Morecambe Offshore Windfarm: Generation Assets

Examination Documents

Volume 9

The Applicant's Comments on Written Representations

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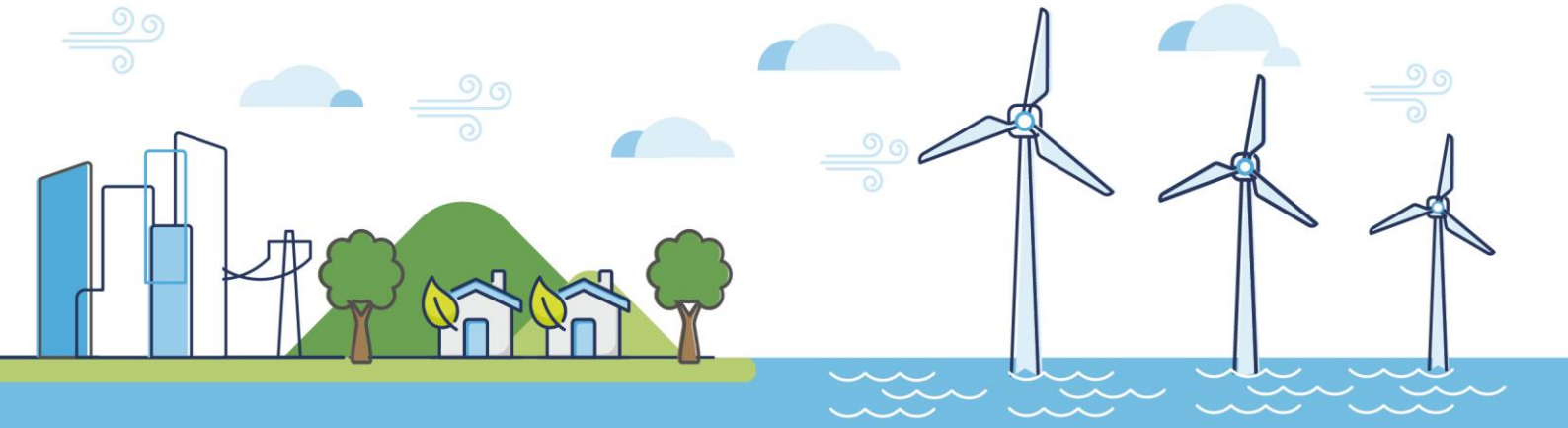
Rev 01



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Glossary of Acronyms

ADD	Acoustic Deterrent Device
AfL	Agreement for Lease
AEoSI	Adverse effect on site integrity
AEZs	Archaeological Exclusion Zones
AHV	Anchor Handling Vessel
AIS	Automatic Identification System
ALARP	As Low As Reasonably Practicable
AMSL	Above mean sea level
AONs	Automatic Obsolescence Notification System
ARA	Airborne Radar Approach
ARPA	Automatic Radar Plotting Aid
BTO	British Trust for Ornithology
CAA	Civil Aviation Authority
CAT	Commercial Air Transportation
CCRA	Climate Change Resilience Assessment
CCUS	Carbon Capture Utilisation and Storage
CEA	Cumulative Effects Assessment
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CGNS	Celtic and Greater North Seas
CIS	Celtic and Irish Sea
CO_2	Carbon Dioxide
CPC	Central Processing Complex
CRM	Collision Risk Modelling
CRNRA	Cumulative Regional Navigational Risk Assessment
DAERA	Department of Agriculture, Environment and Rural Affairs
DCMS	Department for Culture, Media and Sport
DCO	Development Consent Order
DMAC	Diving Medical Advisory Committee
dML	Deemed Marine Licence
DRC	Dose-Response Curve
EDR	Effective Deterrent Range
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EN-3	The National Policy Statement for Renewable Energy Infrastructure

EPS	European Protected Species
ERRV	Emergency Response and Rescue Vehicle
ES	Environmental Statement
ETG	Expert Topic Groups
EU	European Union
EWG	Expert Working Group
ExA	Examining Authority
GBBG	Great Black Backed Gull
GHG	Greenhouse Gas
GIS	Geographic Information Systems
HBMCE	Historic Buildings and Monuments Commission for England
HE	Historic England
HRA	Habitat Regulations Assessment
HSC	Historic Seascape Character
HSE	Health and Safety Executive
IEMA	Institute of Environmental Management and Assessment
IFC	Instrument Flying Conditions
IFR	Instrument Flying Rules
IMC	Instrument Meteorological Conditions
IP	Interested Parties
iPCoD	Interim Population Consequences of Disturbance
IPMP	In Principle Monitoring Plan
IRPA	Individual Risk Per Annum
ISH1	Issue Specific Hearing 1
JNCC	Joint Nature Conservation Committee
JOGAA	Joint Oil and Gas Aviation Audit
LBBG	lesser black-backed gull
LF	Low Frequency
LPA	Local Planning Authority
M&DE	Morecambe Bay and Duddon Estuary
MBES	multibeam echo sounder
MCA	Maritime and Coastguard Agency
MDS	Maximum Design Scenario
MIT	Maintenance, Inspection and Testing
MMMP	Marine Mammal Mitigation Plan
MGN	Marine Guidance Note

MMMU	Marine Mammal Management Units
MMO	Marine Management Organisation
MNZ	Morecambe Net Zero
MOD	Ministry of Defence
MSA	Minimum Sector Altitude
MU	Management Unit
NAS	Noise Abatement Systems
NE	Natural England
NFFO	National Federation of Fisherman's Organisations
NPI	Non-Production Installation
NPS	National Policy Statement
NRA	Navigation Risk Assessment
NRHE	National Record of the Historic Environment
NRW	Natural Resources Wales
NSIPs	Nationally Significant Infrastructure Projects
NSTA	North Sea Transition Authority
NUI	Normally Unmanned Installation
NWWT	North Wales Wildlife Trust
OEI	One Engine Inoperative
OEUK	Offshore Energy United Kingdom
OIM	Offshore Installation Manager
OMP	Operations and Maintenance Plan
ORJIP	Offshore Renewables Joint Industry Programme's
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
OWF	Offshore Windfarm
P&A	Plugging and Abandonment
PADSS	Principal Areas of Disagreement Summary Statement
PDA	Project development area
PDE	Project Design Envelope
PEIR	Preliminary Environmental Information Report
PEMP	Project Environmental Management Plan
PFEER	Prevention of Fire and Explosion, and Emergency Response
PINS	Planning Inspectorate
PSR	Primary Surveillance Radar
POB	Passenger (s) On Board

PTS	Permanent hearing threshold shift
PVA	Population Viability Analysis
QRA	Quantitative Risk Assessments
R&AE	Ribble and Alt Estuaries
RaDIN	Range dependent nature of impulsive noise
RAG	Red Amber Green
REWS	Radar Early Warning System
RIAA	Report to Inform Appropriate Assessment
RR	Relevant Representation
RSPB	Royal Society for the Protection of Birds
RTD	Red Throated Diver
SAC	Special Area of Conservation
SAR	Search and Rescue
SBP	Sub-Bottom Profiler
sCRM	Stochastic Collision Risk Model
SECE	Safety and Environmental Critical Elements
SELcum	Sound Exposure Level from cumulative exposure
SELss	Sound Exposure Level from single strike
SNCB	Statutory Nature Conservation Body
SoCG	Statements of Common Ground
SoS	Secretary of State
SPA	Special Protection Area
SPL	Seaward Production Licences
SSS	Side Scan Sonar
SSSI	Sites of Special Scientific Interest
SSSP	Skomer, Stockholm and the Seas Off Pembrokeshire
TAEZs	Temporary Archaeological Exclusion Zones
TCE	The Crown Estate
TTS	Temporary Threshold Shift
UK	United Kingdom
UKCOS	The UK Chamber of Shipping
UKCS	United Kingdom Continental Shelf
UWSMS	Underwater Sound Management Strategy
UXO	Unexploded ordnance
VFR	Visual Flight Rules
VCRA	Vessel Collision Risk Assessment

VTMP	Vessel Traffic Management Plan
WFA	Welsh Fishermen's Association
WoDS	West of Duddon Sands
WSI	Written Scheme of Investigation
WTG	Wind Turbine Generators

Glossary of Unit Terms

km	kilometre
km^2	square kilometre
m	metre
m^3	cubic metre
nt	nanotesla

Glossary of Terminology

Agreement for Lease (AfL)	Agreements under which seabed rights are awarded following the completion of The Crown Estate tender process.
Applicant	Morecambe Offshore Windfarm Ltd
Application	This refers to the Applicant's application for a Development Consent Order (DCO). An application consists of a series of documents and plans which are published on the Planning Inspectorate's (PINS) website.
Generation Assets (the Project)	Generation assets associated with the Morecambe Offshore Windfarm. This is infrastructure in connection with electricity production, namely the fixed foundation wind turbine generators (WTGs), inter-array cables, offshore substation platform(s) (OSP(s)) and possible platform link cables to connect OSP(s).
The Planning Inspectorate	The agency responsible for operating the planning process for Nationally Significant Infrastructure Projects.
Windfarm site	The area within which the WTGs, inter-array cables, OSP(s) and platform link cables would be present.

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1 Introduction

1. This document presents the Applicant's comments on written representations received from the following Interested Parties (IP) at Deadline 1:

   - Historic England (REP1-095) – **Section 2.1**
   - Marine Management Organisation (REP1-096) – **Section 2.2**
   - Natural resource Wales – **Section 2.3**
   - DLP Planning Ltd on behalf of BAE Systems (Marine) Ltd and BAE Systems (Operations) Ltd (REP1-100) - **Section 2.4**
   - Harbour Energy (REP1-102) - **Section 2.5**
   - Shepherd & Wedderburn on behalf of Ørsted IPs (REP1-112) (noting that the Applicant has also responded to Ørsted's Summary of Deadline 1 submission (REP1-111) in **Table 2.7**) – **Section 0**
   - Eversheds Sutherland on behalf of Spirit Energy (REP1-116) – **Section 2.7**

2. The Applicant has responded to Natural England's Risks and Issues Log (REP1-098) separately in The Applicant's Comments on Written Representations Appendix A: Applicant's Comments on Natural England Risk and Issue Log (Document Reference 9.33.1), submitted alongside this document at Deadline 2.

3. The Applicant has further responded to Spirit Energy's Deadline 1 submissions in the following documents, submitted alongside this document at Deadline 2:

   - The Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35)
   - The Applicant's Response to Spirit Energy Deadline 1 Submissions Appendix A: The Applicant's Comments on Spirit Energy and Harbour Energy Aviation Access Study Report (Document Reference 9.35.1)
   - The Applicant's Response to Spirit Energy Deadline 1 Submissions Appendix B: Helicopter Access IMC Corridor (Document Reference 9.35.2)
   - The Applicant's Response to Spirit Energy Deadline 1 Submissions Appendix C: Helicopter Supporting Information Technical Note (Document Reference 9.35.2)

4. As the owner of the Morecambe Offshore Windfarm Generation Assets, Morecambe Offshore Windfarm Ltd is the named undertaker that has the

benefit of the Development Consent Order (DCO). References in this document to obligations on, or commitments by, 'the Applicant' are given on behalf of Morecambe Offshore Windfarm Ltd as the undertaker of Morecambe Offshore Windfarm Generation Assets.

2 Comments on written representations

5. The Applicant's comments on written representations are presented in **Sections 2.1 – Section 2.7.**

2.1 Historic England (REP1-095)

Table 2.1 The Applicant's comments on HEs written representation

ID	Written Representation	Applicant comment
WR-095-01	PLANNING ACT 2008 (AS AMENDED) – SECTION 88 AND THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010 (AS AMENDED) – RULE 6 APPLICATION BY MORECAMBE OFFSHORE WIND LTD FOR AN ORDER GRANTING DEVELOPMENT CONSENT FOR THE MORECAMBE OFFSHORE WIND FARM GENERATION ASSETS PROJECT APPLICATION REF: EN010121 SUBMISSION DEADLINE: 26th November 2024 WRITTEN REPRESENTATION OF THE HISTORIC BUILDINGS AND MONUMENTS COMMISSION FOR ENGLAND (HISTORIC ENGLAND) REGISTRATION ID No: 20049980	The Applicant notes this response.
WR-095-02	**Written Representation: Historic England** **Summary** Historic England is the Government's statutory adviser on the historic environment. It is our duty under the National Heritage Act 1983 to secure the preservation and enhancement of the historic environment. This extends to sites and places in, on, or under the seabed within the seaward limits of the UK Territorial Sea adjacent to England. Our objective is to ensure that the historic environment generally, and marine and designated heritage assets especially, are fully considered in the determination of this DCO.	The Applicant notes this response.
WR-095-03	The Historic Buildings and Monuments Commission for England (HBMCE), known as Historic England, is the Government's adviser on all aspects of the historic environment in England including historic buildings and areas, archaeology and historic landscape with a duty to	The Applicant notes this response.

ID	Written Representation	Applicant comment
	promote public understanding and enjoyment. Historic England is an executive Non-Departmental Public body sponsored by the Department for Culture, Media and Sport (DCMS) and we answer to Parliament through the Secretary of State DCMS. Our remit in conservation matters intersects with the policy responsibilities of a number of other government departments particularly those with responsibilities for planning matters. The National Heritage Act (2002) gave Historic England responsibility for identifying sites for designation within the English area of the UK Territorial Sea (i.e. English Inshore Marine Planning Area). We also provide our advice in reference to how the historic environment is included within marine planning and licensing provisions within the Marine and Coastal Access Act 2009.	
WR-095-04	We have provided substantive pre-application advice about the scope of environmental assessment and the PEIR. We have also submitted a Relevant Representation (dated 19th August 2024). The applicant has provided an Environmental Statement with supporting appendices and other documentation with the application. We have therefore considered this information and we hereby provide detailed comments, expanding on the matters highlighted in our Relevant Representation (PINs Document Ref: RR-030).	The Applicant notes this response.
WR-095-05	Historic England do not object in principle to the Proposed Development and we summarise our position as follows:	The Applicant notes this response.
WR-095-06	i) The Environmental Statement contains a geoarchaeological review of geophysical and geotechnical data acquired for this project and Appendix 15.1 contains a very useful set of recommendations for future work, should this project gain consent.	The approach to delivering further work post-consent is set out in the Outline Offshore Written Scheme of Investigation (WSI) (APP-154).
WR-095-07	ii) The application includes an Outline Marine Written Scheme of Investigation (WSI) as a mitigation action which should inform the production of a WSI to support archaeological assessment of further survey data acquired post-consent (should consent be obtained).	The requirement for a WSI, informed by the Outline Offshore WSI (APP-154), to support archaeological assessment of further survey data to be acquired post-consent in captured in conditions 9(1)(f) and condition 9(2) of the Deemed Marine Licence (dML)

ID	Written Representation	Applicant comment
		included within the draft Development Consent Order (DCO) (PD1-002).
WR-095-08	iii) The draft DCO includes a Deemed Marine Licence which includes conditions for WSIs. However, we recommend that the wording requires review to ensure implementation in the crucial post-consent and pre-construction phase to inform the planning and engineering design, and delivery of the proposed project.	This matter was discussed with Historic England on 2nd December 2024 and it was agreed that, together with condition 9(2), which addresses pre-commencement surveys, and condition 10(1), that the WSI must be submitted for approval at least four months before the intended commencement of licensed activities, the currently proposed wording of condition 9(1)(f) does not need further amendment. Additional clarity on the relationship between these conditions, and the delivery of the measures agreed through the WSI, will be captured in the In Principle Monitoring Plan (IPMP) (APP-148), to be updated at Deadline 3, and this will be agreed between the Applicant and Historic England through a Statement of Common Ground (SoCG).
Introduction		
WR-095-09	This Written Representation sets out the views of Historic England on the proposed Development Consent Order (DCO) application made by Morecambe Offshore Wind Ltd for the proposed Morecambe Offshore Wind Farm Project: Generation Assets.	The Applicant notes this response.
WR-095-10	The application explains that the size and capacity of Wind Turbine Generators (WTGs) for the Proposed Development will be determined during the final project design stage i.e. post consent, should permission be obtained, and that this Environmental Statement (ES) assess a maximum design scenario for the WTGs as a “worst case” scenario. Inter-array cables will connect the WTGs to a maximum of two offshore substations, and that electricity export to landfall on the Lancashire coast is subject to separate DCO application as	The Applicant notes this response.

ID	Written Representation	Applicant comment
	transmission assets in conjunction with the Morgan Offshore Wind Generation Assets (PINs Ref: EN010136).	
WR-095-11	The submitted application includes an ES, dated May 2024, produced to satisfy the requirements of Environmental Impact Assessment (EIA) requirements, under the terms of European Union Directive 2011/92/EU (as amended by Directive 2014/52/EU)) on the assessment of the effects of certain public and private projects on the environment (EIA Directive). The EIA Directive is transposed into English law for Nationally Significant Infrastructure Projects (NSIPs) by The Infrastructure Planning (EIA) Regulations 2017.	The Applicant notes this response.
WR-095-12	In our Section 56 Relevant Representation (dated 19th August 2024) we noted that this development has the potential to impact the historic environment, and that this impact could be significant in relation to a number of heritage receptors and in relation to EIA policy.	The Applicant notes this response.
Comments on Environmental Statement: Volume 5, Chapter 5 – Project description (Document Reference: 5.1.5) PINS Reference: APP-042		
WR-095-13	We note the explanation that a 2.5-year construction phase is anticipated and that the operation and maintenance phase could be for 35 years with a Crown Estate seabed lease for 60 years, it is therefore possible that “repowering activities” could extend the operational phase of the windfarm. We also acknowledge the use of a design envelope approach (known as Rochdale Envelope) to identify key design assumptions to produce realistic worst-case scenarios. Furthermore, that the environmental assessment retains flexibility to accommodate further refinement (should the proposed project secure consent).	The Applicant notes this response. It should be noted that repowering would require a new consent application. The Applicant at Deadline 1 provided further information in the response to hearing actions on the Project operational period, noting that new consent would be required for foundation replacement (refer to Response to Actions arising from Preliminary Meeting and Issue Specific Hearing 1 (ISH1) (REP1-086)).
WR-095-14	Section 5.2 (Project design envelope), details two Wind Turbine Generator (WTG) scenarios within the Project Design Envelope (PDE):	The Applicant notes this response.

ID	Written Representation	Applicant comment
	▪ 35 smaller WTGs (maximum blade tip height 290m); and ▪ 30 larger WTGs (maximum blade tip height 310m)	
WR-095-15	The proposed development location is described as being located within eastern Irish Sea with the closest point to the English coastline 30km away. However, we are aware of the proposed Morgan Generation Offshore Wind Farm (presently in examination), which could be built to the west of the proposed Morecambe Generation Assets project and that development consent was granted for the Awel y Môr Offshore Wind Farm in September 2023, located 29km to the south of the proposed Morecambe array in the Welsh marine planning area.	Each of the identified offshore windfarms are included in the cumulative effects assessment presented in Section 15.7 of Chapter 15 Marine Archaeology and Cultural Heritage (APP-052). Furthermore, the Applicant submitted a Report on Interrelationships with Other Infrastructure Projects (REP1-078) at Deadline 1 which noted how the cumulative effects for marine archaeology and cultural heritage had not changed following the change in status of several projects, including the Morgan Offshore Wind Project: Generation Assets.
WR-095-16	Section 5.5.2 states that up to two Offshore Substation Platforms (OSPs) and section 5.5.3 described the foundation designs under consideration inclusive of: ▪ Gravity Base Structures (GBS); ▪ Multi-legged pin piled jacket foundations; ▪ Multi-leg suction bucket jacket foundations; and ▪ Monopile.	The Applicant notes this response.
WR-095-17	Paragraph 5.4.1 mentions the use of “mudmat foundation” in conjunction with GBS, and that the anticipated maximum seabed penetration could be 1.5m (Table 5.14), which will require preparation, as described in paragraph 5.92. For multi-leg foundations with pin piles, the maximum diameter could be 3m with 56m penetration. If multi-leg foundations with suction buckets are deployed, the maximum diameter could be 20m with 25m seabed penetration. Monopile diameter is estimated to be 12m (56m seabed penetration).	The Applicant notes this response.
WR-095-18	The target depth of inter-array cable installation should be between 0.5m and 3m (target depth 1.5m), and we note the detail provided in	The approach to delivering archaeological analysis of pre-commencement surveys, and how this will

ID	Written Representation	Applicant comment
	sub-section 5.6.2.3 regarding anticipated seabed clearance works to be conducted pre-installation. For example, boulder clearance and pre-lay grapnel runs prior to inter-array cable laying. It is therefore relevant that analysis is conducted of pre-commencement surveys to actively inform inter-array cable route selection to determine the proximity of cable installation to features of known or possible archaeological interest.	actively inform the design of offshore infrastructure, is set out in the Outline Offshore WSI (APP-154).
Comments on Environmental Statement: Volume 5, Chapter 6 – Environmental impact assessment methodology (Document Reference: 5.1.6) PINs Reference: APP-043		
WR-095-19	This Nationally Significant Infrastructure Project (NSIP) is subject to an EIA produced in accordance with the Infrastructure Planning (EIA) Regulations 2017. We understand that the accompanying ES should explain the predicted likely significant effects (positive and negative) and the scope for avoiding, preventing, reducing, and if possible, offsetting any identified significant adverse effects on the environment (defined as inclusive of archaeological heritage).	The Applicant notes this response.
WR-095-20	We appreciate the attention given to the Evidence Plan Process (Section 6.5.3) and the use of Expert Topic Groups (ETGs) as summarised in Table 6.4. We note the attention given in section 6.6.3 to mitigation and comprise “embedded” and “additional” techniques and that a range of measures that have been designed to reduce or prevent significant adverse effects arising are set out in a Schedule of Mitigation (Applicant Document Reference: 5.5; PINs Reference: App-144).	The Applicant notes this response.
Comments on Environmental Statement: Volume 5, Chapter 15 – Marine archaeology and cultural heritage (Document Reference: 5.1.15) PINs Reference: APP-052		
WR-095-21	We note the attention given to EN-3 (published in November 2023) and we are aware that EN-3 (see paragraph 2.8.315) sets out that sufficient and adequate mitigation is applicable as much to known wreck (of historic environment interest) as for discoveries that may	The Applicant notes this response.

ID	Written Representation	Applicant comment
	occur when high resolution surveys are commissioned post-consent, should permission be obtained.	
WR-095-22	Table 15.2 (key parameters for assessment) the Applicant set out the following maximum design scenario: ▪ 35 WTGs on Gravity Base Foundations (GBFs), two OSP on GBSs, the description is noted that a GBS could have a diameter of 65m plus 10m 'disturbance' zone.	The Applicant notes this response.
WR-095-23	Table 15.2 describes different potential impacts during construction, operation and decommissioning, with impacts considered inclusive of jack-up vessels in reference to the described maximum design scenario.	The Applicant notes this response.
WR-095-24	Section 15.3.3 (Summary of mitigation embedded in design), we concur with the decision to place AEZs, either individually or in cluster configuration, as specified in Table 15.23, use of Temporary AEZs (TAEZ), as specified in Table 15.24, and micro-siting as "embedded" mitigation measures for known heritage assets. However, it is insufficient to depend on a reporting protocol system for "unexpected discoveries". It is essential that the Applicant acknowledges that reporting after impact does not mitigate harm. The function of a reporting protocol system is to facilitate rapid communication between identified parties to aid efficient decision making. In consideration of the advice provided during pre-application on this point, we highlight the attention given in Table 15.5 to the heritage policy in the published North West marine plan. In particular, differentiating between embedded (i.e. avoidance) and "offsetting" measures given that it will not be possible to "repair damage" to archaeological materials, as acknowledged by the Applicant in paragraph 15.70.	This matter was discussed with Historic England on 29th August 2024 and 2nd December 2024 and appropriate wording confirming this is not a principal area of disagreement between the Applicant and Historic England will be agreed between the Applicant and Historic England through the SoCG.
WR-095-25	Section 15.4.2 (Data and information sources), we are aware that geophysical site characterisation survey was commissioned by the Applicant for the proposed array area and that survey data acquisition was conducted between October and November 2021 and comprised	The Applicant notes this response.

ID	Written Representation	Applicant comment
	Side Scan Sonar (SSS), Multi-Beam Echo Sounder (MBES), Magnetometer and Sub-Bottom Profiler (SBP), obtained between July to October 2023. We are also aware that the professional and accredited archaeological sub-contractor responsible for analysis of the survey data determined that data was of "good quality overall" with 100% coverage for SSS and MBES. Furthermore, SBP (conducted in two phases) and magnetometer data were both considered to be "suitable" i.e. coverage and seabed penetration and identification of ferrous material >50kg respectively and therefore that "robust archaeological assessment" was possible including the identification of a "large magnetic anomaly (i.e. >100nT) (Referenced as MC22_MAG_0254, Figure 15.4). In reference to marine geotechnical survey programmes conducted to date, we appreciate that samples obtained to data have been assessed (e.g. as summarised in Table 15.8), but that further geotechnical investigations are planned to be undertaken in 2024 (paragraph 15.46).	
WR-095-26	Sub-section 15.4.4 (Historic seascape character), it is important to acknowledge that the primary purpose of Historic Seascape Character (HSC) is to provide context for heritage assets as could be located within a particular area. We concur that it is not possible to identify 'magnitude of impact' on HSC, and furthermore, the focus for attention should not be on HSC as "perceived by the public". Perception of change should be that of the Applicant in consideration of change such as through energy transition from hydrocarbon (oil and gas production) to renewables generating electricity and in reference to other relevant ES chapters.	The Applicant notes this response.
WR-095-27	Sub-section 15.5.1 (Seabed prehistory), it is apparent that palaeoenvironment evidence is complex, but that the professional option is that there is potential to encounter preserved artefacts and archaeological material in the proposed development location. However, in reference to Table 15.14 and the identified Quaternary sedimentary sequence, it is apparent that there could be some archaeological potential associated with Units 1 and 2. The	Subsequent to submission, the geoarchaeological assessment (Stage 1 review of geotechnical logs) of vibrocores and boreholes, acquired in 2024, has shown only the presence of marine and glacial deposits. The deposits conform to the Quaternary sedimentary sequence identified in Table 15.14 (Chapter 15 Marine Archaeology and Cultural

ID	Written Representation	Applicant comment
	recommendation is noted that further investigation and geoarchaeological analysis could help to address present “gaps in understanding” (paragraph 15.121). It is therefore relevant that any outline WSI prepared for this project sets out research questions as could be addressed by any further programme of analysis with measures identified to support corroboration with shallow seismic geophysical data.	Heritage (APP-052)), and document the transition from a glacial, to glaciomarine and finally marine environment during the Weichselian and Holocene. There is no evidence of deposits that formed in a subaerial, temperate environment that would have been suitable for inhabitation. Therefore, further assessment has not been recommended and there are no further research questions relating to further programmes of analysis relating to this topic. These results were discussed in consultation with Historic England on 29th August 2024 and 2nd December 2024 and a technical note with the results of the geoarchaeological review of geotechnical logs will be provided to Historic England. Consultation will be ongoing whilst there remain survey results for Historic England to review.
WR-095-28	Sub-section 15.5.2 (Maritime and aviation archaeology), 21 anomalies of potential archaeological interest were identified within the proposed development area; of these 4 were considered to have “medium” potential, none of which correspond with any UKHO or National Record of the Historic Environment records (NRHE) and 17 “low” potential anomalies. Furthermore, it is explained that only two UKHO records are spatially identified within the proposed array area and no corroboration was possible with geophysical data. We also note the conclusion that given the review of both desk-based sources of information and interpretation of geophysical survey data acquired to date, the potential (i.e. risk of encountering presently unknown archaeological materials) is considered to be “low”. However, areas of mobile sand waves could contain presently undetected buried material and that higher resolution geophysical data acquisition campaigns could also reveal the presence of presently unknown sites of possible archaeological interest (paragraph 15.151).	The approach to delivering archaeological analysis of higher resolution surveys, post-consent, is set out in the Outline Offshore WSI (APP-154).

ID	Written Representation	Applicant comment
WR-095-29	Sub-section 15.5.3 (Coastal heritage assets), we note the reference made to a high-level screening assessment and the focus directed at heritage assets "…with views out to sea or which have a relationship to the sea which forms part of their setting…" (paragraph 15.162). We note that 73 heritage assets were thus identified, as described in paragraph 15.163, and that in reference to visual assessment techniques, 37 were selected for detailed assessment which were thought could be affected by the proposed development.	The Applicant notes this response.
WR-095-30	Sub-section 15.5.4 (Historic seascape character), it is not entirely clear why this subject matter is addressed in two separate sub-sections in this chapter (see also 15.4.4). In reference to Table 15.22 we do not agree with the attempt to identify public perception or how it is thought the project could accommodate change in reference to broad character type e.g. fishing. It is apparent that given identified techniques of dredging and bottom trawling as character sub-types, this proposed development will change identifiable historic seascape character. However, given that historic seascape character is only designed to provide context and in consideration of the assessment of records and survey data presented in this chapter (as described above), we have no further comment to offer.	Section 15.4.4 of Chapter 15 Marine Archaeology and Cultural Heritage (APP-052) sets out the approach to the assessment of historic seascape character. Section 15.5.4 of Chapter 15 Marine Archaeology and Cultural Heritage (APP-052) sets out the results of the assessment. The Applicant agrees that historic seascape character is only designed to provide context, and as this is not an area of disagreement, and has no further comment.
WR-095-31	Section 15.6 (Assessment of effects), It is apparent that the overall conclusion of no significant effects arising from Morecambe Generation Assets during construction, operation and maintenance or decommissioning phases is predicated on implementation of embedded mitigation measures (e.g. AEZs). However, we appreciate the recognition of adaptive mitigation, as alluded to in paragraph 15.178 and the importance of archaeological analysis of high-resolution geophysical data undertaken for the purposes of UXO which could reveal the presence of presently unknown archaeological sites. In reference to the identified impacts, we offer the following comments:	The Applicant notes this response.

ID	Written Representation	Applicant comment
WR-095-32	▪ Construction Impact 2 (15.6.1.2) and Operations and Maintenance Impact 2 (15.6.2.2): Direct impact to potential heritage assets – we appreciate the identification of additional mitigation to address potential to have major adverse effects (paragraph 15.189) and identification of residual effects (e.g. as assumed in paragraph 15.202);	The Applicant notes this response.
WR-095-33	▪ Operations and Maintenance Impact 5 (15.6.2.5): Changes to the setting of coastal (terrestrial) designated heritage assets – we focus our attention on the identified Scheduled Monuments and Listed Buildings I and II* such that we have no further comment to offer regarding the conclusion offered in paragraph 15.240 ("…no change to the significance of the designated heritage assets would occur to due to changes in their setting.");	The Applicant notes this response.
WR-095-34	▪ Decommissioning Potential effects during decommissioning (15.6.3) – on the basis of the information supplied at this time we are minded to concur with the impact assessment conclusions determined by the Applicant;	The Applicant notes this response.
WR-095-35	▪ Cumulative effects (15.7) – we are minded to concur with the assessment set out in Table 15.25 e.g. "minor adverse" for Construction and Operations and Maintenance Phases "Impact 2";	The Applicant notes this response.
WR-095-36	▪ Cumulative assessment (15.7.3.1) – the Project and Transmission Assets (combined assessment) we appreciate the attention given by the Applicant to the separate DCO application for Morgan and Morecambe Offshore Wind Farms: Transmission Assets and consideration of impact at all identified project phases, as summarised in Table 15.27, and we have no further comment to offer;	The Applicant notes this response.
WR-095-37	▪ Interactions (15.10) – we note the assessment provided in Tables 15.29, 15.30 and 15.31 and the inclusion of Impact 4 ("Impacts to the setting of marine heritage assets and historic	The Applicant notes this response.

