the EIA as presented. **Update at Deadline 2** These documents should be officially submitted with the ES. **Update at Deadline 3** No change **Update at Deadline 4** No change	The Applicant directs Natural England to their Response to Natural England's submission on this matter at Deadline 3 (see REP3-049.71 of REP4-009 and REP2-033.56 in REP3-004). The Applicant has engaged with Natural England on this matter between Deadline 4 and 5. The Applicant explained how all relevant information has been provided in Volume 4, Annex 1.1: Physical processes technical report (APP-033) and Volume 4, Annex 2.1: Benthic subtidal ecology technical report (APP-050), as appropriate and the file size transfer issue and Natural England have confirmed they have received the reports. The Applicant welcomes a response from Natural England to this latest submission.
REP4-043.57	**F10** "We advise that impacts should be minimised as much as possible, with consideration being given to the deposition locations in similar habitat type	The Applicant has updated the wording in the dMLs at Deadline 5 (S_D5_7) to include the amended wording proposed by Natural England regarding reef habitats of principal importance as listed under Section 41 of the NERC

Reference	Natural England's submission	Applicant's response
	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." **Update at Deadline 2** No change **Update at Deadline 3** No change: Whilst the Applicant's characterisation survey did not identify any Habitats of Principal Importance or Annex I habitats within the survey area, we highlight that some habitats such as sabellaria spp. and mytilus edulis are ephemeral. Therefore, just because they weren't identified in the Applicant's survey does not rule out the possibility of those habitats being present at a later date or being present in pre-construction surveys. We strongly advise that the Applicant should include a commitment to micro-site around sensitive habitats such as Habitats of Principal Importance listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 where possible. This should be secured in the DCO/ dML or provided in the schedule of mitigation. We highlight that this is standard mitigation and has been included on all recent offshore wind farm consents. Please see East Anglia One North and East Anglia two for recent examples. **Update at Deadline 4** Natural England welcomes the addition to Schedule 3, condition 20(1)(a)(v). However, we request that the wording is changed to: 'relating to any benthic habitats of conservation, ecological or economic importance constituting **reef habitats of principal importance as listed under Section 41 of the NERC act**.' Following this change to the wording, this issue can be readily resolved.	Act (see Schedule 3, condition 20(1)(a); Schedule 4, condition 20(1)(a)). The Applicant considers that its response now fully addresses Natural England's comments and is now resolved.
REP4-043.58	**F15** "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.	The Applicant directs Natural England to their Response to Natural England's submission on this matter at Deadline 3 (REP4-009, REP3-049.74) in which the Applicant commits to updating Section 2.9.12 of Volume 2, Chapter 2: Benthic subtidal ecology (APP-020) to incorporate the

Reference	Natural England's submission	Applicant's response
	Further detail is required on the potential impacts of UXO detonation on benthic habitats and/or mitigation measures to prevent impacts to benthic habitats. " **Update at Deadline 2** It is acknowledged that temporary habitat loss, in relation to UXO clearance, is briefly covered in the Benthic subtidal ecology chapter (APP-020), paragraph 2.9.2.9. However, this paragraph does not summarise the potential total impact of temporary habitat loss as a result of UXO clearance. This should be updated and reflected in the ES. **Update at Deadline 3** No change **Update at Deadline 4** No change	additional detail on crater sizes from UXO clearance as detailed in the Applicant's response to ExAQ1 (REP3-006, MP 1.12). The updated chapter will be submitted at Deadline 6. The Applicant raised the outstanding benthic and physical processes matters during our engagement between Deadline 4 and 5 and it is anticipated from discussions that many of these matters will be resolved at Deadline 5. The Applicant welcomes a response from Natural England to this latest submission.
REP4-043.59	**F16** "Regardless of legislation or being outside of designated sites, the Applicant should aim to remove infrastructure at the time of decommissioning 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. " **Update at Deadline 2** We note that the Applicant will produce a draft decommissioning programme prior to construction. However, our comments around using removable scour and cable protection, and securing this as a commitment remain. And advise that this is secured in an outline decommissioning plan at the time of consent **Update at Deadline 3** No change	The Applicant directs Natural England to their Response to Natural England's submission on this matter at Deadline 3 (REP4-009, REP3-049.75) which confirms that the Applicant will commit to considering the potential for the use of cable and scour protection which is of such a nature that it may be more readily removable at decommissioning. The Applicant raised the outstanding benthic and physical processes matters during our engagement between Deadline 4 and 5 including during a meeting held 8 January 2025 and Natural England stated that many of the points will be resolved at Deadline 5. The Applicant is arranging a meeting to discuss any outstanding matters in January 2025 to resolve for Deadline 6. The Applicant therefore considers the matter closed but awaits confirmation from Natural England at Deadline 5.

Reference	Natural England's submission	Applicant's response
	Update at Deadline 4 No change	
REP4-043.60	**F20** 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. **Update at Deadline 2** Natural England notes that the Applicant intends to produce a Marine Pollution Contingency Plan and Outline EMP post consent. However, we maintain that these documents should be submitted into Examination to inform consenting. **Update at Deadline 3** No change **Update at Deadline 4** Natural England acknowledges that the Applicant intends to submit an Outline Offshore Environmental Management Plan (EMP), which will include an Outline Marine Pollution Contingency Plan (MPCP) and outline measures to minimise the potential spread of invasive non-native species, at Deadline 4. Therefore we will defer our comments until Deadline 5.	The Applicant has submitted an outline Offshore Environmental Management Plan (EMP), which includes an outline Marine Pollution Contingency Plan (MPCP) and outline measures to minimise the potential spread of invasive non-native species, at Deadline 4 (REP4-018) and awaits Natural England's comments at Deadline 5. The Applicant considers this matter to now be resolved.
REP4-043.61	**Other Plans** **G2** 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. 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.	The Applicant has provided a response to Natural England at Deadline 4 (REP4-009, REP3-049.77). The Applicant has confirmed that the final monitoring plan developed post consent will set out the specific hypotheses to be tested, monitoring objectives and duration of surveys. The IPMP has been updated at Deadline 5 as requested by the ExA and sets out the proposed monitoring objectives and approach including adaptive measures at Deadline 5 (S_D5_21). The Applicant welcomes a response from Natural England to this latest submission.

Reference	Natural England's submission	Applicant's response
	Update at Deadline 2 Natural England provided detailed comments on the outline IPMP at deadline 1. We will continue to engage with this if any updates are provided throughout Examination. **Update at Deadline 3** In progress: Please see our Deadline 3 Appendix H3 **Update at Deadline 4** No change	
REP4-043.62	**G3** 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. **Update at Deadline 2** Natural England has updated the RAG status to align with DCO/dML point, but there remains no resolution on this point **Update at Deadline 3** In progress: We acknowledge the updated IPMP submitted by the Applicant at deadline 2 (REP2-013). However, we reiterate that adaptive monitoring should be secured. **Update at Deadline 4** No change	The Applicant has provided a response to Natural England at Deadline 4 (REP4-009, REP3-049.78). The Applicant further adds to this response that the majority of the monitoring measures secured within the Offshore In-Principle Monitoring Plan (REP2-014) are adaptive monitoring measures where further monitoring may be required dependent on survey findings. Finally, the Applicant highlights in its response to ExA Q2 GEN 2.9 (S_D5_5) that where relevant this monitoring has adaptive commitments associated with them, and this is reflected within the updated Offshore In-Principle Monitoring Plan (S_D5_21). The Applicant has provided justification for any scenarios where it does not consider it is appropriate to include an adaptive management element to the monitoring within its response to ExA Q2 GEN 2.9 (S_D5_5). Therefore the Applicant considers the provision of this additional clarity on the adaptive monitoring in the Offshore In-Principle Monitoring Plan (S_D5_21) to resolve this matter.
REP4-043.63	**G4** Natural England advises that a key consideration is that the type of scour protection used will be removable upon decommissioning. 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. The Applicant should seek to identify the most sustainable and removable form of scour protection. **Update at Deadline 2** No change	The Applicant provided a full response to this comment when it was raised as part of Natural England's relevant representation (see Applicant's Response to Relevant Representations [PD1- 017]). The Applicant will commit to considering the most sustainable and removable form of scour protection. The Applicant has responded on Natural England's point regarding a Decommissioning Plan at Deadline 4 (REP4-009, REP3-049.79) which notes Applicant's response to ExQ1 GEN 1.21 (REP3-006) stating that a separate legislative regime is in place under the Energy Act 2004 to control the decommissioning process for offshore renewable energy installations and that it is not considered necessary or appropriate to duplicate this

Reference	Natural England's submission	Applicant's response
	Update at Deadline 3 No change: NE acknowledges that the Applicant will produce an Offshore Construction Method Statement and a draft Decommissioning Plan. However, as with NE comment G7, an outline decommissioning plan should be submitted into Examination. **Update at Deadline 4** No change	through consents issued under the Planning Act 2008. Therefore, no outline decommissioning plan is considered to be necessary for inclusion with this application. The Applicant has since provided an Outline Offshore Construction Method Statement (CMS), which incorporates an Outline Cable Specification and Installation Plan (CSIP) submitted at Deadline 4 (REP4-032).
REP4-043.64	**G6** 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), and that this is evidenced within the plan. **Update at Deadline 2** No change **Update at Deadline 3** No change **Update at Deadline 4** No change	The Applicant provided a full response to this comment when it was raised as part of Natural England's relevant representation (see Applicant's Response to Relevant Representations [PD1- 017]). The Applicant also confirmed in REP3-004 that the project design envelope for operations and maintenance activities has been informed by industry experience of the Applicant on other offshore wind assets including lessons learnt, and will also inform the final Offshore Construction Method Statement (CMS). The Applicant has since provided an Outline Offshore Construction Method Statement (CMS), which incorporates an Outline Cable Specification and Installation Plan (CSIP) submitted at Deadline 4 (REP4-032). Natural England has not made clear if they have any further concerns in relation to these responses. The Applicant considers this matter to be resolved.
REP4-043.65	**G7** The Applicant should produce an Outline Decommissioning Plan that outlines all decommissioning options (maintain, full removal and partial removal) during the consenting phase. These options can be assessed and refined closer to the time of decommissioning itself in consultation with Natural England. **Update at Deadline 2** No change **Update at Deadline 3** No change **Update at Deadline 4** No change	The Applicant provided a full response to this comment when it was raised as part of Natural England's relevant representation (see Applicant's Response to Relevant Representations [PD1- 017]). The Applicant has provided further response in relation to a Decommissioning Plan in REP4-043.63 above. It is noted that the MMO is in agreement with the Applicant's approach in that the decommissioning programme is updated during the Morgan Generation Assets lifespan to take account of changing good practice and new technologies and that the scope of the decommissioning works is determined by the relevant legislation and guidance at the time of decommissioning. This is outlined in the MMO Deadline 2 Submission (REP2-029, RR-020.39).