ID	Written Representation	Applicant comment
	seascape character"), however, while it is correct to include setting of heritage assets, this should not be conflated with any consideration of change as related to interpretation of historic seascape character.	
WR-095-38	Assessment summary – we agree with the statement made in paragraph 15.300 and 15.301. However, in paragraph 15.302 while we appreciate the reference made to the approach set out in the Outline OWSI, it is essential that all parties understand that should consent be secured for this proposed development, that WSIs are produced from the "outline" that are tailored and specific to each subsequent phase of delivery.	The Outline Offshore WSI (APP-154) sets out the approach to delivering phase specific WSI's which are captured through the application and through conditions attached to the dML as follows: ▪ Pre-consent Outline WSI (to set out the framework for the assumed mitigation that is submitted with the DCO Application) (APP-154) ▪ Pre-commencement survey Draft WSI (or WSIs) (in accordance with the Outline WSI) prior to further surveys (which may take place pre-determination) to ensure archaeological objectives are considered (condition 9(2)) ▪ A final (post-consent), agreed WSI (in accordance with the Outline WSI and any subsequent pre-commencement survey draft WSI or WSIs)) would set out the overarching approach to survey and archaeological investigations prior to pre-construction works commencing (condition 9(1)(f))
Comments on Volume 5, Appendix 15.1: Archaeological Assessment of Geophysical and Hydrographic Data (Document Reference: 5.2.15.1) PINs Reference: APP-075		
WR-095-39	It is relevant to highlight that proposed array area is adjacent to the South Morecambe Gas Fields, which are expected to cease production in 2027 and that the selection of this area was to demonstrate how this proposed project could co-exist within a previously developed seabed area, as described in Section 4 (Existing infrastructure). For example, the fact that two gas platforms are	The Applicant acknowledges that there are two areas without data, and these correspond to locations of existing oil and gas infrastructure at the time of survey. Only one of these areas is now within the windfarm site and should development be planned in this area following decommissioning of the gas field

ID	Written Representation	Applicant comment
	present within the proposed array area; one active and one decommissioned. However it is worth noting that "…there is a notable absence of data within an 850 to 900 m radius of these structures" (paragraph 5.1.3).	infrastructure, a survey programme would be undertaken as part of post-consent surveys to address this absence of data if required. Surveys programmes, and the requirement for geophysical data within construction footprints are captured in the Outline WSI.
WR-095-39	Sub-section 5.3 describes data quality and limitations and that Side Scan Sonar (SSS) data was considered to be "generally of good quality" and for Multi-Bean Echo Sounder (MBES) that "…data density is good", for Sub-Bottom Profiler (SBP) "…data was of good quality" with seabed penetration of 50m. The observation that the proposed array area "…is characterised across a significant area by mobile sands, manifesting as sandwaves of various sizes" (paragraph 5.3.6) is a relevant factor in the interpretation of risk.	The Applicant notes this response.
WR-095-40	Overall, it is stated that the geophysical survey data made available for analysis was of an "…appropriate specification, coverage, and quality, to undertake a robust archaeological assessment to inform the EIA process" (paragraph 5.3.11). It was important to see the action taken to assess and analyse each data type and also conduct a combined assessment of primary data acquired for this proposed project and other relevant desk-based sources of available data.	The Applicant notes this response.
WR-095-41	Section 5.6 details the review of geophysical and geotechnical information and the production of a "ground model" as described in paragraph 5.6.3	The Applicant notes this response.
WR-095-42	Section 6 states that a total of 38 anomalies of potential archaeological interest were identified within the wider archaeology study area (as illustrated in Figure 8) with 6 considered to be of "medium potential".	The Applicant notes this response.
WR-095-43	In the exercise to cross-reference between geophysical data only one magnetic anomaly correlated directly with an anomaly identified as of	The Applicant notes this response.

ID	Written Representation	Applicant comment
	archaeological potential. However, it was acknowledged this was likely to be due to magnetometer data line spacing (as illustrated in Figure 18). The identification, at this stage of other potential anomalies, as well as UKHO and NHRE records is relevant, as subsequent high-resolution survey to inform any foundation positioning and dredging requirements will help to refine the available information. We also remain aware that other anomalies of possible archaeological interest might presently be concealed within mobile sedimentary bedforms. The attention given to palaeolandscapes in Section 10 was useful, in particular the ongoing research regarding the Holocene transgression and the corresponding debate about geoarchaeological potential, as expanded upon in Section 10.7 although the consensus seems to be that understanding the timing of Holocene transgression continues to be a key research question.	
Comments on Volume 5, Annex 15.5 Setting assessment (Document Reference 5.2.15.3) PINs Reference: APP-077		
WR-095-44	We understand that this document presents the results of the assessment of potential impacts and effects arising from changes which could be considered relevant to the settings of identified terrestrial historic assets in the English coastal zone. Out of the high number of designated assets on the coast and within the selected buffer zone, 73 are identified as requiring further assessment. These include one World Heritage Site (WHS), 13 Scheduled Monuments (SMs), 3 Registered Parks and Gardens, 7 Grade I Listed Buildings (LBs), 9 Grade II* LBs, 27 Grade II LBs and 13 Conservation Areas (Cas). However, in consideration that Historic England's statutory remit is focussed on Grade I and II* assets, we will leave further comment on other identified heritage assets to the relevant local authorities.	The Applicant notes this response.
WR-095-45	There is quite a lot of duplication among the highly graded assets listed, due to the inclusion of dual-designated sites (i.e. both Scheduled and Listed) which are categorised under both headings. For example, individual assets are specifically identified in paragraph	The Applicant notes this response.

ID	Written Representation	Applicant comment
	15.239, such as three Grade I listings at Heysham cover features which are included in the scheduling of “St Patrick’s early Christian chapel and associated cemetery, Lower Heysham” (NHLE 1020535), while a Grade I listed building at Cockersand is also included in the scheduling of “Cockersand Premonstratensian Abbey” (NHLE 1018919), yet they are all listed as individual designated heritage assets.	
WR-095-46	We appreciate that most of the highly grade heritage assets identified and assessed are a considerable distance away from the array area of the proposed Wind Farm (Cockersand, for example, is 43km away) and there are already numerous turbines visible in the distance from Blackpool, Heysham and Cockersand. In the circumstances, we don’t see any reason to question the assessment carried out, or its conclusion as set out at paragraph 15.240 such that there is no change to the significance of the designated heritage assets (as relevant to Historic England, as explained above) would occur due to anticipated changes in their setting.	The Applicant notes this response.
Comments on Outline offshore written scheme of Investigation for archaeology, Volume 6 (Document Reference 6.10) PINs Reference: APP-154		
WR-095-47	We agree that this Outline offshore WSI should be updated to produce a “final” WSI to be applied post-consent, should permission(s) be secured, in accordance with NPS EN-3. This document will also require monitoring and review over the lifetime of the proposed development project and that specific tasks, relevant to the WSI will require method statements, produced by a professional retained archaeological advice service (as described in section 2.1) and subject to consultation with Historic England prior to formal approval.	The Applicant notes this response.
WR-095-48	We concur with the approach to implementing investigation and mitigation as described in sub-section 2.3, in particular, highlighting the importance of the post-application/pre-commencement stage and the identification of archaeological objectives. We also concur with the	The Applicant notes this response.

ID	Written Representation	Applicant comment
	process of consultation to take work forward through iterative WSIs, should consent be obtained.	
WR-095-49	We appreciate that both geophysical and geotechnical data analysis has informed the production of the outline WSI to provide an informed position about seabed prehistoric evidence potential.	The Applicant notes this response.
WR-095-50	Section 4.2 (Summary of mitigation) is useful in that brief mention is made about “acquisition of high resolution geophysical data, to be acquired post-consent” in Table 4.1 it is not immediately apparent why Section 4.3 (Impact assessment summary) is included as this duplicates information provided elsewhere in the ES and is not specifically relevant to the core purpose of a WSI.	The Applicant has included Section 4.3 (Impact assessment summary) in order to facilitate the ongoing utility of the Outline WSI (APP-154) as a standalone document and to provide context to the methodological approaches to further investigation and to the mitigation measures set out in the document.
WR-095-51	Section 6 (Methodology for further site investigation) provides key information within a WSI as should be delivered by a professional, accredited and experienced retained archaeological advice service commissioned by the Consent Holder, should permission be obtained. We also concur with the subsequent consultation process that should take place with Historic England prior to any formal “approval” by the MMO as the competent authority. However, we appreciate that follow-on geotechnical survey is already planned (as mentioned in paragraph 98) for which a Method Statement is in place, as explained within section 10 of this outline WSI, and that subsequent analysis will support a specified research hypothesis to produce a Quaternary (sedimentary) deposit model utilising Historic England published guidance.	The campaign of geotechnical investigation was undertaken post-submission in summer 2024, with works undertaken in accordance with the approved method statement. Subsequent to submission, the geoarchaeological assessment (Stage 1 review of geotechnical logs) of vibrocores and boreholes, acquired in 2024, has shown only the presence of marine and glacial deposits. The deposits conform to the Quaternary sedimentary sequence identified in Table 15.14 (Chapter 15 Marine Archaeology and Cultural Heritage (APP-052)), and document the transition from a glacial, to glaciomarine and finally marine environment during the Weichselian and Holocene. There is no evidence of deposits that formed in a subaerial, temperate environment that would have been suitable for inhabitation. Therefore, further assessment has not been recommended and there are no further research questions relating to further programmes of analysis relating to this topic. These

ID	Written Representation	Applicant comment
		results were discussed in consultation with Historic England on 29th August 2024 and 2nd December 2024 and a technical note with the results of the geoarchaeological review of geotechnical logs will be provided to Historic England. Consultation will be ongoing whilst there remain survey results for Historic England to review.
WR-095-52	We appreciate the attention given to direct archaeological investigation by diver or Remotely Operated Vehicle (ROV), particularly as ROV is likely to be used to assist UXO investigations. We also concur with the use of AEZs and TAEZs as the primary mechanism for in-situ protection of materials of possible or known archaeological interest (as illustrated in Figure 7.1).	The Applicant notes this response.
WR-095-53	The explanation provided about the design and implementation of a reporting system for unexpected discoveries of archaeological interest (Section 7.4) is sufficiently detailed to support subsequent application; we also appreciate the detail provide regarding data management, technical reporting, post-fieldwork assessment, publication and archiving.	The Applicant notes this response.
In Principle Monitoring Plan (IPMP), Volume 6 (Document Reference 6.4) PINs Reference: APP-148		
WR-095-54	While note the inclusion of Section 2.9 (Offshore archaeology and cultural heritage) and agreement that the anticipated effects of the proposed development are reduced to a minor adverse residual significance given assumptions made about embedded mitigation and, crucially, the requirement for further interpretation/assessment of geophysical and geotechnical data post-consent, should consent be obtained. We therefore agree with principal mechanism described "…for delivery of monitoring for offshore archaeology and cultural heritage is through (and as conditioned in the DML) the Offshore Written Scheme of Investigation (OWSI)…" and the referenced Outline	The Applicant notes this response.

ID	Written Representation	Applicant comment
	OWSI with any subsequent method statements to be subject to consultation with Historic England.	
Draft Development Consent Order, Volume 3 (Document Reference: 3.1), PINs Reference: APP-012		
WR-095-55	All advice is offered here without prejudice to any decision as might be made whether or not to grant consent for this proposed development.	The Applicant notes this response.
WR-095-56	Schedule 6 Deemed marine licence under the 2009 Act – Morecambe Offshore Windfarm Generation Assets Part 1 (Licensed Marine activities) requires amendment: 1(4)(b) the address of Historic England should be amended to: Historic England, 4th Floor, Cannon Bridge House, 25 Dowgate Hill, London EC4R 2YA	This is amended in the revised DCO submitted at Deadline 2.
WR-095-57	Part 2 (Conditions): Pre-construction plans and documentation; It is essential that post-consent and pre-construction archaeological evaluation informs delivery plans to avoid in-situ archaeological sites, as could be revealed through assessments conducted and completed post-consent and pre-construction. We would therefore expect a condition to be applied to that effect in the draft Deemed Marine Licence.	The requirement for WSIs is addressed through Condition 9(1)(f) and Condition 9(2) of the dML.
WR-095-58	Condition 9(1)(f) to be revised to: “An offshore written scheme of investigation for archaeology in relation to the Order limits, which must accord with an outline marine written scheme of investigation produced in consultation with the statutory historic body at least 12 weeks prior to the commencement of any survey work unless otherwise agreed by the MMO; to include—"	This matter was discussed with Historic England on 2nd December 2024 and it was agreed that, together with condition 9(2), which addresses pre-commencement surveys, and condition 10(1), that the WSI must be submitted for approval at least four months before the intended commencement of licensed activities, the current proposed wording of condition 9(1)(f) included in the draft DCO (PD1-002) does not need further amendment. Additional clarity on the relationship between these conditions, and the delivery of the measures agreed

ID	Written Representation	Applicant comment
		through the WSI, will be captured in the IPMP, to be updated at Deadline 3, and this will agreed between the Applicant and Historic England through a SoCG.
Historic England Written Representation: Conclusions		
WR-095-59	Historic England do not object in principle to the Proposed Development.	The Applicant notes this response.
WR-095-60	There is an accepted risk that this project could encounter presently unknown elements of the historic environment which could be subject to a high level of harm.	This matter was discussed with Historic England on 29th August 2024 and 2nd December 2024 and appropriate wording confirming this is not a principal area of disagreement between the Applicant and Historic England will be agreed between the Applicant and Historic England through a SoCG.
WR-095-61	It is apparent from the description provided about the maximum design scenario and the foundation designs under consideration that post-consent evaluation will be essential (subject to securing authorisation) and that such survey acquisition and data analysis must occur in a timely way to inform any pre-construction design finalisation.	The approach to post-consent evaluation is set out in the Outline Offshore WSI (APP-154) and the requirement for phase specific WSIs, to ensure that archaeological objectives are considered as part of planning for any relevant survey, is addressed through Condition 9(1)(f) and Condition 9(2) of the dML.
WR-095-62	The draft DCO includes (draft) Deemed Marine Licences which include conditions for WSIs. However, we recommend that the wording is given attention to ensure implementation in the crucial post-consent and pre-construction phase to adequately inform the planning and engineering design, and delivery of the proposed project.	This matter was discussed with Historic England on 2nd December 2024 and it was agreed that, together with condition 9(2), which addresses pre-commencement surveys, and condition 10(1), that the WSI must be submitted for approval at least four months before the intended commencement of licensed activities, the current proposed wording of condition 9(1)(f) does not need further amendment. Additional clarity on the relationship between these conditions, and the delivery of the measures agreed through the WSI, will be captured in the IPMP, to be

ID	Written Representation	Applicant comment
		updated at Deadline 3, and this will agreed between the Applicant and Historic England through a SoCG.

2.2 Marine Management Organisation (REP1-096)

Table 2.2 The Applicant's comments on MMOs written representation

ID	Written Representation	Applicant comment
WR-096-01	Dear Robert Jackson, Planning Act 2008, Floatation Energy, Proposed Morecambe Offshore Wind Farm Generation Assets Deadline 1 Submission	The Applicant notes this response.
WR-096-02	On 27 June 2024 the MMO received notice under Section 56 of the the Planning Act 2008 (the PA 2008) that the Planning Inspectorate (PINS) had accepted an application made by Morecambe Offshore Windfarm Ltd, for determination of a development consent order (DCO) for the construction, maintenance and operation of the proposed Morecambe Offshore Windfarm (the application) (MMO ref: DCO/2022/00001, PINS reference EN010121).	
WR-096-03	The DCO Application seeks authorisation for the construction, operation and maintenance of Morecambe Offshore Generation Assets. The proposal is located 30 kilometres (km) from the Lancashire coast, England. The windfarm Agreement for Lease area awarded by The Crown Estate spans 125 km squared (km^2). The proposed windfarm site development area has been reduced to approximately 87km^2. All project infrastructure will be located within the 87km^2 windfarm site. The project consists of up to 35 Wind Turbine Generators (WTGs), up to two Offshore substations (OST), their associated foundations and platform link cables. Inter-array	

ID	Written Representation	Applicant comment
	cables. Scour protection around foundations and subsea cable protection where required.	
WR-096-04	One Deemed Marine Licence (DML) is included in the draft DCO. The DML relates to offshore (WTG) and Associated Infrastructure and Associated Development.	
WR-096-05	As a marine licence has been deemed within the draft DCO, the MMO is the delivery body responsible for post-consent monitoring, variation, enforcement, and revocation of provisions relating to the marine environment. As such, the MMO has an interest in ensuring that provisions drafted in a deemed marine licence enable the MMO to fulfil these obligations.	
WR-096-06	This document comprises the MMO's summary of submission for Deadline 1.	
WR-096-07	This written representation is submitted without prejudice to any future representation the MMO may make about the DCO Application throughout the examination process. This representation is also submitted without prejudice to any decision the MMO may make on any associated application for consent, permission, approval or any other type of authorisation submitted to the MMO either for the works in the marine area or for any other authorisation relevant to the proposed development. Yours sincerely [REDACTED]	
Comments on Relevant Representations from other Interested Parties		
WR-096-08	The MMO's Deadline 1 response contains detailed comments on the following Interested Parties, Relevant Representations: ▪ Corporation of Trinity House of Deptford Strond (Corporation of Trinity House of Deptford Strond) RR-018 ▪ Historic England (HE) RR-030	The Applicant notes this response and has responded in detail, where necessary, below.

ID	Written Representation	Applicant comment
	▪ Maritime and Coastguard Agency (MCA) RR-048 ▪ National Federation of Fisherman's Organisations (NFFO) RR-059 ▪ Natural England RR-061 ▪ North West Wildlife Trusts (North West Wildlife Trusts) RR-065 ▪ Representation by The UK Chamber of Shipping (The UK Chamber of Shipping) (UKCOS) RR-084 Royal Society for the Protection of Birds (RSPB) RR-073	
WR-096-09	The MMO will be reviewing the responses from the above Interested Parties (IPs) throughout examination and hopes to see issues between the above IPs and the Applicant resolved.	Responses to the above Interested Parties were provided at Procedural Deadline A by the Applicant. The Applicant remains in discussions with these interested Parties, as required, with a draft Statement of Common Ground (SoCG) submitted at Deadline 1 for the following: ▪ Royal Society for the Protection of Birds (RSPB) ▪ The United Kingdom (UK) Chamber of Shipping ▪ National Federation of Fisherman's Organisations (NFFO) ▪ Maritime and Coastguard Agency (MCA) ▪ Trinity House No SoCG is being progressed with Natural England, but an updated issues log was provided by them at Deadline 1. A SoCG is being progressed with Historic England, with the initial draft submitted at Deadline 2. The Applicant also reached out to the North West Wildlife Trust who confirmed their main interests are in association with the Transmission Assets and as such would not engage in meetings.

ID	Written Representation	Applicant comment
WR-096-10	**Comments on Pre-Examination Procedural Deadline Submissions** The MMO has reviewed the following document submitted by the applicant: PD1-011 The Applicant's Response to Relevant Representations	The Applicant thanks the Marine Management Organisation (MMO) for the review of the submitted document.
WR-096-11	The MMO has provided a response in tabular format contained within Deadline 1 submission which provides the MMO's stance on points regarding the DCO and DML noting further comments will be provided at Deadline 2.	The Applicant notes that for a number of items the MMO has deferred to Deadline 2. The Applicant has provided comment to all MMO Deadline 1 responses, and, where further information is needed, highlighted when in examination this would be provided.
WR-096-12	The MMO confirms that the DCO seeks authorisation for the construction, operation and maintenance of Morecambe Offshore Windfarm Generation Assets and not the proposed Morgan Offshore Windfarm Generation assets.	The Applicant notes this response.
WR-096-13	The MMO welcomes the inclusion of the exact coordinates of the licensed marine activities in the revised draft DCO.	The Applicant notes this response.
WR-096-14	The MMO welcomes the update to Section 2 (d) of the draft Deemed Marine Licence (DML) regarding the removal of reference to sediment samples.	The Applicant notes this response.
WR-096-15	The MMO notes that if the geophysical surveys were assessed within the Environmental Statement then this could be part of the DML. It would have to be clear within the DML when commencement begins in relation to the surveys and when method statements would be agreed and how the conditions are worded for any submissions post consent.	The Applicant notes that a separate marine licence or exemption (as appropriate) will be sought for geophysical surveys.
WR-096-16	The MMO agrees with the Applicant in regard to the removal of detonations and explosives from the 'Reporting of Impact Pile Driving/Detonation of Explosives' condition.	The Applicant notes this response.

ID	Written Representation	Applicant comment
WR-096-17	The MMO welcomes the update to condition 2(3) of the draft DML in reference to the offshore operation and maintenance plan.	The Applicant notes this response.
WR-096-18	The MMO welcomes the amendment to condition 13, which now reflects the wording the proposed wording by the MMO.	The Applicant notes this response.
WR-096-19	In regard to the Marine Mammal Unexploded Ordnance Assessment (APP-067) the Applicant has confirmed that Unexploded Ordnance (UXO) clearance will be developed post consent. The MMO agrees with this approach.	The Applicant notes this response.
WR-096-20	The MMO acknowledges that the final Marine Mammal Mitigation Protocol (MMMP) for UXO clearance will be submitted under a future marine licence. The MMO may provide further comments at Deadline 2.	Noted with thanks, the Applicant will review further comments if provided by the MMO at Deadline 2.
WR-096-21	The MMO has no major comments regarding the Outline Project Environmental Management Plan (PEMP), but nay require minor updates in relation to chemicals.	Noted and would request the MMO provide details of any suggested amendments
WR-096-22	The MMO has no further comments in regard to including the number of windfarms in the introduction of the Environmental Statement, as this was a minor matter.	The Applicant welcomes this response.
WR-096-23	The MMO is currently requesting a seasonal restriction for piling, the MMO is reviewing the DML and how this would work alongside the Underwater Sound Management Strategy.	The Applicant notes the MMO's position. Consideration of seasonal restrictions has been included in the Underwater Sound Management Strategy, noting the Applicant's position that this would not be required if design refinement or noise abatement were to be undertaken/used.
WR-096-24	The MMO acknowledges that the underwater noise modelling assumes a larger pile diameter. The MMO has requested that this information is consistent across the various chapters of the Environmental Statement and Appendixes.	The Applicant notes this has been discussed with the MMO and the MMO have suggested that this should be clarified across the relevant chapters and Appendices. The Applicant is considering a suitable time in Examination to submit the updated documents to seek to reduce the volume of material

ID	Written Representation	Applicant comment
		being entered into Examination at each deadline, but it is expected to be at Deadline 4.
WR-096-25	The MMO previously questioned the Magnitude scoring in Table 5.2. with regard to Appendix 11.3 of the Marine Mammal Unexploded Ordnance Assessment, that confirmed 2,037 individual harbour porpoise are at risk of a temporary threshold shift (TTS) during high-order detonation, which was assessed as having a 'Low' magnitude anticipated risk. The MMO maintains that 2,037 individual harbour porpoise at risk of TTS is not a significant number. However, no further action is requested.	The Applicants notes the MMO's position, see response to ID WR-096-110 below.
WR-096-26	The MMO previously did not support the use of TTS as a proxy for disturbance from underwater noise. The MMO appreciates that there are no agreed thresholds for the onset of a behavioural response from underwater noise. The MMO maintains the position that the characteristics of TTS are distinct from behavioural changes.	The Applicant notes the MMO's position, see response to ID WR-096-111 and WR-096-112 below.
WR-096-27	The MMO agrees with the Applicant that applying an EDR (Effective Deterrent Range) for harbour porpoise to other species is deemed conservative. However, the MMO maintains that this should be used as the precautionary option.	The Applicant notes the MMO's position, see response to ID WR-096-111 and WR-096-112 below.
WR-096-28	With regards to the outline Project Environmental Management Plan (PEMP) and the In Principle Monitoring Plan (IPMP) the MMO notes that confirmation of requirements for mitigation will be agreed post-consent. The MMO understands that detail will be agreed post- but may provide further comments on the information within the document.	Noted, the Applicant will respond to comments if provided by the MMO.
WR-096-29	The MMO will provide further comments at Deadline 2.	Noted, the Applicant will respond to comments if provided by the MMO.
WR-096-30	**Initial Statements of Common Ground (SoCG)** The MMO has worked with the Applicant to prepare a SoCG which will be submitted at Deadline 1. The MMO will continue to work with	The Applicant appreciates the engagement by the MMO on the SoCG and is committed to further engagement thoughout Examination.

ID	Written Representation	Applicant comment
	the Applicant outside of the written process to ensure issues are being moved to resolution where possible.	
WR-096-31	**Other sections** The MMO has provided a response to the following Examining Authority's requests: ▪ Notification by Statutory Parties of their wish to be considered as an IP by the ExA ▪ Comments from ISH1 ▪ Notification of wish to have future correspondence received electronically ▪ Declaration of use of Artificial Intelligence in preparation of any submissions to date	The Applicant notes this response.
WR-096-32	[REDACTED]	
Applicant's comments on MMO written representation response from other Interested Parties		
WR-096-33	Dear Robert Jackson, **Planning Act 2008, Floatation Energy, Proposed Morecambe Offshore Wind Farm Generation Assets** **Deadline 1 Submission**	The Applicant notes this response.
WR-096-34	On 27 June 2024 the MMO received notice under Section 56 of the Planning Act 2008 (the PA 2008) that the Planning Inspectorate (PINS) had accepted an Application made by Morecambe Offshore Windfarm Ltd (the Applicant), for determination of a development consent order (DCO) for the construction, maintenance and operation of the proposed Morecambe Offshore Windfarm (the Application) (MMO reference DCO/2022/00001, PINS reference EN010121).	The Applicant notes this response.
WR-096-35	The Application seeks authorisation for the construction, operation and maintenance of Morecambe Offshore Generation Assets. The proposal is located 30 kilometres (km) from the Lancashire coast, England. The windfarm Agreement for Lease area awarded by The	The Applicant notes this response.

ID	Written Representation	Applicant comment
	Crown Estate spans 125 km squared (km²). The proposed windfarm site development area has been reduced to approximately 87km². All project infrastructure will be located within the 87km² windfarm site. The project consists of up to 35 Wind Turbine Generators (WTGs), up to two Offshore substations (OST), their associated foundations and platform link cables. Inter-array cables. Scour protection around foundations and subsea cable protection where required.	
WR-096-36	One Deemed Marine Licence (DML) is included in the draft DCO. The DML relates to offshore (WTG) and Associated Infrastructure and Associated Development.	The Applicant notes this response.
WR-096-37	As a marine licence has been deemed within the draft DCO, the MMO is the delivery body responsible for post-consent monitoring, variation, enforcement, and revocation of provisions relating to the marine environment. As such, the MMO has an interest in ensuring that provisions drafted in a deemed marine licence enable the MMO to fulfil these obligations.	The Applicant notes this response.
WR-096-38	This document comprises the MMO's submission for Deadline 1. This written representation is submitted without prejudice to any future representation the MMO may make about the DCO Application throughout the examination process. This representation is also submitted without prejudice to any decision the MMO may make on any associated application for consent, permission, approval or any other type of authorisation submitted to the MMO either for the works in the marine area or for any other authorisation relevant to the proposed development. Yours sincerely [REDACTED]	The Applicant notes this response.
WR-096-39	**Comments on Relevant Representations from other Interested Parties** **General Comments**	Noted, the Applicant remains engaged with other Interested Parties with draft SoCGs submitted at Deadline 1.

ID	Written Representation	Applicant comment
	The MMO has reviewed the Relevant Representations (RR) of a number of parties and provided initial comments below. The MMO notes that a number of comments have been raised in relation to shipping, radar and impact to other industries. The MMO hopes the Applicant can resolve these comments and defers to the Interested Parties. The MMO will maintain a watching brief for any concerns where DML conditions may be required.	
WR-096-40	**Corporation of Trinity House of Deptford Strond (Corporation of Trinity House of Deptford Strond) RR-018** The MMO notes that Trinity House may have further comments to make on the Application and the draft DCO. The MMO will keep a watching brief on any comments.	Noted, the Applicant remains engaged with Trinity House with a draft SoCG submitted at Deadline 1 (REP1-065).
WR-096-41	**Historic England (HE) RR-030** The MMO notes that HE commented on the presence of unidentified obstructions within the proposed array area that may be of archaeological interest. HE notes that post submission/consent and pre-construction geophysical and geotechnical surveys will be undertaken and that HE will be consulted on this. From this appropriate mitigation measures will be selected. The MMO is in support of this.	Noted. The approach to post submission/ pre-consent and pre-construction geophysical and geotechnical surveys, and consultation with Historic England on this, is detailed in the Outline Offshore Written Scheme of Investigation (WSI) (APP-154) and the In Principle Monitoring Plan (IPMP) (APP-148).
WR-096-42	HE has raised concerns in regard to the determination of residual effects and the reliance on embedded mitigation measures. HE does not agree with the downgrading of residual impact and the concluding residual effects as 'not significant' in the Environmental Impact Assessment (EIA). The MMO hopes this issue will be addressed during Examination.	This matter has been discussed with Historic England during consultation on the SoCG and does not represent an area of disagreement. The outcomes of the discussion are detailed in the responses to Historic England's Written Representation and the draft SoCG (Document Reference 9.34) submitted at Deadline 2.
WR-096-43	The MMO supports HE's confirmation that a Written Scheme of Investigation (WSI) is required, as conditioned within the Deemed Marine Licence (Schedule 6) of the draft DCO.	The Applicant notes this response.

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WR-096-44	The MMO notes that HE will provide further comments through their Written Representation for any other matters that are relevant to the historic environment. The MMO will keep a watching brief on this.	Noted. Responses to Historic England's Written Representation are provided in Deadline 2 submissions (within this document).
WR-096-45	**Maritime and Coastguard Agency (MCA) RR-048** The MMO welcomes the MCA's confirmation that the MCA will be responding on matters concerning the safety of maritime navigation and maritime Search and Rescue, and the Navigation Risk Assessment, Shipping and Navigation chapter of the EIA Report. The MMO notes that the MCA have concerns regarding vessel routeing, vessels' ability for continued safe passage, that risks to all vessels and craft are at an acceptable level, and the project is not at the detriment to the provision of Search and Rescue, and other emergency response. The MMO hopes to see these issues addressed and is working with MCA to understand how these are captured within the DML.	Noted, the Applicant remains engaged with the Maritime and Coastguard Agency (MCA) with a draft SoCG submitted at Deadline 1 (REP1-068).
WR-096-46	The MMO is currently discussing any updates to the DML with MCA.	An updated dML is submitted alongside this document at Deadline 2 (Draft Development Consent Order_Rev 3 Clean and Draft Development Consent Order_Rev 3 Tracked), incorporating proposed updates from the MCA.
WR-096-47	**National Federation of Fisherman's Organisations (NFFO) RR-059** The MMO notes that this RR is a joint submission from both NFFO and Welsh Fishermen's Association (WFA-CPC).	The Applicant notes this response.
WR-096-48	The MMO acknowledges concerns raised regarding additional loss of space for fishing activities in an area already faced with extensive spatial restrictions such as existing offshore wind developments, offshore cables, Marine Protected Areas and legislative restrictions in the region. The MMO is aware that further displacement could cause economic harm, through loss of earnings from the ground and additional operating costs, due to increased steaming times during	Noted, this is reflected in Chapter 13 Commercial Fisheries of the Environmental Statement (ES) (APP-050). Mitigation has been identified to reduce Project-alone significant effects to minor (and not significant). The ES also identifies a residual significant cumulative effect during construction, and proposes monitoring.

ID	Written Representation	Applicant comment
	construction and operation of the project, as well as contributing to the spatial squeeze on fisheries in the region.	
WR-096-49	The MMO notes that the NFFO has concerns regarding the lack of contemporary and site-specific data presented in the fish and ecology assessments and a lack of focus on key commercial species. The MMO will review the Applicant's response in relation to this and may provide further comments at Deadline 2.	The Applicant has responded to this point from the NFFO in The Applicant's Response to Relevant Representations (PD1-010). It is also noted that the Applicant has submitted an update of Appendix 13.1 Commercial Fisheries Technical Report at Deadline 2 (Appendix 13.1 Commercial Fisheries Technical Report_Rev 02 Clean and Appendix 13.1 Commercial Fisheries Technical Report_Rev 02 Tracked) to include further mapping of fishing grounds. It is noted that the MMO were involved in the fish and shellfish Expert Topic Group (ETG) where the fish and shellfish baseline was agreed. The Applicant will respond to any further comments on this point provided by the MMO, if required, at Deadline 3.
WR-096-50	The MMO notes the NFFO's concerns regarding the assumption that commercial fisheries, specifically mobile gear will be able to return to the area post construction and that there will be no displacement effects observed during construction for all the different fishing gear sectors. The NFFO believes this is an underestimate. The MMO will maintain a watching brief on this issue.	The ES acknowledges that fishing patterns would not be the same during construction or post-construction. Displacement was found to be significant during construction for the potting fleets but not during operation based on the understanding that potting can resume. It is noted that the Windfarm Site is not heavily targeted by mobile gear, as demonstrated by Appendix 13.1. This issue has been covered in the SoCG with the NFFO and Welsh Fisherman's Association (WFA) submitted at Deadline 1 (REP1-063). The conclusions of the assessments for all project phases are agreed with the NFFO, noting that

ID	Written Representation	Applicant comment
		monitoring is fully supported to validate the understanding of fishing activity post construction.
WR-096-51	The NFFO welcomes the development of a Fisheries Liaison and Co-existence Plan. The MMO is in support of this and will provide comments on this document at Deadline 2.	Noted, the Applicant will respond to comments if provided by the MMO.
WR-096-52	The MMO supports the NFFO's request that a Statement of Common Ground be required to ensure that the fisheries concerns, that to date have not been accounted for, are considered during the decision to consent the Morecambe Generation Assets project.	Noted, the Applicant remains engaged with the NFFO and Welsh Fisherman's Association (WFA) with a draft SoCG submitted at Deadline 1 (REP1-063).
WR-096-53	**Natural England RR-061** The MMO is aware that there remain unresolved issues that centre around protected sites and that on the basis of the information submitted, NE, as the competent authority (Conservation of Habitats and Species Regulations 2017), is not satisfied that it can be excluded beyond reasonable scientific doubt that the project would have an adverse effect alone or in-combination on the integrity of the following sites: ▪ Liverpool Bay Special Protection Area (SPA) UK9020294A ▪ Morecambe Bay and Duddon Estuary SPA UK9020326, and Ramsar site ▪ Ribble and Alt Estuaries SPA UK9005103, and Ramsar site	The Applicant notes this is the position of Natural England, but notes that the competent authority is the Secretary of State. The Applicant has provided further evidence to support the conclusion of no adverse effects on integrity at Deadline 1 (Offshore Ornithology Technical Note 2 (Habitat Regulations Assessment (HRA)) (REP1-081)) as well as an update on without prejudice compensation measures (9.30 Update on Without Prejudice Compensation Measures (REP1-093)).
WR-096-54	The MMO defers to NE on matters related to HRA. The MMO will maintain a watching brief on these matters and will ensure we are included/are provided updates on any discussions in relation to the HRA. The MMO highlights that any mitigation secured through the HRA will need to be included within the conditions on the DML.	The Applicant is continuing discussion with Natural England, noting that provision is included in the draft DCO regarding compensation if deemed to be required for Morecambe Bay and Duddon Estuary SPA UK9020326, and Ramsar site and Ribble and Alt Estuaries Special Protection Area (SPA) UK9005103, and Ramsar site

ID	Written Representation	Applicant comment
WR-096-55	The MMO notes NE's comment regarding consideration for the need for European Protected Species (EPS) licences in relation to the marine species. NE highlight that the MMO is responsible for wildlife licensing of activity in English waters. The MMO notes that the onus is on the Applicant to determine if a wildlife licence is required. The MMO would also highlight that if a marine licence is required that a separate licence will be required once the impact to a marine species is further identified.	As stated in Other Consents and Licences (AS-006), EPS licenses will be sought post consent.
WR-096-56	The MMO notes that NE have engaged and provided advice to the Applicant regarding seascape, landscape and visual impact assessment (SLVIA) and that NE have no major remaining concerns on the impact of the proposal on SLVIA. The MMO defers to NE and the Local Planning Authority (LPA) on this topic.	Noted, no further action required.
WR-096-57	The MMO notes NE's concerns regarding the Cumulative Effects Assessment (CEA), regarding the proposed separate DCO applications for 'Generation Assets' and Transmission Assets'.	Noted, the Applicant has provided responses to Natural England at Procedural Deadline A as well as a Report on Interrelationships with Other Infrastructure Projects (REP1-078) submitted at Deadline 1.
WR-096-58	The MMO notes NE's decision to use the 'Red Amber Green' (RAG) system to denote the level of risk associated with a topic related to this development. The MMO welcomes NE's use of this system and considers it a clear and concise way to present the severity of an outstanding concern.	Noted, the Applicant is continuing to engage with Natural England to work through the material issues.
WR-096-59	***Development Consent Order (DCO) and Deemed Marine Licence (DML)*** The MMO notes the comments raised in relation to the construction noise monitoring condition and is currently reviewing the condition in consultation with relevant consultees and will provide updates in due course.	Noted, the Applicant will review comments when received.

ID	Written Representation	Applicant comment
WR-096-60	The MMO agrees that monitoring of benthic, ornithological and marine mammals should be secured through appropriate conditions.	The Applicant has identified that monitoring for red-throated diver would be undertaken which will be included in the IPMP at Deadline 3, as appropriate, following further discussions with NE. It is also proposed that during aerial surveys undertaken for red-throated diver marine mammal observations could be taken to provide further information on species density and distribution and include analysis on the numbers of harbour porpoise that were identified in baseline surveys. It is considered details of these measures would be agreed post-consent. Monitoring of Invasive Non-Native Species (INNS) is also proposed and secured in the draft Development Consent Order (PD1-002 and PD1-003) in Condition 16 (post-construction monitoring) of the dML. Given the findings of the ES no further benthic monitoring is proposed. The Applicant has committed to monitoring of the first four piles in relation to underwater noise, secured in the in the draft Development Consent Order (PD1-002 and PD1-003) in Condition 15(2) (construction monitoring) of the dML. The Applicant considers that it is unreasonable and disproportionate to expect broad scale blanket monitoring to be undertaken. The Project is outside of any designated site and at some distance from any site designated for benthic and marine mammal species. The Applicant has committed to undertake a number of targeted monitoring including INNS and is developing monitoring for red throated diver. The monitoring is targeted to key species or where meaningful contribution can be made on a Project basis to reduce uncertainty in the industry and

ID	Written Representation	Applicant comment
		considers the monitoring proposed is proportionate to the effects identified.
WR-096-61	***Offshore Ornithology*** The MMO notes NE's concerns regarding the robustness of the Cumulative Effects Assessment methodology. NE advises that a full quantitative assessment should be presented, following the method previously supplied to the Applicant by NE. The MMO defers to NE regarding matters relating to ornithology and supports NE's request to update the assessments as required.	The Applicant has provided an update to the CEA for ornithology at Deadline 1 within the Offshore Ornithology Technical Note 1 (EIA) (REP1-080) and Offshore Ornithology Technical Note 2 (HRA) (REP1-081).
WR-096-62	NE has raised concerns regarding red-throated dive at Liverpool Bay SPA. NE does not agree that adverse effects on the integrity of Liverpool Bay SPA can be ruled out due to displacement impacts on Red Throated Diver (RTD). The MMO defers to NE regarding ornithological issues.	The Applicant has provided further evidence to support the conclusions made at Deadline 1 in Offshore Ornithology Technical Note 3 (HRA) (Red-throated diver at Liverpool Bay SPA update assessment) (REP1-082), and continues to discuss the matter with Natural England.
WR-096-63	The MMO notes NE's concerns regarding adverse effects on the lesser black-backed gull at Morecambe Bay and Duddon Estuary SPA and Ribble and Alt Estuary SPA, due to in-combination collision impacts. The MMO defers to NE on ornithological matters and supports NE's advice that the Applicant's assessments should be updated.	The Applicant has provided further evidence to support the conclusions made at Deadline 1 within the Offshore Ornithology Technical Note 2 (HRA) (REP1-081) and continues to discuss the matter with Natural England. It is also noted the Applicant has provided a without prejudice derogation case as part of the DCO Application.
WR-096-64	***Marine Mammals*** The MMO supports NE's recommendation that the Applicant should fully commit to using Noise Abatement Systems (NAS) as mitigation to reduce both injury and disturbance to marine mammal receptors during construction activities. The MMO would highlight that policy is leading to the requirement for all projects with noisy activities to have NAS and would strongly suggest this is considered as part of the Application.	The use of NAS is included as an option in the draft MMMP (APP-149) submitted as part of the DCO Application and the Outline Underwater sound management strategy (UWSMS) submitted at Deadline 2. The Applicant maintains that design refinements can reduce residual effects before any commitment to use a NAS needs to be made and this would be discussed and agreed post consent.

ID	Written Representation	Applicant comment
		The Applicant is planning for the event that policy dictates the use of NAS but at the time of writing there is no policy in place to drive this requirement.
WR-096-65	***Benthic Ecology and Physical Processes*** The MMO notes NE's concerns regarding the assessment of impacts to benthic habitats and physical processes. NE have said that this is incomplete as potential impacts from seabed preparation works have not been fully considered within the assessment. The MMO supports NE's recommendation that the Applicant should provide an updated assessment of impacts on physical processes and benthic ecology.	The Applicant notes this information was provided at Procedural Deadline A, as part of The Applicant's Response to the Rule 9 Letter (PD1-010). The Applicant notes that in the Natural England Deadline 1 response (REP1-097 and REP1-098) they are content with the information but request this is included within the ES chapters. The Applicant has incorporated changes into the following chapters, submitted at Deadline 2: ▪ Chapter 7 Marine Geology, Oceanography and Physical Processes (Chapter 7 Marine Geology, Oceanography and Physical Processes_Rev 03 Clean and Chapter 7 Marine Geology, Oceanography and Physical Processes_Rev 03 Tracked) ▪ Chapter 8 Marine Sediment and Water Quality (Chapter 8 Marine Sediment and Water Quality _Rev 03 Clean and Chapter 8 Marine Sediment and Water Quality _Rev 03 Tracked) ▪ Chapter 9 Benthic Ecology (Chapter 9 Benthic Ecology_Rev 02 Clean and Chapter 9 Benthic Ecology_Rev 02 Tracked)
WR-096-66	**North West Wildlife Trusts (NWWT) RR-065** The MMO notes that the NWWT is supportive of offshore wind generation, but the development must not come at the expense of nature.	Noted, the Applicant has reduced impacts through design and mitigations (see Schedule of Mitigation (APP-144)).

ID	Written Representation	Applicant comment
WR-096-67	The MMO notes the NWWT' disappointment that a future monitoring plan of many of the ecological receptors has not been embedded into the project to validate the predictions in the ES and inform future projects.	The Applicant notes it is unreasonable and disproportionate to expect broad scale blanket monitoring to be undertaken. The Applicant has committed to undertake a number of targeted monitoring plans including INNS and is developing monitoring for red throated diver. The monitoring proposes to target key species or where meaningful contribution can be made on a Project basis to reduce uncertainty in the industry and considers the monitoring proposed is proportionate to the effects identified.
WR-096-68	The MMO notes the NWWT' comment regarding minimising ornithological impacts through the project design and best use of technology. The MMO defers to NE on ornithological issues.	See ID RR-065-08 in The Applicant's Response to Relevant Representations (PD1-011) for a full response to North Wales Wildlife Trust (NWWT) regarding minimising ornithological impacts through the project design. Further, please refer to Section 4 of the Offshore Ornithology Technical Note 1 (EIA) (REP1-080) submitted at Deadline 1 which explains why increasing the air gap above 25m would make a very small difference to the predicted mortality, particularly when considered for the cumulative effect.
WR-096-69	The MMO notes the NWWTs concerns regarding the number of proposed offshore wind farms in the eastern part of the Irish Sea, with potential for significant barrier effects. The MMO will maintain a watching brief of these concerns and will look to see resolutions on these points.	The Applicant notes a comprehensive CEA was undertaken as part of the DCO Application, including assessment of barrier effects. Further, a Report on Interrelationships with Other Infrastructure Projects (REP1-078) has been provided at Deadline 1 which further examines interrelated projects in the region.
WR-096-70	**Representation by The UK Chamber of Shipping (The UK Chamber of Shipping) (UKCOS) RR-084**	The Applicant notes this response.

ID	Written Representation	Applicant comment
	The MMO notes UKCOS support of the Government's obligations to achieve Net Zero Carbon by 2050 and welcomes the development of offshore renewable energy to succeed in this obligation.	
WR-096-71	The MMO acknowledges the UKCOS stance in seeking to ensure navigational safety is upheld, and that developments are appropriately positioned to enable existing and future commercial navigation to continue safely and efficiently.	The Applicant notes all navigation safety risks in relation to the Project have been assessed as acceptable or tolerable but As Low As Reasonable Possible (ALARP) (see Chapter 14 Shipping and Navigation (APP-051) of the ES, NRA (APP-073) and CRNRA (APP-074)).
WR-096-72	The MMO notes UKCOS concerns regarding ongoing cumulative concerns relating to safety, deviation, scheduling and negative environmental impact upon the shipping industry from the revised Red Lind Boundary (development area), along with potential negative economic impact to island communities which need full consideration.	The Applicant is engaged with the The UK Chamber of Shipping (UKCOS) on these matters with a draft SoCG provided at Deadline 1 (REP1-071). It is noted that the siting of the Project means no Project alone significant effects have been identified and the Project is considered to have a small contribution to cumulative effects.
WR-096-73	The MMO welcomes the UKCOS' request provide further representation regarding navigational safety and impact upon commercial routeing at Examination where appropriate. The MMO will maintain a watching brief on this.	The Applicant provided a comprehensive assessment within Chapter 14 Shipping and Navigation (APP-051) of the ES, Navigation Risk Assessment (NRA) (APP-073) and Cumulative Regional Navigational Risk Assessment (CRNRA) (APP-074) and continues to work with the UKCOS to discuss outstanding matters.
WR-096-74	**Royal Society for the Protection of Birds (RSPB) RR-073** The MMO notes that the RSPB's comment regarding uncertainty throughout the impact assessments, which the RSPB notes does not fully capture the complexity of seabird behavioural or demographic processes in a dynamic marine environment.	The Applicant has provided detailed responses to the RSPB's comments in PD1-011. It recognises that there is some inherent uncertainty in the assessment of offshore wind development, but that the assessments presented in Chapter 12 Offshore Ornithology of the ES (APP-049) and the Report to Inform Appropriate Assessment (RIAA) (APP-027) accord with current best practice recommended by the SNCBs, and include sufficient precaution to

ID	Written Representation	Applicant comment
		ensure that uncertainty is accounted for, and that conclusions are scientifically robust.
WR-096-75	The RSPB notes that if precautionary approach is taken from the beginning, the likelihood of irreversible damage occurring is reduced even whilst our knowledge base is incomplete, and modelling improves. The precautionary principle requires the Applicant to demonstrate with scientific certainty that something would not be harmful. The MMO is in support of a precautionary approach.	As above, the Applicant considers that the best practice methods used for the assessment include sufficient precaution to account for complexity and uncertainty in the marine environment. Accordingly, it is considered that the assessment conclusions are sufficiently robust to inform the decision-making process.
WR-096-76	The RSPB has significant methodological concerns with the Applicant's assessment and currently are unable to reach conclusions with regard to the significance of predicted impacts and have significant concerns relating to the project's in-combination and cumulative collision risk and displacement impacts.	The Applicant has provided detailed responses to the RSPB's comments in PD1-011. As above, the Applicant considers that the ornithological assessment is robust, noting a number of assessment updates have been presented by the Applicant at Deadline 1 within the Offshore Ornithology Technical Note 1 (EIA) (REP1-080), Offshore Ornithology Technical Note 2 (HRA) (REP1-081) and Offshore Ornithology Technical Note 3 (HRA) (Red-throated diver at Liverpool Bay SPA update assessment) (REP1-082).
WR-096-77	The MMO notes the RSPB's concerns regarding impacts not being adequately assessed and, as such consider Adverse Effect on Integrity cannot be ruled out beyond reasonable doubt for collision impacts arising through the project alone and in combination with other projects.	The Applicant assumes that the MMO is referring to RSPB's comments in respect of Manx shearwater. These are addressed in detail in the Applicant's response (PD1-011), and confirms the Applicant's position that there would be no measurable collision risk to this species.
WR-096-78	The MMO will maintain a watching brief of these concerns and will look to see resolution on these points. The MMO defers to NE for matters relating to ornithology.	Noted. The Applicant continues to maintain dialogue with RSPB and Natural England on these matters and will provide further updates during the Examination, where appropriate.

ID	Written Representation	Applicant comment
WR-096-79	**Comments on Pre-Examination Procedural Deadline Submissions** ***PD1-011 The Applicant's Response to Relevant Representations*** The MMO acknowledges the submission of this response and will provide further comments at Deadline 2 and throughout the examination process. The MMO has added comments in Table 1 for ease of viewing.	The Applicant notes this response. Further comments, if provided by the MMO, will be reviewed.
WR-096-80	***MMO's Deadline 1 response to RR-047-01*** The MMO confirms that the DCO seeks authorisation for the construction, operation and maintenance of Morecambe Offshore Windfarm Generation Assets and not the proposed Morgan Offshore Windfarm Generation Assets, as described in the MMO response.	The Applicant notes this response.
WR-096-81	***MMO's Deadline 1 response to RR-047-02*** The MMO has no further comments on this point.	The Applicant notes this response.
WR-096-82	***MMO's Deadline 1 response to RR-047-03*** The MMO has no further comments.	The Applicant notes this response.
WR-096-83	***MMO's Deadline 1 response to RR-047-04*** The MMO has no further comments.	The Applicant notes this response.
WR-096-84	***MMO's Deadline 1 response to RR-047-05*** The MMO has no further comments.	The Applicant notes this response.
WR-096-85	***MMO's Deadline 1 response to RR-047-06*** The MMO notes that the Applicant is Morecambe Offshore Windfarm Ltd and will ensure this is reflected in future representations.	The Applicant notes this response.
WR-096-86	***MMO's Deadline 1 response to RR-047-07*** The MMO has no further comments.	The Applicant notes this response.
WR-096-87	***MMO's Deadline 1 response to RR-047-08*** The MMO has no further comments.	The Applicant notes this response.

ID	Written Representation	Applicant comment
WR-096-88	***MMO's Deadline 1 response to RR-047-09*** The MMO has no further comments.	The Applicant notes this response.
WR-096-89	***MMO's Deadline 1 response to RR-047-10*** The MMO is reviewing all comments and the DCO and will provide comments for Deadline 2. The MMO will provide these earlier to the Applicant where possible to ensure conversations can continue outside of the written process.	The Applicant notes this response.
WR-096-90	***MMO's Deadline 1 response to RR-047-11*** The MMO welcomes this update.	The Applicant notes this response.
WR-096-91	***MMO's Deadline 1 response to RR-047-12*** The MMO welcomes this update noting that if these surveys were assessed within the ES then this could be part of the DML, it would just have to be clear within the DML when commencement begins in relation to the surveys and when method statements would be agreed and how the conditions are worded for any submissions post consent.	It is noted the Applicant expects separate marine licences or exemptions (as appropriate) will be sought for geophysical surveys.
WR-096-92	***MMO's Deadline 1 response to RR-047-13*** The MMO notes the Applicant's response and will provide an update at Deadline 2.	The Applicant notes this response.
WR-096-93	***MMO's Deadline 1 response to RR-047-14*** The MMO notes the Applicant's response and will provide an update at Deadline 2.	The Applicant notes this response.
WR-096-94	***MMO's Deadline 1 response to RR-047-15*** The MMO notes the Applicant's response. This point as been discussed in meetings held with the Applicant and the MMO. The MMO intends to work with the Applicant to designate a disposal area and has requested shape files of the locations.	The Applicant thanks the MMO for progress the matter.
WR-096-95	***MMO's Deadline 1 response to RR-047-16***	The Applicant notes this response. Further comments, if provided by the MMO, will be reviewed.

ID	Written Representation	Applicant comment
	The MMO welcomes this update in regard to impact pile driving and agrees with the removal of detonations of explosives. Further discussion has taken place with JNCC in relation to the noise registry conditions and we are just confirming if a slightly updated condition needs to be included in DMLs. Once we have this information we will provide this to the Applicant and request this is updated as part of the Examination.	
WR-096-96	***MMO's Deadline 1 response to RR-047-17*** The MMO welcomes this update.	The Applicant notes this response.
WR-096-97	***MMO's Deadline 1 response to RR-047-18*** The MMO notes the Applicant's response and will provide an update at Deadline 2.	The Applicant notes this response.
WR-096-98	***MMO's Deadline 1 response to RR-047-19*** The MMO notes the Applicant's response and will provide an update at Deadline 2.	The Applicant notes this response.
WR-096-99	***MMO's Deadline 1 response to RR-047-20*** The MMO welcomes this update and will provide further comment in due course.	The Applicant notes this response.
WR-096-100	***MMO's Deadline 1 response to RR-047-21*** The MMO notes the Applicant's response and the inclusion of this condition. The MMO has no further comments at this time.	The Applicant notes this response.
WR-096-101	***MMO's Deadline 1 response to RR-047-22*** The MMO welcomes this update.	The Applicant notes this response.
WR-096-102	***MMO's Deadline 1 response to RR-047-23*** The MMO notes the Applicant's response and will provide further comment in due course.	The Applicant notes this response.

ID	Written Representation	Applicant comment
WR-096-103	***MMO's Deadline 1 response to RR-047-24*** The MMO notes the Applicant's response. The MMO has no further comments at this time.	The Applicant notes this response.
WR-096-104	***MMO's Deadline 1 response to RR-047-25*** The MMO welcomes this clarification and will provide an update at Deadline 2.	The Applicant notes this response.
WR-096-105	**Draft MMMP (APP-149) and Appendix 11.3 Marine Mammal Unexploded Ordnance Assessment (APP-067)** ***MMO's Deadline 1 response to RR-047-26*** The MMO notes the Applicant's response. The Applicant and MMO have held meetings where the UXO clearance has been discussed. The Applicant has confirmed that the UXO clearance will be developed post-consent as part of separate investigations and clearance licences. The MMO is content with this approach.	The Applicant notes this response.
WR-096-106	***MMO's Deadline 1 response to RR-047-27*** The MMO acknowledges that the final wording in the MMMP would be undertaken post-consent. The MMO alongside Cefas will be happy to review the finalised MMMP to ensure potential impacts are appropriately mitigated. The MMO will provide further comment at Deadline 2.	The Applicant notes this response.
WR-096-107	***MMO's Deadline 1 response to RR-047-28*** The MMO and Cefas previously noted that the predicted ranges in Table 3.1 of the MMMP are vastly different to those presented in Appendix 11. The MMO and Cefas recommended that these discrepancies should be checked and clarified.	Noted and clarification is included in the Deadline 2 submission of the Marine Mammal Mitigation Plan (MMMP).

ID	Written Representation	Applicant comment
	The Applicant has clarified with the MMO that additional modelling was completed for a higher strike rate. The MMO welcomes this clarification. The MMO requests that this is made clear in an updated version of the Draft MMMP.	
WR-096-108	***MMO's Deadline 1 response to RR-047-29*** The MMO notes the Applicant's update. Regarding section 5.2.11.3 in Appendix 11.3 Marine Mammal Unexploded Ordnance (UXO) Assessment, the Error is noted as "Table 4.8 and Table 4.9, the PTS (permanent threshold shift) and TTS (temporary threshold shift) metric should be Sound Exposure Level (SPL)peak and SELss, not SELcum". The Correction is noted as "The column header in Table 4.8 Appendix 11.3 Marine Mammal Unexploded Ordnance Assessment (APP-067) is corrected as follows: 'PTS Sound Exposure Level from Single Strike (SELcumpeak)' The column header in Table 4.9 is corrected as follows: 'TTS SELcumss' This error does not affect outputs or assessment conclusions". The MMO and Cefas believe that the original Error has been misinterpreted, and subsequently the correction does not make sense. For instance, there is no such metric as the 'SELcumpeak' or 'SELcumss'. For clarity, in previous advice (section 3.2 of the MMO's RR), the MMO and Cefas highlighted that the PTS and TTS criteria (in Tables 4.8 and 4.9) for UXO are based on the are based on the peak sound pressure level (SPLpeak) metric, and the single strike sound exposure level (SELss) metric, and not the cumulative sound exposure level (SELcum). Therefore, in terms of the Correction, the only change required in Table 4.8 is that the middle column should be referring to the SELss (i.e., 'PTS Sound Exposure Level (SELss))', rather than 'PTS Sound Exposure Level from cumulative exposure (SELcum)'.	Noted. In response to the initial RR response, the Applicant corrected the third column header in Table 4.8 and 4.9 of Appendix 11.3 Marine Mammal Unexploded Ordnance Assessment (APP-067). This correction is documented in The Applicant's Errata Sheet (PD1-012). The Applicant would like to highlight that the strikethrough indicates the original incorrect metric, which has been replaced by metric highlighted in green. The Appendix submitted at Deadline 1 (REP1-046 and REP1-047) was incorrectly amended, and updated version will be submitted alongside updates to the ES Chapter, expected at Deadline 4. For clarity, and in line with the MMO's comment, the following corrections will be made: ▪ the third column header in Table 4.8 should now read 'PTS Sound Exposure Level from Single Strike (SELss) Weighted (Impulsive Criteria)'; and ▪ the third column header in Table 4.9 should now read 'TTS SELss Weighted (Impulsive Criteria)'.

ID	Written Representation	Applicant comment
	Likewise, in Table 4.9, the middle column should be referring to the SELss for TTS (and not the SELcum). I agree that this error does not affect the outputs or assessment conclusions. The MMO and Cefas agree that this error does not affect the outputs or assessment conclusions.	
WR-096-109	***MMO's Deadline 1 response to RR-047-30*** The MMO and Cefas are content that the information provided satisfies the issue previously raised. However, the MMO requests that the Applicant clarifies to the MMO if this will also be updated in the technical note or just the Errata sheet.	An update to the magnitude for harbour porpoise at risk of Permanent Threshold Shift (PTS), as outlined in Table 5.1 in Appendix 11.3 Marine Mammal Unexploded Ordnance Assessment (APP-067), has been addressed in Marine Mammal Technical Note 1 (EIA) (REP1-083) in Section 2.5. The change of magnitude from Medium to High did not change the overall significance of effect, which was Significant (Major adverse). Following advice from the ExA that the Errata Sheet will not be accepted, this update will be incorporated to Appendix 11.3 Marine Mammal Unexploded Ordnance Assessment (REP1-046 and REP1-047) and submitted, expected to be at Deadline 4.
WR-096-110	***MMO's Deadline 1 response to RR-047-31*** The MMO and Cefas questioned the Magnitude scoring in Table 5.2. Table 5-2 confirmed that 2,037 individual harbour porpoise are at risk of TTS during high-order detonation, but this has been assessed as only having a 'Low' magnitude (with 3.3 % of the Celtic and Irish Sea (CIS) Management Unit) anticipated to be at risk of TTS). There was no further action as such requested by the MMO and Cefas, although we raised this point for awareness.	The Applicant notes the MMO's position, and further highlights that the assessment is in line with the methodology used. The EIA identifies no significant impacts. However, it is noted that UXO clearance, if required, would be determined under a separate marine licence application where mitigation would be agreed, noting low order clearance would be undertaken where possible in acknowledgement of the residual effects.

ID	Written Representation	Applicant comment
	The Applicant confirms that the 3.3% population level impact does fall within the 'Low' magnitude category for an intermittent and temporary effect. Nonetheless, the MMO and Cefas maintain that 2,037 individual harbour porpoise at risk of TTS is not an insignificant number.	
WR-096-111	***MMO's Deadline 1 response to RR-047-32*** The MMO and Cefas appreciate (and acknowledge) that there are no agreed thresholds for the onset of a behavioural response from underwater noise, especially for explosions during UXO clearance activities. Other assessments of UXO clearance activities may have used (or proposed) the TTS-onset threshold to indicate the level at which a 'fleeing; response may be expected to occur in marine mammals. Nonetheless, the MMO and Cefas advice and recommendations re regarding the assessment of TTS have been consistent. We agree that Southall et al. (2007) state that the onset of significant behavioural disturbance is proposed to occur at the lowest level of noise exposure that has a measurable transient effect on hearing (i.e., TTS-onset), recognising that this is not a behavioural effect per se. Thus, the MMO and Cefas maintain our current position that the characteristics of TTS are distinct from behavioural disturbance, in which an animal changes its behaviour in response to a stimulus. TTS typically occurs at much higher sound exposures than the onset of behavioural disturbance, and so if behavioural disturbance is assumed to occur only at sound exposures where TTS would occur, this is likely to significantly underestimate the risk of disturbance. Furthermore, behavioural responses to noise are highly variable and depend on numerous factors, including the species, individual differences, context of the noise exposure, and the animal's previous experiences. Thus, behavioural responses are influenced by a combination of physiological, psychological, and environmental	The Applicant acknowledges the MMO's response. Given the lack of agreed thresholds, the Applicant maintains that the use of TTS provides a suitable assessment to consider the effects of any potential UXO clearance. However, as a separate Marine Licence will be made for any Unexploded ordnance (UXO) clearance, the Applicant will consider the suggestions made by the MMO and continue to engage on the use of Effective Deterrent Ranges (EDRs) in any necessary UXO clearance marine licence Application, which would also inform the appropriate mitigation.

ID	Written Representation	Applicant comment
	factors, and the mechanisms driving these responses are different (compared to TTS).	
WR-096-112	***MMO's Deadline 1 response to RR-047-33*** Please refer to MMO comments for RR-047-32. The MMO and Cefas agree with the Applicant that applying an EDR (Effective Deterrent Range) for harbour porpoise to other species is deemed to be conservative (as the MMO and Cefas acknowledge in our original comment). However, the MMO and Cefas maintain that this would be a suitable precautionary option in the absence of other data (and a useful starting point), given the uncertainties surrounding the use of TTS as a proxy for disturbance. Furthermore, EDRs are designed to reflect the distances at which marine mammals are likely to exhibit behavioural changes in response to noise. The MMO and Cefas do appreciate that the EDR for piling has been used as a proxy for explosions in the JNCC (2020) guidance, despite there being no empirical evidence of harbour porpoise avoidance.	
WR-096-113	***MMO's Deadline 1 response to RR-047-34*** MMO acknowledges that the final MMMP for UXO clearance would be submitted under a future marine licence application. The MMO may provide further comments at Deadline 2 to assist with the marine licence application.	Noted, the Applicant will review any comments provided at Deadline 2.
WR-096-114	**Outline PEMP (APP-146) and IPMP (APP-148)** ***MMO's Deadline 1 response to RR-047-35*** The MMO has nothing to add at this stage but may require minor updates in relation to chemicals and will provide an update at Deadline 2.	Noted, the Applicant will review any comments provided at Deadline 2.
WR-096-115	***MMO's Deadline 1 response to RR-047-36*** The MMO notes the Applicant's response.	Noted, the Applicant will review any comments provided by the MMO.

ID	Written Representation	Applicant comment
	The MMO and Cefas are content that the information provided satisfies the previous issue raise. The MMO may provide further comments in due course.	
WR-096-116	***MMO's Deadline 1 response to RR-047-37*** The MMO has no further comments.	The Applicant notes this response.
WR-096-117	***MMO's Deadline 1 response to RR-047-38*** The MMO notes the Applicant's response.	The Applicant notes this response.
WR-096-118	***MMO's Deadline 1 response to RR-047-39*** The MMO notes the Applicant's response.	The Applicant notes this response.
WR-096-119	**General comments** ***MMO's Deadline 1 response to RR-047-40*** Noted.	The Applicant notes this response.
WR-096-120	**Chapter 7 Marine Geology, Oceanography and Physical Processes (APP-044)** ***MMO's Deadline 1 response to RR-047-41*** The MMO notes the Applicant's response. The Applicant's response does not address the previous comment as the Applicant does not propose to update the introduction. However, the MMO has no further comments as this is a minor matter and does not materially affect the application.	The Applicant notes this response.
WR-096-121	***MMO's Deadline 1 response to RR-047-42*** The MMO has no further comments.	The Applicant notes this response.
WR-096-122	***MMO's Deadline 1 response to RR-047-43*** The MMO has no further comments.	The Applicant notes this response.
WR-096-123	**Chapter 8 Marine Sediment and Water Quality (APP-045)** ***MMO's Deadline 1 response to RR-047-44***	The Applicant notes this response.

ID	Written Representation	Applicant comment
	The MMO has no further comment.	
WR-096-124	***MMO's Deadline 1 response to RR-047-45*** The MMO welcomes the Applicant's comment. The MMO will provide further comments at Deadline 2.	The Applicant notes this response, further comments if provided will be reviewed.
WR-096-125	***MMO's Deadline 1 response to RR-047-46*** The MMO will provide comments at Deadline 2.	The Applicant notes this response, further comments if provided by the MMO will be reviewed.
WR-096-126	***MMO's Deadline 1 response to RR-047-47*** The MMO will provide comments at Deadline 2.	The Applicant notes this response, further comments if provided by the MMO will be reviewed.
WR-096-127	**Chapter 5 Project Description (APP-042)** ***MMO's Deadline 1 response to RR-047-48*** The MMO alongside Cefas notes that recent research has indicated that there may be an increase in microplastic emissions from offshore wind farms (e.g., flaking of antifouling paint and erosion of turbine blade leading-edge protection materials) which could subsequently impact upon benthic receptors ((Tagg et al., 2024; Piarulli et al., 2024). Advice provided to the nearby Morgan Offshore Windfarm project, from the MMO and Cefas, regarding this impact was to ensure adequate sampling of the pre-construction condition of sediment bound microplastic load. The MMO and Cefas would similarly encourage the Applicant to seek opportunities for collaboration between researchers and industry to ensure that the opportunity to investigate this potential impact to benthic ecology is not missed at the Morecambe Offshore Windfarm. The MMO and Cefas request that the impact of the Morecambe Offshore Windfarm on sediment bound microplastic load is scoped in	The Applicant is unclear how an assessment of microplastics could be undertaken as they will be dispersed as small particles, as with all other painted structures in the marine environment. Furthermore, all paints used would be certified for use in the marine environment. There is no baseline to understand what a potential addition of potential microplastics from the Project means, given that these will be shed throughout the life of the Project and as fine particles, most will enter the water column and be distributed by currents across a wide area. The Applicant suggests that this is perhaps broadscale research but not EIA related. This type of research may not be suitable for the Project given the site is in proximity to oil and gas infrastructure and there could be no distinction between particles from the Project or nearby oil and gas infrastructure,

ID	Written Representation	Applicant comment
	for assessment and advocate for the inclusion of a suitable pre-construction survey to enable future comparison, post construction.	noting the potential decommissioning activities associated with these structures. The Applicant will however provide an update to the IPMP that paint loss and leading edge protection erosion will be monitored during the asset protection studies conducted post-construction.
WR-096-128	***MMO's Deadline 1 response to RR-047-49*** The MMO will provide comments at deadline 2.	The Applicant notes this response, further comments if provided by the MMO will be reviewed.
WR-096-129	***MMO's Deadline 1 response to RR-047-50*** The MMO will provide comments at deadline 2.	The Applicant notes this response, further comments if provided by the MMO will be reviewed.
WR-096-130	***MMO's Deadline 1 response to RR-047-51*** The MMO will provide comments at deadline 2.	The Applicant notes this response, further comments if provided by the MMO will be reviewed.
WR-096-131	***MMO's Deadline 1 response to RR-047-52*** The MMO will provide comments at deadline 2.	The Applicant notes this response, further comments if provided by the MMO will be reviewed.
WR-096-132	***MMO's Deadline 1 response to RR-047-53*** The MMO is currently reviewing all information and working with our scientific advisors to designate disposal sites. Although disposal is an activity disposal sites are regulated and reported on under OSPAR and sites should be secured within the DML. Once this has been completed the MMO will inform the Applicant and request this is updated within the DML as part of the Examination process.	The Applicant agrees that the disposal site should be secured through the dML.
WR-096-133	**Chapter 9 Benthic Ecology (APP-046)** ***MMO's Deadline 1 response to RR-047-54*** The MMO has no further comments.	The Applicant notes this response.
WR-096-134	***MMO's Deadline 1 response to RR-047-55*** The MMO has no further comments.	The Applicant notes this response.