Reference	Natural England's submission	Applicant's response
REP4-043.66	**G8** Further detail on cable protection, scour protection and cable burial which would ideally be included in the final version of the Cable Burial Risk Assessment (CBRA) sound be considered further. 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. **Update at Deadline 2** No change **Update at Deadline 3** No change **Update at Deadline 4** Natural England notes that the applicant intends to consider the selection of scour protection methods post consent. We maintain that the options for scour prevention and cable protection should be agreed as part of the consenting phase.	The Applicant provided a full response to this comment when it was raised as part of Natural England's relevant representation (see Applicant's Response to Relevant Representations [PD1- 017]). The Applicant has since provided an Outline Offshore Construction Method Statement (CMS), which incorporates an Outline Cable Specification and Installation Plan (CSIP) submitted at Deadline 4 (REP4-032).
REP4-043.67	**G9** We advise that it is critical that engineering decisions include a hierarchy of the different cable protection 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. **Update at Deadline 2** No change **Update at Deadline 3** No change **Update at Deadline 4** Natural England notes that the Applicant seeks to retain all options for cable protection until all geophysical surveys are complete and analysed post-	The Applicant provided a full response to this comment when it was raised as part of Natural England's relevant representation (see Applicant's Response to Relevant Representations [PD1- 017]). The Applicant provided an updated In Principle Monitoring Plan (REP2-013) at Deadline 2, with further detail on commitments for monitoring post-installation recovery. The Applicant has since provided an Outline Offshore Construction Method Statement (CMS), which incorporates an Outline Cable Specification and Installation Plan (CSIP) submitted at Deadline 4 (REP4-032). The Applicant re-iterates that it is not in a position to provide information on detailed design at the consenting stage and further surveys will be undertaken in 2025 (licence has already been approved by MMO). This is standard practice across the offshore wind industry and has been for decades.

Reference	Natural England's submission	Applicant's response
	consent. We maintain that the options for scour prevention and cable protection should be agreed as part of the consenting phase.	
REP4-043.68	**G10** 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 provide final comment on the suitability of the management measures proposed. Therefore, we advise that more detail is provided within an outline OEMP and that Natural England are consulted on the final plan prior to construction. We advise a holistic approach to the final plan to bring together all agreed measures across the ES. **Update at Deadline 2** No change **Update at Deadline 3** NE notes and welcomes the request from the ExA to the Applicant to provide an Outline Offshore EMP. We will revisit this comment when the Applicant provides an Outline Offshore EMP. **Update at Deadline 4** Natural England acknowledges that the Applicant intends to submit an Outline Offshore Environmental Management Plan (EMP) at Deadline 4. Therefore we will provide comments on this document at the relevant deadline.	The Applicant has provided an Outline Environmental Management Plan (EMP) which was submitted into the Examination at Deadline 4 (REP4-032) and awaits Natural England's comments at Deadline 5.
REP4-043.69	**G13** 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. Sufficient information should be provided at the pre-consent stage to allow operations and maintenance (O&M) activities to be fully assessed. **Update at Deadline 2** No change	The Applicant provided a full response to this comment when it was raised as part of Natural England's relevant representation (see Applicant's Response to Relevant Representations [PD1- 017]) and responded further on this comment in subsequent deadline submissions. The Applicant's response at Deadline 4 (REP4-009, REP3-049.85) states that the Applicant confirms that all reasonably foreseeable operations and maintenance activities have been included within the Outline offshore operations and maintenance plan (APP-079) to allow these activities to be fully assessed within the Morgan Generation Assets application. The final operations and maintenance plan will reflect the final design of the Morgan Generation

Reference	Natural England's submission	Applicant's response
	Update at Deadline 3 No change **Update at Deadline 4** No change	Assets and therefore the activities set out within the final plan will fall within the project design envelope assessed within the application. The Applicant reiterates that operations and maintenance activities have been fully assessed within the application. Natural England has not made clear if they have any further concerns in relation to this response. As stated within the Applicant's response at Deadline 4 (REP4-009, REP3-049.85), the Applicant considers that this matter is closed.
REP4-043.70	**G14** All reasonably predictable activities should be assessed 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. 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. **Update at Deadline 2** Natural England notes that the Applicant will include the MMO's definition of emergency in the final Offshore Operations and Maintenance Plan. The Applicant also outlined that their screening exercise for the OOMP identified 'typical' operations and maintenance activities. However, our comment referred to understanding non-typical/ unpredictable activities that have occurred at other wind farms. This R&I remains unresolved and advise it is an issue for pre-consent. **Update at Deadline 3** No change **Update at Deadline 4** No change	The Applicant provided a response to this comment at Deadline 4 (REP4-009, REP3-049.86) and confirmed that all reasonably foreseeable operations and maintenance activities have been included within the Outline offshore operations and maintenance plan (APP-079) which is secured under Schedules 3 and 4, Condition 13(3) of the dMLs within the draft DCO (REP4-013)), and that these activities have been fully assessed within the application. The Applicant also confirmed in REP3-004 that the project design envelope for operations and maintenance activities has been informed by industry experience of the Applicant on other offshore wind assets, including lessons learnt of unpredicted activities. Natural England has not made clear if they have any further concerns in relation to this response. The Applicant considers that this matter is resolved.
REP4-043.71	**G16** 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 has repeatedly set out its position in response to this comment, most recently at Deadline 4 in the Applicant's Response to IP submissions submitted at Deadline 3 (REP4-009).

Reference	Natural England's submission	Applicant's response
	Update at Deadline 2 No change **Update at Deadline 3** No change **Update at Deadline 4** No change	Natural England has not responded in any detail to justify or explain its position, which is legally incorrect. In the absence of any further comment from Natural England, the Applicant has nothing further to add.
REP4-043.72	**G17** 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. Consideration needs to be given to ongoing data collection required to inform micro-siting of activities during the lifetime of the project, and further details provided during the consenting phase. **Update at Deadline 2** No change **Update at Deadline 3** No Change: Whilst the Applicant's characterisation survey did not identify any Habitats of Principal Importance or Annex I habitats within the survey area, we highlight that some habitats such as sabellaria spp. and mytilus edulis are ephemeral. Therefore, just because they weren't identified in the Applicant's survey does not rule out the possibility of those habitats being present at a later date or being present in pre-construction surveys. We strongly advise that the Applicant should include a commitment to micro-site around sensitive habitats such as Habitats of Principal Importance listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 where possible. This should be secured in the DCO/ dML or provided in the schedule of mitigation. We highlight that this is standard mitigation and has been included on all recent offshore wind farm consents. Please see East Anglia One North and East Anglia two for recent examples.	The Applicant has updated the wording in the dMLs at Deadline 5 (S_D5_7) to include the amended wording proposed by Natural England regarding reef habitats of principal importance as listed under Section 41 of the NERC Act (see Schedule 3, condition 20(1)(a); Schedule 4, condition 20(1)(a)). The Applicant considers that its response now fully addresses Natural England's comments and is resolved.

Reference	Natural England's submission	Applicant's response
	Update at Deadline 4 Natural England welcomes the addition to Schedule 3, condition 20(1)(a)(v). However, we request that the wording is changed to: 'relating to any benthic habitats of conservation, ecological or economic importance constituting **reef habitats of principal importance as listed under Section 41 of the NERC act**.' Following this change to the wording, this issue can be readily resolved.	
REP4-043.73	**G19** We note that there is currently no information on how the impacts of O&M works will be monitored. We advise that the Applicant considers this further in an updated plan. **Update at Deadline 2** No change **Update at Deadline 3** In progress: NE notes that the updated IPMP considers how various O&M activities will be logged there is no consideration of monitoring said activities from an environmental perspective or any safe guards to stop unforeseen impacts occurring. **Update at Deadline 4** No change	The Applicant provided a response to this comment at Deadline 4 (REP4-009, REP3-049.89) and a full response to this comment when it was raised as part of Natural England's relevant representation (see Applicant's Response to Relevant Representations [PD1- 017]). The Applicant considers that its response addresses Natural England's comments and is therefore resolved. As noted in that response, and as described in the Offshore in-principle monitoring plan (REP2-013), monitoring of the cables and their burial status will take place, as secured by condition 20(1)(d)(cc) of the deemed Marine Licences (Schedules 3 and 4) within the draft DCO (REP4-013). Please also see the Applicant's response to REP3-047.3 above regarding monitoring of secondary scour during operation.

2.4 Natural Resources Wales

Table 2.4: REP4-044 – Natural Resources Wales.

Reference	Natural Resource Wales's submission	Applicant's response
REP4-044.1	Please find below NRW's Deadline 4 submissions which comprises advice on the submissions produced by the Applicant and received at Deadline 3 on 12 November 2023 and responses to the Examining Authority (ExA) actions arising from Issue Specific Hearing 2. The documents that we have reviewed for Deadline 4 include: • REP3-018, S_D3_9 – Inclusion of Awel y Mor in Cumulative Assessments –Clarification Note. • REP3-019, S_D3_10 – Review of Cumulative Effects Assessment and In Combination Assessment: Offshore Ornithology. • REP3-020, S_D3_11 – Kittiwake Apportioning Clarification Note. We have provided advice specifically on marine ornithology considering the Applicant's Deadline 3 submissions. Where we have not provided explicit advice, it can be taken that we have no further comments to make at this stage and that the ExA should refer to our previous submissions on those matters. These representations should be read in conjunction with advice previously provided into the Examination. NRW continues to engage extensively and proactively with the Applicant throughout the Examination in order to resolve outstanding matters. The comments provided in this submission, comprise NRW's response as a Statutory Party under the Planning Act 2008 and Infrastructure Planning (Interested Parties) Regulations 2015 and as an 'Interested Party' under S102(1) of the Planning Act 2008. Our comments are made without prejudice to any	The Applicant notes the response from NRW.