ID	Written Representation	Applicant comment
WR-096-135	**Chapter 10 Fish and Shellfish Ecology (APP-047)** ***MMO's Deadline 1 response to RR-047-56*** The MMO has no further comments.	The Applicant notes this response.
WR-096-136	***MMO's Deadline 1 response to RR-047-57*** The MMO welcomes this update and will review the submission and provide comments in due course.	The Applicant notes this response. Further comments, if provided by the MMO, will be reviewed.
WR-096-137	***MMO's Deadline 1 response to RR-047-58*** The MMO notes the Applicant's response. The MMO is working with the Applicant to address this point. At this stage, the MMO is requesting a seasonal restriction as the information provided to date does not provide confidence that there is no impact to fish. The MMO is reviewing the information provided at the Procedural Deadline A. As standard even with an Underwater Sound Management Strategy a seasonal restriction would still have to be included on the face on the DML. However, the MMO is currently reviewing the DML and how a seasonal restriction would work alongside the Underwater Sound Management Strategy to provide the Applicant with condition wording and will provide an update in due course.	The Applicant notes the MMO's position. Consideration of seasonal restrictions have been included in the Outline UWSMS (Document Reference 9.32), noting the Applicant's position that this would not be required if design refinement or noise abatement were to be undertaken. The Applicant considers that the Outline UWSMS (Document Reference 9.32) would be sufficient to secure the necessary mitigation measures to limit impacts on fish receptors without the need for an additional and therefore unnecessary dML condition.
WR-096-138	***MMO's Deadline 1 response to RR-047-59*** The MMO will provide further comments in due course.	The Applicant notes this response.
WR-096-139	***MMO's Deadline 1 response to RR-047-60*** The MMO welcomes this update and will provide further comments in due course.	The Applicant notes this response.
WR-096-140	***MMO's Deadline 1 response to RR-047-61*** The MMO has no further comments.	The Applicant notes this response.

ID	Written Representation	Applicant comment
WR-096-141	***MMO's Deadline 1 response to RR-047-62*** The MMO has no further comments to make.	The Applicant notes this response.
WR-096-142	**Chapter 13 Commercial Fisheries (APP-050)** ***MMO's Deadline 1 response to RR-047-63*** The MMO has no further comments to make at this time.	The Applicant notes this response.
WR-096-143	**Chapter 11 Marine Mammals (APP-048)** ***MMO's Deadline 1 response to RR-047-64*** The MMO has no further comments to make.	The Applicant notes this response.
WR-096-144	***MMO's Deadline 1 response to RR-047-65*** The MMO will provide further comments at Deadline 2.	The Applicant notes this response. Further comments, if provided by the MMO, will be reviewed.
WR-096-145	***MMO's Deadline 1 response to RR-047-66*** The MMO notes the Applicant's comment. The MMO acknowledges that the underwater noise modelling assumes a larger pile diameter. The MMO have recommended to the Applicant that this information across the various Environmental Statement and appendixes are consistent, so it is clear what the worst-case assumptions are but welcomes this clarification.	The Applicant is considering the appropriate time for submission of clarification within the documentation while other technical matters are still in discussion. It is anticipated that these updated documents will be provided at Deadline 4.
WR-096-146	**Chapter 14 Shipping and Navigation (APP-051)** ***MMO's Deadline 1 response to RR-047-67*** Please see comments in Section 1.4 of this document	The Applicant notes this response.
WR-096-147	**Chapter 15 Marine Archaeology and Cultural Heritage (APP-052)** ***MMO's Deadline 1 response to RR-047-68*** Please see comments in Section 1.3 of this document	The Applicant notes this response. No further action required.

ID	Written Representation	Applicant comment
WR-096-148	**Chapter 18 Seascape, Landscape and Visual Impact Assessment (APP-055)** ***MMO's Deadline 1 response to RR-047-69*** The MMO understands there is no outstanding comments on this matter.	The Applicant notes this response. No further action required.
WR-096-149	**Chapter 12 Offshore Ornithology (APP-049)** ***MMO's Deadline 1 response to RR-047-70*** Please see comments in Section 1.6 of this document which in general defer to the SNCBs.	The Applicant notes this response.
WR-096-150	**Initial Statements of Common Ground (SoCG)** The MMO has worked with the Applicant to prepare a SoCG which will be submitted by the Applicant at Deadline 1. The MMO will continue to work with the Applicant outside of the written process to ensure issues are being moved to resolution where possible.	Noted with thanks and the Applicant will continue to work with the MMO as required.
WR-096-151	**Comments from ISH1** The MMO has reviewed EV3-009 'Action Points from Issue Specific Hearing 1 (ISH1)' and will review the documents/updates to be submitted by the Applicant where relevant.	The Applicant notes this response.
WR-096-152	**Notification by Statutory Parties of their wish to be considered as an IP by the ExA** The MMO wish to be considered as an interested party by the ExA.	The Applicant notes this response.
WR-096-153	**Notification of wish to have future correspondence received electronically** The following people request future correspondence to be received electronically: ▪ [REDACTED] ▪ [REDACTED]	The Applicant notes this response.

ID	Written Representation	Applicant comment
	▪ [REDACTED]	
WR-096-154	**Declaration of use of Artificial Intelligence in preparation of any submissions to date** The MMO has not used Artificial Intelligence in preparation of any submissions to date. [REDACTED]	The Applicant notes this response.

2.3 Natural Resource Wales (REP1-099)

Table 2.3 The Applicant's comments on NRWs written representation

ID	Written Representation	Applicant comment
WR-099-01	**PROPOSED MORECAMBE OFFSHORE WINDFARM GENERATION ASSETS** **CYFEIRNOD YR AROLYGIAETH GYNLLUNIO / PLANNING INSPECTORATE** **REFERENCE: EN010121** **EIN CYFEIRNOD / OUR REFERENCE: 20049962** **RE: NATURAL RESOURCES WALES' WRITTEN SUBMISSION FOR DEADLINE 1** Thank you for your Rule 8 letter, dated 23rd September 2024 requesting Cyfoeth Naturiol Cymru / Natural Resources Wales' (NRW) comments regarding the above project. This letter comprises the following submission from NRW: a) Written Representations – see Annex A. The comments provided in this submission, including the associated Annexes, comprise NRW's response as a Statutory Party under the Planning Act 2008 and Infrastructure Planning (Interested Parties)	The Applicant notes this response.

ID	Written Representation	Applicant comment
	Regulations 2015 and as an 'Interested Party' under s102(1) of the Planning Act 2008. The comments are made without prejudice to any further comments NRW 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 Morecambe Offshore Windfarm Ltd ('the Applicant'), the Examining Authority or other Interested Parties. NRW are in active and on-going engagement with the Applicant. As previously communicated with the Applicant and the Planning Inspectorate, for the Morecambe Offshore Windfarm Generation Assets DCO, NRW registered as an interested party for Marine Mammals, Marine Ornithology, and in-combination and cumulative effects but were not in the position to provide detailed comments at pre-examination, namely for Relevant Representations. NRW's detailed comments can be found in Annex A. The Rule 8 letter requested Initial Statements of Common Ground (SoCG) to be submitted at Deadline 1. NRW have taken the decision to only review the first and final iterations of any SoCG with the Applicant. This decision has been made to ensure that we are able to direct our focus on further written submissions, questions put forward to NRW by the Examining Authority, responses to other Interested Party submissions, responses required under Rule 17. NRW (A) continue to work with the Applicant and believe that they intend to submit the first draft iteration of the SoCG for examination at Deadline 3. With respect to the advice contained within this document relating to nature conservation within Welsh inshore waters, reference to Welsh Offshore waters and English Onshore / Offshore waters may be	

ID	Written Representation	Applicant comment
	made in view of mobile species, Zones of Influence and potential cross-border and cumulative / in-combination impacts on the Welsh inshore marine area and protected sites. Where potential impacts are wholly within Welsh offshore waters or English Onshore / Offshore waters, NRW (A) defer to comments provided by the Joint Nature Conservation Committee (JNCC) and Natural England (NE) respectively. [REDACTED]	
Annex A – Written Representations Marine Ornithology		
WR-099-02	1. **Summary** NRW (A) are unable to agree with conclusions on project alone impacts for features of Welsh SPAs due to concerns regarding the Applicants underlying methodology together with discrepancies in seasonal definitions and mean seasonal abundance at EIA scale which affect apportioned impacts to designated sites. Where data gaps exist in cumulative and in-combination assessments we are unable to comment on the potential significance of in combination impacts to Welsh Designated Sites. There is a lack of consideration of a range of % mortality rates in gannet displacement assessments and a lack of quantitative assessments for features of Pen y Gogarth / Great Orme's Head SSSI.	The Applicant notes this response– see detailed responses to WR-099-04 to WR-099-41 below.
WR-099-03	**2. Detailed Comments** This section of our Written Representation covers issues associated with matters considered to be cumulative and in-combination effects in relation to Welsh designated sites and/or mobile species. NRW (A) are therefore focussing on Marine Mammals and Marine Ornithology only. All other matters pertaining to the development will be deferred to Natural England/the Joint Nature Conservation Committee (JNCC). Our response draws on the information contained in the	Noted, the Applicant will continue to engage with Natural Resource Wales (NRW) and develop the SoCG for Deadline 3.

ID	Written Representation	Applicant comment
	original application documents submitted by the Applicant. NRW registered as an interested party but were not in the position to provide detailed comments at pre-examination, namely relevant representations. Hence, NRW do not have any outstanding issues to respond to from the Applicant as part of our written representations. In our Written Representations, NRW (A) set out the main issues in relation to the application. We also provide advice on the Applicant's approach which, although suitable for this application, it may not be for other situations and should not set a precedent for further offshore wind applications coming up in the same area. We are also progressing a draft SoCG between NRW and the Applicant, which is planned for submission (by the Applicant) at Deadline 3. This SoCG will highlight progress made and those matters that are still outstanding / ongoing between the two parties.	
WR-099-04	**3. Marine Ornithology** This section of NRW (A)'s Written Representation covers issues relating to offshore ornithology associated with the Morecambe Generation Assets application and draws on the information contained in the original application documents and further submissions from the Applicant at Procedural Deadline A.	The Applicant notes this response.
WR-099-05	As the Morecambe Generation Assets project is located wholly in English waters, NRW (A)'s primary area of interest for offshore ornithology for this project is on impacts to Welsh designated sites and hence the advice provided focuses on Welsh designated sites and cumulative/in-combination assessments. However, we have also provided advice on the overall methodological approaches taken for offshore ornithology as these are relevant to the assessment of impacts to Welsh designated sites.	The Applicant notes this response.
WR-099-06	Following a review of the information submitted by the Applicant, NRW (A) have identified the key issues as:	The Applicant notes this response– see responses to WR-099-07 to WR-099-10 below.
WR-099-07	We have concerns regarding the Applicants approach together with discrepancies in seasonal definitions and mean seasonal peak	The Applicant presented an update to the gannet Environmental Impact Assessment (EIA) assessment

ID	Written Representation	Applicant comment
	abundances at EIA scale, which have the potential to feed through to apportioned impacts to designated sites (SPAs/Ramsar's) and hence mean we are unable to confidently agree to conclusions regarding project alone impacts for some features of Welsh SPAs. See Sections and 3.1.5.	to reflect the corrected seasonal periods at Procedural Deadline A (PD1-010, Section 4). The Applicant will provide updates to address NRW's other comments at Deadline 3, which should provide NRW with sufficient information to agree no adverse effect on integrity (AEoI) for Welsh SPAs.
WR-099-08	Lack of consideration of a range of % mortality rates in gannet displacement assessments. Although we do note that full displacement matrices for the Grassholm SPA are provided in APP-070 and hence, the predicted impacts for the advised range can be accessed. See Sections 3.1.2 and 3.1.5.	The Applicant notes this response – see detailed responses below.
WR-099-09	Data gaps in cumulative/in-combination assessments, meaning that at present we are unable to comment on the potential significance of in-combination impacts to Welsh designated sites. See Section 3.1.4. Lack of quantitative assessments for features of Pen y Gogarth / Great Orme's Head SSSI. See Section 3.1.6	Noted – The Applicant has presented information to address the 'gap-filling' of historic projects at Deadline 1 within the Offshore Ornithology Technical Note 1 (EIA) (REP1-080) and Offshore Ornithology Technical Note 2 (Habitat Regulations Assessment (HRA)) (REP1-081). See also detailed responses below
WR-099-10	Further detail on each of these issues are set out below.	The Applicant notes this response – see responses to detailed comments below.
WR-099-11	**3.1 Methodological Issues** **3.1.1 Seasonal differences and mean peak abundances** NRW (A) agree with the shaded seasonal definitions presented by the Applicant in Table 12.16 of Volume 5, Chapter 12, [APP-049]. However, on comparison of the seasonal mean peak abundances presented in Table 12.21 of APP-049 with the array plus 2km buffer abundances presented in the Technical Report [APP-070], there appears to be some inconsistencies in the months assigned to each season for gannet (Table 5.76 of APP-070) and Manx shearwater (Table 5.148 of APP-070). NRW (A) advise that the full breeding season definition is used and then where there is overlap of a month(s) with both a migration season and the breeding season, the	Noted – see detailed responses below

ID	Written Representation	Applicant comment
	month(s) in question should be considered in the breeding season and the non-breeding season definitions in Furness (2015) be adjusted accordingly. The inconsistencies identified are as follows:	
WR-099-12	Assigning gannet abundances to seasons following the NRW (A) advised seasonal definition approach would mean that: 0 gannets were recorded in the wind farm array + 2km buffer in the pre-breeding/spring migration period of December-February, and far fewer gannets (14 rather than 124 as presented in Table 12.21 of APP-049) were recorded in the post-breeding/autumn migration period of October-November.	As noted in NRW's comment below, the Applicant presented an update to the gannet assessment to reflect the corrected seasonal periods at Procedural Deadline A (PD1-010, Section 4).
WR-099-13	Assigning Manx shearwater abundances to seasons following the NRW (A) advised seasonal definitions approach would mean that: 0 Manx shearwaters were recorded in the wind farm array + 2km buffer in the pre-breeding/spring migration period of March, rather than the 1,617 as presented by the Applicant in Table 12.21 of APP-049. 5,161 Manx shearwaters were recorded in the wind farm array + 2km buffer in the breeding period of April-August, rather than the 4,705 as presented by the Applicant in Table 12.21 of APP-049. 376 Manx shearwaters were recorded in the wind farm array + 2km buffer in the post-breeding/autumn migration period of September-October, rather than the 2,650 as presented in Table 12.21 of APP-049.	The Applicant notes NRW's comments and confirms that an updated assessment for Manx shearwater will be presented in an update to the Offshore Ornithology Technical Note 1 (EIA) at Deadline 3. The Applicant does not expect that these changes will affect the conclusions of the assessment, either at the EIA or HRA scales.
WR-099-14	We do however note that the correct months as advised by NRW (A) have been used for assigning collision impacts to seasons for gannet. NRW (A) note that these inconsistencies/errors in the seasonal mean peaks could have implications for the number of gannets and Manx shearwaters apportioned to designated sites (including	Noted. The Applicant will review these changes and present any necessary updates at Deadline 3 within the Offshore Ornithology Technical Note 1 (EIA) and Offshore Ornithology Technical Note 2 (HRA), as appropriate.

ID	Written Representation	Applicant comment
	Grassholm SPA, Aberdaron Coast and Bardsey Island SPA and Skomer, Skokholm and seas off Pembrokeshire (SSSP) SPA). Therefore, we suggest that the assessments should be reviewed by the Applicant and updated as necessary, including following any updates through to apportionment to designated sites and associated HRA reports, so that the most appropriate figures for the project for these sites are available for future projects to include in in-combination assessments.	
WR-099-15	We note that the Applicant has updated the EIA scale gannet assessments to correct these errors in their Response to the Rule 9 Letter [PD1-010]. We welcome this, but we also consider that these corrected EIA scale abundances should also be taken through to the HRA assessments for the relevant gannet designated sites (including Grassholm SPA) and the assessments updated accordingly.	Noted. The Applicant will present any necessary updates in respect of gannet for Grassholm Special Protection Area (SPA) at Deadline 3 within the Offshore Ornithology Technical Note 2 (HRA).
WR-099-16	NRW (A) also request clarification from the Applicant as to the seasonal definitions used for puffin, as the shaded seasonal definitions presented by the Applicant in Table 12.16 of Volume 5, Chapter 12 [APP-049] suggest definitions of April-August have been used for the full breeding season and September-March as the non-breeding season. However, the text in paragraph 1410 of the Report to Inform Appropriate Assessment (RIAA) [APP-027] in the puffin assessment for the SSSP SPA suggests that a non-breeding season definition of August-March may have been used. We suggest the Applicant checks these definitions and ensures that no months are considered in more than one season, and then where required, the apportioned impacts for the puffin feature of the SSSP SPA (and any other sites that may be affected) are checked and updated.	The Applicant can confirm that the assessment of puffin displacement (both within ES Chapter 12 (APP-049) and the Report to Inform Appropriate Assessment (RIAA) (APP-027)) has assumed a breeding season of April to August and a non-breeding season of September to March. The mention of August to March for the non-breeding season in paragraph 1410 of the RIAA (APP-027) is specifically referencing the BDMPS population, as defined in Furness (2015), which is given as this period. However, September to March has been used to define the relevant Project non-breeding populations that have been used in the respective assessments.
WR-099-17	**3.1.2 Collision risk modelling (CRM) and displacement assessments** NRW (A) welcome that in the assessments to Welsh SPAs/Ramsars in the RIAA [APP-027], the Applicant has considered a range of	The Applicant welcomes NRW's agreement with the approach used for the collision risk and displacement assessments.

ID	Written Representation	Applicant comment
	predicted apportioned impacts that consider the uncertainty and variability in the Collision Risk Modelling (CRM) input parameters (i.e. consider the range of predicted collision vales from the sCRM tool, rather than just the mean predicted impact) and consider the uncertainty and variability in the potential % displacement and % mortality rates (i.e. have considered a range of % displacement and % mortality rates, as well as the Applicant's preferred rates). We agree with the sCRM input parameters used (i.e. those advised to the Applicant by NE during the Expert Working Group (EWG)) and are largely in agreement with the ranges of % displacement and % mortality rates used by the Applicant. However, we would suggest that a 1-10% range of mortality rates are used for gannet displacement assessment (such as for Grassholm SPA) rather than a single 1% mortality as has been used. Although we do note that full displacement matrices for this site are provided in APP-070 (see Section 3.1.5 below).	The Applicant does not agree that use of a single (1%) mortality rate for gannet is inappropriate. This species has a long foraging range (mean maximum+1SD = 509km (Woodward *et al.*, 2019)) and has high habitat flexibility (Furness and Wade, 2012). It is therefore unlikely that displacement from a windfarm, particularly when distant from a breeding colony or located within the species' extensive non-breeding season foraging range, would have any measurable mortality effect. Therefore, mortality of 1% for displaced birds is considered suitably precautionary, and has been widely accepted as appropriate by the SNCBs for existing consented windfarm projects, including the Awel y Môr windfarm (RWE, 2023, NRW, 2022). Nonetheless, as NRW has noted, the Applicant has presented the full range of mortality scenarios within its submissions to enable the effect at different levels of mortality to be considered, if required. Furthermore, given the very low levels of mortality predicted for this species, it is very unlikely that the assessment conclusions would be affected even if 10% mortality was assumed.
WR-099-18	**3.1.3 Migratory non-seabird collision risk** NRW (A) welcome the consideration of migratory non-seabirds and impact estimates derived by CRM. We note the low levels of predicted impact from the project alone relative to the contributing populations. NRW (A) are satisfied that the project alone will not result in any significant level of impact to migratory non- seabirds that are qualifying features of the Welsh SPAs/Ramsar sites within 100km of the Project.	Noted, the Applicant welcomes NRW's agreement with the conclusions of the migratory non-seabird collision risk assessment.

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WR-099-19	**3.1.4 Cumulative Effects Assessment (CEA) methodology** NRW (A) do not consider the Cumulative Effects Assessment (CEA) (cumulative at EIA scale and in-combination for HRA) to be sufficiently robust. This is due to the lack of quantitative consideration of some historic projects. This issue was raised as a concern by NRW (A) in our Preliminary Environmental Information Report (PEIR) responses. We highlight that NRW (A) advised the Crown Estate Round 4 plan-level Habitats Regulations Assessment (HRA) to undertake quantitative 'gap-filling' for historic projects. It is unfortunate that this advice was not adopted as we do consider this problem would be best tackled at the strategic level. Nonetheless, the SNCBs supplied bespoke advice to the Round 4 projects in the Irish Sea detailing a hierarchical method to 'gap-fill' the Irish Sea cumulative and in-combination assessments, in this case sent by Natural England (NE) to the Applicant. The advice to the Applicant was to generate indicative estimates for currently unknown impacts, which have been assumed to be zero. Adopting an approach that would allow indicative estimates to be made (rather than assuming zero) would then enable more informed expert judgement to be made on the likelihood of adverse effects, and thus if further investigation by a more rigorous assessment was warranted.	Noted. The Applicant has presented information to address the 'gap-filling' of historic projects at Deadline 1 within the Offshore Ornithology Technical Note 1 (EIA) (REP1-080) and Offshore Ornithology Technical Note 2 (HRA) (REP1-081).
WR-099-20	We note that the Applicant declined to fully follow the SNCB advised approach to 'gap-fill' the CEA, as the Applicant does not believe the consideration of proxy sites with quantified impacts is appropriate. Whilst the Applicant has made useful progress on addressing the data gaps in the assessments presented, we remain concerned that some projects are effectively treated as having 0 impact based on highly uncertain qualitative assessments. Hence, we do not consider that the qualitative assessments presented by the Applicant are sufficient to give confidence in the conclusions drawn with respect to the level of significance of accumulating scale of impacts to some species. Our advice therefore remains as detailed in the original SNCB advice provided to the Applicant. However, we do recognise	

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	that for most assessments the legitimate risk of impact on integrity judgements is relatively low.	
WR-099-21	We note that since the PEIR, the Applicant has made useful progress on addressing data gaps and assessing the risks of remaining gaps in the submission documents. However, we question the apportioning approach used by the Applicant in cases where EIA impacts are assigned to SPAs for in-combination assessments (see below). At present, we do not consider that appropriate assessments can be undertaken without further quantification of impacts arising at historic projects.	
WR-099-22	For in-combination assessments, the numbers of mortalities attributed to each project in the region, which the Applicant produced for their cumulative impacts assessment for EIA, have been apportioned to SPAs. In the breeding season, birds are constrained to forage from a single colony, and the distance of a project from a colony becomes highly influential in determining how many birds should be apportioned to that colony. Calculation of breeding season apportioning values using the NatureScot method involves working out the distance from a project to every colony within the foraging range of a given species. Rather than do this for every historic project for which apportioning values are not available, the Applicant has chosen instead to use newer projects as proxies for the older ones. This is reasonable in cases where a proxy is in a similar location to another project. However, in some cases the Applicant has used a project that is a significant distance away both from other projects, and from key SPA colonies, as a proxy. This may lead to severe underestimation of in-combination impacts.	Noted. Natural England raised similar concerns within its relevant representations (RR-061) regarding the approach to apportioning effects for lesser black-backed gull at Morecambe Bay and Duddon Estuary SPA (which, with Ribble and Alt Estuaries SPA was the only site for which Natural England had outstanding concerns regarding the in-combination assessment conclusions). The Applicant therefore updated the apportioning approach for relevant projects included in the in-combination assessments for this species at Deadline 1, as presented in Offshore Ornithology Technical Note 2 (HRA) (REP1-081). The Applicant has not identified any other Welsh SPAs/features where this would apply.
WR-099-23	NRW (A) also highlight inconsistencies in figures used for some projects compared to those in other assessments (e.g. Morgan Generation Assets and Mona Offshore Wind Farms (OWF)). We advise that the Round 4 Irish Sea OWFs should be collaborating to use the same data to conduct their cumulative and in-combination	The Applicant has presented the updated cumulative assessment, including 'gap-filled' historic projects, at Deadline 1. This has been provided for species where Natural England, in its relevant representations (RR-061), identified outstanding concerns regarding the

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	assessments. This is important both with respect to historic projects and the current projects themselves, given these projects are in examination simultaneously and the impact estimates are subject to change.	potential significant cumulative effects at the EIA scale (guillemot, herring gull, lesser black-backed gull, great black-backed gull and little gull) or in-combination effects at the HRA scale (lesser black-backed gull). The Applicant has worked with the Mona and Morgan Generation projects to ensure a consistent approach to the generation of the 'gap-fill' values, with the estimates published by the Applicant at Deadline 1 based primarily on those presented by the Mona project at its Deadline 1 (Mona Examination Library: REP3-04). There will be small differences between the published values for the three projects, but these differences will not affect the assessment conclusions. The reasons for these differences include: ▪ The Applicant has presented the most recent population/mortality estimates for the Mona and Morgan Generation projects, as published during their respective Examinations. The summed values may therefore differ from those presented by those projects, where previous values have been used. ▪ For the assessment of cumulative collision risk for herring gull, lesser black-backed gull and great back-backed gull, the Applicant has adjusted the avoidance rate presented in the Mona Offshore Wind Project Technical Note (0.9939) to the ‘large gull’ rate recommended in the joint SNCB advice note (0.9940; SNCBs, 2024). ▪ The Applicant has presented an updated cumulative/in-combination assessment for little gull and in-combination assessment for lesser

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		black-backed gull; neither has been undertaken for the Mona or Morgan Generation projects.
WR-099-24	Therefore, based on the issues outlined above, we are unable to comment on the potential significance of in-combination impacts to Welsh designated sites presented at this stage.	Noted, see responses above.
WR-099-25	We note that NE also raised the issue of gaps in the cumulative/in-combination assessments in their Relevant Representations [RR-061]. From the Applicant's response to NE's Relevant Representations [see points RR-061-26, RR-061-70 of PD1-011], we understand that the Applicant will provide an update to cumulative/in combination assessments at Deadline 1 (agreed with the ExA within its Rule 6 Letter [PD-007]), to incorporate additional information for historic projects, for species where NE has identified this requirement. We also understand from PD1-011 that the Applicant confirms that discussions with the other Round 4 Irish Sea offshore windfarms (OWFs) (Mona Offshore Wind Project and Morgan Offshore Wind Project Generation Assets) are ongoing to ensure collaboration across the projects, which is welcomed. We will therefore provide further advice regarding in-combination impacts to Welsh designated sites following full review of the information submitted by the Applicant.	Noted, see responses above.
WR-099-26	NRW (A) also note that the Applicant has taken a general approach of where the background mortality is predicted to increase by less than 0.1% and/or apportioned mortality is significantly below one individual, it has been assumed that changes would be undetectable against natural variation, and no contribution by the project to in-combination effects has been assumed. Whilst this approach may be appropriate for this project where predicted impacts from the project alone are likely very small, it may not be appropriate in other situations, including for designated sites where in-combination impacts are already close to/at levels that are already considered to be of an adverse effect; or for designated sites considered to be in	Noted, the Applicant welcomes NRW's agreement that the approach adopted for the in-combination assessment is appropriate for the Project assessment.

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	unfavourable condition/have restore conservation objectives. It also does not mean that impacts from the Morecambe Generation Assets project should be excluded from in-combination totals for future project assessments. We do however welcome that the Applicant has taken designated sites through to in-combination assessment where the predicted impact from the project alone exceeds their 0.1% baseline mortality threshold anywhere across the full range of predicted impacts assessed.	
WR-099-27	**3.1.5 Impacts to Welsh Designated Sites** ***Welsh Special Protection Areas (SPAs) and Ramsar sites*** NRW (A) welcomes the Applicant's approach to HRA, in which a comprehensive list of SPAs/Ramsars has been considered for impacts and agree with the Welsh SPA/Ramsar sites screened into the assessment in the HRA Screening Report [APP-028]. We note that due to the location of the Morecambe Generation Assets project, protected sites from the other devolved administrations are screened into the assessment. We highlight that NRW are the relevant SNCB to consult on impacts to Welsh sites, but it would not be appropriate for us to advise on integrity judgements on sites located outside of Wales. We advise that the Applicant consult the relevant SNCBs regarding impacts to non-Welsh sites.	The Applicant welcomes this response, and confirms that it has been working closely with Natural England in respect of English sites. The Applicant has also contacted Department of Agriculture, Environment and Rural Affairs (DAERA) and NatureScot regarding Northern Irish and Scottish sites respectively. Comments have recently been received from NatureScot who confirmed they will not be participating in the Examination (6th December 2024). No direct response has been received from DAERA to date.
WR-099-28	NRW (A) are content with the Applicant's methods used to calculate the breeding season and non-breeding season(s) apportionment values for impacts from the project alone to SPAs and Ramsars. We do note NE's concerns raised in their Relevant Representations [RR-061] regarding the apportionment of lesser black-backed gull colonies in the breeding season, but we note that any updates to this would not alter the apportioned impacts from the project alone for this species to the Skomer, Skokholm and seas off Pembrokeshire SPA as no breeding season impacts have been apportioned to this colony.	The Applicant notes this response.

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WR-099-29	We agree with the Applicant that for the Welsh SPAs/Ramsar site assessed the predicted impacts from the Morecambe Generation Assets project alone are small and equate to less than 1% of baseline mortality of the respective population and would not be detectable against background mortality and hence can agree that an adverse effect on site integrity (AEoSI) can be ruled out for these sites and feature combinations. However, there are some exceptions to this, which are detailed in paragraphs 31- 36 below.	The Applicant welcomes NRW's agreement with the conclusions of the assessment conclusions for Welsh sites presented in the RIAA (APP-027), noting the exceptions below.
WR-099-30	***Glannau Aberdaron ac Ynys Enlli / Aberdaron Coast and Bardsey Island (AC & BI) SPA: Manx shearwater*** NRW (A) draw attention to our comments in Section 3.1., paragraph 13 above regarding the apparent errors in the mean peak seasonal abundance figures for EIA scale Manx shearwater. Whilst, we expect that these errors are unlikely to alter the Applicant's conclusions of no AEoSI from the project alone, the figures should be checked and corrected for this site/feature combination where appropriate before we can definitely reach agreed conclusions.	The Applicant confirms that it will review the Manx shearwater assessment for the Aberdaron Coast and Bardsey Island SPA to reflect the adjusted seasonal values, and present any relevant updates at Deadline 3 within the Offshore Ornithology Technical Note 2 (HRA).
WR-099-31	***Sgomer, Sgogwm a Moroedd Penfro / Skomer, Skokholm and the Seas off Pembrokeshire (SSSP) SPA: Manx shearwater, puffin*** RW (A) draw attention to our comments in Section 3.1., paragraph 13 above regarding the apparent errors in the mean peak seasonal abundance figures for EIA scale Manx shearwater. Whilst, we expect that these errors are unlikely to alter the Applicant's conclusions of no AEoSI from the project alone, the figures should be checked and corrected for this site/feature combination where appropriate before we can definitely reach agreed conclusions.	The Applicant confirms that it will review the Manx shearwater assessment for the Skomer, Skokholm and the Seas off Pembrokeshire SPA to reflect the adjusted seasonal values, and present any relevant updates at Deadline 3 within the Offshore Ornithology Technical Note 2 (HRA).
WR-099-32	We also note our comments in Section 3.1., paragraph 17 above regarding the seasonal definitions used for puffin in this assessment and the potential for errors in the mean peak seasonal abundance figures used in the apportionment of abundance	As set out in its response to NRW comments in Section 3.1, the Applicant can confirm that the assessment of puffin displacement within the RIAA (APP-027) has used the correct seasonal population

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	estimates to the SPA. Whilst we expect that these errors are unlikely to alter the Applicant's conclusions of no AEoSI from the project alone, the figures should be checked and corrected for this site/feature combination where appropriate before we can definitely reach agreed conclusions.	estimates for this species. No update in respect of the Skomer, Skokholm and the Seas off Pembrokeshire SPA assessment is therefore required, and the assessment conclusion of no AEoSI for this species (as set out in the RIAA; APP-027) is unchanged.
WR-099-33	***Grassholm SPA: Gannet*** NRW (A) note our comments in 3.1. paragraph 12 above regarding the apparent errors in the mean peak seasonal abundance figures for EIA scale gannet. Therefore, we advise the Applicant checks these figures and updates the apportioned figures for this feature of the colony and associated assessment accordingly. We also note that in the displacement assessment, the Applicant has only considered a 1% mortality rate. To account for uncertainty in mortality rates resulting from displacement we would recommend that the Applicant also considers the 1-10% mortality rate ranges for this species as has been done for other species displacement assessments. Although, we do note that the Applicant has presented full displacement matrices for apportioned impacts (which need to be corrected for errors in seasonal apportioned abundances) for this site for the project alone in Tables 3.230-3.237 of APP-070 and if updated, then the numbers for our advised range could be extracted to inform our advice. Whilst, we expect that these issues are unlikely to alter the Applicant's conclusions of no AEoSI from the project alone, the figures should be checked and corrected for this site/feature combination where appropriate before we can definitely reach agreed conclusions.	The Applicant confirms that it will review the gannet assessment for Grassholm SPA to reflect the adjusted seasonal values, and present any relevant updates at Deadline 3 within the Offshore Ornithology Technical Note 2 (HRA). As set out in its response to NRW comment 3.1.2, the Applicant does not agree that use of a single (1%) mortality rate for gannet is inappropriate; refer to the response above for the Applicant's justification for this position. Nonetheless, as NRW has noted, the Applicant has presented the full range of mortality scenarios within its submissions (and will also do so for the update to be presented at Deadline 3) to enable the effect at different levels of mortality to be considered, if required. As noted above, given the very low mortality predicted for this species, it is very unlikely that the assessment conclusions would be affected even if 10% mortality was assumed.
WR-099-34	***Liverpool Bay SPA*** Given that the Morecambe Generation Assets project is located wholly in English waters, we defer comment/advice regarding predicted impacts and integrity judgements of the project alone and in-combination for all qualifying features of the Liverpool Bay SPA to NE.	The Applicant notes this response.

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WR-099-35	However, we do note that in paragraph 479 of the RIAA [APP-027] the Applicant states that: 'It is noted that in the HRA of the Awel y Môr OWF project (DESNZ, 2023a), the Secretary of State (SoS) concluded that an adverse effect on the integrity on the red-throated diver feature of the SPA from the Awel y Môr project in-combination with other projects could be excluded.' Hence, the Applicant concludes that it is unlikely that the SoS would reach a materially different conclusion in this regard. With regard to this point, we note that NRW/JNCC advice provided during the Awel y Môr project related to specific factors and data relating to that particular area of the SPA. The advice specifically related to the low numbers of divers encountered in the area and the findings of the post-construction monitoring of the Gwynt y Môr windfarm. As a result, NRW/JNCC concluded that Awel y Môr would not significantly affect the distribution of red-throated diver in this particular area of the SPA. In our Written Representations for the Awel y Môr project (NRW 2022), we note that the lack of displacement of red-throated diver in this part of Liverpool Bay SPA is not consistent with what has been observed in other areas of Liverpool Bay SPA as well as in other areas of the UK and Europe where strong displacement of RTD by offshore windfarms have been observed. Given this anomaly we advised that comprehensive validation monitoring before, during, and after construction of Awel y Môr is needed to confirm that it is the case that supporting habitat (as identified in the sites conservation objectives) has not been lost. It should therefore be borne in mind that the proposed Morecambe Generation Assets project will be impacting the northern part of the SPA, whereas the Awel y Môr project is located in the southern part of the SPA.	The Applicant notes NRW's comments on this matter. A detailed response to support the Applicant's conclusion of no AEoI in respect of red-throated diver at Liverpool Bay SPA was presented at Deadline 1 in Offshore Ornithology Technical Note 3 (Red-throated diver at Liverpool Bay SPA update assessment) (REP1-082). This note addresses NRW's comments regarding the distribution of and relative effects on red-throated diver arising from the Awel y Môr windfarm and the Project, noting that the Applicant does not agree that there is sufficient evidence to indicate that there would be a substantially different response by red-throated divers when comparing the two projects, or that the distribution of red-throated divers is likely to be affected by the Project. The Applicant also notes that red-throated diver validation monitoring has been proposed for the Project, as set out in its Offshore Ornithology Technical Note 3 (RTD) (REP1-082) submitted at Deadline 1 and The Applicant's Response to Relevant Representations (PD1-011) submitted at Procedural Deadline A.
WR-099-36	**3.1.6 Welsh Sites of Special Scientific Interest (SSSIs)** ***Pen-y-Gogarth / Great Orme's Head SSSI*** In our PEIR comments, NRW (A) highlighted that as the Morecambe Generation Assets project is located within foraging range of the	Noted. The Applicant confirms that it will present a quantitative assessment of effects on Pen-y-Gogarth / Great Orme's Head Site of Special Scientific Interest (SSSI) in an update to the Offshore Ornithology

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	guillemot, razorbill and kittiwake features of the Pen-y-Gogarth / Great Orme's Head SSSI, there was a need for the Applicant to present a full quantitative assessment of impacts from the proposed project on these features of the site. Whilst the Applicant presents a very high-level qualitative assessment of impacts to SSSIs in paragraphs 12.423-12.424 of Volume 5, Chapter 12 [APP-049], no quantitative assessment has been made in the submission of impacts to the guillemot, razorbill (both for displacement) or kittiwake (collision) features of this site. Therefore, the Applicant has not carried out assessment of potential impacts to this site sufficiently in order to enable the effects on the features of the site to be assessed.	Technical Note 1 (EIA) at Deadline 3. We confirm that we will review relevant assessments presented by the Awel y Môr, Mona and Morgan Generation projects to support this information, and that the assessment will be presented in line with the approach advised by NRW.
WR-099-37	The proposed location for the Morecambe Generation Assets array area is approximately 52km from Pen-y-Gogarth / Great Ormes Head Site SSSI (Figure 1). The cliffs host a large colony of breeding seabirds, and the site is designated for breeding kittiwake, guillemot and razorbill. This is the second largest kittiwake breeding colony in Wales and the largest in North Wales, supporting approximately 790 pairs (5-year mean of peak counts 2018-2022, excluding 2020 when no data were collected due to the COVID-19 Pandemic). In addition, the site supports around 1,500 guillemots and 150 razorbills each year (figures also based on 5-year mean peak 2018-2022 excluding 2020).	
WR-099-38	NRW (A) advise that the Applicant should undertake full quantitative assessments of predicted impacts of displacement of the guillemot and razorbill and collision of the kittiwake features of the Pen-y-Gogarth / Great Orme's Head SSSI. We advise that displacement and collision risk impacts are apportioned to the site using the same approaches as used for the SPA/Ramsar assessment, i.e. to follow the NatureScot approach (as has already been done in Annex 2 of APP-070) for the breeding season and use the information in the respective Appendix A tables from Furness (2015) for the non-breeding seasons – as the SSSI colony will not be specifically listed in the Furness (2015) tables, we suggest that apportionment is	

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	informed by use of the adult proportion of birds for the 'western non SPA colonies' in the Furness 2015 Appendix A tables. We would be happy to discuss appropriate approaches further with the Applicant if required.	
WR-099-39	Guillemot and razorbill displacement assessments should be based on the displacement matrix approach and due to the uncertainty around specific displacement and mortality rates the assessments should consider a range of displacement rates (i.e. for auks 30-70% displacement and 1-10% mortality), as has been undertaken by the Applicant in their other assessments. Kittiwake collision assessments should be based on the stochastic collision risk model (sCRM) as used by the Applicant for their other collision assessments, using the same input parameters for bird biometrics, flight speeds, avoidance rates, nocturnal activity etc (as was provided to the Applicant by NE). If apportioned impacts equate to 1% or greater of baseline mortality then further consideration should be given through PVA. If this is the case, NRW (A) can discuss and advise appropriate input parameters with the Applicant.	
WR-099-40	NRW (A) also advise that the Applicant considers assessment of cumulative impacts to this SSSI of the Morecambe Generation Assets project cumulatively with other plans and projects. This is particularly as the Awel y Môr, Mona and Morgan generation assets projects are all located within foraging range of all three features of the Pen y Gogarth / Great Orme's Head SSSI.	
WR-099-41	We note that quantitative assessments of impacts to this site have been conducted by the Awel-y-Môr Applicant in their Deadline 3a submission: Deadline 3a assessment and are also being undertaken by the Mona project and Morgan Generation Assets Applicants. We note that a recent update to the Mona assessment for this site has been submitted by the Applicant at Deadline 4. Whilst we have not yet fully reviewed this document, we understand that this includes cumulative assessments. We suggest that the Morecambe	

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	Generation Assets Applicant discusses approaches with the Mona and Morgan Generation Applicants to ensure consistent approaches are undertaken.	
Annex A – Written Representations **Marine Mammals**		
WR-099-42	**Annex A – Written Representations** **1. Summary** Marine Mammals NRW (A) do not agree with the conclusions of the Cumulative Effects Assessment (CEA) and subsequently do not agree with the in-combination assessment, given that the conclusions are based on the CEA. NRW (A) provides detailed review and feedback of the various methodologies used for the CEA with recommendations. An identified Key Issue is that the Applicant is relying on the Marine Mammal Mitigation Plan (MMMP) to avoid conclusions of significant impact for the project alone and in the CEA, and maintains that mitigation can be achieved, but does not specify the measures relied upon to conclude no adverse effect. NRW (A) provides additional comment on the Applicants response to Relevant Representations.	The Applicant has responded to each detailed point below in ID WR-099-46 – WR-099-108.
WR-099-43	**2. Detailed Comments** This section of our Written Representation covers issues associated with matters considered to be cumulative and in-combination effects in relation to Welsh designated sites and/or mobile species. NRW (A) are therefore focussing on Marine Mammals and Marine Ornithology only. All other matters pertaining to the development will be deferred to Natural England/the Joint Nature Conservation Committee (JNCC). Our response draws on the information contained in the original application documents submitted by the Applicant. NRW registered as an interested party but were not in the position to provide detailed comments at pre-examination, namely relevant representations. Hence, NRW do not have any outstanding issues to respond to from the Applicant as part of our written representations.	The Applicant notes this response.

ID	Written Representation	Applicant comment
	In our Written Representations, NRW (A) set out the main issues in relation to the application. We also provide advice on the Applicant's approach which, although suitable for this application, it may not be for other situations and should not set a precedent for further offshore wind applications coming up in the same area. We are also progressing a draft SoCG between NRW and the Applicant, which is planned for submission (by the Applicant) at Deadline 3. This SoCG will highlight progress made and those matters that are still outstanding / ongoing between the two parties.	
WR-099-44	This section of NRW (A)'s Written Representation covers issues relating to marine mammals associated with the Morecambe Generation Assets application and draws on the information contained in the original application documents and further submissions from the Applicant at Procedural Deadline A.	The Applicant notes this response.
WR-099-45	As the Morecambe Generation Assets project is located wholly in English waters, NRW (A)'s primary area of interest for marine mammals for this project is on impacts to Welsh designated sites and Marine Mammal Management Units (MMMU). Hence the advice provided focuses on Welsh designated sites, MMMUs and cumulative/in-combination assessments. However, we have also provided advice on the overall methodological approaches taken for marine mammals as these are relevant to the assessment of impacts to Welsh designated sites.	The Applicant notes this response.
WR-099-46	Following a review of the information submitted by the Applicant, NRW (A) have identified the key issues as: ▪ NRW (A) do not agree with the conclusions of the Cumulative Effects Assessment (CEA). Several aspects of the CEA need updating and potentially re-assessment before we can agree to the conclusions.	The Applicant has provided detailed comments below, including identification of where further material will be provided at Deadline 3 in line with Natural Resource Wales (NRW) request for further clarification on the Cumulative Effects Assessment (CEA) and subsequently in-combination assessments.
WR-099-47	▪ NRW (A) do not agree with the conclusions of the in-combination assessment, given that these are based on the	

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	CEA. If the CEA is updated, we may be able to agree on the conclusions in the in-combination assessment.	
WR-099-48	▪ The Applicant is relying on the Marine Mammal Mitigation Plan (MMMP) to avoid conclusions of significant impact for the project alone and in the CEA. The Applicant has maintained that any effects may be suitably mitigated through further design refinement and other embedded mitigation however has not stated the precise mitigation measures that are being relied upon to conclude no adverse effect. The Applicant should make a stronger commitment to several mitigation options.	An updated Marine Mammal Mitigation Plan (MMMP) is provided at Deadline 2 to clarify the measures committed to and adopted by the Project. The Marine Management Organisation (MMO) and (Natural England (NE) have indicated that Noise Abatement Systems (NAS) could be required for European Protected Species (EPS) licensing of Offshore Windfarm (OWF) projects using monopiles from early 2025 onwards. This is of relevance, should monopiles be the foundation option taken forward by the Project. The finalisation of the MMMP for piling and EPS licencing applications will be undertaken post-consent and consider the latest policy on NAS at the time. The Applicant notes that potential mitigation options, including NAS, are listed within the Draft Marine Mammal Mitigation Plan (MMMP) (APP-149) which would be finalised post-consent in line with the final design of the Project. It is recognised that upon assessment of more developed design information, any need for the implementation of NAS will be decided in consultation with the licencing authority. The Applicant is planning appropriately for the potential requirement for NAS but maintains the position that the effects may be suitably mitigated through further design changes and other embedded mitigation. The Applicant has also provided an Outline Underwater Sound Management Strategy (UWSMS) (as requested by NE in RR-061-215) at Deadline 2, which includes the consideration of NAS.

ID	Written Representation	Applicant comment
WR-099-49	Further detail on each of these issues is set out below. **4.1 Detailed comments** NRW (A) has previously stated that other than for the Cumulative Effects Assessment (CEA) and transboundary assessment, we would be deferring to Natural England (NE). However, given that currently the Applicant is relying on the Marine Mammal Mitigation Plan (MMMP) to avoid conclusions of significant impact for the project alone and the CEA, regarding the MMMP and the proposed outline underwater sound management strategy NRW (A)'s comments are as follows:	Detailed responses are provided below where relevant.
WR-099-50	The Applicant is relying on the MMMP to avoid conclusions of significant impact for the project alone and in the CEA. The Applicant has maintained that any effects may be suitably mitigated through further design refinement and other embedded mitigation but has not stated the precise mitigation measures that are being relied upon to conclude no adverse effect. NRW (A) advise that the Applicant should make a stronger commitment to several mitigation options such as the use of bubble curtains and other noise abatement systems (NAS).	An updated MMMP is provided at Deadline 2 to clarify the measures committed to and adopted by the Project. The MMO and NE have indicated that NAS could be required for EPS licensing of OWF projects using monopiles from early 2025 onwards. This is of relevance, should monopiles be the foundation option taken forward by the Project. The finalisation of the MMMP for piling and EPS licencing applications will be undertaken post-consent and consider the latest policy on NAS at the time. The Applicant notes that potential mitigation options, including NAS, are listed within the Draft MMMP (APP-149) which would be finalised post-consent in line with the final design of the Project. It is recognised that upon assessment of more developed design information, any need for the implementation of NAS will be decided in consultation with the licencing authority. The Applicant is planning appropriately for the potential requirement for NAS but maintains the position that the effects may be suitably mitigated

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		through further design changes and other embedded mitigation. The Applicant has also provided an Outline UWSMS (as requested by NE in RR-061-215) at Deadline 2, which includes the consideration of NAS.
WR-099-51	NRW (A) recommend that the Applicant consider one of the key findings in Offshore Renewables Joint Industry Programme's (ORJIP) Range dependent nature of impulsive noise (RaDIN) project (ORJIP 2024). The purpose of this project was to improve our understanding of how the impulsiveness of sounds produced during pile driving and unexploded ordnance (UXO) clearances changes with increasing distance from the source, and to help refine the estimation of auditory injury impact ranges for marine mammals to reduce conservatism during noise impact assessments. One of the major findings from this project was that the time between subsequent pile strikes was found to have the largest effect on hearing injury onset ranges, where increasing the time between pile strikes significantly reduced the range of injury onset. A freely available software tool was developed by the project, which allows the user to estimate permanent hearing damage impact ranges from impact pile driving by considering a variety of factors including source level, timing between pile strikes, fleeing speed of the animal, and the assumed distance at which sound becomes non-impulsive. Work is currently ongoing to further develop the tool to be able to include ramp-up procedures, and the potential for the auditory system to recover between pile strikes. NRW (A) understands that at the application stage, consent must be considered based on the maximum design envelope which considers both a realistic worst case in accordance with the precautionary principle and to maximise flexibility in construction if consent is awarded. In addition, detailed information and further refinements of the piling schedule are normally only available further along the consenting process. Thus post-consent, once more information on the piling schedule is	The Applicant acknowledges this and appreciates the information. Two strike rate scenarios were considered in the ES. The maximum strike rate scenario was used for the overall assessments as this resulted in the worst-case cumulative Sound Exposure Level (SEL_{cum}) Permanent Hearing Threshold Shift (PTS) and Temporary Threshold Shift (TTS) impact ranges for each piling event. While the lower strike rate scenario would last longer overall, more animals are impacted per pile, and therefore overall, in the higher strike rate scenario. This is due to the greater number of strikes at higher hammer energy leading to a greater SEL_{cum}. This worst-case scenario, in terms of number of animals affected, has informed the assessment at present and been considered in in the ES. The Applicant will use all appropriate tools and up-to-date information when evaluating the potential effects of the Project post-consent, considering the final project design and the mitigation requirements for the development of the final UWSMS, the final MMMP for piling and EPS Licence requirements.

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	available, there may be the potential to consider using the permanent hearing threshold shift (PTS) software tool developed from RaDIN to test the effect of altering the temporal pattern of pile strikes on PTS impact range and potentially use the temporal pattern of pile strikes as a primary mitigation method. NRW (A) believe this could be particularly useful for mitigating impacts on Minke whale (Low Frequency (LF) hearing group) the species with the largest PTS impact range.	
WR-099-52	The Outline Vessel Traffic Management Plan (VTMP) [APP-153] does not currently reference mitigation for collision risk or disturbance. While Section 6.2.2.2 of the Outline Project Environmental Management Plan [APP-146] does mention mitigation for collision risk, no measures which specifically address mitigation of disturbance from vessel noise (construction and maintenance) are listed.	Acknowledged, the Applicant has updated the Vessel Traffic Management Plan (VTMP) [APP-153] and submitted this at Deadline 2 to outline the measures included in the Outline Project Environmental Management Plan (PEMP) [APP-146]. While the measures described in the Outline PEMP and updated VTMP focus on collision risk, they would also help to reduce any potential disturbance effects. The text in the VTMP has been amended, where relevant, to reflect this.
WR-099-53	**APP-048: Volume 5, Chapter 11 – Environment Statement - Marine Mammals** The Interim Population Consequences of Disturbance (iPCoD) framework can be used to assess population-level effects from multiple impact pathways (King et al. 2015). The primary output from iPCoD is an iteratively simulated population growth rate, in the presence and absence of a development (Harwood et al. 2014; King et al. 2015).	The Applicant notes this response
WR-099-54	The definitions of magnitude as described in paragraphs 11.51-11.59 and significance as described in paragraph 11.60–11.63 suggest strongly that the outputs obtained from iPCoD would inform a conclusion of the significance of an effect, and not a conclusion on the magnitude. Furthermore, the factors listed in paragraph 11.52	The Applicant acknowledges and appreciates the feedback on this approach and will adjust Chapter 11 Marine Mammals and RIAA accordingly, expected to be at Deadline 4, whereby the Interim Population Consequences of Disturbance (iPCoD) links directly

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	overlap significantly with the disturbance inputs for the iPCoD model (namely: duration of piling, number of operations, days of residual disturbance, number of animals disturbed, number of animals injured). Thus, NRW (A) disagree with Applicant's use of iPCoD to inform the magnitude of the impact in the assessment. The assessment should be revised with iPCoD results being used to inform the significance of the effect.	to the significance of effect rather than used just to define the magnitude. However, it is noted this will not alter the over significance of effect of the population modelling assessment presented.
WR-099-55	Furthermore, while NRW (A) agree that iPCoD is a useful tool to assess the potential impacts of disturbance, given that there is no standardised method for quantifying disturbance, iPCoD can be one of multiple tools that together can be used to inform a decision on significance. It should never be the sole basis for any decision.	The Applicant has used a number of approaches to assess disturbance, including the use of known disturbance ranges for marine mammals and a Dose-Response Curve (DRC) assessment. These methods have been used to determine the worst-case disturbance effect from piling. Currently, there is no standardised or agreed method for quantifying disturbance. Therefore, the highest or worst-case numbers from these different approaches were incorporated into the population modelling (iPCoD), forming the basis of the assessment. The iPCoD model is an appropriate tool to assess the potential impacts of disturbance as it considers the consequences of disturbance or injury that might result from the construction or operation of OWFs. The Applicant presents, for information, the significances of effect for each assessment method, as well as updated supporting text for the assessment conclusions within Section 5.1 of The Applicant's Response to the Rule 9 Letter for Morecambe Offshore Windfarm Generation Assets (PD1-010), submitted at Procedural Deadline A. This information will be incorporated into Chapter 11 Marine Mammals and RIAA, expected to be updated at Deadline 4.

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WR-099-56	NRW (A) disagrees with the use of a Temporary Threshold Shift (TTS) threshold to estimate the number of animals disturbed from piling for dolphin species. The use of a TTS threshold is not sufficiently precautionary to assess disturbance except when assessing disturbance from UXO clearance (Sinclair et al. 2022; NRW 2023).	The Applicant acknowledges this comment and has also presented the potential for disturbance through the using literature-based disturbance ranges, DRC, and TTS assessments. The worst-case scenario in terms of numbers of disturbed animals has been carried forward to the population modelling, informing the significance of effect. For the dolphin species assessed, the worst-case numbers resulted from the DRC assessment. This approach is highly precautionary, as it is based on the harbour porpoise curve, which assumes a higher and more sensitive hearing range than dolphins.
WR-099-57	NRW (A) acknowledge and welcome the efforts made by the Applicant to undertake an assessment of the disturbance impact from Acoustic Deterrent Device (ADD) activation. However, NRW (A) do not agree that the effect ranges of ADDs will be limited to the (minimum) distance the receptor can swim in the time that the ADD is active. ADDs are often used to deter marine mammals from pile driving operations that may otherwise cause hearing injury. These devices work by emitting a noise to which the target animal is sensitive, and at a level loud enough or for a long enough period to elicit a behavioural reaction sufficient for the animal to swim away to a safe distance – i.e. a deterrence range. This deterrence range can be altered based on the expected PTS impact range.	The Applicant recognises that the potential disturbance range for the Acoustic Deterrent Device (ADD) may be larger than currently calculated. The required duration will be determined based on the final project design, updated PTS ranges from underwater noise modelling, and any additional mitigation measures that maybe implemented for driven piles, such as the use of NAS. The potential disturbance effect has been based on a conservative swim speed for harbour porpoise of 1.5 m/s. Fleeing-response speeds in relation to ADD use for harbour porpoise have been recorded at up to 3.2 m/s (Elmegaard *et al.,* 2023), making the duration calculation and effects highly precautionary. The duration and potential effect of the use of the ADD will be further considered post-consent in the final UWSMS, MMMP and EPS licence with consultation based on the most up to date available information.
WR-099-58	NRW (A) note that evidence from Elmegaard et al. (2023), Graham et al. (2023), Voβ et al. (2023), and Brandt et al. (2013) demonstrates that harbour porpoise shows very strong flight and physiological responses to ADD use even at low received levels and often far beyond the intended mitigation zone. This evidence is corroborated by data collected on porpoise response (displacement) to chronic and long-term exposure to ADDs at aquaculture sites (Findlay et al. 2024). Such energetic responses to noise may have a	

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	cumulative effect on health if they occur frequently enough, particularly for porpoise who are thought to need to forage constantly to meet their energy demands. NRW (A) believe that there is a risk that to reduce the number of animals injured, a reliance on ADD deployment over other forms of mitigation will increase the number of animals disturbed, particularly harbour porpoise. A deterrence sound must be efficient in clearing an area of animals, yet it should not cause disruptions at scales larger than necessary. Thus, consideration should be given to proportionate and judicious application of ADDs in terms of deployment duration.	
WR-099-59	NRW (A) welcome the quantification of impacts from vessel noise through the use of a 4 km buffer, and note that while this assessment adequately represents a worst case scenario with 37 vessels on site at a single point in time, it does not capture repeated instances of disturbance over a specific time period e.g. a 24 hour period. The methodology appears to assume that either (1) disturbed animals will leave the area, and/or (2) no new animals will be disturbed (or repeatedly disturbed) other than those within the 285.4 km^2 area. NRW (A) advise that the Applicant should clarify the assumptions made in their assessment.	Benhemma-Le Gall *et al*. (2021) demonstrated harbour porpoise displacement up to 4km from construction vessels at the Beatrice OWF and Moray East OWF. The studies indicated that at a mean distance of 2km from construction vessels, harbour porpoise occurrence decreased by up to 35.2% as vessel intensity increased. Harbour porpoise responses decreased as the mean vessel distance increased (−24% at 3 km), with no apparent response observed at 4 km (+7.2%). The disturbance calculations assume that 100% of the animals potentially in the area are being affected, which is highly precautionary. The area assessed is also larger than the daily disturbance area of 256km^2 defined for geophysical surveys in the Marine Noise Registry (Joint Nature Conservation Committee (JNCC), 2023). Wisniewska *et al.* (2018) showed that despite potential short-term effects on foraging, harbour porpoise recover quickly from vessel traffic and remain in areas of high traffic, even after diving from fast ferries.

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		The Applicant maintains the conclusion in Environmental Statement (ES) Chapter 11 Marine Mammals (APP-048).
WR-099-60	NRW (A) welcome the approach taken in the CEA to combine the assessments for the generation and transition assets, however NRW (A) have several major reservations regarding the overall approach taken for a number of aspects of the CEA (see below paragraphs 48-58):	Comments are addressed in detail below.
WR-099-61	Other than the section on Population modelling for cumulative disturbance from OWF projects, assessments appear to have been based on numbers disturbed from a single event of a given activity. Thus the (potential) cumulative impact of repeated disturbance events on the same population over time has not been captured.	The Applicant's approach to assessing the potential effects of underwater noise has been based on a conservative effective radius for each activity, providing a snapshot of the potential level of effect on the wider population. For piling, these assessments have been used to present the worst-case for the inclusion in the population modelling. The Applicant uses population modelling, as it allows for the estimation of population effects over time. However, it should be noted that the current iPCoD modelling is only designed for impulsive piling. It has been requested that the Applicant present the potential significance of underwater noise from all other industries in the NE Relevant Representation (Ref. D50; RR-061-214). This has been presented in the Marine Mammal Technical Note 1 (REP1-083) at Deadline 1. It is considered that further commentary and on the effects from all sources across the Project lifetime from a cumulative perspective will be provided in an updated marine mammal technical note at Deadline 3.
WR-099-62	In paragraph 11.764 [APP-048] the Applicant states that: "The approach to the CEA for piling at OWFs was based on the potential for single piling activity at each windfarm at the same time as single	The assessment of the potential cumulative effects of piling on common and Risso's dolphin used an additive approach, considering all projects piling

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	piling activity at the Project windfarm site. This approach while others could be simultaneously undertaking piling activities (further information is available in Appendix 11.4). This was considered to be the most realistic worst-case scenario, as it is highly unlikely that all other windfarms would be simultaneously undertaking piling activities at exactly the same time as piling activity at the Project, especially given the limited active piling time."	simultaneously to evaluate the potential effects of disturbance. These findings are presented in Table 11.85 in Chapter 11 Marine Mammals (APP-048). This assessment is provided as there is currently no function within the iPCoD model to look at long term significance of effect for these two species. This is an approach that has previously agreed with Statutory Nature Conservation Bodies (SNCBs) to quantify the potential effect with no other suitable approach is available. It may not present a long-term perspective, but it does consider the cumulative effects for the projects piling at the same time incorporating numbers from the relevant assessments. The approach presented in paragraph 11.767-11.794 was applied to all species considered in the iPCoD modelling (harbour porpoise, bottlenose dolphin, minke whale, grey and harbour seals).
WR-099-63	Our understanding is that this implies that the overall approach taken by the Applicant for this CEA was to present a worst-case snapshot scenario of animals that may be disturbed simultaneously at any one point in time by the project and other OWFs. Our view is that this is essentially a simultaneous assessment, but not necessarily a cumulative one.	
WR-099-64	However, NRW (A) note that this approach contradicts the population modelling conducted using iPCoD to assess the cumulative impact of piling from multiple projects [paragraph 11.767-11.794]. iPCoD allows the user to specify piling schedules for each operation within each project and thus captures the number of animals predicted to be disturbed by these activities and their extent in time and space. While we agree with the Applicant's decision to prioritise the results of iPCoD modelling, we would be grateful for more clarity regarding the decision to also present the approach in paragraph 11.764.	
WR-099-65	For the project alone, separate assessments have been provided for the different phases of the project; construction vs operation and maintenance phase. These should be summed to capture the cumulative impact for the project overall.	Information on the cumulative impact for the Project overall has been presented in Table 11.115 of Chapter 11 Marine Mammals (APP-048). Further commentary on the effects from all sources across the Project lifetime from a cumulative perspective will be provided in an updated EIA note at Deadline 3.

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WR-099-66	Separate cumulative assessments have been provided for each of the different impact pathways, with individual cumulative assessment conclusions for each. The impacts of these separate assessments do not appear to have been summed/considered in the same model, thus the impact of multiple pathways of disturbance on the same populations has not been captured. While effects of these impacts acting in concert may not necessarily be additive, no justification has been provided to support this assumption.	A consideration of cumulative effects from underwater noise from all noisy activities was requested by NE Ref. D50; RR-061-214 and has been presented in the Marine Mammal Technical Note 1 (EIA) and Marine Mammal Technical Note 2 (HRA) (REP1-083 and REP1-084), submitted at Deadline 1. Additional text regarding all cumulative impact pathways will be presented in a marine mammal technical note at Deadline 3.
WR-099-67	In paragraph 11.796 [APP-048] the Applicant states that: "Construction activities (such as seabed preparation, cable installation and vessel activities) could occur at the same time as piling activities at the Project. Projects where piling overlap was considered have not been included in regard to other construction noise." Here, the Applicant has screened out any activities based on piling overlap. This appears to assume that there will be no days where, for instance, piling does not occur, but other activities do. It further assumes that all animals disturbed will be displaced from the area, ruling out the possibility that impact radii for different pathways may overlap, with potentially additive impacts.	At the time of assessment, the Applicant considered all projects with known timeframes for overlapping piling activities with the Project in the iPCoD modelling or the additive assessment (for common and Risso's dolphin) presented in Section Cumulative effect 1a of Chapter 11 Marine Mammals (APP-048). If the worst-case construction activity, in this case piling, showed no significance of effect in the CEA, it was not considered further for other construction activities. The Applicant acknowledges that projects that have the potential for piling overlap could alternatively be undertaking other construction activities at the same time as piling at the Project, but it is considered that the effect would be less than or equal to what has been previously assessed.
WR-099-68	NRW (A) note that the assessment of construction activities (other than piling) could be assessed using the same method used for piling noise (i.e. an iPCoD model). King *et al.* (2015) suggests that other impact pathways (such as noise from seismic surveys and/ or vessels) can be included in the same manner by using estimates of	Whilst it is true that King *et al.* (2015) suggest that population modelling approaches *could* be used in the future to understand the consequences of disturbance from other noise sources, they flag that a good

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	the number of animals predicted to be disturbed by these activities and their extent in time and space.	understanding of the extent of the noise, and the animals affected, in time and space is required. This understanding is far more challenging to achieve for moving vessels transiting to and from OWF projects over construction, operation, and decommissioning phases of (compared to pile driving which occurs at a single location), and there is no precedent or guidance of how best to achieve this. In addition, the iPCoD methods, and therefore results, rely on an expert elicitation process which was carried out specifically in relation to the consequences of low frequency impulsive noise such as pile driving (Sinclair *et al.*, 2019). This expert elicitation process cannot reliably be extrapolated to other noise sources with differing characteristics, such as continuous broadband vessel noise. The current version of the iPCoD code is not set up to assess noise sources other than piling. In summary, whilst population modelling approaches may be possible to use for noise sources other than piling in the future, there is not yet sufficient established methods or guidance for this Project to do so. Estimated worst-case disturbance numbers from noise sources other than piling are displayed and assessed in The Applicant's Response to the Rule 9 Letter for Morecambe Offshore Windfarm Generation Assets (PD1-010), noting these are temporary and

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		reversible effects. As shown in the iPCoD modelling, the consequences of piling disturbance and PTS at a cumulative level does not produce significant long term effects on the relevant marine mammal populations.
WR-099-69	The conclusions in paragraph 11.715 [APP-048] indicate that "while all effects are additive between the Project and the Transmission Assets, due to the localised effects there is no material change in significance of effects when considering the majority of impacts together (see impact screening summary)." Here, the additive nature of the impacts does not appear to have been considered, and a conclusion of no material change has been made based on "localised effects". NRW (A) advise that the assessment should either be based on a summation of the effects, or a much stronger justification should be provided.	It is noted that since the time of assessment there is now no requirement for piling as part of the Transmission Assets project. It is noted that while the effects from both projects may be additive this does not result in a change in the overall level of significance. Further justification will be provided in an updated EIA note at Deadline 3 and the text will be updated in Chapter 11 Marine Mammals and RIAA where relevant, expected to be at Deadline 4.
WR-099-70	The conclusions on disturbance from vessel noise in paragraph 11.736 [APP-048] appear to have been based on estimates of numbers of animals disturbed at a single point in time. NRW (A) believe that this does not adequately capture the overall additional disturbance introduced by repeated disturbance events over the different phases of the project. While we understand that disturbance from vessel noise is relatively short lived, the fact that an animal recovers sometime after a disturbance event does not mean the event should no longer be counted as disturbance. Thus, if the intent is to calculate the cumulative number of animals disturbed, to propose basing the CEA on a snapshot estimate invites the risk of significant underestimates. There is a risk that impact pathways which consist of chronic, but individually relatively small (in terms of effect) disturbance events are overlooked on account of these individual disturbance events being short lived. NRW (A) believe it is important to consider the overall additional stressor load introduced when making a conclusion on the magnitude of an impact pathway.	The Applicant acknowledges this point. As requested in NE Relevant Representations (NE Ref D21; RR-061-185) the sensitivity assigned to dolphin and seal species for disturbance effects has been presented as medium. The cumulative assessment for the Project will be further detailed in an updated EIA note at Deadline 3 and the relevant text will be updated in Chapter 11 Marine Mammals Chapter and RIAA at Deadline 4. Measures to reduce the risk of collision have been presented in the Outline PEMP (APP-146) and included in the Outline VTMP updated at Deadline 2. The measures included would also help to reduce the potential level of disturbance from vessels.