Reference	Natural Resource Wales's submission	Applicant's response
	further comments we may wish to make in relation to this application and Examination whether in relation to the Environmental Statement (ES) and associated documents, provisions of the draft Development Consent Order ('DCO') and its Requirements, or other evidence and documents provided by bpENBW ('the Applicant'), the ExA or other Interested Parties. Should further clarity be required, we will be pleased to answer these further through the Examining Authority Questions and / or a Rule 17 request(s).	
REP4-044.2	**1. Marine Ornithology Comments on Deadline 3 Submissions** 1. NRW welcomes these clarification documents. However, we note that these generally equate to further stress testing of the Applicant's preferred approaches. NRW had a productive meeting with the Applicant on 28/11/2024, where outstanding issues and potential approaches to addressing these were discussed. Following this meeting, we understand that the Applicant is going to provide outputs following a full approach as advised by the Statutory Nature Conservation Bodies (SNCBs) in a future submission.	The Applicant welcomes the engagement with NRW on this matter. The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16_Morgan Gen_Ornithological assessment clarification data_F01). It is anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC. The Applicant has sought engagement with all SNCBs on this matter and has discussed the information submitted at Deadline 5 with NRW.
REP4-044.3	**2. REP3-018:** NRW welcomes that the Applicant has provided clarification on which Band model options (i.e. Option 2 or 3) were utilised for the large gull species from the Awel Y Mor project included in the in-combination assessments. NRW welcomes that the Applicant has provided a comparison of figures between the preferred approach versus the SNCB advised approach for the Band model options. Whilst the conclusions are unlikely to be materially changed irrespective of approach taken, NRW continue to advise that herring gull figures are updated to present Option 2 figures clearly and concisely as the SNCB preferred approach [paragraph 22, REP1-056].	The Applicant welcomes the comments that the conclusions are unlikely to be materially changed irrespective of approach taken. The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16_Morgan Gen_Ornithological assessment clarification data_F01). It is anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC. A meeting was held on 08 January 2025 to discuss the information and resolve any outstanding matters.

Reference	Natural Resource Wales's submission	Applicant's response
REP4-044.4	**3. REP3-018**: As noted in NRW's Relevant and Written Representations [RR-027, REP1-056], NRW will base conclusions on levels of significance to Welsh sites using the predicted impacts based on our advised collision risk modelling (CRM) input parameters (including flight speeds and avoidance rates). Therefore, NRW welcome that the Applicant has clearly indicated which outputs are from the SNCB advised avoidance rates and which are the Applicant's.	The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16_Morgan Gen_Ornithological assessment clarification data_F01). It is anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC. A meeting was held on 08 January 2025 to discuss the information and resolve any outstanding matters.
REP4-044.5	**4. REP3-019**: NRW notes that the Applicant has provided a comparison table of predicted annual displacement impacts broken down by species, between available figures from Morecambe Generation Assets' application and Preliminary Environmental Information Report (PEIR). NRW welcomes that the Applicant's assessments will be updated with the latest available figures at Deadline 4. NRW continue to recommend that any updated figures should be incorporated into a single, coherent ES.	The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16_Morgan Gen_Ornithological assessment clarification data_F01). The Applicant is not proposing to update the application documents as it was deemed not necessary by Natural England as the information that submitted will suffice. It is anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC. A meeting was held on 08 January 2025 to discuss the information and resolve any outstanding matters.
REP4-044.6	**5. REP3-020**: NRW continue to advise that the use of age-specific survival rates from Horswill and Robinson (2015) for kittiwake to calculate the proportion of different age classes (i.e. the approach taken for Hornsea Project 2) is not applied and that the SNCB preferred method of using the site-specific digital aerial survey (DAS) data proportions of adults, or the more precautionary approach of assuming all birds are adults, is followed. The reasons for this advice are set out in our Relevant and Written Representations [RR-027 and REP1-056], and in our Deadline 3 submission [REP3-050; REP1-056.28-REP1-056.30]. In summary, the issue remains that there is uncertainty around the appropriateness of the approach for use at the Morgan Generation Assets site which is located in the Irish Sea.	The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16_Morgan Gen_Ornithological assessment clarification data_F01). It is anticipated that this will close all remaining methodological issues for Natural England, Natural Resources Wales and JNCC. A meeting was held on 08 January 2025 to discuss the information and resolve any outstanding matters.
REP4-044.7	**2. Response to Hearing Action Point 21A of ISH2** **6. Marine Ornithology:** NRW cannot rule out an adverse effect on site integrity (AEoSI) for features of	The Applicant has submitted the information requested by Natural England at the meeting held on 13 November 2024 into the Examination at Deadline 5 (S_D5_16_Morgan Gen_Ornithological assessment clarification data_F01). It is anticipated that this will close all remaining methodological

Reference	Natural Resource Wales's submission	Applicant's response
	Welsh designated sites until all of our comments on methodology and Cumulative Effects Assessment (CEA) have been addressed and we have had the opportunity to fully review the information that will be provided by the Applicant at Deadline 4. NRW is actively engaging with the Applicant on this and has an agreed way to address these points. We anticipate that the remaining issues are capable of being resolved before the close of Examination, and therefore derogation and compensation may not be required. This is subject to a full and comprehensive review of submissions made by the Applicant at Deadline 4**.**	issues for Natural England, Natural Resources Wales and JNCC enabling the conclusion of no AEoI to be fully concluded and therefore no derogation required. Please note Natural England have reiterated at their Deadline 4 response that NE 'considers the risk of adverse effects on the SPAs listed is generally low, and that the submission of in-principle compensatory measures for English SPAs is unlikely to be necessary' (REP4-042).
REP4-044.8	**7. Marine Mammals:** NRW confirms that for sites within NRW's remit, and from a Marine Mammal Perspective, an Adverse Effect on Site Integrity on all European Sites from the project alone and in-combination with other plans or projects can likely be excluded. This is on the provison that the Underwater Sound Management Strategy (UWSMS), Marine Mammal Mitigation Protocol (MMMP) and other post-consent mitigation is secured.	The Applicant notes and welcomes NRW's response. The Applicant confirms that they will continue to engage with NRW on the MMMP and UWSMS post-consent and the MMMP and UWSMS and other mitigation is secured in the draft DCO updated at Deadline 5 (S_D5_7).

2.5 Historic England

Table 2.5: REP4-045 – Historic England.

Reference	Historic England's submission	Applicant's response
REP4-045.1	**Application by Morgan Offshore Wind Limited for an Order Granting Development Consent for the Morgan Offshore Wind Farm Generation Assets PINs Ref: EN010136** **The Examination Authority – Deadline 4 Historic England registration identification number: 20049461** We offer this response regarding the following document that has been supplied to us by the Applicant (received by us on 4th December 2024) as referenced: Morgan Offshore Wind Farm Project: Generation Assets. Outline offshore written scheme of investigation for archaeology. Document Number: MRCNS-J3303-RPS-10114, Document Reference: J14. Dated December 2024.	The Applicant notes and welcomes Historic England's response.
REP4-045.2	In our response to First Questions (Your ref: REP3-032), we acknowledge that the Applicant would submit a revised Outline Archaeological Written Scheme of Investigation (WSI) at Deadline 4. We therefore hope that by providing our comments now will help facilitate the examination process by providing our advice at this deadline.	The Applicant notes Historic England's response.
REP4- 045.3	In regard to the above referenced WSI, we note the edits made in Section 1.4.6 (Research Frameworks) and we are pleased to see the attention now directed at questions specified within the North West Regional Research Framework (NWRRF). Furthermore, regarding the edits made in Section 1.7.5 (Geotechnical survey) we appreciate the attention given to production of a Morgan Generation Assets ground model.	The Applicant has updated the Outline offshore written scheme of investigation for archaeology (S_D5_19) at Deadline 5 to ensure it references the Outline offshore written scheme of investigation produced for the Morgan and Morecambe Offshore Wind Farms: Transmission Assets DCO application.

Reference	Historic England's submission	Applicant's response
	However, it is our advice that to optimise the time and effort committed to completing this task that this document is cross-referenced with any Outline archaeological Written Scheme of Investigation produced for the Morgan and Morecambe Offshore Wind Farms: Transmission Assets DCO application (PINs Ref: EN020028), which we understand has recently been accepted for Examination (Planning Inspectorate letter to the Applicant, dated 18th November 2024).	
REP4- 045.4	We are also aware that the Morecambe Offshore Windfarm Generation Assets Project (PINs Ref: EN010121) is also presently going through Examination and it is our advice that the best outcome is for coordinated action to be taken to optimise geoarchaeological analysis that spatially connects these three projects with a shared approach to addressing research questions, such as published through NWRRF.	Coordinated action to optimise geoarchaeological analysis will be taken between Morgan Offshore Wind Project: Generation Assets and Morgan and Morecambe Offshore Wind Farms: Transmission Assets and the Outline offshore written scheme of investigation for archaeology (REP4-033) has been updated at Deadline 5 to reflect this (S_D5_19). The Applicant is not involved in the Morecambe Offshore Windfarm: Generation Assets Project and it may be delivered against a different timeline. On that basis at this point in time it cannot be guaranteed that coordinated action with the project will be deliverable, but should the projects have aligned delivery periods the Applicant will endeavour to deliver a co-ordinated analysis with Morecambe Offshore Windfarm.
REP4- 045.5	In particular, it is apparent from the geoarchaeological analysis completed so far, as presented in Morgan Offshore Wind Farm Project Marine Archaeological Technical Report; Document Reference: F4.8.1; Examination Reference: APP-061 (Environmental Statement Volume 4, Appendix 8.1), and given the attention now directed at NWRRF, that there appears to be relevant connectivity with the proposed Morgan and Morecambe Transmission Assets project and possibility of encountering prehistoric sedimentary sequences of archaeological interest closer to the English coastline.	See Applicant's response to REP4- 045.4 above.
REP4- 045.6	In National Policy Statement EN-3 (published November 2023), we are aware of the attention given to Applicants producing an "outline WSI", as mitigation, such as described in paragraph 2.8.247 and the convention for programmes of archaeological works to be completed per DCO project. However, we take this opportunity to request that consideration should be given to realising	See Applicant's response to REP4- 045.4 above.

Reference	Historic England's submission	Applicant's response
	benefits of coordination between these projects, such as alluded to in EN-3 in paragraph 2.8.162.	
REP4- 045.7	Although we appreciate that these are separate DCO applications, it would be sensible to make any accompanying geo-archaeological analysis programme as efficient as possible through contributing to a shared outcome that supports production of a unifying palaeo-environmental ground model. We therefore suggest that consideration is given to how such a matter could be captured within the Morgan Generation Assets Mitigation and Monitoring Schedule (Examination Ref: REP2-016), which for one matter (Section 1.3 Socio-economics) does mention the existence of one plan for both Morgan Generation and Morgan and Morecambe Transmission Assets projects. Perhaps it is possible to also reference a plan that would coordinate action to deliver the WSIs for each separate project?	See Applicant's response to REP4- 045.4 above.
REP4- 045.8	We also concur with the edits made to Section 1.6.3 (Monitoring and Watching Briefs). We also acknowledge that the Applicant in document Schedule of Change to the draft Development Consent Order (S_D2_8), Examination Ref: REP2-012, has amended the draft deemed Marine Licence Schedule 4, paragraph 20(2).	The Applicant notes and welcomes Historic England's response.

2.6 Orsted IPs

Table 2.6: REP4-046, REP4-047, REP4-048, REP4-049, REP4-051 – Orsted IPs.

Reference	Orsted IP's submission	Applicant's response
REP4-046.1	**Orsted Cover Email** EN010136 - Application by Morgan Offshore Wind Limited for an Order Granting Development Consent for the Morgan Offshore Wind Farm We represent the following parties in respect of the above examination: - Barrow Offshore Wind Limited (Ref: 20049595); - Burbo Extension Ltd (Ref: 20049590); - Walney Extension Limited (Ref: 20048542); - Morecambe Wind Limited (Ref: 20049596); - Walney (UK) Offshore Windfarms Limited (Ref: 20049592); and - Ørsted Burbo (UK) Limited (Ref: 20049589). Together, referred to as "the Ørsted Ips	The Applicant notes this response.
REP4-046.2	In accordance with examination deadline 4, please find attached on behalf of the Ørsted IPs, the following documents: - Post-hearing submission; - Response to deadline 3 submissions (please note this document contains a response to the action points 11 and 13 arising out of issue specific hearing 2); - Appendix 1 to the response to deadline 3 submissions; and - In response to action point 11, a report by consultants Wood Thilsted, in respect of the wake effects of the Project.	The Applicant notes the attachments and has responded accordingly below.
REP4-047.1	**POST HEARING SUBMISSION ON BEHALF OF THE "ØRSTED IPs** **Introduction** 1.1 This post-hearing submission is provided in	The Applicant notes this response.

Reference	Orsted IP's submission	Applicant's response
	accordance with Deadline 4 of the examination timetable for the application by Morgan Offshore Wind Farm Limited (the "Applicant") for an Order under the Planning Act 2008 (the "Act") granting Development Consent for the Morgan Offshore Wind Farm (the "Project").	
REP4-047.2	1.2 We represent six owners of operational offshore windfarms in the East Irish Sea (as set out relevant representations RR-005, RR-007, RR-023, RR-032, RR-043, RR-044), who we refer to together as the "Ørsted IPs".	The Applicant notes this response.
REP4-047.3	1.3 The Ørsted IPs attended Issue Specific Hearing 2 ("ISH2") on 26 November 2024 and addressed agenda item 4a. 'Potential wake/energy yield effects for other offshore wind farms in the Irish Sea'.	The Applicant notes this response.
REP4-047.4	1.4 The Ørsted IPs have made substantial submissions1 outlining their position on the policy and regulatory basis for the Applicant to provide an assessment of the Project's wake effects, and the consequences of leaving this issue unassessed for decision-making. The Ørsted IPs have also provided extensive evidence indicating material wake effects are likely to be experienced at their development, including at this deadline, the finalised modelling of the Project's wake effects commissioned by the Ørsted IPs.2	The Applicant has also made substantial submissions outlining its position on the lack of policy and regulatory basis for an assessment of wake effects. None of the evidence submitted by the Ørsted IPs provides a justification for a more detailed assessment of wake loss being required, or indeed any compelling reason why this application should be considered differently from previous offshore wind farm applications (including those promoted by Ørsted), where no detailed / quantified assessment of wake effects was undertaken as part of the consent application.
REP4-047.5	1.5 Alongside this document, the Ørsted IPs have also submitted comments on the Applicant's responses to the examining authority's first written questions. We do not propose to repeat arguments set out in other submissions, however, wish to make some additional submissions regarding wake effects, following discussions at ISH2.	The Applicant notes this response.
REP4-047.6	**2. Additional submissions on wake effects** Requirement for an assessment under National Policy Statement EN3 ("NPS-EN3") 2.1 At ISH2, the Applicant outlined that it does not	The Applicant's position remains as set out within its previous response to the Ørsted IPs at Deadline 4 (REP4-009 at row REP3-070.7).

Reference	Orsted IP's submission	Applicant's response
	consider the Ørsted IPs' developments could be considered "close" to the Project in terms of NPS-EN3 paragraph 2.8.197, on the basis that the ordinary dictionary definition of close is "proximate" or "not far from". The Ørsted IPs consider these terms are equally subjective in this context as the term "close". An important principle of legal interpretation is that where the meaning of a word is not defined, the meaning should be established in light of the purpose of the provision.	The Crown Estate Round 4 separation criteria, as referenced in previous submissions, is also important in considering the correct application of paragraphs 2.8.197 and 2.8.198 of NPS EN-3. The Crown Estate have a key role in the offshore wind industry as the authority responsible for leasing rounds. They have a strategic role to play in the development of the industry, part of which is implemented through the criteria that they impose for each leasing round. That criteria is fixed taking account of industry representations and concerns, ultimately determining criteria that The Crown Estate (TCE) consider acceptable to manage interactions with other sea users, subject to the details of any specific project. The Crown Estate increased the separation distance between projects between Round 3 and Round 4 from 5 km to 7.5 km, deliberately limiting proximity of projects. That increase took into account submissions made by the wider offshore wind industry and, as far as the Applicant is aware, there was no suggestion by the industry that 7.5 km was unacceptable due to potential wake loss impacts. Paragraphs 2.7.197 and 2.8.198 should be read in light of that wider strategic context, and the exercise already undertaken by TCE in assessing what separation distance was acceptable for Round 4 projects. NPS-EN3, section on 'Factors influencing site selection and design' for offshore wind, paragraph 2.8.44, references constraints imposed on the siting or design of offshore wind farms because of the presence of other offshore infrastructure, such as oil and gas, Carbon Capture, Usage and Storage (CCUS), co-location of electrolysers for hydrogen production, marine aggregate dredging, telecommunications, or activities such as aviation and recreation. Paragraph 2.8.44 goes on to state that prior to the submission of an application involving the development of the seabed, applicants should engage with key stakeholders, such as The Crown Estate and statutory bodies to ensure they are aware of any current or emerging interests on or underneath the seabed which might give rise to a conflict with a specific application. This will ensure adequate opportunity to reduce potential conflicts and increase time to find a resolution. The Applicant would note that at more than 7.5 km from any of the Ørsted IPs projects, there are no impacts on any activities on or underneath the seabed in relation to the Ørsted IPs projects. As the Applicant set out in ISH2 (REP4-006) the licensable activities that the Ørsted IPs have or are undertaking relate to the installation and operation of their assets, not to the extraction of power from wind. The presence of the Morgan Generation Assets at a significant distance has no bearing on the Ørsted IPs ability to undertake those activities.
REP4-047.7	2.2 The purpose of this provision of the NPS-EN3 is to provide an understanding of the effects of a development on existing sea users, in order to allow the Secretary of State to undertake decision making in accordance with paragraphs 2.8.341-2.8.348 (which includes satisfaction that site selection and site design has been made with a view to avoiding or minimising disruption or economic loss to other offshore industries). We consider the purpose of these policies is to ensure that new development understands and minimises adverse impacts on existing infrastructure, to ensure successful coexistence. Therefore, if a development has the potential to result in a material impact on existing infrastructure, it should be considered close to that infrastructure for the purposes of the NPS-EN3.	
REP4-047.8	2.3 The Applicant also outlined a narrow interpretation of the second limb of 2.8.197 – "the potential to affect activities for which a licence has been issued by government". The Applicant outlined their position that this policy does not capture the Ørsted IPs because marine licenses authorise the existence of infrastructure on the seabed, and prevent the generation of electricity from being unlawful. These licences do not guarantee the operation of a windfarm.	
REP4-047.9	2.4 We consider the Applicant's interpretation of this provision is unduly narrow. Marine licenses are required to deposit a substance or object "in the sea or on or	

Reference	Orsted IP's submission	Applicant's response
	under the seabed" (not only to structures secured to the seabed). Additionally, we do not agree that a generating licence simply prevents the generation of electricity from being unlawful. Rather, it authorises the operation of, and therefore generation of electricity from, a generating station. Therefore, if a proposed development has the potential to impact on the ability of a generating station to generate electricity (which is authorised by a generating licence), it is captured by paragraph 2.8.197.	
REP4-047.10	2.5 The Ørsted IPs consider the intention behind the two limbs in 2.8.197 is intended to capture both existing development and consented but not yet built development. Our view is that the licence in this context merely means 'authorised' – it is a broad term intended to capture any activities which the Government has approved. We note that elsewhere in the NPS-EN3 the term 'marine licence' is used where policies specifically relate to marine licences.	
REP4-047.11	2.6 The Applicant has taken an unduly narrow interpretation of the NPS-EN3 in respect of effects on sea-users, which the Ørsted IPs consider undermines the intent of the policy document.	
REP4-047.12	<u>Evidentiary basis for wake loss</u> 2.7 At ISH2, there was discussion regarding the emergence of wake effects in recent applications for development consent orders ("DCOs") relating to offshore wind developments, and how wake loss should be treated in DCO applications.	The Applicant has not at any point disputed that wake effects occur and it is also not in dispute that there has been an increase in research on wake effects over the last decade (noting that much of it has not been peer-reviewed). However, the industry has been aware of wake effects for a long time. An increase in interest and subsequent research does not change the policy or regulatory position. As set out further in point REP4-048.18 below, the NPS paragraphs relied on by the Ørsted IPs as justifying a wake assessment are in the same terms as the provisions set out in the 2011 NPS. If the effect of those provisions was to require any new offshore wind farm development to assess wake effects on existing wind farms, that would have become a well-established practice in the industry by this point. That is simply not the case. Even for the few examples that the Ørsted IPs seek to rely on, the discussion of wake loss was minimal through the consenting process. The relevant NPS policies have not historically been considered to require wake assessment and there is no basis for a change in interpretation now.
REP4-047.13	2.8 The Ørsted IPs reiterate that industry understanding of wake effects has developed significantly in recent years, in particular in the years following the Crown Estate's Offshore Wind Leasing Round 4 ("Round 4"). Whilst it has always been acknowledged that wake effects can occur, recent modelling and research has been able to provide significantly more detailed information regarding actual effects which occur	