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	NRW (A) advise that the Applicant should either revise the conclusions or provide mitigation measures which specifically address disturbance from vessel noise.	
WR-099-71	"The long-term population consequences were assessed as low for bottlenose dolphin and negligible for all species for the next 25 years (standard modelling period; details in Appendix 11.2)". NRW (A) suggests that the modelled results at the ~5-6-year interval would be more suitable and biologically relevant, as this accounts for cumulative impacts / any shorter to medium term changes as a result of construction.	The Applicant acknowledges the response. The information and assessment for the population level effect at the six year is presented in the individual species assessment. The summary text at the end of the section will be expanded to also include this information in the Chapter 11 Marine Mammals and RIAA where relevant, expected to be updated at Deadline 4.
WR-099-72	APP-068: Vol. 5 App. 11.4, CEA Project Screening NRW (A) do not agree with the Applicant's assumption that all projects with unknown construction timelines will not overlap with the Morecambe construction period. We consider that it would be conservative to assume that construction for consented Table 4.1 for the projects listed in Paragraph 53) and is like the Morecambe project's operational date. The projects listed in Paragraph 53 should be included in the CEA.	The Applicant acknowledges the response. A qualitative assessment will be presented in a marine mammal technical note at Deadline 3. Updates to the Appendix 11.4, CEA Project Screening (APP-068) will be made, expected to be at Deadline 4.
WR-099-73	NRW (A) further note the Applicant's response to RR-061-202 [PD1-011] that: "The Applicant is committed to this requirement to be secured in the final MMMP but maintains the position that the effects may be suitably mitigated through further design refinement and embedded mitigation before commitment to additional mitigation. This is a commitment made by all neighbouring projects, which have also proposed to secure mitigation measures through Outline MMMPs submitted with their DCO applications to ensure the reduction of risk of PTS. As such there should be no potential cumulative effects."	The finalisation of the MMMP for piling and EPS licencing applications will consider the latest policy on NAS at the time. The Applicant notes that potential mitigation options, including NAS, are listed within the Draft MMMP (APP-149) which would be finalised post-consent in line with the final design of the Project. It is recognised that upon assessment of more developed design information, any need for the implementation of NAS will be decided in consultation with the licencing authority.
WR-099-74	The Applicant is relying on the MMMP to avoid conclusions of significant impact or residual impact for the project alone and in the	The Applicant is planning appropriately for the potential requirement for NAS but maintains the position that the effects may be suitably mitigated

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	CEA. The Applicant has maintained that any effects may be suitably mitigated through further design refinement and other embedded mitigation however has not stated the precise mitigation measures that are being relied upon to conclude no adverse effect. We note that there has been commitment by Awel Y Mor, Morgan, and Mona projects to the potential use of other NAS methods such as bubble curtains if required.	through further design changes and other embedded mitigation. The Applicant will also provide an Outline UWSMS (as requested by NE in RR-061-215) at Deadline 2, which includes the consideration of NAS.
WR-099-75	NRW (A) also note the Applicant's response that: "As a precautionary approach, PTS numbers were included in the population modelling for the cumulative assessment, in the Cumulative Effect 1a, Section 11.7.3.2 of Chapter 11 Marine Mammals (APP-048)), so while not looked at individually, the potential impact has been given consideration in the significance of effect at a cumulative level." Given that PTS numbers were included in the population modelling, we can consider the specific issue of assessing PTS impacts in the CEA closed. However, PTS should still be considered as an impact and screened in, with assessment conclusions provided specifically for that pathway.	Noted, a relevant section for cumulative PTS will to be added to the marine mammal technical notes at Deadline 3, and then updated in the chapter accordingly, expected to be at Deadline 4.
WR-099-76	NRW (A) does not agree with the decision to screen out underwater noise from OWFs maintenance activities and decommissioning activities. Here, the Applicant has argued that the impact footprint from the construction phase will exceed the impact footprint from the operational phase concluding that this makes inclusion of the operational phase unnecessary. However, a cumulative assessment should consider the entire one point. Thus, although the construction phase may have a larger impact footprint, the Applicant is not currently assessing the additional (largely chronic) impact load introduced over the operational phase of other projects. There is a risk that the resulting CEA is under precautionary.	Acknowledged, the Applicant will add a qualitative impact load assessment introduced over the operational and decommissioning phase of other projects cumulatively in the marine mammal technical notes at Deadline 3 and then updated in the chapter accordingly, expected to be at Deadline 4.
WR-099-77	The Applicant further argues that a lack of information on impacts from decommissioning justifies the decision to screen out impacts from this phase. However, a lack of information does not preclude	

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	the possibility of making precautionary assumptions about the impact load that might be expected. The Applicant is not currently including any additional impact load introduced over the decommissioning phase of other projects, and there is a risk that the resulting CEA is under precautionary.	
WR-099-78	NRW (A) does not agree with the decision to screen out all shipping from further consideration, particularly given that it is expected that construction of other NSIPs in the vicinity will overlap with the Morecambe project. NRW (A) draw attention to the fact that PINS (2019) Advice Note 17 states that only projects expected to be completed before construction of the proposed NSIP should be considered part of the baseline.	Noted, a section for the additional presence of vessels from the other NSIPs will be considered in the CEA and in-combination Assessment as part of the updated marine mammal technical notes to be provided at Deadline 3 and then updated in the chapter accordingly, expected to be at Deadline 4.
WR-099-79	NRW (A) does not agree with the decision to screen out all aggregate extraction and dredging projects within the Celtic and Irish Sea (CIS) Management Unit (MU), in particular we disagree that the assumption that the impact ranges from such activities would only cause localised effects on short, perhaps medium-term behavioural reactions justifies their omission. NRW (A) argue that the Applicant may be overlooking individually smaller impact pathways based on their individually smaller impact, despite their affecting the same management unit population.	An assessment for the two aggregate projects that have become active since the baseline aerial surveys were undertaken has been screened in and assessed in Section Cumulative effect 1c: Assessment of disturbance from other industries and activities in Chapter 11 Marine Mammals (APP-048). The sites screened in are listed in Table 4.3 of Appendix 11.4 Marine Mammal CEA Project Screening (APP-068).
WR-099-80	NRW (A) agree with the assumption made by the Applicant that up to one seismic survey, and up to two geophysical surveys may overlap with the construction phase of the project.	The Applicant welcomes this response.
WR-099-81	APP-034: Volume 4 - Habitats Regulations Assessment Screening Report NRW (A) can agree with the list of potential effects scoped in for Likely Significant Effects (LSE) and the list of Special Areas of Conservation (SAC) scoped in for the assessment.	The Applicant welcomes this response.

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WR-099-82	APP-027: Volume 4 - Report to Inform the Appropriate Assessment NRW (A) do not agree with the conclusions of the in-combination assessment [APP-034], given that these are based on the CEA. If the CEA is updated, we may be able to agree on the conclusions in the in-combination assessment.	At Deadline 1, the Applicant provided technical notes in relation to clarification points and updates in respect of the CEA and RIAA in-combination effects (REP1-083 and REP1-084). Further amendments will be presented in the marine mammal technical notes at Deadline 3 in order to address NRW comments that had not been provided until Deadline 1.
WR-099-83	PD1-011: The Applicant's response to Relevant Representations RR-061-185 – NRW (A) agree with Natural England (NE) on this point. We note the Applicant's response and acknowledge and welcome the changes made, raising the sensitivity from low to medium for dolphins and seals.	The Applicant welcomes this response, and noted this has been reflected in Deadline 1 submissions. This will be updated in Chapter 11 Marine Mammals and the RIAA, expected to be at Deadline 4.
WR-099-84	RR-060-188 – NRW (A) agree with NE on this point. We note the Applicant's response, and their acknowledgement that there is a potential for barrier effects to extend to the coast during piling in the Applicant's Errata sheet [PD1-012].	The Applicant notes this response. This will be updated in Chapter 11 Marine Mammals and the RIAA, expected to be at Deadline 4.
WR-099-85	RR-061-189 – NRW (A) agree with NE that the sensitivity of all marine mammals to collision risk should be amended to medium. We acknowledge that the Applicant will be providing further information on the sensitivity of marine mammals to collision risk in deadline 1.	The Applicant notes this response. The information provided at Deadline 1 will be added to Chapter 11 Marine Mammals and RIAA where relevant, expected to be at Deadline 4.
WR-099-86	RR-061-192 – NRW (A) agree with NE on this point. While we agree that iPCoD is an appropriate tool to assess the potential impacts of disturbance, given that there is no standardised method for quantifying disturbance iPCoD can be one of multiple tools that together can be used to inform a decision on significance. We further note that in some cases iPCoD modelling was used to inform the magnitude rather than the significance of an impact. Significance of each impact should be presented for each method.	The Applicant notes that at Deadline 1 multiple methods were presented for disturbance and justification of the overall significance given. The Applicant acknowledges that the iPCoD results indicate the significance of effect rather than its magnitude. While the Marine Mammal Technical Note 1 (EIA) (REP1-083) submitted at Deadline 1 described the

ID	Written Representation	Applicant comment
		iPCoD results in terms of magnitude, the significance of effect, given an average annual decline of less than 1%, was classified as minor adverse (Not Significant). Updates to Chapter 11 Marine Mammals are expected to be submitted at Deadline 4.
WR-099-87	RR-061-200 – NRW (A) agree with NE on this point. We do not agree with the Applicant's assumption that all projects with unknown construction timelines will not overlap with the Morecambe construction period. The Applicant should include the projects listed in Paragraph 53 in the CEA.	The Applicant will present an updated qualitative assessment in a marine mammal technical note at Deadline 3. Amendments will be made to Chapter 11 Marine Mammals, RIAA and supporting Appendix, expected to be at Deadline 4, where required.
WR-099-88	RR-061-202 – NRW (A) agree with NE on this issue.	The potential risk of (residual) PTS from other OWF projects has been incorporated in the cumulative disturbance assessment using population modelling (iPCoD) in the ES Chapter 11 Marine Mammals (APP-048). The iPCoD approach is a tool for assessing both PTS and disturbance on marine mammal populations. Further information on the assessment of PTS in the CEA will be presented in a marine mammal technical note at Deadline 3 and then updated in Chapter 11 Marine Mammals and RIAA where relevant, expected to be at Deadline 4.
WR-099-89	RR-061-204 – NRW (A) agree with NE over this issue. The use of a TTS threshold is not sufficiently precautionary to assess disturbance except when assessing disturbance from UXO clearance (NRW 2023). NRW (A) do not accept the argument presented by the Applicant that the density of common dolphin in the area essentially balances out the under-precautionary nature of the TTS threshold, given that White Cross project is a known to be situated in a high-	The Applicant acknowledges this point. The Project's disturbance assessments have been based on a variety of methods including EDRs, DRC assessments, literature-based disturbance effects and TTS ranges. The highest number of animals potentially disturbed from the Project has been

ID	Written Representation	Applicant comment
	density area for common dolphin. Other projects have recorded site specific densities of 15.97 animals/km^2 (Llyr project), and 1.52 animals/km^2 (Erebus project) which indicates a high level of variability in the area which we believe is due to the presence of transitory super-pods in the area.	carried forward into a review of the significance of effect. In cumulative assessments, the numbers produced by individual projects have been included. The Applicant is only able to present the densities recorded by other projects, which are considered in their assessments and the of numbers of animals disturbed in the public domain using the metrics applied by other projects. For example, the TTS ranges for dolphin species at White Cross. The Applicant does not propose to amend other project's assessments.
WR-099-90	RR-061-209 – NRW (A) agree with NE over this issue. In their response, the Applicant has argued that: "It is noted the Project is outside of any MPAs, with the nearest SAC for marine mammals being 45 km away (North Anglesey Marine (Gogledd Môn Forol) SAC) and in the UK thus far, offshore wind developers are not known to have been required to employ NAS."	
WR-099-91	NRW (A) notes that despite the nearest SAC for marine mammals being 45 km away, animals that form part of the same management unit may be found in or near the project area and thus could be impacted by the development. Furthermore, while other offshore wind project may not have necessitated deployment of NAS, there has been commitment by Awel Y Mor, Morgan, and Mona projects to the potential use of other NAS methods such as bubble curtains if required.	All impacts to marine mammals have been assessed both on the Management Units (MU) (in ES Chapter 11 Marine Mammals (APP-048) and in the context of the nearest Special Area of Conservation (SAC) for which the relevant species qualify in RIAA (APP-027). Thus, the assessments cover both scales, regardless of the exact origin of a marine mammal species. The finalisation of the UWSMS, MMMP for piling and EPS licencing applications will consider the latest policy on NAS at the time. The Applicant notes that potential mitigation options, including NAS, are listed within the Draft MMMP (APP-149) which would be finalised post-consent in line with the final design of the Project. It is recognised that upon assessment of more developed design information, any need for the implementation of NAS will be decided in consultation with the licencing authority. The commitment to consider NAS is also captured in the UWSMS. The position of the Project is in line with that of the Awel y Môr, Morgan, and Mona projects. The Applicant is planning appropriately for the potential requirement for NAS but maintains the

ID	Written Representation	Applicant comment
		position that the effects may be suitably mitigated through further design changes and other embedded mitigation.
WR-099-92	RR-061-210 – NRW (A) agree with NE that the Outline Vessel Traffic Management Plan (VTMP) (APP-153) does not reference mitigation for collision risk or disturbance. We further note that while 6.2.2.2 of the Outline Project Environmental Management Plan [APP-146] does mention mitigation for collision risk, no measures which specifically address mitigation of disturbance from vessel noise (construction and maintenance) are listed.	As detailed in The Applicant's Response to Relevant Representations (PD1-011; ID RR-061-210), the Outline VTMP (APP-153) does not reference mitigation for collision risk *per se*, but refers to the determination of transit routes for construction and operation vessels once ports are made known, and that vessel crew will be briefed regarding the impacts on marine mammals. Further detail has been added to Section 7 of the Outline VTMP (APP-153) and submitted alongside this document at Deadline 2. The majority of measures while designed to reduce the potential for collision risk also have the benefit of reducing disturbance.
WR-099-93	RR-061-213 – NRW (A) agree with NE over this point.	As detailed in The Applicant's Response to Relevant Representations (PD1-011; ID RR-061-213), the Applicant notes a table of additional planned consultation is presented in Table 1.3 in the Draft MMMP (APP-149) to help ensure appropriate measures based on the final Project design are being implemented and the needs of the EPS licences are being met. The Applicant is planning appropriately for the potential requirement for NAS but maintains the position that the effects may be suitably mitigated through further design refinement and other embedded mitigation.

ID	Written Representation	Applicant comment
		Further the Applicant has also provided an Outline UWSMS (Document Reference 9.32) alongside this document at Deadline 2, which includes the consideration of NAS. The Applicant has added a new condition 30 (UWSMS) in the dML submitted with the updated draft DCO at Procedural Deadline A to secure this (PD1-002 and PD1-003).
WR-099-94	RR-061-214 – NRW (A) agree with NE over these issues.	In response to NE's comment, the Applicant has provided a quantified assessment of all cumulative disturbance pathways from other noisy activity for each marine mammal receptor in the Mammals Technical Note (EIA) (REP1-083) provided at Deadline 1. Although the Applicant believes the quantified assessment may not accurately represent disturbed animals due the indicative nature of most activities, the most representative method using iPCoD has not changed the assessment conclusion in ES Chapter 11 Marine Mammals (APP-048). Regardless the Applicant has also provided an Outline Underwater Sound Management Strategy ((Document Reference 9.32) alongside this document at Deadline 2, which includes the consideration of NAS.
WR-099-95	RR-061-215 – NRW (A) agree with NE over these issues.	As detailed in the response to RR-061-214 (PD1-011), Table 2.39 in the Marine Mammals Technical Note (EIA) (REP1-083) submitted at Deadline 1 provides an updated version of Table 11.108 of ES

ID	Written Representation	Applicant comment
		Chapter 11 Marine Mammals (APP-048). This table summarises the conclusions regarding the significance of potential cumulative disturbance effects from other noisy projects and activities, including piling at the Project. While this assessment included activities with currently unknown timelines (such as Unexploded Ordnance (UXO) clearances, geophysical and seismic surveys), some activities, like piling at other OWFs have published expected timelines. Due the indicative nature of most activities, the most representative method is considered to be iPCoD which has not changed the assessment conclusion in ES Chapter 11 Marine Mammals (APP-048). However, in recognition of the potential number of noisy activities that could take place, to avoid or mitigate effects of sounds to marine mammals (and to reduce the contribution from the Project to cumulative effects), the Applicant has provided an Outline UWSMS (Document Reference 9.32). In regard to vessel disturbance, measures have been included in the PEMP and also in the VTMP (updated in the Deadline 2 submission). The Applicant proposes that a Code of Conduct will be developed post-consent with SNCBs based on the latest data and research and detailed within the final PEMP which will be reflected in the VTMP.
WR-099-96	RR-061-217 – NRW (A) agree with NE over this issue.	The Applicant has provided a thorough response to this matter in The Applicant's Response to Relevant Representations (PD1-011; ID RR-061-217).
WR-099-97	RR-061-224 – NRW (A) agree with NE. All comments with respect to the CEA also apply to the in-combination assessment.	The Applicant has provided a technical note in relation to clarification points and updates in respect

ID	Written Representation	Applicant comment
		of the RIAA in-combination effects at Deadline 1 (Marine Mammal Technical Note 1 (EIA); REP1-083). This will be updated in Chapter 11 Marine Mammals and the RIAA, expected to be at Deadline 4.
WR-099-98	RR-061-225 – NRW (A) agree with NE regarding the need for additional monitoring. In view of the overall conclusions in this assessment and given the: (1) residual impacts from some pathways, and (2) lack of pre-consent commitment to sufficient mitigation to reduce the risk of these residual impacts, we recommend that marine mammal monitoring to test the predictions made within the impact assessment is carried out. Any additional data collection over and above that is carried out by the Applicant would of course be welcome.	The Applicant maintains that monitoring should be proportionate to the level of effects, must be focused to a specific area of uncertainty and provide meaningful results at a Project level. The Applicant has further considered the request for monitoring and is considering that aerial surveys proposed during the winter season (potentially November to March) for Red Throated Diver could provide a means to provide information on marine mammal presence and densities, particularly gathering further insight on the high numbers of harbour porpoise seen in the baseline surveys. This will be discussed further with NE and NRW and updated in the IPMP if agreed.
WR-099-99	RR-061-228 – NRW (A) agree with NE and believe that an indicative ADD duration should still be provided.	The Applicant has provided a thorough response to this matter in The Applicant's Response to Relevant Representations (PD1-011; ID RR-061-228). The duration and potential effect of the use of the ADD will be further considered post-consent in the final UWSMS, MMMP and EPS licence with consultation based on the most up to date available information.
WR-099-100	RR-061-229 – NRW (A) agree with NE and believe that the Applicant should make a stronger commitment to several mitigation options.	The Applicant has provided a thorough response to this matter in The Applicant's Response to Relevant Representations (PD1-011; ID RR-061-229). Updates to the draft MMMP are provided at Deadline 2. The Applicant has also provided an Outline

ID	Written Representation	Applicant comment
		UWSMS (as requested by NE in RR-061-215) at Deadline 2 which includes the consideration of NAS.
WR-099-101	RR-061-231 – NRW (A) agree with NE that there are certain impact pathways in the ES that the Applicant is relying on the MMMP to avoid significant impact. The Applicant should make a stronger commitment to several mitigation options.	The draft MMMP has been revised at Deadline 2 to clarify the measures that are committed to in the draft MMMP. The Outline UWSMS (Document Reference 9.32) has been submitted at Deadline 2 as a mechanism to inform the mitigation and management measures that will be required for the Project.
WR-099-102	RR-061-232 – NRW (A) agree with NE over this issue.	As outlined in ID RR-061-232 of The Applicant's Response to Relevant Representations (PD1-011), the Applicant acknowledges the request, however notes that the finalisation of procedures in the MMMP would be undertaken post-consent alongside developed Project design information and will follow the latest JNCC guidelines at the time as required.
WR-099-103	RR-061-234 – NRW (A) agree with NE over this issue.	As outlined in ID RR-061-209 of The Applicant's Response to Relevant Representations (PD1-011), ADD durations and the subsequent mitigation requirements will be confirmed post-consent based on the final Project design. Other mitigation, including NAS, will be considered alongside design evolution. The Applicant is planning appropriately for the potential requirement for NAS but maintains the position that the effects may be suitably mitigated through further design refinement and other embedded mitigation. The Applicant has provided an Outline UWSMS (Document Reference 9.32) at Deadline 2 which includes the commitment to consider NAS.

ID	Written Representation	Applicant comment
		The Applicant has added a new condition 30 (Underwater Sound Management Strategy) in the dML submitted with the updated draft DCO at Procedural Deadline A to secure this (PD1-002 and PD1-003).
WR-099-104	RR-061-235 – NRW (A) agree with NE over this issue.	The Applicant has provided an Outline UWSMS (Document Reference 9.32) at Deadline 2 which includes the commitment to consider NAS. The Applicant has added a new condition 30 (Underwater Sound Management Strategy) in the dML submitted with the updated draft DCO at Procedural Deadline A to secure this (PD1-002 and PD1-003).
WR-099-105	4.2 Minor points / Recommendations for future assessment In paragraph 203 of APP-066 the Applicant states that: “Should the OSPAR III region population be used in the impact assessment, the increase in population numbers would cause a dilution of animals affected in the assessment and was likely to underestimate effects. As such the most precautionary approach (to use the reference population set out in Section 5.7.3.2 above) has been taken.”	The Applicant has provided an Outline UWSMS (Document Reference 9.32) alongside this document at Deadline 2. The Applicant has added a new condition 30 (Underwater Sound Management Strategy) in the dML submitted with the updated draft DCO at Procedural Deadline A to secure this (PD1-002 and PD1-003). The Applicant appreciates the information on the approach for the application of the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) III region for consideration in future assessments, and has discussed the matter with NRW, who are not expecting updates to be made. The Applicant considers they have presented an appropriate MU approach for this assessment. While
WR-099-106	Whilst NRW (A) can confirm that the decision to use the reference population set out in section 5.7.3.2 does not impact the overall result, we would advise that a dilution would only occur if projects within the smaller reference population borders are screened in and used against the larger OSPAR III population, as opposed to also screening all projects in the larger OSPAR III (see also paragraph 95). NRW (A) wishes to clarify that when we recommended the use of the OSPAR III population as a potential option, the OSPAR III border was intended to be used for screening in projects for assessment as well.	

ID	Written Representation	Applicant comment
WR-099-107	Thus, we would not necessarily agree with the statement that the OSPAR III region is "less precautionary" due to various nuances that make such a conclusion difficult to make. Although a smaller population number may be more sensitive to modelled impacts, a larger screening area would include projects much further afield capturing broader cumulative impacts.	different from the OSPAR III region, the Applicant considers the assessment proportional and that there is no material impact on the outcome of the assessment undertaken by the Applicant using Mus that that of using the OSPAR III region.
WR-099-108	NRW (A) advise that the Applicant should also be conscious of the uncertainty being introduced when selecting a smaller (pragmatic) population boundary which uses political borders and that may not necessarily match the actual (likely larger) population boundary. NRW are currently finalising a population modelling report which as part of the scope of work carried out sensitivity analyses for various models and recommends population parameters for harbour porpoise, bottlenose dolphin, and grey seal. We draw attention to one of the major conclusions of this work: that all the models depended upon an appropriately defined population management unit. If the population boundaries assigned do not align with the true biological population (and there is movement of animals in or out), then this will affect whether the abundance estimate is responses to human impacts.	

2.4 DLP Planning Ltd on behalf of BAE Systems (Marine) Ltd and BAE Systems (Operations) Ltd (REP1-100)

Table 2.4 The Applicant's comments on DLP Planning Ltd on behalf of BAE Systems (Marine) Ltd and BAE Systems (Operations) Ltd written representation

ID	Written Representation	Applicant comment
WR-100-01	We are making these further comments on behalf of BAE Systems (Marine) Ltd and BAE Systems (Operations) Ltd. The comments provide clarification on matters discussed at the Preliminary Meeting (PE) and the Issue Specific Hearing 1 (ISH1) on the Scope of Development and Interrelationship with other Infrastructure Projects.	The Applicant notes this response.
WR-100-02	BAE Systems were invited to submit comments on the potential implications of dealing with unexploded ordnance (UXO) and any clearance activities (as addressed in PINS Document Reference: 5.2.11.3)	The Applicant notes this response and highlights that the draft Development Consent Order (DCO) and Deemed Marine Licence (dML) do not include any unexploded ordnance (UXO) related activities. In the event that UXO relocation and/or clearance is required, a separate marine licence will be sought. See also detailed responses to ID WR-100-02 and WR-100-03 below.
WR-100-03	In circumstances where there is a need for airspace to close in order to contain any blast/debris, aircraft inbound to Walney Aerodrome could either be delayed or have to divert due to the proximity of any protective zone established around the blast location.	Limited airspace closures may be required in the unlikely event that high order UXO clearance is needed. It should also be noted that any closure would be temporary and only in place for the duration of any individual high order clearance activity which would be expected to be completed within a few hours. The Applicant notes that these could be scheduled in coordination with local air operators so as to minimise any potential impacts to aircraft inbound to Walney Aerodrome. Although given that the minimum safe altitude of 1,800ft above mean sea level (AMSL) for

ID	Written Representation	Applicant comment
		the Walney Aerodrome Minimum Sector Altitude (MSA) which extends over the windfarm site it is considered unlikely that airspace closure, if needed, would impact on the Walney Aerodrome MSA. The Applicant anticipates that low order clearance would be the preferred mechanism for any necessary UXO clearance, which is unlikely to result in any need for airspace closures.

2.5 Harbour Energy (REP1-102)

Table 2.5 The Applicant's comments on Harbour Energy's written representation

ID	Written Representation	Applicant Comment
WR-102-01	**Introduction** The proposed Morecambe Generation Assets are located adjacent to the Calder Platform, wells, export pipelines, and power cable each forming part of the Calder Field facilities owned by Chrysaor Resources (Irish Sea) Limited (hereinafter referred to as Harbour Energy), which contributes to United Kingdom (UK) domestic gas production. The Calder Field Facilities are currently operated by Spirit Energy Production UK Limited (hereinafter referred to as Spirit Energy) on behalf of Harbour Energy. The proposed proximity of wind turbine generators to the Calder Field (See Figure 1) would restrict aviation (helicopter) access. As the personnel supporting gas production operations at the Calder Platform are based on Spirit Energy's Morecambe Field AP1 platform, Harbour Energy will also be affected by any restrictions that the proximity of the Morecambe Generation Assets places on access to and from AP1 (this has been outlined in Spirit Energy's Relevant Representation (RR-077). It is expected that production from the Calder Field will continue beyond the	The Applicant notes the proposed timeline for the decommissioning of the Calder Field as set out in the decommissioning programme submitted to the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) for approval in accordance with Section 29 of the Petroleum Act 1998. The Applicant notes that during the operational phase the duty holder is Spirit Energy Production UK Limited (Spirit Energy). The Applicant has commented upon the concerns raised by Spirit Energy within the Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35) and the following references to the document:

ID	Written Representation	Applicant Comment
	commencement of construction of the Morecambe Generation Assets and may continue during the operation of the Morecambe Generation Assets. Decommissioning of the Calder Field facilities is thus expected to occur following construction of the Morecambe Generation Assets and during the operating phase. Harbour Energy's production and decommissioning activities are obligations under the licence granted by the Secretary of State. Harbour Energy is committed to finding solutions that will allow the co-existence of its operations with other stakeholders, including offshore renewable energy developers.	▪ Appendix A: The Applicant's Comments on Spirit Energy and Harbour Energy Aviation Access Study Report (Document Reference 9.35.1) ▪ Appendix B: Helicopter Access Instrument Meteorological Conditions (IMC) Corridor (Document Reference 9.35.2) ▪ Appendix C: Helicopter Supporting Information Technical Note (Document Reference 9.35.3)
WR-102-02	***Figure 1: Location of Morecambe Generation Assets Relative to Harbour Energy's Calder Field and Spirit Energy's South Morecambe AP1 Platform.***	No comment is provided.
WR-102-03	The National Policy Statement for Renewable Energy Infrastructure (EN-3) makes clear that "the Secretary of State should be satisfied that the site selection and site design of a proposed offshore wind farm and offshore transmission has been made with a view to avoiding or minimising disruption or economic loss or any adverse effect on safety to other offshore industries." (EN-3: 2.8.345). The Secretary of State is also required to employ "a pragmatic approach" (EN-3: 2.8.342). Accordingly, Harbour Energy presents within this Written Representation, its assessment of the potential for: disruption; economic loss; and adverse effects on safety arising from the proposed Morecambe Generation Assets development. Further, where possible, Harbour Energy presents suggestions for pragmatic approaches to mitigate such adverse effects.	The site selection and site design process is set out in Chapter 4 Site Selection and Assessment of Alternatives (APP-041) of the Environmental Statement (ES). The site selection process was undertaken through the Round 4 The Crown Estate (TCE) leasing and bidding process. A detailed study was undertaken to consider an initial zone in Bidding Area 4 for the most technically and environmentally suitable development sites. This was supported by Geographic Information Systems (GIS) modelling and analysis which included opportunities and constraints in relation to interaction with oil and gas infrastructure. One of the key reasonings for selecting the site is because of its lower constraints compared to other regions and the opportunities to develop a site within an oil and gas field that is expected to be reaching the end of its productive life.

ID	Written Representation	Applicant Comment
		Engagement was undertaken with oil and gas operators, including both Spirit Energy and Harbour Energy, during the Round 4 bidding process by the Applicant to support the selection process of the windfarm site, given its location in the South Morecambe gas field. The Applicant has also worked closely with oil and gas operators throughout the pre-application period, with one of the key factors influencing the reduction in the windfarm site area was to facilitate the coexistence of the Project alongside oil and gas operations. The frequent engagement undertaken by the Applicant during pre-application is set out in the Consultation Report (APP-015, REP1-002) and is ongoing. A windfarm site of 125km^2 (reflecting the Agreement for Lease (AfL) area) was assessed in the Project Preliminary Environmental Impact Report (PEIR). The windfarm site development area was subsequently reduced to 87km^2 and reflects the windfarm site assessed in the Environmental Statement (ES). The windfarm site refinement was undertaken following analysis of geophysical survey data, environmental analysis, consultation feedback and layout design development, and key drivers for change (alongside power density considerations). This is set out in Chapter 4 Site Selection and Assessment of Alternatives (APP-041) of the ES. Assessments identified the potential interaction between the South Morecambe gas field vessels and helicopter operations and the windfarm site. The location and extent of the windfarm boundary was designed to take account of exclusion zones, including statutory safety zones around the oil and

ID	Written Representation	Applicant Comment
		gas installations (as set out in Section 21 of the Petroleum Act 1987) and operations of existing oil and gas infrastructure to successfully coexist with other marine users. Following PEIR the windfarm site was further refined to reduce the interaction with the gas field operations, and both the Calder platform and CPC-1 platforms sit outside the windfarm site boundary. A further important part of the site selection and design process in relation to Harbour's interests are the mitigation measures proposed in protective provisions secured in the Development Consent Order (DCO). Engagement has continued post-application with Harbour Energy, and Spirt Energy as the duty holder for the Calder Field. Additional mitigations measures, secured as protective provisions within the updated draft DCO in favour of Harbour Energy, have been submitted at Deadline 2 (Document Reference 3.1) taking account of comments provided below (comment ID WR-102-04 to WR-102-06). The Applicant has sent the updated protective provisions to Harbour Energy. The updated protective provisions provide for a one nautical mile (1 nm) marine buffer zone around the Calder platform, a one kilometre (1 km) marine buffer zone along the pipelines and cables, and a one nautical mile (1 nm) marine corridor between the Calder platform and CPC-1 platform. These marine areas are to be free from wind turbine generators (WTGS), offshore substation platforms (OSPs) and temporary surface infrastructure (not including temporary

ID	Written Representation	Applicant Comment
		infrastructure in transit). This is all the shipping and navigation safety mitigation requested by Harbour. In relation to aviation access, the updated protective provisions include for a one point five nautical mile (1.5 nm) aviation buffer zone of clear airspace free of WTGS around the Calder platform, and introduces an aviation corridor which is two nautical miles (2 nm) wide and measured at 220 degrees from the CPC-1 platform, the Aviation Corridor. This is explained at paragraphs 31-32 of the Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35) and Appendix B of that document, Helicopter Access IMC Corridor (Document Reference 9.35.2). This proposed additional mitigation, the Aviation Corridor, would also provide additional mitigation for the Calder Platform allowing for additional landings under IMC and at night, further increasing the level of helicopter access. The Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35) also set out why any residual aviation impact is not a safety issue, but an efficiency and operational (so a commercial issue). The Applicant acknowledges that there may be residual impaired IMC access to the Calder platform and has provided in the updated protective provisions that the undertaker must pay to the owner the additional costs resulting from such residual impaired access. This is also secured in the updated protective provisions. The Applicant's position is that due to siting and this design mitigation (including the new Aviation Corridor

ID	Written Representation	Applicant Comment
		secured by Protective Provisions), disruption and economic loss has been minimised and adverse effects on safety (aviation and marine) have been minimised and avoided. In terms of economic loss, these are considered avoided, taking into the obligation to pay any additional costs incurred by Harbour Energy in relation to reduced helicopter access also secured by the protective provisions. It is acknowledged that there may be some operational accommodation required by Harbour Energy until decommissioning is completed, but it is considered this even if this amounted to "disruption" it is accepted by the National Policy Statements (NPSs) that the scale of future offshore wind development means development will occur close to other offshore infrastructure (NPS EN-3 2.8.199), solutions for successful co-existence should be sought (NPS EN-3 2.8.203), and where a proposed offshore wind farm potentially affects other offshore infrastructure a pragmatic approach should be taken (NPS EN-3 2.8.342).
WR-102-04	Offshore oil & gas operations at any offshore installation are conducted under a dedicated safety case which must be approved by the Health and Safety Executive ("HSE"). Should a proposed alternative to a mitigation provision contained within the currently accepted safety case be significant, a material revision to that installation safety case is required and will be subject to statutory assessment and acceptance by the HSE. A major revision to a safety case is a time-consuming and expensive process requiring detailed quantitative risk assessments and extensive workforce consultation.	Changes to the risk control measures in a safety case may constitute a material change though no such changes are being proposed, just a potential small change in already variable helicopter operations. Under the 2015 Safety Case Regulations what constitutes a material change is determined by the installation duty holder. Any change to describe a slightly different approach to helicopter operations is not major and would be unlikely to be considered material. In the Applicant's consultant's experience many safety case material changes are relatively

ID	Written Representation	Applicant Comment
		straightforward and the process is often not time consuming or costly. An update in relation to a change in helicopter operations is not necessarily “major”.
WR-102-05	When an offshore installation requires support from a Non-Production Installation (“NPI”), such as for well decommissioning, the NPI is similarly obliged to have an HSE accepted safety case pursuant to the terms of the Offshore Installations (Offshore Safety Directive) (Safety Case etc) Regulations 2015). Where obligations under the NPI safety case cannot be met this will restrict the NPI’s ability to support the operation.	The Applicant notes Harbour’s response. A Non-Production Installation (NPI) would require a combined operations notification under the 2015 Safety Case Regulations. Risk assessments and the identification of mitigation measures would be part of this process. The safety case for the NPI would not be specific to Morecambe and so there would be no Morecambe-specific obligations to be met. The way in which helicopters were used for normal transportation and potentially in emergency would be described in the Combined Operations (ComOps) notification sent to the HSE. In relation to emergency use, helicopter evacuation is slow and the helicopter may not be available in an emergency. In this case the lifeboats on the rig are used.
WR-102-06	Helicopter service providers to the offshore industry have procedures which form part of their licence to operate as approved by the Civil Aviation Authority (“CAA”). Should a proposed mitigation require modifications to a helicopter operator’s procedures, such revision would be subject to approval by the CAA of the revised procedures.	Operational Approvals and Alternative Means of Compliance are shown in the Applicant’s Appendix 17.1 - Helicopter Access Study and supporting Technical Note (APP-081).
WR-102-07	**Aviation Operations** The Calder Platform is a normally unmanned installation (“NUI”). Helicopters are an essential component of offshore operations at the Calder Platform. During remaining production operations, helicopters will be required to transport personnel to and from the Calder Platform in order to undertake essential, and in many cases safety-critical, work. Helicopters will sometimes also be required to bring equipment to the installation. During removal and decommissioning operations, one or	The Applicant notes this comment.