Reference	Orsted IP's submission	Applicant's response
	between windfarms. As a result, a more sophisticated understanding of the significance of likely and actual wake effects has been developed within the offshore wind industry. It is noted that the majority of the research provided by the Ørsted IPs at deadline 3 [REP3-057]-[REP3-069] is post-2020.	
REP4-047.14	2.9 This contemporary research indicates that material wake effects can occur at distances greater than those at play in respect of the Project. This is borne out by the modelling commissioned by Ørsted IPs, which indicates the Project will result in a material impact on their developments.	
REP4-047.15	<u>Treatment of wake loss effect in the consenting process</u> 2.10 Additionally, the Ørsted IPs note that research indicates (and it is well understood by industry) that distance is not the only factor relevant to the degree of wake impact. A focus of the Applicant's submissions at ISH2 and in written submissions has been that the only way to mitigate wake effects is to increase the distance between the Project's array area and other windfarms. However, this is only one relevant factor. One particularly important factor in the degree of wake effect experienced, is the location of a proposed development in relation to the prevailing wind direction of the wind resource utilised by an existing development. New developments can theoretically be located very close to existing development without substantial impacts on the incumbent development's access to wind resource. This underscores the importance of undertaking a robust assessment, and considering how a proposed development can be best designed to allow for long term coexistence with existing development.	The Applicant does not contest that both distance and wind direction (and indeed other project-specific related design aspects) are important factors when considering wake loss. The Applicant set out the factors relevant to wake effects in response to ExQ1 INF 1.4 in REP3-006. In this response the Applicant stated that wake effects are influenced by the on-site wind distribution (both wind speed and direction), wind turbine layout, turbine make and model, and operational issues such as technical availability. Wake interactions (within a wind farm, as well as between wind farms) also depend on and vary with atmospheric conditions such as stability and turbulence levels. The Applicant however reiterates that the distance between wind turbines is the key factor for wake effects (both internal and external). The greater the distance between turbines, the less interaction there will be between them as the wakes-affected airflow has more space to recover (i.e. regain the velocity) from the energy of ambient flow around it. In terms of the location of a project in relation to prevailing wind direction, TCE took account of wake effects, amongst other matters, when setting the 7.5 km distance between Round 4 leasing areas and other OWFs (see the Applicant's response to REP4-048.8 below). The Morgan Generation Assets are limited to the Agreement for Lease area, and taking account of the 7.5 km specified by TCE should be able to develop within that area subject to existing constraints. The only way for new schemes not to affect the wind regime for existing projects would be for them not to be built at all, clearly not the intention of either TCE or Government who see new offshore wind capacity as Critical National Priority infrastructure (see the Applicant's response to HAP_ISH2_13 in REP4-004). Further, the Applicant would note that, based on the Ørsted IPs presentation of the potential for effects up to 100 km downwind of an offshore wind farm (REP3-056) there is nowhere within the Round 4 Northern Wales and Irish Sea bidding area that would not have the potential for effects as outlined by the Ørsted IPs. As set out in the Applicant's Response to Hearing Action Point HAP_ISH1_25 (Applicant's response to Wake Loss) (REP1-016), further to meeting TCE's spacing criterion, the Applicant

Reference	Orsted IP's submission	Applicant's response
		during the pre-application phase has taken the steps required by the relevant NPS policy to further minimise potential impacts. The Morgan Array Area was reduced following receipt of statutory pre-application consultation responses on the Preliminary Environmental Information Report (PEIR). This is set out in Volume 1, Chapter 4: Site selection and consideration of alternatives (APP-011) and Volume 2, Chapter 9: Other sea users (APP-027). Post-consent the Applicant will go through the final design process, which may include refinement of number of wind turbines, refinement of wind turbine spacing and refinement of wind turbine position within the Morgan Array Area (in accordance with the layout principles set out in Table 3.7 of the Project description chapter (APP-010)), following the completion of detailed site investigation campaigns and selection of wind turbine model through a competitive procurement process.
REP4-047.16	2.11 At ISH2, the Applicant emphasised that due to design factors the Project would produce more energy per MW than Ørsted IPs' developments. For the purposes of the Project's environmental impact assessment ("EIA"), the Applicant argued that any reduction in the ability of existing developments to provide carbon savings would be outweighed by the savings offered by the Project. Therefore, the Applicant argues that any energy loss at the Project due to mitigating impacts on existing development would be "disproportionate".	The Applicant has provided the Technical Note: Calculation of the Net Effects on Greenhouse Gas Emissions (S_D5_20) at Deadline 5. Please also see the Applicant's response to REP4-047.17.
REP4-047.17	2.12 In making this assessment, the Applicant has failed to appreciate the materiality of the impacts of the Project on existing development. As noted in the Ørsted IPs' response to the questions of the examining authority [REP3-053], the level of impact which will likely result from the Project is a factor which would be taken into account in long-term decision making in respect of those developments. Therefore, the potential loss of generation at stake is potentially much more significant than the yearly AEP loss (which is material in and of itself).	As set out in the Applicant's response to Written Representations (REP1-060.11 in REP2-005), NPS EN-1 recognises that in order for the UK to reach its net zero target by 2050, a dramatic increase in the volume of new large-scale development is required, which will not be possible without some level of residual impacts (paras 3.1.1 and 3.1.2). The NPS directs developers to minimise effects in accordance with the policy set out in Part 4 and Part 5 of EN-1 and the technology specific NPS. As set out in the Applicant's Response to Hearing Action Point HAP_ISH1_25 (Applicant's response to Wake Loss) (REP1-016), the need to balance competing interests, whilst achieving the overarching policy aims for offshore wind development in the UK was recognised by TCE in setting the parameters for the Round 4 Lease Areas. Within their leasing process, TCE required a separation distance of 7.5 km between Round 4 developments and existing offshore wind farm infrastructure. TCE took account of minimising impacts on other licensed activities in identifying this distance and specified that no Round 4 offshore wind project could be located within 7.5 km of an existing offshore wind farm, unless the owner of the existing offshore wind farm had given its written consent (TCE, 2019). This ensures that any likely project interactions are managed between the two leaseholders, which would include potential discussion of financial compensation. Beyond

Reference	Orsted IP's submission	Applicant's response
		this no consent or approval from any existing operators is needed. No approval from any existing operating wind farms is required for the Morgan Generation Assets.
REP4-047.18	2.13 Again, this raises the question of whether the Project has employed principles of good design, in efforts to ensure that it can co-exist with existing development (as directed by NPS-EN3 at 2.8.48)	Please see the Applicant's response to REP4-047.17 above and the Applicant's response to ExQ1 GEN 1.15 on good design in REP3-006.
REP4-047.19	Responses to ISH2 Action Points 2.14 Two action points arising out of ISH2 have been directed to the Ørsted IPs.	The Applicant notes the Ørsted IPs action points arising out of ISH2, and has responded below.
REP4-047.20	2.15 In response to action point 11, the Ørsted IPs note that the Wood Thilsted report, commissioned by the Ørsted IPs to understand the potential wake effects of the Project has been finalised and submitted at DL4. The Annual Energy Production loss figures provided at DL3 were based on a preliminary version of this analysis. Regarding the examining authority's specific request of whether the figures represent a loss at front row receptor turbines only/how many of the existing turbines would suffer adverse wake effects, the Ørsted IPs are investigating this modelling scenario and will provide an update as soon as possible	The Applicant awaits the Ørsted IPs updated modelling/report to confirm if the AEP loss figures represent a loss at front row receptor turbines or how many turbines would experience adverse wake effects.
REP4-047.21	2.16 In response to action point 13, the Ørsted IPs reiterate that in order to understand what mitigation might be required in respect of wake effects, the Applicant must first assess the potential effect of the Project.	The Applicant's response to the same Hearing Action Point is contained in REP4-004. The Applicant maintains that there is no robust or recognised approach for assessing wake effects in EIA terms (e.g. for determining the significance of any such effects) and for any potential mitigation to be applied. To mitigate any effects on the Ørsted IPs projects would require an increase in distance between the projects (noting that the Morgan Generation Assets previously increased the separation distance between consultation on the PEIR and application submission) that would have a disproportionately larger effect on the Morgan Generation Assets project and result in a greater net loss of avoided GHG emissions as described in Technical Note: Calculation of the Net Effects on Greenhouse Gas Emissions (S_D5_20).
REP4-047.22	2.17 Notwithstanding the above the Ørsted IPs note that, generally speaking, a number of steps can be taken to mitigate the wake effects of a development. These steps could include design and operational	The Applicant has provided a response to mitigation options in response to ExQ2 INF 2.8 ii (S_D5_5).

Reference	Orsted IP's submission	Applicant's response
	changes such as installing a smaller number of larger turbines, reducing capacity, increasing the separation distance between the Project and the Ørsted IPs' developments, wind sector management and wake steering.	
REP4-047.23	2.18 Additionally, the Ørsted IPs consider that a commercial side agreement would assist in ensuring their interests are adequately protected. However, such an agreement would require meaningful engagement from the Applicant, which has not been forthcoming to date.	The Applicant set out in response to ISH2 Hearing Action Point 12 (REP4-004) that a commercial side agreement is not required or appropriate and maintains that a commercial side agreement is only relevant where there are identified residual effects (either by the Applicant or as proposed by a regulator/SNCB) under the EIA process, undertaken against guidance established by regulators in the relevant field, and where supported by policy, which is not the case for the Ørsted IPs issue of wake effects. The Applicant does not believe there is therefore a case for meaningful engagement on a commercial side agreement on that basis.
REP4-047.24	2.19 The Ørsted IPs consider that any parameters in terms of distance and other design requirements would be more appropriately placed as DCO requirements rather than protective provisions. However, the Ørsted IPs reiterate that in order for the Secretary of State to be in a position to make its decision on the application in accordance with the NPS-EN3, an assessment of wake effects and how those have been addressed must be provided by the Applicant before the application is granted.	The Applicant does not believe that DCO requirements are either justified or workable. As the Applicant has set out through its representations it does not consider an assessment needs to be conducted, given the lack of policy and guidance to undertake one. That lack of policy and guidance is also of relevance to the drafting and benefit of a DCO Requirement which might seek to control design parameters in order to address the Ørsted IPs issue. The Applicant is unclear how any Requirement would work in the absence of guidance that sets out what constitutes a significant effect, or what change against a baseline (leaving aside the Applicant's position that this cannot be established) would necessitate mitigation.
REP4-048.1	**Response to deadline 3 submissions** 1.1 This submission is provided in accordance with Deadline 4 of the examination timetable for the application by Morgan Offshore Wind Farm Limited (the "Applicant") for an Order under the Planning Act 2008 (the "Act") granting Development Consent for the Morgan Offshore Wind Farm (the "Project").	The Applicant notes this response.
REP4-048.2	1.2 We represent six owners of operational offshore windfarms in the East Irish Sea (as set out relevant representations RR-005, RR-007, RR-023, RR-032, RR-043, RR-044), who we refer to together as the "Ørsted IPs".	