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	more NPIs, will be stationed close to the Calder Platform. Each of these NPIs will have its own helideck. Where an NPI is required for an extended period, such as the several months that a drilling rig will be required for well plugging and abandonment, regular (typically daily) helicopter flights will be required to the NPI's helideck. It should be noted that the NPI helideck may be one hundred metres (100m) to one hundred and fifty metres (150m) closer to the Morecambe Generation Assets than the Calder Platform helideck. Each of the foregoing essential helicopter operations (in support of production operations and decommissioning) will operate in accordance with Commercial Air Transportation ("CAT") Regulations.	
WR-102-08	Helicopters are also typically the primary means of evacuation, as required by the Offshore Installations **(**Prevention of Fire and Explosion, and Emergency Response) Regulations 1995 **(“**PFEER Regulations"), from an offshore installation. Where there is danger to life, Search and Rescue ("SAR") services may be requested, however such evacuation, without the restriction of the Morecambe Generation Assets, would often be carried out by CAT regulated helicopters. Accordingly, CAT regulated helicopters will be relied upon for medi-vac, down-manning and compassionate flights.	Regulation 15 of Offshore Installations **(**Prevention of Fire and Explosion, and Emergency Response) Regulations 1995 requires the duty holder to provide a means of evacuation. However, this does not need to be a helicopter. In the case of a fire evacuation by helicopter is unlikely to be practical. Furthermore, helicopter provision in Morecambe Bay appears to be limited to an 8-seat AW169 aircraft. This may be enough for a small work party on Calder, but otherwise evacuation by lifeboat is likely to be the only practical option. Downmanning of a normally unmanned installation (NUI) may be required, though is a rare event. However, this is already not available at all times e.g. where flying is not possible due to fog. In these situations, the Operator may restrict operations offshore to remove, or reduce the hazard that was leading to the downman requirement. Prevention of Fire and Explosion, and Emergency Response) Regulations (PFEER) does not cover

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		medi-vac, or compassionate flights, nor specifically downmanning.
WR-102-09	It has been assumed within this Written Representation that the requirements for SAR access will be reviewed by the Marine Coastguard Authority ("MCA"), therefore the discussion in this Written Representation is restricted to CAT regulated flights.	The Applicant notes this response.
WR-102-10	***Aviation Operations in support of Calder Production*** During production operation of the Calder Field, Spirit Energy is the Offshore Safety Directive Installation and Well Operator for the Calder Field, and in such capacity is responsible for operating and maintaining the Calder Platform on behalf of Harbour Energy as the sole Calder owner. The safety case which governs operation during the production phase is held by Spirit Energy, and therefore all aviation operations are conducted by Spirit Energy under its safety case.	The Applicant notes this response.
WR-102-11	***Current Operations*** The Calder Helideck is approved for daylight and night flights. As there is no accommodation, personnel working at the Calder Platform need to be transported there by helicopter and thereafter collected by helicopter allowing sufficient time to conduct their work. In the unlikely event that personnel were unable to be collected from the Calder Platform, there is emergency overnight accommodation, but its use is restricted by the safety case (and considerations of the welfare of personnel) to emergency use only. Accordingly, it is not permitted to plan on the emergency overnight accommodation being used. When taking personnel to a NUI it is therefore necessary to be confident, not only that conditions are suitable at the time of dropping off personnel, but also that conditions will be suitable later in the day when personnel are due to be collected.	The Applicant notes the response and agrees that personnel should not be transferred to the Calder Platform if weather conditions might preclude them being picked up at the end of their work day. However, weather forecasts are sufficiently accurate that this scenario should not occur assuming that visits are planned effectively. The location of the windfarm should not affect visits given that the proportion of flights at night or in IMC are small. It should be noted that at present flights at night are already constrained by the opening hours of Blackpool Airport (7am to 9pm), and that Spirit Energy do not have an out of hours contract to allow flights outside of these opening hours.
WR-102-12	In order to execute five (5) hours of productive work at the Calder Platform, weather conditions would need to be suitable for flying both	The Applicant notes this response.

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	when dropping off personnel and when collecting them at least seven (7) hours later in the day (allowing time for set-up and close-down). Analysis of five (5) years' of met-ocean data from Spirit Energy's South Morecambe Field (refer to Appendix 1: Assessment of Helicopter Access), shows that the first flight to Calder, can currently occur forty two percent (42%) of the time during normal airport operating hours. This is the baseline for personnel visits to Calder.	
WR-102-13	***Future Operations following Construction of Morecambe Generation Assets*** Any wind farm located within nine (9) nautical miles of an offshore installation helideck will restrict flying to that installation. These restrictions include: ▪ Wind turbine rotor tips within nine (9) nautical miles downwind of the helideck would preclude the use of an Airborne Radar Approach ("ARA"). An approach may still be possible by means of an en-route let-down, but this would require a higher cloud base than an ARA, therefore flying opportunities would be slightly reduced. ▪ Wind turbine rotor tips within three point nine (3.9) nautical miles upwind of the helideck would preclude a take-off on instruments, therefore flying opportunities would be further reduced. ▪ It was agreed at the August 2024 meeting of the CAA, led Offshore Helicopter Safety Leadership Group, that if any wind turbine rotor tip is within three (3) nautical miles of the helideck (in any direction) flying would be limited to daylight and visual with a slightly increased cloud base and visibility requirement. It is anticipated that this will be enacted by the CAA. ▪ If any wind turbine rotor tip is within one point nine (1.9) nautical miles upwind of the helideck, a take-off would not generally be possible. This would restrict flying to times when the wind is not from the direction of the location of the wind farm.	The Applicant has applied all current and proposed aviation regulations, guidance and industry best practice in conducting its assessment shown in Appendix 17.1 - Helicopter Access Study and Technical Note (APP-081). The Applicant disagrees with the distances stated by Harbour Energy and refers to Section 5 of the Applicant's response to Spirit Energy's Deadline 1 Submissions (Document Reference 9.35) where is details a response to Harbour Energy's points on these matters and discusses the Aviation Corridor.

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	▪ If any wind turbine rotor tip is within one point five (1.5) nautical miles downwind of the helideck, an approach with a turn and landing into wind would not be possible. This would restrict flying to times when the wind is not towards the wind farm.	
WR-102-14	The Applicant has proposed, by way of the Draft Protective Provisions (Draft DCO [APP-012] Schedule 3, Part 2, Rev 01, May 2024), that no wind turbine generator or offshore substation platform shall be erected within an area of one point five nautical miles (1.5 nm) of clear airspace measured from the outer extremity edge of the Calder Platform to any tip from any wind turbine generator located within the Licence and extending vertically from mean sea level. Therefore, assuming that wind turbines will be placed along the array boundary such that wind turbine rotor tips are no less than one point five (1.5) nautical miles from the Calder Platform, analysis of the met-ocean data (refer to Appendix 1: Assessment of Helicopter Access) shows that an annual average of fifty six percent (56%) of current opportunities to fly personnel to work on the Calder Platform would be lost (relative to the baseline described in Section 2.1.1). However, during winter months the loss of current opportunities to fly personnel to work at the Calder Platform increases to eighty six percent (86%).	The Applicant refers to response WR-102-13 above.
WR-102-15	***Disruption*** Flights to offshore installations in the East Irish Sea are highly integrated. During remaining production operations from the Calder Field maintenance is, and will continue to be, undertaken by Spirit Energy personnel using Spirit Energy's aviation provider. The personnel are based on Spirit Energy's AP1 installation. From here they are ferried by helicopter to work on Spirit Energy's and Harbour Energy's East Irish Sea installations. As the proposed Morecambe Generation Assets could be one point five (1.5) nautical miles of AP1, flights to and from AP1 would be severely limited and there would, as described in Appendix D of Spirit Energy's Relevant Representation (RR-077), be consequent disruption to all flights using the AP1	The Applicant does not agree that a distance of 1.5nm would severely limit operations. The Applicant refers to responses WR-102-03 and 13 above, and in particular refers to the updated mitigation offered to Harbour Energy and Spirit Energy, the Aviation Corridor. This will enable a greater number of flights to operate from CPC-1 (including AP1).

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	helideck. Visits to the Calder Platform during production operations are managed as part of Spirit Energy's integrated EIS operations and are therefore not controlled by Harbour Energy. As a result, Harbour Energy's operations at the Calder Platform will suffer from the cumulative impact of the Morecambe Generation Assets on all of Spirit Energy's East Irish Sea operations.	
WR-102-16	Harbour Energy's best estimate is that an annual average of fifty six percent (56%) of all opportunities currently available to make a pair of trips to the Calder Platform with at least 7hrs between outward and return flights (giving 5 hours available for work) would be lost. Given the proximity of the Morecambe Generation Assets to Spirit Energy's AP1 facility where personnel are based, a similar level of losses would apply to all other Spirit Energy operated facilities in the East Irish Sea with consequent "knock-on" effects on Calder.	The Applicant refers to responses WR-102-03 and WR-102-13 above.
WR-102-17	***Potential Mitigation of Disruption*** Given that the disruption to aviation caused by the Morecambe Generation Assets during the Calder Field's production phase relates directly to Spirit Energy's aviation operations, it is not appropriate for Harbour Energy to propose potential mitigations in this respect. Harbour Energy will instead rely upon submissions to be made by Spirit Energy in this regard.	The Applicant notes this comment. The Applicant has addressed the operational aviation aspects to the Calder Platform in the Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35). The Calder platform is addressed at Section 5.1 of this document onwards. The Applicant refers to responses WR-102-03 and WR-102-13 above.
WR-102-18	***Economic Loss*** The level of disruption outlined in Section 2.1.3 and, more particularly, the adverse effect on safety outlined in Section 2.1.5 below threatens the viability of continuing production operations from the Calder Field.	The Applicant accepts that there will be some logistic disruptions during the remaining life of the Calder platform. However, it disagrees on the scale of the disruption stated. There will be no reduction in safety. The protective provisions secure that the Applicant will be responsible for paying any additional costs of Harbour due to any reduction in helicopter access.

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WR-102-19	***Potential Mitigation of Economic Loss*** Given that Harbour Energy's economic loss relating to aviation restrictions arises from disruption caused to Spirit Energy's aviation operations, Harbour Energy does not feel able to propose potential mitigations and will rely upon submissions to be made by Spirit Energy in this regard.	The Applicant notes this comment.
WR-102-20	***Adverse Effect on Safety*** CAT regulated flights are only conducted when it is safe to do so. The proposed proximity of the Morecambe Generation Assets will not reduce the safety of these flights but will result in a reduction of times when flights can be made. The significant reduction in availability of flying opportunities to the Calder Field due to the proposed proximity of the Morecambe Generation Assets would have an adverse effect on safety. Setting aside situations where there is a risk to life where SAR flights would be requested, it will become more likely that, should there be a need to evacuate any personnel using CAT regulated flights, personnel would need to remain on the Calder Platform for a longer period than if there was the current availability of flying. It is accepted that evacuation of personnel occurs infrequently, however the provision of a means of evacuation from an offshore installation is a legal requirement as per the PFEER Regulations.	As previously stated, careful planning of visits to the Calder Platform should avoid this scenario. Accurate weather forecasts will be key to the planning process which will minimise the potential for personnel to have to remain overnight. The helicopter operations at Calder already have a high degree of variability: for example, monthly landings in 2021/22 vary between 0 and 27. This shows that the effort on Calder is variable and there is no direct impact on safety for these activities for a delayed, or rescheduled flight as there is already this variability in flights. Similarly, the amount of time spent on a NUI varies considerably. Over the same 2-year period for Calder, from vantage data it is estimated that time spent on the platform for each visit varies between just under an hour to just under 12 hours. As a proportion of the work done, the flying risk is >10 times higher for the short visit but is a risk that is already deemed acceptable by the Operator, HSE and other relevant bodies.
WR-102-21	In addition, Spirit Energy, who is the Offshore Safety Directive operator for the Calder wells and installation, have assessed that the reduced level of flying following construction of the Morecambe Generating	Safety and environmental critical elements (SECE) maintenance – while important – is rarely urgent. It is industry practice to plan this maintenance well in

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	Assets would prevent it from being able to carry out all of the maintenance and verification required on safety and environmental critical elements ("SECEs"). In respect of the Calder Platform which Spirit Energy includes within its definition of "Affected Assets", Spirit Energy concluded in its Relevant Representation (RR-077) that "the "real world" levels of the Delays and Cancellations present a very serious risk to the safe operations of the Affected Assets and Spirit's ability to comply with related safety regulatory requirements."	advance thus the scenario Spirit Energy describe is not credible assuming that their maintenance planning processes are effective. Maintenance intervals for SECEs are measured in months and years, allowing significant time for planning and rescheduling. Verification activities are an independent check that maintenance activities are being carried out effectively. As such verification is not a maintenance activity and, although important, it is not actually a safety critical process itself.
WR-102-22	***Potential Mitigation of Adverse Effect on Safety*** Given that the adverse effect on safety caused by the Morecambe Generation Assets that would impact Harbour Energy's Calder Field arises from disruption caused to Spirit Energy's aviation operations, Harbour Energy does not feel able to propose potential mitigations and will rely upon submissions to be made by Spirit Energy in this regard.	The Applicant notes the response.
WR-102-23	***Aviation Operations in support of Calder Decommissioning*** During decommissioning, of the Calder Field facilities (including platform, wells and subsea pipelines), one or more NPIs will be stationed close to the Calder Platform. In particular, it is anticipated that a drilling rig will be required for a period of approximately four (4) months in order to undertake the plugging and abandonment (P&A) of the wells. During the well P&A programme, regular (typically daily) helicopter flights will be required to the NPI's helideck. It should be noted that the NPI helideck may be one hundred metres (100m) to one hundred and fifty metres (150m) closer to the Morecambe Generation Assets than the Calder Platform helideck.	As identified in the Applicants Appendix 17.1 and Technical Note (APP-081) a distance of 1.5nm is sufficient for day VMC operations, with a margin over the actual approach and take-off distances required. An additional distance of 150m is likely to have a negligible impact on operations. The Applicant refers to responses WR-102-03 and WR-102-15 above, and in particular the Aviation Corridor.
WR-102-24	***Operations prior to Construction of the Morecambe Generation Assets***	The Applicant notes this comment.

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	The NPIs utilised would have helidecks suitable for daylight and night helicopter operations and would have permanent accommodation for personnel. Thus, unlike flying personnel to the Calder Platform, there is no requirement to be able to return to the installation later the same day to transport personnel back. Accordingly, analysis of five (5) years' of met-ocean data from the Morecambe Central Processing Complex (refer to Appendix 1: Assessment of Helicopter Access) shows that flights would be able to be conducted to an NPI close to the Calder Platform ninety four percent (94%) of the time during normal airport operating hours. This is the baseline for personnel visits to an NPI at the Calder Platform during decommissioning were the Morecambe Generation Assets not constructed.	
WR-102-25	***Operations Following Construction of the Morecambe Generation Assets*** Any wind farm located within nine (9) nautical miles of an offshore installation helideck will restrict flying to that installation. These restrictions include: ▪ Wind turbine rotor tips within nine (9) nautical miles downwind of the helideck would preclude the use of an "ARA". An approach may still be possible by means of an en-route let-down, but this would require a higher cloud base than an ARA, therefore flying opportunities would be slightly reduced. ▪ Wind turbine rotor tips within three point nine (3.9) nautical miles upwind of the helideck would preclude a take-off on instruments, therefore flying opportunities would be further reduced. ▪ It was agreed at the August 2024 meeting of the CAA led Offshore Helicopter Safety Leadership Group that if any wind turbine rotor tip is within three (3) nautical miles of the helideck (in any direction) flying would be limited to daylight and visual with a slightly increased cloud base and visibility requirement. It is anticipated that this will be enacted by the CAA.	The Applicant refers to its response to WR-102-03 and WR-102-13 above. The Applicant disagrees with the distances stated by Harbour Energy. The ability to conduct an Airborne Radar Approach (ARA) depends on the wind direction. As the prevailing wind direction is from the south west, an into wind ARA will be flown from the northeast. The presence of the Morecambe Offshore Wind Farm will not affect an ARA from the northeast into the prevailing wind. Table 4.3 within the Applicant's Response to Spirit Energy Deadline 1 Submissions Appendix C: Helicopter Supporting Information Technical Note (Document Reference 9.35.3) shows the IMC one engine inoperative (OEI) distance required. Depending on the ambient wind, the OEI take-off distance required was between 2.73nm and 3.26nm.

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	▪ If any wind turbine rotor tip is within one point nine (1.9) nautical miles upwind of the helideck, a take-off would not generally be possible. This would restrict flying to times when the wind is not from the direction of the location of the wind farm. ▪ If any wind turbine rotor tip is within one point five (1.5) nautical miles downwind of the helideck, an approach with a turn and landing into wind would not be possible. This would restrict flying to times when the wind is not towards the wind farm.	It should be noted that the Applicant has proposed a take-off corridor to the southwest (the prevailing wind) of the South Morecambe Platform, the Aviation Corridor, which will permit most IMC and night operations to continue after the Morecambe Offshore Windfarm is constructed.
WR-102-26	The Applicant has proposed, by way of the Draft Protective Provisions (Draft DCO [APP-012] Schedule 3, Part 2, Rev 01, May 2024), that no wind turbine generator or offshore substation platform shall be erected within an area of one point five (1.5) nautical miles of clear airspace measured from the outer extremity edge of the Calder Platform to any tip from any wind turbine generator located within the Licence and extending vertically from mean sea level. It should be noted that this may result in some wind turbine generators being less than one point five (1.5) nautical miles from an NPI helideck during decommissioning operations. Assuming that wind turbine generators will be placed along the array boundary such that wind turbine generator rotor tips are no less than one point five (1.5) nautical miles from the Calder Platform, analysis of the met-ocean data (refer to Appendix 1: Assessment of Helicopter Access) shows that an annual average of thirty five percent (35%) of current opportunities to fly personnel to work on an NPI at the Calder Platform would be lost (relative to the baseline described in Section 2.2.1). However, during winter months the loss of current opportunities to fly personnel to work on an NPI at the Calder Platform increases to fifty five percent (55%). As summarised in the introduction to this Section 2.2.2, one point five (1.5) nautical miles is insufficient to allow a downwind approach followed by a turn and landing into wind and is also insufficient to allow a take-off into wind. Accordingly, if the NPI helideck is less than one point five (1.5) nautical miles from the nearest wind turbine rotor tip, there could be further restrictions depending on the array layout and the wind direction.	The Applicant does not agree with their impact on their operations stated. The Applicant refers to responses WR-102-03 and WR-102-13 above, and in particular the Aviation Corridor.

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WR-102-27	***Disruption*** Up until permanent cessation of production, aviation support for the Calder Field production operations will be provided by Spirit Energy as part of its extensive Environmental Impact Statement (EIS) operations. Harbour Energy's future arrangements for aviation support during decommissioning of the Calder facilities have yet to be finalised. Given the remoteness of the EIS from other oil and gas operations, aviation support options for the Calder Field decommissioning activities are limited. For the purposes of this analysis, it is assumed that helicopters will be brought to the EIS from another area of the UKCS and that, unlike flights in support of current production operation, there would be no requirement to fly via the Spirit Energy's Morecambe AP1 Platform.	The Applicant notes this comment.
WR-102-28	There is not, nor is there anticipated to be, sufficient availability of suitable helicopters to allow dedicated helicopters to be relocated to the EIS for the duration of the Calder Field decommissioning operations. Calder Field decommissioning is expected to require approximately one flight per day during the approximate four (4) months of peak activity. Such a level of activity, would be insufficient to justify dedicated helicopters, were they to be available. A more likely scenario is that a helicopter would be made available part-time from another area of the UK Continental Shelf (UKCS). For example, a helicopter could be moved to the EIS for three (3) days per week and all the flights for Calder Field decommissioning would be undertaken during this time. In such an arrangement, any loss of an opportunity to fly to the Calder Field arising from the proximity of the Morecambe Generation Assets would result in a lengthening of the Calder decommissioning programme relative to the duration of the programme if the Morecambe Generation Assets were not in the process of or had completed construction. Sharing an aircraft between operations in the EIS and Harbour Energy's operations elsewhere in the UK will already be challenging, however the impact of the Morecambe Generation	The Applicant notes there have been other NPIs operating in the Morecambe Bay Gas Fields close to existing wind farms where no major impacts have been identified. The Applicant refers to responses WR-102-03 and WR-102-13 above, and in particular the Aviation Corridor.

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	Assets will compound these challenges and lead to significant disruption to Harbour Energy's operations.	
WR-102-29	As the number of flights required whilst the helicopter is in the EIS would, for operational reasons on the NPI, be limited to around two (2) flights per day, it should be possible to schedule all the flights within daylight hours (even within winter), significantly reducing the adverse impact of the Morecambe Generation Assets on the Calder Field decommissioning programme. Were the aircraft an AW169 as currently used for production operations, the anticipated loss of flights relative to those currently available to an NPI at the Calder Platform would be an annual average of twenty six percent (26%) of flights, rising to forty percent (40%) in winter. If a different aircraft could be procured, such as the AW139 or the AW189 used by Harbour in its Central North Sea operations, the loss of flights to an NPI would be less (10% annual average rising to 16% in winter) as a take-off, even with one engine inoperable, could be accomplished within one point five (1.5) nautical miles from the nearest upwind wind turbine generator rotor tip. In each case this represents a very significant disruption (see Section 2.2.4).	The Applicant notes there have been other NPIs operating in the Morecambe Bay Gas Fields close to existing windfarms where no major impacts have been identified. The Applicant refers to responses WR-102-03 and WR-102-13 above, and in particular the Aviation Corridor.
WR-102-30	***Potential Mitigation of Disruption*** The most straightforward and effective mitigation would be to ensure a distance of at least three (3) nautical miles clear of wind turbine rotor tips is maintained around the Calder Platform. This would reduce the lost flying opportunities from ten percent (10%) to four percent (4%) and in winter from sixteen percent (16%) to eight percent (8%).	The Applicant does not agree with this assessment. Appendix 17.1: Helicopter Access Study (APP-081) and the Applicant's Response to Spirit Energy Deadline 1 Submissions Appendix C: Helicopter Supporting Information Technical Note (Document Reference 9.35.3) a lower impact. The approach and take-off distances stated by Harbour Energy are derived from the AviateQ Report submitted into examination by Spirit Energy. The Applicant has submitted comments where a number of incorrect assumptions are made, resulting in the calculation of excessive approach and take-off distances. The comments have been made on the AviateQ Report in the Applicant's Response to Spirit

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		Energy Deadline 1 Submissions Appendix A: The Applicant's Comments on Spirit Energy and Harbour Energy Aviation Access Study Report (Document Reference 9.35.1).
WR-102-31	***Economic Loss*** During the Calder well decommissioning, a jack-up drilling rig with its associated crew and attendant vessels will be required. The global market for drilling rigs and associated attendant vessels, is currently constrained due to demand that is driving higher vessel rates. Based on the anticipated disruption outlined in Section 2.2.3 and detailed modelling, this would result in an economic loss (arising from the increase in cost of the programme) likely to be in the range of three million pounds sterling (£3,000,000) to eight million pounds sterling (£8,000,000).	The Applicant maintains that the protective provisions secured in favour of Harbour Energy Schedule 3 Part 3 of the draft DCO (Document Reference 3.1) for operation can also be maintained into the decommissioning phase in order to reduce any disruption and ensure that additional direct costs incurred resulting from reduced helicopter are compensated. Furthermore, the Applicant considers that additional measures can further reduce disruption during decommissioning. For example, hiring another helicopter would give greater flexibility and solve most of any arising issues. The Applicant requests that Harbour Energy provide a detailed breakdown of the cost range provided.
WR-102-32	***Potential Mitigation of Economic Loss*** The first of the mitigating measures suggested in Section 2.2.3.1, would reduce the additional length of the Calder Platform well decommissioning programme but would still be likely to result in significant economic loss. Further mitigation may be possible by means of compensation to Harbour Energy, however such payments would be inefficient when considered on a post-tax basis.	The Applicant maintains that the updated Protective Provisions in favour of Harbour Energy (Document Reference 3.1) secured for operation can also be maintained into the decommissioning phase in order to reduce any disruption and ensure that additional direct costs incurred resulting from reduced helicopter are compensated. Furthermore, the Applicant considers that additional measures can further reduce disruption during decommissioning.
WR-102-33	***Adverse Effect on Safety*** CAT regulated flights are only conducted when it is safe to do so. The proposed proximity of the Morecambe Generation Assets will not	As previously stated, careful planning of visits to the Calder Platform should avoid this scenario. Accurate weather forecasts will be key to the planning process which will minimise the potential for personnel to

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	reduce the safety of these flights but will result in a reduction of times when flights can be made. The significant reduction in availability of flying opportunities to NPIs at the Calder Field due to the proposed proximity of the Morecambe Generation Assets will have an adverse effect on safety. Setting aside situations where there is a risk to life where SAR flights would be requested, it will become more likely that, should there be a need to evacuate any personnel using CAT regulated flights, personnel would need to remain on the offshore installation for a longer period than if there was the current availability of flying. It is accepted that evacuation of personnel occurs infrequently, however the provision of a means of evacuation from an offshore installation is a legal requirement as per the PFEER Regulations.	have to remain overnight, as stated earlier, there is significant variability in the visit to Calder in terms of visits per month and the length of those visits. Calder is a normally unattended installation thus visits to the platform should be infrequent.
WR-102-34	A significant reduction in the availability of CAT flights to conduct evacuations may preclude the use of some NPIs or may restrict the execution of works to times when CAT flights would be available. Such intermittent working increases the safety risks and would further add to the disruption and economic loss outlined in Sections 2.2.3, 2.2.3.1, 2.2.4 and 2.2.4.1.	The Applicant refers to responses WR-102-32 above.
WR-102-35	***Potential Mitigation of Adverse Effect on Safety*** Restricting work to when CAT flights are available as suggested in Section 2.2.5 would be a practical step towards mitigating the adverse impact on safety, but as noted in Section 2.2.5 would increase the disruption and economic loss beyond that set out in Sections 2.2.3, 2.2.3.1, 2.2.4 and 2.2.4.1.	The Applicant refers to responses WR-102-32 above.
WR-102-36	**Marine Operations** During the life of the Calder Field including decommissioning, there will be a need to manoeuvre several large vessels, (such as jack-up drilling rigs, heavy lift vessels) along with any attendant vessels such as tugs or anchor handlers. Whilst the Protective Provisions proposed by the Applicant would ensure that no wind turbine generators are constructed within one point five (1.5) nautical miles of the Calder	The Applicant refers to responses WR-102-03 and WR-102-13 above. The Applicant has provided Harbour Energy with updated protective provisions (see Schedule 3 Part 2 of the draft DCO (Document Reference 3.1)). These updated protective provisions allow for marine areas which will be free of temporary or permanent surface

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	Platform, Harbour Energy is concerned that the Applicant may place temporary infrastructure (such as buoys) that would impede Harbour Energy's access for such large vessels to carry out the decommissioning work at the Calder Field. Harbour Energy believes that Protective Provisions should be included in the DCO to secure the spatial requirements set out in Section 3.1.	infrastructure. These areas are, a one nautical mile (1 nm) radius around the Calder platform, a one nautical mile wide (1 nm) marine corridor between the Calder and CPP1 platforms, and 500 metres each side of the Calder pipelines and subsea cables.
WR-102-37	***Spatial Requirements*** As set out in Harbour Energy's response to the PEIR, the Calder Platform and facilities will require marine access corridors free from temporary or permanent surface infrastructure (except as may from time to time be approved by the Calder Operator) as follows: 1. a radius of one point eight (1.8) kilometres (1 nautical mile) around the Calder Platform; 2. a one point eight (1.8) kilometres (1 nautical mile) corridor between the Calder and CPP1 platforms; and 3. Five hundred (500) metres each side of the Calder pipelines and subsea cables.	The Applicant refers to response WR-102-36 above.
WR-102-38	Since the PEIR the Applicant has modified the Order Limits and therefore the second above is no longer applicable. The Applicant's draft Protective Provisions would provide the areas set out above with respect to installation of wind turbine generators but would need to be expanded to include reasonable restrictions in respect of placement of temporary surface infrastructure.	The Applicant refers to response WR-102-36 above.
WR-102-39	***Disruption*** If the marine access corridors set out in Section 3.1 are not available, delay and disruption to decommissioning activity could result.	The Applicant acknowledges this concern and will continue to engage with Harbour Energy to minimise the impact to any operations.
WR-102-40	***3.1.1.1. Potential Mitigation of Disruption*** Harbour Energy believes that mitigation of such disruption can be achieved through the DCO including Protective Provisions:	The Applicant notes this response.

ID	Written Representation	Applicant Comment
WR-102-41	1. precluding the Applicant from placing temporary or permanent surface infrastructure within the areas set out in Section 3.1 above (except as may from time to time be approved by the Calder Operator); and 2. requiring that prior to commencement of construction, an agreement (a Cooperation and Co-existence Agreement) between the Applicant and Harbour Energy has been executed that ensures, in respect of marine access, that the parties will work together to facilitate one another's work.	The Applicant refers to response WR-102-03, WR-102-13 and WR-102-36 above. The Applicant has updated the protective provisions in favour of Harbour Energy to use reasonable endeavours to conclude a co-existence agreement prior to commencement of the authorised development, this would ensure that if a co-existence agreement is not concluded at this stage (or a side agreement is preferred by Harbour Energy), then there is a clear commitment to having such an agreement (which would cover detailed matter of co-existence such as crossing arrangements) in place once the detailed design is finalised. In addition, the updated protective provisions provide for mutual good faith co-operation obligations.
WR-102-42	***3.1.2. Economic Loss*** If the marine access corridors set out in Section 3.1 are not available, economic loss arising from delay and disruption to decommissioning activity could result.	The Applicant refers to response WR-102-03, WR-102-13 and WR-102-36 above.
WR-102-43	***3.1.2.1. Potential Mitigation of Economic Loss*** The proposed mitigations by means of Protective Provisions in the DCO set out in Section 3.1.2 above would also provide effective mitigation against the economic loss described in Section 3.1.2.	The Applicant refers to response WR-102-03, WR-102-15 and WR-102-36 above.
WR-102-44	***3.1.3. Adverse Effect on Safety*** If the marine access corridors set out in Section 3.1 are not available, no adverse effect on safety would arise as no work would be undertaken unless it is safe to do so.	The Applicant notes the response. The Applicant refers to response WR-102-03, WR-102-15 and WR-102-36 above.
WR-102-45	**4.0 Mutually Exclusive Simultaneous Operations** Harbour Energy's Relevant Representation [RR-027] states that detrimental impacts may arise affecting mutually exclusive	Simultaneous operations will be planned and risk assessed on an individual basis. This is implying the piling for the wind farm would affect diving on Calder. This is unlikely due to physical separation, but the

ID	Written Representation	Applicant Comment
	simultaneous operations such as piling and diving operations (reference Diving Medical Advisory Committee: DMAC 12 Safe Diving Distance from Seismic Surveying Operations Rev. 2.1 – June 2020).	amount of diving would be low and probably only associated with eventual decommissioning. The Applicant has updated the protective provisions in favour of Harbour Energy to use reasonable endeavours to conclude a co-existence agreement prior to commencement of the authorised development, this would ensure that if a co-existence agreement is not concluded at this stage (or a side agreement is preferred by Harbour Energy), then there is a clear commitment to having such an agreement (which would cover detailed matter of co-existence such as crossing arrangements) in place once the detailed design is finalised. In addition, the updated protective provisions provide for mutual good faith co-operation obligations. The Applicant has provided Heads of Terms for a Cooperation and Co-Existence Agreement and is committed to working with Harbour towards a mutually agreeable solution.
WR-102-46	***4.1. Disruption*** Poor planning and coordination between the Applicant and Harbour Energy in connection with mutually exclusive simultaneous operations would result in disruption to execution of work.	The Applicant notes the response and refers to its response at WR-102-45 above. However, this merely provides an incentive for Harbour and the Applicant to ensure good planning and cooperation. The Applicant is committed to doing so.
WR-102-47	***4.1.1. Potential Mitigation of Disruption*** Harbour Energy believes that a condition of granting the Morecambe Generation Assets DCO should be a requirement that, prior to commencement of construction, an agreement (a Cooperation and Co-existence Agreement) is in place between the Applicant and Harbour Energy that ensures, in respect of mutually exclusive simultaneous operations, such as piling, diving and seismic, that the parties will work together to facilitate one another's work.	The Applicant acknowledges the response and refers to its response at WR-102-45 above**.** The Applicant is committed to planning said work such that it is carried out safely and efficiently.