Reference	Orsted IP's submission	Applicant's response
REP4-048.3	1.3 This submission provides comments on the Applicant's response to the first written questions of the examining authority ("ExQ1") [REP3-006], provided at examination deadline 3. In particular, the Ørsted IPs respond to the Applicant's responses at: 1.3.1 CE 1.1 regarding projects approaching end of life; and 1.3.2 INF1.3-INF1.7 regarding wake	
REP4-048.4	**2. Response to CE 1.1** 2.1 At CE 1.2, the Examining Authority's requested the Applicant provide information regarding developments which they consider are nearing the end of their lifetime, in the context of the Applicant's cumulative effects assessment.	Please see the Applicant's response to REP4-048.5.
REP4-048.5	2.2 In its response, the Applicant has incorrectly recorded that Barrow Offshore Wind Farm and Burbo Bank Offshore Windfarm are approaching the end of their lifetimes (in 2030 and 2031, respectively). The Ørsted IPs do not consider any additional consents are required to continue operating these developments beyond 2030/2031. The Ørsted IPs note that these developments have marine licences relating to maintenance which will expire in 2030/2031, however these licences are not required for the ongoing operation of the developments.	Please see the Applicant's response to ExQ2 CE 2.3 (S_D5_5).
REP4-048.6	2.3 Barrow Offshore Windfarm was discounted from the Applicant's offshore ornithology cumulative effects assessment [APP-023] on the grounds that it will not have any temporal overlap with the Project. This is not correct, and therefore the development should be included in the cumulative effects assessment.	Please see the Applicant's response to ExQ2 CE 2.3 (S_D5_5). However, although the Applicant's view remains that no further assessment is required, the Applicant agreed with Natural England during a meeting on 08 January 2025 that it shall include the Barrow Offshore Wind Farm in the Ornithological assessment clarification data (S_D5_16) submitted at Deadline 5.
REP4-048.7	**3. Response to INF1.3 - INF1.7** 3.1 The Ørsted IPs have provided extensive submissions outlining their key arguments relating to	The Applicant notes this response.

Reference	Orsted IP's submission	Applicant's response
	wake loss. We do not propose to repeat those arguments here. However, the Ørsted IPs wish to respond to a small number of points raised by the Applicant in their response to ExQ1.	
REP4-048.8	<u>The Crown Estate's Round 4 leasing requirements</u> 3.2 The Applicant has stated that the Crown Estate ("TCE") took account of minimising impacts on other licensed activities in setting the round 4 minimum separation distances. However, the Applicant has not produced any evidence for this proposition.	The Applicant notes that The Crown Estate submitted a response to the Outer Dowsing Offshore Wind Farm Examination. The Orsted IPs have annexed a copy of that response to their Deadline 4 submission (REP4-051). The Applicant considers this could not be clearer that The Crown Estate took account of these matters. In response to the question "*Can the Crown Estate clarify if the minimum 7.5km distance requirement between Leasing Round 4 projects takes the potential for wake effects into account?"* The Crown Estate states, amongst other things: *"• The buffer/stand-off between wind farms (unless developers consent to closer proximity) is a separation distance to enable developers to develop, operate and maintain wind farms by allowing for a range of factors including amongst other matters, wake effects, navigation, and safety.* *• The 2019 Information Memorandum ahead of Offshore Wind Leasing Round 4 set out the requirement that "Projects may not be located within 7.5 km of an existing offshore wind farm (meaning a wind farm at any stage of development which has been awarded an agreement for lease or lease from The Crown Estate) unless the owner of the existing offshore wind farm has given its written consent".* *• This 7.5km was used for the purpose of processing project proposals in the tender only, being higher than the 5km buffers that are specified within the seabed lease agreements (introduced in Round 3); this was for the purpose of de-risking the Round 4 tender by providing additional mitigation and assurance to participants through limiting proximity."* The statement that the increased buffer distance of 7.5km was for the purpose of de-risking projects by providing "additional mitigation and assurance" through limiting proximity can be read no other way than having regard to existing licensed activities of other offshore wind farms. In their response the Crown Estate go on to note that it is for the project developer to decide where within the agreement for lease area the project is located. The Applicant has taken this approach to development of the project, and as set out in Site Selection and Consideration of Alternatives (APP-011) has made amendments to the design of the project in response to potential significant effects identified through the EIA process against established guidance and policy in consultation with established regulators in the field. The Applicant does not believe The Crown Estate's (TCE) response to the Outer Dowsing Offshore Wind Farm (Generating Station) ExQ1 OG 1.2 contradicts in anyway the approach taken by the Applicant.

Reference	Orsted IP's submission	Applicant's response
REP4-048.9	3.3 We note the 2023 Frazer-Nash study referred to by the Applicant and provided at deadline 3 post-dates the establishment of the round 4 separation distances (and the signing of the agreements for lease) and should not be interpreted as forming the basis for that separation distance. We also reiterate that that study, which takes some generic, theoretical offshore wind farm pairs and looks at the balance in total production based on different densities and separation buffers, cannot be relied on as an assessment of the likely effects of the Project on the Ørsted IPs' developments, in these specific circumstances.	The Applicant notes that The Crown Estate continues to bring forward leasing rounds with projects in close proximity to each other, with Leasing Round 5 having project areas cited much closer than 7.5 km to a suite of demonstration projects that either have or, are well advanced in securing consents. Furthermore, early outputs for Leasing Round 6 proposals would further suggest that (within the Celtic Sea at least) this trend may continue.
REP4-048.10	3.4 This is supported by comments made by the Crown Estate ("TCE") in its recent submission in response to the Examining Authority's Written Questions ExQ1 OG 1.2 in respect of the Outer Dowsing Offshore Wind Farm (Generating Station). TCE was asked about the 7.5km distance between Round 4 projects and the Frazer-Nash report. TCE acknowledged that the inter-farm wake effects can extend beyond the buffer distances and that other factors beyond distance, including prevailing wind direction and wind farm layout, may also be relevant. TCE went on to state that the location of a wind farm within the leased area is a matter for the developers to decide and design for. In relation to the Frazer-Nash study, TCE stated that "The report summarises modelling applied to generic/hypothetical wind farms and does not replace the need for project-specific analysis." We annex a copy of the whole of TCE's response as Appendix 1 to this document.	With regard to REP4-048.10 and REP4-048.11, the Applicant cross refers the Ørsted IPs to its response to REP4-048.8 above. The Applicant notes that the ExA has directed ExQ2 question INF 2.10 at The Crown Estate, regarding the specific situation for the Morgan Generation Assets and awaits the response.
REP4-048.11	3.5 This does not support the approach that the Applicant has taken to wake loss during this examination.	
REP4-048.12	3.6 Additionally, we note that the industry's understanding of wake effects has developed significantly in the years following the establishment of	The Applicant considers it inappropriate to speculate about how The Crown Estate would manage its leasing process under theoretical scenarios and that this point should be dismissed accordingly. The Applicant does not contest that wake effect knowledge will be increasing as the global pipeline

Reference	Orsted IP's submission	Applicant's response
	the TCE boundaries. Therefore, if wake was accounted for in the establishment of the TCE boundaries, those boundaries would no longer be based on sound information, and the effect would need to be assessed regardless.	of projects increases but does not consider there has been any material shift in knowledge around wake effects in very recent years that would have caused a fundamentally different approach to leasing or regulatory processes in the UK. No evidence has been presented that would suggest such a shift is imminent, or even under consideration.
REP4-048.13	3.7 Irrespective of the above, the Ørsted IPs maintain their position that any requirements established during the TCE's leasing process does not obviate the requirement for the effects of a development to be assessed in the consenting process. Any generic boundaries established in that process could not have taken into consideration the specific circumstances and likely effects of the Project on the Ørsted IPs' developments. As the Ørsted IPs have stated in a number of submissions, the policy and regulatory framework requires an assessment of these effects to be undertaken, and for the outcome of that assessment to be carefully considered in the decision making process.	The Applicant has made clear within its submissions throughout the Examination that irrespective of The Crown Estate's position with regard to leasing, it does not consider there is any policy or regulatory requirement to undertake a wake loss assessment as part of the consent application, as has been the case for every offshore wind farm brought forward within the UK to date.
REP4-048.14	3.8 As explained further below, wake effects are not solely determined by distance – the key to understanding wake loss is the impact of a development on the wind resource. Windfarms in close proximity can have less of an impact on wake than windfarms at greater distances if they are not located in the prevailing wind direction. Separation distances per se are a very poor indicator of effect, and if solely relied on could potentially restrict development unnecessarily, in circumstances where effects between windfarms was very limited. TCE acknowledged in its submission on the Outer Dowsing Offshore Windfarm that wake effects "may depend upon factors beyond distance – e.g. prevailing wind direction and wind farm layout."	The Applicant notes this and does not contest that both distance and wind direction (and indeed other project-specific related design aspects) are important factors when considering wake loss.
REP4-048.15	<u>Challenges in respect of modelling effect</u> 3.9 The Applicant has commented that wake effects are "a very complex phenomenon and are difficult to accurately quantify". The Ørsted IPs reiterate that wake	The Applicant maintains that wake effects are complex and difficult to accurately quantify. The Applicant has never denied that there are wake effects, or that they cannot be determined, but in EIA planning and policy terms, there is no guidance to assess them.

Reference	Orsted IP's submission	Applicant's response
	loss is an effect which, practically speaking, can be accurately and robustly assessed.	Modelling of wake loss effects is dependent on accurate information of the wind farm that is being proposed, as well as the existing operational wind farms (for instance their current yield, downtime, curtailment, internal wakes etc.). It is also highly dependent on the choice of model used to undertake the assessment, and the decisions made in how to run the model. It is noteworthy that there are large number of wake loss models used throughout the industry, each likely to produce different outcomes for a given scenario (understanding the inputs of the scenario is not straightforward or set out in agreed guidance). Different developers have different considerations when choosing wake loss models to use, and different approaches to how to run the models. There is no single verifiable approach that exists that could be used to produce an outcome, or range of outcomes, that would be meaningful in the context of this Examination. The Applicant would also highlight that unlike other areas where regulators have driven the development of an approach to EIA and assessment (for example the approaches of NRW, JNCC and others to ornithological assessment), the suggestion that a wake loss assessment is required is not being raised by regulators or the Government. If the need for such an assessment was a genuine policy requirement it would be being directed by the Secretary of State along with an accepted framework for quantifying the extent of effects and the measures that should be explored to mitigate effects. This is clearly not the case here.
REP4-048.16	3.10 As outlined in detail in the Ørsted IPs' deadline 3 submission [REP3-070], wake assessments are regularly and reliably undertaken by specialist consultants. Wake assessments between wind farms are an integral and routine component of the offshore wind farm development process. The findings are a necessary to inform the development of an offshore wind farm's Business Case. Consultants have worked with the offshore wind industry and developed software and models to assist the industry in understanding energy yield and wake effects.	The Applicant has responded to the ExQ2 question INF 2.4, (i) directed to the Applicant in S_D5_5.4.
REP4-048.17	3.11 We consider the Applicant should be asked to confirm whether they have undertaken an assessment of energy yield and wake effects of the Project and if so, whether specialist consultants were engaged in that exercise.	
REP4-048.18	<u>Lack of precedence</u> 3.12 The Applicant's understanding is that prior to Awel y Mor, wake effects have not been considered within consenting applications for proposed offshore wind	The Applicant has provided a response to this point in Annex 4.1 (S_D5_4.1).

Reference	Orsted IP's submission	Applicant's response
	developments. This understanding is not correct. The Ørsted IPs are aware that wake effects were openly considered during the consenting process for the Burbo Bank Extension offshore wind farm, the Walney Extension offshore wind farm, and the Hornsea 2 offshore windfarm.	
REP4-048.19	3.13 The Ørsted IPs understand that this is an issue which is regularly dealt with by applicants and incumbent developers - often resolved through negotiation. Other applicants have engaged with impacted sea users on this effect, assessed the effect and either demonstrated the effect is immaterial or provided appropriate mitigation, such that examination of the issue in an examination or the imposition of a DCO requirement has not been necessary.	The Applicant cannot comment on discussions which have taken place outside of the public domain. The Applicant contends that potential for wake effects is not commonly considered at either the application stage or Examination stage in an EIA context for UK offshore wind development.
REP4-048.20	Mitigating wake effect 3.14 The Applicant has indicated that to mitigate the wake effects of the Project, the distance between the Project and the Ørsted IPs developments requires to be increased by decreasing the Project's array area. The Applicant has stated that to do so would have a "disproportionately greater effect on the new clean energy generation" compared to the "lesser effect any greater distance would have on mitigating wake effects on the existing projects".	The Applicant has responded to potential mitigation options in response to the ExA Q2 question 2.8 (ii) in document reference S_D5_5. The Applicant has prepared a Technical Note on the Calculation of the Net Effects on Greenhouse Gas Emissions (S_D5_20) which has further evidenced that the avoided emissions arising from the operation of the Morgan Generation Assets greatly exceed any loss in avoided emissions by Ørsted IPs projects resulting from potential wake effects; and that the implementation of indicative mitigation by the Morgan Generation Assets to reduce the potential wake effects on the Ørsted IPs projects would result in a large loss of avoided emissions, due to the decrease in the Annual Energy Production of the Morgan Generation Assets, that outweigh those lost by the Ørsted IPs projects as a result of wake effects.
REP4-048.21	3.15 First, the Ørsted IPs agree that reducing the array area would likely mitigate the wake effects of the Project. However, a number of other steps could be taken to mitigate this effect, including design and operational changes such as installing a smaller number of larger turbines, reducing capacity, wind sector management or exploring new technologies such as wake steering. However, before such measures can be considered, the Applicant must first assess the impact of its Project on the Ørsted IPs' developments.	

Reference	Orsted IP's submission	Applicant's response
REP4-048.22	3.16 Further, the Ørsted IPs do not consider the Applicant is in a position to state that reducing the Project's array area would be disproportionate, having not undertaken an assessment of the Project's effects on wake and given its continuous refusal to do so. This is particularly true in light of the potential for the Project to impact long-term decisions regarding the lifetime of Ørsted IPs' developments (as noted in REP3-053).	
REP4-048.23	Uncertainty in the offshore wind industry 3.17 The Applicant has stated that, if a requirement was included in the Development Consent Order ("DCO") requiring a wake loss assessment that this would "create further uncertainty in the offshore wind development industry, leading to significant project risk and ultimately could affect the net-zero strategy of the UK leading to longer term negative impacts on the cost of energy (and security)."	The Applicant notes this point.
REP4-048.24	3.18 The Ørsted IPs reiterate their position that the Applicant should be required to assess and develop mitigation for the Project's wake effect prior to the close of the examination.	The Applicant has already set out at length its position on its interpretation of the EIA and NPS requirements with regard to consideration of wake loss and does not repeat them here. Notwithstanding this, the Applicant has produced a technical note which calculates the net effects of Greenhouse Gas emissions (S_D5_20) that gives consideration to the implications of any indicative mitigation from the Morgan Generation Assets project on the Ørsted IPs assets, and set this in the context of the overarching objectives of the combined projects contribution to reducing greenhouse gas emissions. The Applicant cross refers the Ørsted IPs to this response. With regard to the point relating to the perceived need for projects to properly assess and mitigate wake effects of their development on existing schemes, the Applicant cross refers Ørsted IPs to the following: • S_D5_4.1 Annex 4.1 (Annex to Applicants Response to Orsted IPs D4 submission); and • S_D5_4 (Applicants response to ExQ2), specifically responses to INF 2.6 and 2.8
REP4-048.25	3.19 However, we do not agree that a requirement would have the impacts the Applicant alleges. We note that if an applicant wished to avoid any uncertainty created by such a DCO requirement, they could instead choose to follow the requirements of the NPS-EN3, and assess and mitigate the effects of their development ahead of submission to the planning inspectorate.	
REP4-048.26	3.20 Additionally, we consider that if mitigating the effects of the Project would result in "significant project risk", this suggests that the potential effects of the Project in terms of wake loss are also likely significant.	
REP4-048.27	3.21 Additionally, the Ørsted IPs consider that a considerable risk exists that, if applicants for offshore wind development are not required to properly assess	

Reference	Orsted IP's submission	Applicant's response
	and mitigate the effects of their development on existing developments, existing and planned developments will be faced with considerable uncertainty regarding the energy yield and viability of their developments. Prospective developments would need to account for the potential for new developments to have a material impact on their energy yield, with no prospect of that being mitigated or compensated for (or even properly assessed). This cost would likely result in the increase in cost of electricity. If wake loss is not assessed, it creates uncertainty for owners of existing developments regarding the long-term viability of their developments.	
REP4-049.1	Wood Thilsted Wake Impact Assessment report Irish Sea Cluster - Ørsted	The Applicant has responded to the Ørsted IPs Wood Thilsted Wake Impact Assessment Report in response to ExQ2 INF 2.4 ii) in document reference S_D5_5.4.
REP4-051.1	**Appendix 1 – The Crown Estate's submission in the Outer Dowsing Offshore Wind Farm (Generating Station) (provided separately)** Please see below The Crown Estate's response to Outer Dowsing Offshore Wind (Generating Station) Examination - Question ExQ1 OG 1.2 of the Examining Authority's written questions and requests for information, issued on 6 th November 2024. **1. Can the Crown Estate clarify if the minimum 7.5km distance requirement between Leasing Round 4 projects takes the potential for wake effects into account?** • The buffer/stand-off between wind farms (unless developers consent to closer proximity) is a separation distance to enable developers to develop, operate and maintain wind farms by allowing for a range of factors including amongst other matters, wake effects, navigation, and safety.	The Applicant notes the inclusion of the Outer Dowsing Offshore Wind Farm submission from The Crown Estate (TCE) submitted by the Ørsted IPs. As set out in the Applicant's response to item REP3-070.7 of document REP4-009, the Applicant considers that the responses of TCE are supportive of the Applicant's position. It confirms that wake effects were considered by TCE when determining the buffer distance between wind farms. TCE note that this increased distance, relative to previous bidding rounds where it was 5 km, was for the purpose of de-risking the Round 4 tender process by providing additional mitigation and assurance to participants through limiting proximity to other OWFs, or in other words, ensuring they were not close to each other.
REP4-051.2	• The 2019 Information Memorandum ahead of Offshore Wind Leasing Round 4 set out the requirement that "*Projects may not be located within 7.5 km of an*	

Reference	Orsted IP's submission	Applicant's response
	existing offshore wind farm (meaning a wind farm at any stage of development which has been awarded an agreement for lease or lease from The Crown Estate) unless the owner of the existing offshore wind farm has given its written consent"	
REP4-051.3	• This 7.5km was used for the purpose of processing project proposals in the tender only, being higher than the 5km buffers that are specified within the seabed lease agreements (introduced in Round 3); this was for the purpose of de-risking the Round 4 tender by providing additional mitigation and assurance to participants through limiting proximity.	
REP4-051.4	• The Crown Estate acknowledges that inter-farm wake effects can extend beyond these buffer distances. TCE also notes that the spatial and temporal variability of wind speed means that it is complex to accurately predict the wake impact on nearby wind farms, which may depend upon factors beyond distance – e.g. prevailing wind direction and wind farm layout.	
REP4-051.5	• The location of a wind farm within an area of seabed leased from The Crown Estate is for developers to decide and design for, subject to obtaining the necessary consents and The Crown Estate's approval.	
REP4-051.6	**2. The Crown Estate is invited to comment on the purpose of the Offshore Wind Leasing Programme Array Layout Yield Study and any implications for the project.** • As outlined in the Introduction section of the Offshore Wind Leasing Programme Array Layout Yield Study by Frazer-Nash published on the Marine Data Exchange in November 2023: "The objective of this present study is to provide generic evidence to support TCE's design of future offshore wind leasing programmes from an aerodynamic loss perspective. Specifically, the influence of key PDA (project development area) design parameters on wind farm production are assessed using	

Reference	Orsted IP's submission	Applicant's response
	an updated engineering wake model with more realistic accounting of farm-to-farm wake and farm blockage effects"	
REP4-051.7	• The report summarises modelling applied to generic/hypothetical wind farms and does not replace the need for project-specific analysis	
REP4-051.8	• The published report included findings on inter-farm wake effects for generic scenarios. As with any technical evidence, this can be beneficial to the sector to inform decision making and analysis; appropriate selection and application of this or other studies and evidence to specific projects is for developers to determine.	
REP4-051.9	• As this report was completed during 2023 it has no direct link to the buffer zones set out in the 2019 Information Memorandum for Offshore Wind Leasing Round 4	

2.7 Scottish Fishermen's Federation and West Cost Sea Products Ltd

Table 2.7: REP4-050 – Scottish Fishermen's Federation and West Cost Sea Products Ltd.

Reference	Scottish Fisherman's Federation submission	Applicant's response
REP4-050.18	**Section II** Actions from the ISH2 Session: Action# 16. Sottish Fishermen's Federation (SFF) and West Coast Sea Products (WCSP): Submit responses (either separate or combined) to ExA Written Questions outstanding from Deadline 3. SFF & WCSP Response: See section I of this response.	The Applicant acknowledges the response with thanks and has provided responses to Scottish Fishermen's Federation (SFF) and West Coast Sea Products Ltd (WCSP) responses to ExA questions from Deadline 3.
REP4- 050.19	**Action # 17. SFF**: Provide further evidence of the extent of existing and recent (last three years) pelagic fishing activity in and adjacent to the Morgan Proposed Development, describing seasonal characteristic relating to the scallop fishery in the same sea space. **SFF Response**: The data covering the herring fishing on eastern side of the Isle of man spans from 1994 to 2023 mainly in months July-October, and includes also two instances (2017 & 2022) of the track lines from the scientific survey of herring that one boat is chartered to undertake for DAERA as part of the data that goes into the stock assessment of herring in the Irish sea. I hope the applicant is discussing with DAERA how the array will affect fisheries surveys, because this is becoming a problem in the North Sea herring surveys too. (See Plotter data screenshot below). (see figure There has been no gear conflicts reported between pelagic and Queen Scallop fisheries in the Morgan OWF Array Area.)	The Applicant has noted the response from the SFF and acknowledges their observations made with regard to spatial extent of historic and current pelagic herring fishing activity in relation to the Morgan Array Area. While it is noted that the SFF's conclusions are based on their plotted data that is not publicly available, spatial distribution of fishing activity using Vessel Monitoring System (VMS) data, supported by feedback from project-specific consultation and other sources of data (i.e. observations from Offshore Fisheries Liaison Officers and Marine Traffic Survey data) within Volume 4, Annex 6.1: Commercial fisheries technical report (APP-059) concurs with this conclusion and aligns with the observation depicted in the SFF's plotted data that a relatively small, northwest section of the Morgan Array Area overlaps with this fishery. The SFF's plotted figure shows that the vast majority of herring fishing activity takes place outside of the Morgan Array Area, specifically within Isle of Man waters and the Douglas Bank herring fishery. Additionally, APP-059 states that the Douglas Bank herring fishery is subject to an annual closure from 21 September to 15 November. Landing statistics indicate that August and September are the most important months for this fishery, which partially aligns with the SFF's observation, as these months fall within the broader October-July period. The Applicant understands that the herring fishery within the commercial fisheries study area has not been particularly active in recent years, particularly concerning the Scottish fleet. However, as highlighted by the Applicant during Issue Specific Hearing (ISH) 2 and in Volume 2, Chapter 6: Commercial fisheries (APP-024), pelagic herring vessels operating in the area are not just limited to Scottish vessels. Herring vessels are identified as a distinct receptor group in APP-024 and have been fully assessed within the impact assessment, with the receptor group primarily consisting of

Reference	Scottish Fisherman's Federation submission	Applicant's response
		vessels from Northern Ireland. Relevant stakeholders have been actively and thoroughly engaged throughout the consultation process. During a project-specific meeting with the Anglo-North Irish Fish Producers Organisation (ANIFPO) and the Northern Irish Fish Producers Organisation (NIFPO) on 01 December 2022, it was confirmed that all 28 Northern Irish vessels identified within the commercial fisheries study area operate outside the Morgan Array Area. Northern Irish fisheries targeting herring and Nephrops predominantly operate in the Liverpool Bay area (See Appendix G.16 of the Technical Engagement Plan Appendices - Part 5 (Appendix E to L) (APP-093)). The Applicant is aware of the summer annual acoustic herring surveys and the autumn herring larval surveys carried out within the Irish sea region by Agri-Food Bioscience Institute (AFBI) using the vessels Havilah and Corystes. A very small proportion of these surveys transects occur within the Morgan Array Area. These surveys are carried out in close coordination with the Isle of Man Department Environment Food and Agriculture (DEFA), Anglo-North Irish Fish Producers Organisation (ANIFPO) the Northern Irish Fish Producers Organisation (NIFPO). Consultation with these stakeholders has not raised concern over the projects' impact on the ability of the annual herring surveys to continue within Morgan Array Area. The Applicant understands that the Department of Agriculture, Environment and Rural Affairs (DAERA) manages the Mourne Inshore Herring Fishery which lies within the Western Irish Sea and was therefore not identified as a consultee. The Applicant also notes that the wind turbine spacing within the Morgan Array Area is believed to be the largest of any offshore wind farm project in UK waters. This spacing has been specifically designed to maximise accessibility and facilitate continued fishing activity within the Morgan Array Area for all fishing vessels, including pelagic vessels, during the operations and maintenance phase. The Applicant also acknowledges the response regarding the absence of gear conflict due to the spatial overlap between scallop and pelagic fishing activities.

Reference	Scottish Fisherman's Federation submission	Applicant's response
REP4- 050.20	**Action# 22. SFF**: Submit any evidence regarding effects on shellfish populations at other OWFs. **SFF Response**: the SFF is of the view that there are a lot of unknown regarding the OWFs effects on marine environment, especially fish and shellfish populations/stocks. Therefore, we propose sufficient science around the impacts of OWFs should be present to show the OWFs have no effects on marine environment. Following are some articles/research papers that show possible OWFs/subsea power cable effects e.g. EMF effects on Crab, Haddock larvae from subsea power cables, and more. Understanding the effects of electromagnetic field emissions from Marine Renewable Energy Devices (MREDs) on the commercially important edible crab, Cancer pagurus (L.) : Exposure to Electromagnetic Fields (EMF) from Submarine Power Cables Can Trigger Strength-Dependent Behavioural and Physiological Responses in Edible Crab, Cancer pagurus (L.) Underwater cables stop crabs in their tracks Magnetic fields produced by subsea high-voltage direct current cables reduce swimming activity of haddock larvae (Melanogrammus aeglefinus) Exposure to magnetic fields from subsea cables slows down haddock larvae, study finds Acoustic Impacts of Offshore Wind Energy on Fishery Resources: An Evolving Source and Varied Effects Across a Wind Farm's Lifetime:	The Applicant has provided a robust and detailed impact assessment drawing upon the best available scientific literature in relation to the effects of offshore wind farms on fish and shellfish receptors. The assessment follows best practice guidance and advice for undertaking impact assessment on fish and shellfish populations, with extensive pre-application engagement with key stakeholders (e.g. statutory nature conservation bodies, the MMO and their scientific advisors, Cefas), and drawing upon the latest scientific evidence available to ensure a robust and accurate impact assessment. The impact assessment also draws upon appropriate site specific numerical modelling, including underwater noise modelling to assess effects of underwater noise during the construction and operation and maintenance phases of the project. Where there are uncertainties or gaps in the evidence base, these are acknowledged in the impact assessment and have been addressed (e.g. by making conservative assumptions in modelling/assessments) in line with the precautionary principle. In all cases the assessments are based on maximum design scenarios which are expected to overestimate the magnitude of impacts on fish and shellfish receptors. The Applicant would note that there is broad agreement on the assessment conclusions for fish and shellfish ecology with stakeholders involved in the Evidence Plan Process, including regulators, their scientific advisors and nature conservation bodies. Notwithstanding the lack of significant effects on fish and shellfish ecology (other than on cod and herring spawning where a specific mitigation strategy has been developed), the Applicant has committed to undertaking monitoring of king and queen scallops in acknowledgment of their importance to commercial fisheries in the region and to help further the scientific evidence base, alongside other fisheries research in the region. With specific respect to EMF, the Applicant has provided an analysis of the available published literature for potential EMF impacts on fish and shellfish in section 3.9.6 of Volume 2, Chapter 3: Fish and shellfish ecology (APP-021). This assessment takes into account a variety of design and installation considerations including cable design, insultation, cable configuration, burial depth, and both alternating and direct current, all of which could affect the levels of EMFs emitted into the environment directly surrounding the cables. These factors were considered alongside the range of assessed Important Ecological Features, which included fish, shellfish, and diadromous species, with all current available evidence on sensitivity of the relevant receptors. The assessment concluded that EMFs would result in effects of minor adverse significance in all cases, which is not significant in EIA terms and does not require further mitigation; this conclusion has been agreed with the MMO and their scientific advisors, Cefas. The Applicant welcomes the provided sources, with the EMF specific resources (Scott *et al.*, 2018; Scott *et al*., 2021, and Cresci *et al*., 2022) already assessed as part of section 3.9.6 of Volume 2, Chapter 3: Fish and shellfish ecology (APP-021). As such, the papers provided do not change the conclusions of the assessments presented. Additionally, commercial fisheries stakeholders consider monitoring of scallop to also be important to confirm the accuracy of the assessment presented in Volume 2, Chapter 6: Commercial fisheries

Reference	Scottish Fisherman's Federation submission	Applicant's response
	Could fish larvae be disturbed by offshore wind farms? Emergence of Large-Scale Hydrodynamic Structures Due to Atmospheric Offshore Wind Farm Wakes: Anthropogenic Mixing of Seasonally Stratified Shelf Seas by Offshore Wind Farm Infrastructure: **Conclusion:** On behalf of the SFF and WSCP we appreciate the opportunity to submit this written response and reiterate the SFF robustly objects to the application as it negatively impacts our members.	(APP-024) and Volume 2, Chapter 3: Fish and shellfish ecology (APP-021). The Applicant has acknowledged this and has therefore included a new commitment to include a scallop monitoring programme within the OFLCP (REP4-021). Development of this monitoring programme will consider methodologies from other regional monitoring programmes and input from key fisheries stakeholders and will be cognisant of similar commitments made by the Mona Offshore Wind Project. This will serve to ensure a more comprehensive evidence base is established.