ID	Written Representation	Applicant Comment
WR-102-48	***4.2. Economic Loss*** Poor planning and coordination between the Applicant and Harbour Energy in connection with mutually exclusive simultaneous operations would result in economic loss arising from disruption to execution of work.	The Applicant acknowledges the response and refers to its response at WR-102-45 above**.** The Applicant is committed to planning said work such that it is carried out safely and efficiently
WR-102-49	***4.2.1. Potential Mitigation of Economic Loss*** The mitigation described in Section 4.1.1 would also serve to mitigate against consequent economic loss.	The Applicant acknowledges the response and refers to its response at WR-102-45 above. The Applicant is committed to planning said work such that it is carried out safely and efficiently
WR-102-50	***4.3. Adverse Effect on Safety*** Poor planning and coordination between the Applicant and Harbour Energy in connection with mutually exclusive simultaneous operations could result in an adverse effect on safety as there would be a risk to personnel.	The Applicant is committed to doing so. The Applicant acknowledges the response and refers to its response at WR-102-45 above**.** The Applicant is committed to planning said work such that it is carried out safely and efficiently
WR-102-51	***4.3.1. Potential Mitigation of Adverse Effect on Safety*** The mitigation described in Section 4.1.1 would also serve to mitigate against consequent adverse effect on safety.	Please see response to Comment ID WR-102-45.
WR-102-52	**5.0 Collision / Allision Avoidance** The Calder Platform and any NPI working at the Calder Platform could be vulnerable to allision from passing vessels. Two methods of giving early warning of a potential allision that are generally used in combination are: ▪ Marine radar systems; and ▪ The radio based Automatic Identification System (AIS). Both systems are vulnerable to potential interference from nearby wind farms. The Applicant has assessed the impact of the proposed Morecambe Generation Assets (including the cumulative impact of the Morecambe Generation Assets and the Mona Offshore Wind Farm) on radar and on AIS systems in the Environmental Statement (in particular	The Applicant notes this comment. The Applicant has not responded on Radar Early Warning Systems (REWS) within this response. The comments in relation to REWS which are still being analysed, but given the distinct character of radar impacts (and the similarities with other potential radar impacts in other locations) it is considered that this matter can be addressed distinctly. The Applicant intends to submit and updated REWS assessment at Deadline 3 addressing the comments raised by Spirit in both their relevant representation and written representation.

ID	Written Representation	Applicant Comment
	Chapter 17 (APP-054) and Appendix 17.1 (APP-082)). The Applicant acknowledges that due to the presence of the Morecambe Generation Assets wind turbine generators, there would be some gaps in detection from the radar early warning system (REWS) installed on Spirit Energy's Morecambe South AP1 Platform. Harbour Energy is of the view that the proximity of the Morecambe Generation Assets to the Calder Platform would mean that there should be little vessel traffic choosing a route close to the Calder Platform other than vessels serving the Calder Platform or the Morecambe Generation Assets. Notwithstanding potential impairment of the REWS currently providing protection, Harbour Energy accepts that disruption to its operations arising from potential allision events is unlikely. Accordingly, there would be no significant associated economic loss or adverse effect on safety.	
WR-102-53	**6.0 Microwave Line of Sight Communications** The Calder Platform relies upon a fibre-optic cable to the Morecambe CPP1 which is not within the proposed Morecambe Generation Assets array. Communications with the Morecambe Platform will not therefore be affected by the Morecambe Generation Assets. Any NPI working at the Calder Field will be able to rely on satellite communications and will not be affected by the Morecambe Generation Assets. With regard to communications links, no disruption to operations, economic loss or adverse effect on safety is anticipated as a result of the Morecambe Generation Assets.	The Applicant agrees with this comment.
WR-102-54	**7.0 Summary and Conclusions** It is expected that production from the Calder Field will continue beyond the commencement of construction of the Morecambe Generation Assets. Production may continue during the operation of the Morecambe Generation Assets.	The Applicant notes the proposed timeline for the decommissioning of the Calder Field as set out in the decommissioning programme submitted to the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) for approval in accordance with Section 29 of the Petroleum Act 1998.

ID	Written Representation	Applicant Comment
WR-102-55	Decommissioning of the Calder Field facilities is thus expected to occur following construction of the Morecambe Generation Assets and during the operating phase.	The Applicant notes this response.
WR-102-56	Harbour Energy is committed to working with the Applicant to find acceptable approaches to coexisting and cooperating.	The Applicant notes this response and confirms it is also committed to working with Harbour to find mutually acceptable approaches to coexisting and cooperating.
WR-102-57	The National Energy Policy Statement for Renewable Energy Infrastructure (EN-3) expects the Secretary of State to be “satisfied that the site selection and site design of a proposed offshore wind farm and offshore transmission has been made with a view to avoiding or minimising disruption or economic loss or any adverse effect on safety to other offshore industries.” (EN-3: 2.8.345).	The Applicant has addressed this comment regarding its position on the policy requirement in the above comment in ID WR-102-03.
WR-102-58	As currently proposed, the Morecambe Generation Assets would have the potential to result in significant disruption and economic loss to Harbour Energy’s remaining production and decommissioning activities at the Calder Field. There would also be an adverse effect on safety arising from the restrictions that would apply to aviation operations due to the proposed proximity of Morecambe Generation Assets.	The Applicant refers to its response at WR-102-03, 13 and 26 above. The Applicant has provided Harbour Energy with revised protective provisions (within Schedule 3 Part 3 of the draft DCO (Document Reference 3.1)) and the Aviation Corridor.
WR-102-59	It is estimated by Harbour Energy that Calder Field production operations will be disrupted to the extent that an annual average of fifty six percent (56%) of current opportunities to fly personnel to work on the Calder Platform would be lost, with a loss of eighty six percent (86%) of current opportunities in winter.	The Applicant does not agree with the Harbour Energy assessment. The Harbour Energy assessment appears to be based on an incorrect calculation of the approach and take-off distances required, resulting in a pessimistic calculation of helicopter access. Current operations to NUI helidecks located inside and adjacent to wind farms demonstrate that the impact is considerably lower than stated by harbour Energy.

ID	Written Representation	Applicant Comment
WR-102-60	It is anticipated that, assuming availability of aircraft for decommissioning other than the currently utilised AW169 helicopters, Calder Field decommissioning would be disrupted to the extent that an annual average of four percent (4%) (rising to eight percent (8%) in winter) of currently available flying opportunities to an NPI at the Calder Platform would be lost.	This approximates to the impact calculating by the Applicant, both for flights to a NPI and flights to NUIs in general.
WR-102-61	Spirit Energy, who is the Offshore Safety Directive operator for the Calder wells and installation (included within Spirit Energy's definition of "Affected Assets"), has assessed that the reduced level of flying following construction of the Morecambe Generating Assets would prevent it from being able to carry out all of the maintenance and verification required on SECEs. Spirit Energy therefore concluded in their Relevant Representation (RR-077) that "the "real world" levels of the Delays and Cancellations present a very serious risk to the safe operations of the Affected Assets and Spirit's ability to comply with related safety regulatory requirements."	SECE maintenance – while important – is rarely urgent. It is industry practice to plan this maintenance well in advance thus the scenario Spirit Energy describe is not credible assuming that their maintenance planning processes are effective. Maintenance is required on the timescale of many months or even years and the variability shown in the flying pattern to Calder already accounts for this. Any change caused by the Project would minimally affect this. Verification activities are an independent check that maintenance activities are being carried out effectively. As such verification is not a maintenance activity and, although important, it is not a safety critical process itself. Furthermore, Spirit have not substantiated the claims made in Relevant Representation RR-077, thus the Applicant has no means to verify its accuracy. The Applicant therefore questions the veracity of RR-077.
WR-102-62	The anticipated level of disruption that would arise during production operations, particularly the potential inability to comply with safety regulatory requirements, would threaten the viability of continuing production from the Calder Field after construction of the Morecambe Generation Assets has commenced.	The Applicant disagrees that the level of disruption will impact the viability of the operation of the Calder Field.

ID	Written Representation	Applicant Comment
WR-102-63	An estimate of Harbour Energy's additional economic loss during decommissioning based on the likely extension of the Calder Field facilities decommissioning programme would be in the range of three million pounds sterling (£3,000,000) to eight million pounds sterling (£8,000,000).	The Applicant notes the response. However, Harbour have not explained how this figure was calculated, thus no further comment can be made. It is note that this figure is significantly more than the costs of an additional helicopter to provide flexibility of manning.
WR-102-64	Harbour Energy believes that in order to mitigate against disruption and economic loss arising from any constraints to marine access, the DCO should include Protective Provisions: ▪ precluding the Applicant from placing temporary or permanent surface infrastructure within: ○ a radius of one point eight (1.8) kilometres (1 nautical mile) around the Calder Platform; ○ Five hundred (500) metres each side of the Calder pipelines and subsea cables. (except as may from time to time be approved by the Calder Operator); and ▪ requiring that prior to commencement of construction, an agreement (a Cooperation and Co-existence Agreement) between the Applicant and Harbour Energy has been executed including the above restrictions, thereby ensuring that the parties will work together to facilitate one another's work.	The Applicant refers to its response at WR-102-03, WR-102-13 and WR-102-26 above. The Applicant has provided Harbour Energy with revised protective provisions (within Schedule 3 Part 3 of the draft DCO, Document Reference 3.1). The Applicant has also provided Harbour Energy with the Aviation Corridor (see The Applicants Response to Spirit Energy Deadline 1 Submission Appendix B: Helicopter Access Instrument meteorological conditions (IMC) Corridor (Document Reference 9.35.2)).
WR-102-65	Poor planning and coordination between the Applicant and Harbour Energy in connection with mutually exclusive simultaneous operations (piling, diving and seismic) would result in disruption to execution of work. Harbour Energy believes that a condition of granting the Morecambe Generation Assets DCO should contain a requirement that, prior to commencement of construction, an agreement (a Cooperation and Co-existence Agreement) is in place between the Applicant and Harbour Energy including provisions for planning and coordination of mutually exclusive simultaneous operations thereby ensuring that the parties will work together to facilitate one another's work.	The Applicant has updated the protective provisions in favour of Harbour Energy to use reasonable endeavours to conclude a co-existence agreement prior to commencement of the authorised development, this would ensure that if a co-existence agreement is not concluded at this stage (or a side agreement is preferred by Harbour Energy), then there is a clear commitment to having such an agreement (which would cover detailed matter of co-existence such as crossing arrangements) in place once the detailed design is finalised. In addition, the

ID	Written Representation	Applicant Comment
		updated protective provisions provide for mutual good faith co-operation obligations.
WR-102-66	Harbour Energy accepts that disruption to its operations arising from potential allision events is unlikely.	The Applicant notes this response.
WR-102-67	With regard to communications links, no disruption to operations, economic loss or adverse effect on safety is anticipated as a result of the Morecambe Generation Assets.	The Applicant notes this response.
WR-102-68	***Data*** Five years of proprietary met-ocean data relating to conditions at Spirit Energy's South Morecambe Field were analysed. This data was also provided to the Applicant. The data comprised: wind direction; visibility; cloud height; air temperature; dew point temperature; wind speed; and significant wave height recorded every 10 minutes from 19/12/17 00:00 to 19/12/22 14:30 – a total of 262,583 records.	The Applicant notes this response.
WR-102-69	Many cloud height values were recorded as "NaN". If the dewpoint temperature was within one degree Celsius (1oC) of the air temperature, foggy or similar poor visibility conditions were assumed. If visibility met the minimum required for instrument flying, it was assumed that instrument flying would be possible. Otherwise, it was assumed that "NaN" indicated no cloud, so these values were replaced by a high cloud base that would allow visual flying subject to the visibility meeting the minimum requirements.	The Applicant notes this response.
WR-102-70	***Analysis*** Each record was tested against a variety of conditions.	The Applicant notes this response.
WR-102-71	***Not Suitable for Flying*** Although aviation operations can take place in winds up to sixty (60) knots and when significant wave height is up to six (6) metres, Offshore Energy UK (OEUK) document "OEUK Guidelines for the Management of Helideck Operations" Issue 7, April 2024, sets out lower limits for landings at offshore helidecks. Accordingly, winds	The Applicant notes this response.

ID	Written Representation	Applicant Comment
	greater than forty (45) knots or significant wave heights greater than five pint five (5.5) metres were considered unavailable for flights to offshore installations.	
WR-102-72	If the temperature was less than one point five (1.5) degrees Celsius and the air temperature minus the dewpoint temperature less than 3oC, icing was assumed to be likely and the time marked as not suitable for flying.	The Applicant notes this response.
WR-102-73	In total, two percent (2%) of all records in the dataset (within airport operating hours) were not suitable for flying.	The Applicant notes this response.
WR-102-74	***Suitable for flying on Instruments*** CAA rules limit instrument flying to when visibility is at least one point five (1.5) kilometres, and the cloud base is at least three hundred feet (300') in daylight or four hundred feet (400') at night.	The Applicant notes this response.
WR-102-75	In total, ninety eight percent (98%) of all records in the dataset (within airport operating hours) were suitable for instrument flights.	The Applicant notes this response.
WR-102-76	***Suitable for Visual Flying*** CAA rules require there to be a minimum visibility of four (4) kilometres and a minimum cloud base of six hundred feet (600') for visual flying in daylight and there to be a minimum visibility of five (5) kilometres and a minimum cloud base of seven hundred feet (700') for visual flying at night.	The Applicant notes this response.
WR-102-77	A total of ninety four percent (94%) of records in the dataset (within airport operating hours) were suitable for visual flying.	The Applicant notes this response.
WR-102-78	***Currently Available Flying Opportunities*** Data has only been analysed within the normal operating hours of Blackpool Airport (07:30 – 21:00). It has also been assumed that a helicopter would not set off unless there were a thirty (30) minute window with no more than one ten (10) minute interval unavailable for flying.	The Applicant notes this response.

ID	Written Representation	Applicant Comment
	On this basis, ninety four percent (94%) of records in the dataset (within airport operating hours) would currently be suitable for flying. This is the baseline against which the loss of flying opportunities due to the Morecambe Generation Assets has been determined.	
WR-102-79	***Flying within three (3) nautical miles of a Wind Farm*** New rules adopted by North Sea helicopter operators, agreed by the Offshore Helicopter Safety Leadership Group in August 2024, and expected to be enforced by the CAA in 2025, will limit flying within three (3) nautical miles (in any direction) of any part of a wind turbine to daylight and visual with the additional requirement that visibility is at least five (5) kilometres and cloud base is at least seven hundred feet (700'). There is also discussion that as new larger wind turbines are planned that the cloud base will also need to be at least one hundred feet (100') or two hundred feet (200') above the nacelle (the centre of the rotor) so that the top of the turbine tower (including its lights) is visible to the pilots.	The Applicant notes this response.
WR-102-80	A total of seventy five percent (75%) of all records in the dataset (within airport operating hours) would allow flying within three (3) nautical miles of a wind turbine.	The Applicant notes this response.
WR-102-81	***Suitable for flying, subject to wind direction*** Where a wind farm is less than one point nine (1.9) nautical miles from a helideck, take-off and landing can only be performed if the helicopter flies in a direction that allows one point nine (1.9) nautical miles before the nearest rotor blade is reached. A helicopter must perform its landing and take-off into wind. Based on consultation with NHV Group (an offshore and onshore helicopter service provider), it has been assumed that a helicopter may take-off up to 20o offset from directly into wind. Also, if the wind speed is less than ten (10) knots, it is assumed the helicopter can take-off and land in any direction.	The Applicant notes this response.
WR-102-82	To fly to the Calder Platform or to an NPI adjacent to the Calder Platform, the conditions for flying within three (3) nautical miles of a	The Applicant notes this response.

<table>
<tr><th>ID</th><th>Written Representation</th><th>Applicant Comment</th></tr>
<tr><td></td><td>wind farm would need to be met and the wind would need to be between 210o and 50o. In the database, during airport operating hours, these conditions occur sixty one percent (61%) of the time.
If flights are via Spirit Energy’s Morecambe AP1 Platform, the wind would also need to be between 230o and 105o. In the database, during airport operating hours, these combined conditions occur fifty seven percent (57%) of the time.</td><td></td></tr>
<tr><td>WR-102-83</td><td>Summary
This analysis is summarised in the tables below. Note: Table 1 gives the percentages of records that permit flying in each case, whereas Table 2 gives the percentage of baseline opportunities that would be lost due to the proposed proximity of the Morecambe Generation Assets.</td><td>The Applicant notes this response.</td></tr>
<tr><td>WR-102-84</td><td><table>
<tr><th>% of flying windows within airport operating hours that allow:</th><th>Min Flying Conditions</th><th>IFR</th><th>VFR</th><th>New CAA</th><th>Currently
To an NPI</th><th>Currently
To a NUI</th><th>With Wind Farm >3nm & <3.9nm
To an NPI</th><th>With Wind Farm >3nm & <3.9nm
To a NUI</th><th>With Wind Farm > 1.9nm & <3nm
To an NPI</th><th>With Wind Farm > 1.9nm & <3nm
To a NUI</th></tr>
<tr><td>Annual Average: Day</td><td>98%</td><td>98%</td><td>95%</td><td>92%</td><td>96%</td><td>48%</td><td>92%</td><td>45%</td><td>87%</td><td>30%</td></tr>
<tr><td>Night *</td><td>96%</td><td>96%</td><td>88%</td><td>0%</td><td>83%</td><td>2%</td><td>75%</td><td>1%</td><td>0%</td><td>0%</td></tr>
<tr><td>Day & night</td><td>98%</td><td>98%</td><td>94%</td><td>79%</td><td>94%</td><td>42%</td><td>90%</td><td>39%</td><td>75%</td><td>26%</td></tr>
<tr><td>Monthly Minimum (Day & night)</td><td>93%</td><td>93%</td><td>86%</td><td>57%</td><td>89%</td><td>39%</td><td>81%</td><td>35%</td><td>53%</td><td>8%</td></tr>
</table>
* Night accounts for 13% of flying windows within airport operating hours (25% over winter months)
Table 1: Percentage of Records within Blackpool Airport Operating Hours Suitable for Flying</td><td rowspan="2">The Applicant notes this response.</td></tr>
<tr><td>WR-102-85</td><td><table>
<tr><th></th><th>Lost[1] Flying Opportunities With Wind Farm</th><th></th><th></th></tr>
<tr><th></th><th>WF 1.5nm from Calder</th><th colspan="2">WF 1.5nm from Calder and CPC1</th></tr>
<tr><th></th><th>To an NPI NOT via CPC1</th><th>To an NPI via CPC1</th><th>To a NUI[2] via CPC1</th></tr>
<tr><td>Annual Average (Daylight Only):</td><td>26%</td><td>31%</td><td>56%</td></tr>
<tr><td>Worst Month:</td><td>40%</td><td>47%</td><td>85%</td></tr>
<tr><td>Annual Average (Day & Night):</td><td>35%</td><td>39%</td><td>56%</td></tr>
<tr><td>Worst Month:</td><td>55%</td><td>61%</td><td>86%</td></tr>
</table>
Notes:
1. Lost relative to currently available opportunities without WF
2. NUI Requires min of 7 hrs between flights
Table 2: Percentage of Currently Available Flying Opportunities that would be Lost due to Proposed Proximity of the Morecambe Generation Assets</td></tr>
</table>

2.6 Shepherd & Wedderburn on behalf of Ørsted IPs (REP1-112 and REP1-103)

Table 2.6 The Applicant's comments on Spirit Energy written representation

ID	Written Representation	Applicant comment
WR-112-01	**Introduction** This written representation is provided in accordance with Deadline 1 of the examination timetable for the application by Morecambe Offshore Windfarm Limited (the "**Applicant**") for an Order under the Planning Act 2008 (the "**Act**") granting Development Consent for the Morecambe Offshore Windfarm Generation Assets (the **"Project**"). We represent six owners of operational offshore windfarms in the East Irish Sea (as set out relevant representations RR-008, RR-014, RR-056, RR-088, RR-089, RR-093), who we refer to together as the "**Ørsted IPs**" for the purposes of this written representation. The Ørsted IPs have been engaged in a consultation process with the Applicant in respect of the potential impacts of the Project on the Ørsted IPs' developments. The Ørsted IPs filed relevant representations in respect of the Project and were represented at Issue Specific Hearing 1 ("**ISH1**") on 24 October.	The Applicant notes this response.
WR-112-02	As outlined in the relevant representations and at ISH1, the Ørsted IPs do not oppose the Project in principle. However, they have concerns regarding the interactions between the Project and their developments which are yet to be resolved. Primarily, the Ørsted IPs' concerns relate to the effects of the Project on wake loss, ecology, shipping and navigation, and radar, which are addressed in turn below.	The Applicant notes this response and has responded within ID WR-11-03 – WR-11-15 below.
WR-112-03	**Energy Yield/wake loss**	The Applicant notes this response. Due to the short timescale between Deadline 1 and Deadline 2, the Applicant has not commented on the suite of

ID	Written Representation	Applicant comment
	Alongside this written representation, the Ørsted IPs have submitted (in accordance with action point 8 of the action points arising out of ISH1 [EV3-009]): ▪ a suite of academic research and articles outlining the potential for material wake loss at separation distances of greater than 30km, and an accompanying memorandum; and ▪ a separate document outlining the Ørsted IPs' argument that a wake loss assessment is required.	academic research and articles provided as part of the Ørsted IPs' submission (see REP1-109). The Applicant reserves the right to provide comments at a subsequent deadline once a full review has been undertaken.
WR-112-04	The Ørsted IPs do not seek to repeat the arguments set out in those documents. However, in summary, the Ørsted IPs consider the National Policy Statement EN-3 ("**NPS-EN3**") requires that an assessment of the wake loss impacts of the Project on the Ørsted IPs is undertaken, as it is "close" to Ørsted IPs developments (as required by paragraph 2.8.197). In the absence of such an assessment, there is an important informational gap which would prevent the Secretary of State from making its decision in accordance with key requirements of the NPS-EN3.	The Project proposes to generate clean green energy to help the United Kingdom (UK) reach its net zero target by 2050. The Crown Estate's Round 4 offshore wind portfolio across the UK seeks to deliver around 8GW of new offshore wind projects by the end of the decade. This is enough to power more than seven million homes and deliver the step-change in the UK's journey to net zero by 2050. NPS EN-1 recognises that this target will need a dramatic increase in the volume of new large-scale energy development, which will not be possible without some level of residual impacts (paragraphs 3.1.1 and 3.1.2). For Critical National Priority Infrastructure, such as the Morecambe Generation Assets, the starting point is a presumption that the need outweighs the residual effects in all but the most exceptional cases (paragraph 4.1.7). National Policy Statement (NPS) EN-3 encourages developers to maximise the capacity of new large-scale energy development within technological, environmental and other constraints (NPS EN-3 paragraph 2.8.2). To the extent that new large-scale energy development results in minimal wake loss for operational projects, the Applicant submits that the

ID	Written Representation	Applicant comment
		considerable net benefit delivered by the new development should be afforded very great weight in the planning balance. The Applicant acknowledges Ørsted IPs' concerns regarding wake effects. However, the Applicant considers that this issue must be viewed and balanced in terms of the significant positive contribution of the Morecambe Generation Assets to support the net zero target by 2050. The NPS EN-3 recognises the nature of offshore infrastructure is that development has occurred, and will continue to occur, in or close to areas where there is other offshore infrastructure (paragraph 2.8.196). The Applicant's position is that there is no requirement in the NPS for the Applicant to undertake a wake assessment. Paragraph 2.8.197 of NPS EN-3 further sets out, '*Where a potential offshore wind farm is proposed close to existing operational offshore infrastructure, or has the potential to affect activities for which a licence has been issued by government, the applicant should undertake an assessment of the potential effects of the proposed development on such existing or permitted infrastructure or activities.'* The distances between the Project and each Ørsted IP's development are set out in Table 5.1 and shown in Figure 5.1 of *9.28 Response to Actions arising from Preliminary Meeting and Issue Specific Hearing 1 - Revision 01 (Volume 9)* (REP1-086). Table 5.1 shows the closest of projects represented by Ørsted IPs is West of Duddon Sands, which is 12.9km from the

ID	Written Representation	Applicant comment
		Project at the nearest point. The other projects including Walney Extension 3 and 4, Walney 1 and 2, Burbo Bank and Burbo Bank Extension and Barrow are at a distance of between 18.8km and 33.4km from the Project. It is the Applicant's understanding that the point of contention on the interpretation of paragraph 2.8.197 of NPS EN-3 is the interpretation of the word 'close' to which is not defined in the NPS. In the absence of a definition in the NPS (and in legislation more broadly), words take their ordinary meaning. The ordinary meaning of 'close' defined in the Oxford Dictionary is: ▪ *Very near in position: in or nearly in contact: narrowly escaped.* ▪ *Very near in position, relation, or connection: in or into immediate proximity or intimacy.* It is the Applicant's position that the distance between the Project and the Ørsted IPs' assets does not accord with the ordinary meaning of the word 'close'. The Project is therefore not considered to be 'close' to existing operational offshore infrastructure as set out in paragraph 2.8.197 of NPS EN-3. The Project also does not affect activities for which a licence has been issued by government to other existing offshore infrastructure. The Applicant's position is supported by the findings of the Frazer-Nash Report, prepared for The Crown Estate (TCE) (see 9.28.3 Appendix C: Frazer-Nash Report - Revision 01 (Volume 9) (REP-089)). The Frazer-Nash Report assessed wakes and blockage

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		production losses for a number of generic windfarm generations using the Turbulence Optimized Park wake model coupled to a Rankine Half Body with Wake expansion blockage model. The model is essentially identical to that developed and tuned against real-world measurement data for 48 offshore windfarms by Ørsted. The report concludes, '…*farm-to-farm wake effects represent a small fraction of the production loss due to internal wakes and blockage for separations between wind farms in the range of 2 to 20 km. The model findings indicate that reductions in farm-to-farm wake loss with increasing buffer separation are more significant at lower buffer separations.'* And, *'Beyond approximately 10 km separation between wind farms, the TurbOPark model indicates a levelling off of total interaction loss with buffer distance. For separations much larger than 20 km, farm-to-farm wake losses will become vanishingly small…'* 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. This is also set out in the Frazer-Nash Report, which states, '*TCE wishes to designate offshore wind project development areas (PDAs) to maximise the energy production from the portfolio of existing and future wind farms, whilst balancing environmental and other requirements*.'

ID	Written Representation	Applicant comment
		Within their leasing process, TCE required a separation distance of 7.5km between Round 4 developments and existing offshore windfarm 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 7.5km of an existing offshore windfarm, unless the owner of the existing offshore windfarm had given its written consent (TCE, 2019). This ensures that any likely project interactions are managed between the two leaseholders. Beyond this no consent or approval from any existing operators is needed. No approval from any existing operating wind farms is required for the Project. In the Secretary of State's decision making, NPS EN-3, paragraph 2.8.347 notes, "*Where a proposed development is likely to affect the future viability or safety of an existing or approved/licensed offshore infrastructure or activity, the Secretary of State should give these adverse effects substantial weight in its decision-making.*" The Ørsted IPs in relevant representations and written representation at Deadline 1 do not suggest the Project would affect future viability or safety of its developments and this is also the Applicant's position. Additionally, the Applicant has demonstrated through the TCE Round 4 leasing process and as explained in the site selection process in Volume 5 - Chapter 4 - Site Selection and Assessment of Alternatives (APP-041) that it complies with paragraph 2.8.345 of the

ID	Written Representation	Applicant comment
		NPS EN-3 by minimising effects on other users '….*the Secretary of State should be satisfied that the site selection and site design of a proposed offshore wind farm and offshore transmission has been made with a view to avoiding or minimising disruption or economic loss or any adverse effect on safety to other offshore industries. Applicants will be required to demonstrate that risks to safety will be reduced to as low as reasonably practicable.'* In accordance with the NPS EN-1 (paragraph 4.5.8) the Applicant undertook a Marine Plan assessment against the North West Marine Plan (set out in the Marine Plan Policy Review, APP-025). The Applicant used this assessment to consider which activities may be most affected by the Project in accordance with paragraph 2.8.199 of the NPS EN-3. In particular Policy NW-CO-1 of the North West Marine Plan supports '*Proposals that optimise the use of space and incorporate opportunities for co-existence and co-operation with existing activities'* The policy provides that "*Proposals that may have significant adverse impacts on, or displace, existing activities must demonstrate that they will, in order of preference:* *a) avoid* *b) minimise* *c) mitigate* *adverse effects so they are no longer significant.*

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		If it is not possible to mitigate significant adverse impacts, proposals must state the case for proceeding. The Environmental Impact Assessment (EIA) did not identify any significant adverse impacts on, nor did the Project displace existing activities, in relation to Ørsted IPs' assets. The Applicant has demonstrated in its assessment and in the Development Consent Order (DCO) Application its willingness to incorporate opportunities for co-existence and co-operation with existing activities. In accordance with the NPS, the North West Marine Plan and the Applicant's assessment, the Applicant does not consider Ørsted IPs' assets to be significantly adversely affected by the Project.
WR-112-05	The Ørsted IPs consider wake loss is also relevant to the Applicant's Environmental Impact Assessment in respect of climate change, as its assessment of the net emissions reductions resulting from the Project should take into account the loss of renewable energy generation from the Ørsted IPs' developments.	The Applicant does not consider that potential wake loss of existing operational wind farms to be a matter that requires to be assessed and reported on within the Environmental Statement. The EIA Regulations require an assessment of "likely" "significant" effects, and as such there is a threshold of proportionality before the requirement to carry out an assessment is engaged. It is notable that there is no published guidance by industry or professional bodies that suggests such an assessment is required, or how such an assessment would be undertaken. It was also not requested in the scoping opinion received in relation to the Project. The Applicant has carried out a Greenhouse Gas (GHG) emissions assessment in line with the latest

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		Institute of Environmental Management and Assessment (IEMA) guidance in an EIA context (Chapter 21 Climate Change (APP-058)). The Applicant considers that it has satisfied all necessary EIA guidance and/or policy in this regard. It is the Applicant's position that for similar reasons to those set out in WR-112-04 above, it is not credible to suggest the wake loss issues raised by the Ørsted IPs could be material to the conclusions of the Applicant's GHG emissions assessment. Further, the Applicant is not aware of any other offshore wind project in the UK carrying out an assessment of net effects on emissions reduction in the context suggested. It is understood that given similar comments on the Morgan Generation Offshore Wind Project, there are ongoing discussions, and the Applicant will continue to discuss the matter with Ørsted IPs.
WR-112-06	The academic research the Ørsted IPs have provided in response to action point 8 demonstrates that material wake effects can occur at large distances (far beyond the 7.5km separation distance relied on by the Applicant). Additionally, preliminary modelling commissioned by the Ørsted IPs indicates a material impact at their developments (between 0.3% at the least impacted development and up to 1.4% AEP at the most impacted development from the Project alone and between 1.7%-5.3% cumulatively with the Morgan and Mona developments).	As outlined within this response, the Applicant considers that there is no requirement for wake effects assessment to be undertaken. Therefore, the Applicant does not provide comment on the outcomes of the preliminary modelling commissioned by the Ørsted IPs. Notwithstanding this position, the Applicant considers the limitations to any potential wake effects assessment to be: ▪ site specific Wind Turbine Generators (WTG) operating parameters including the final array, number and model of WTGs for the Project are not known

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		▪ the Applicant does not have access to the current operating performance of the Ørsted IPs windfarms ▪ Lack of agreed meteorological parameters ▪ Lack of agreed publicly available software model ▪ Lack of standard guidance in the assessment of significant effects in relation to wake effects.
WR-112-07	**Environmental assessment** Given the increasingly complex nature of the existing and proposed development environment in the East Irish Sea, the Ørsted IPs have an interest in ensuring the EIA for the Project accurately assesses the potential environmental effects of the Project and identifies appropriate mitigation.	The Applicant considers that the assessments presented in the Environmental Statement (ES) are robust and appropriate mitigation has been correctly identified where required.
WR-112-08	The Ørsted IPs have identified some informational gaps and other discrepancies in the Applicant's environmental assessment and are therefore concerned the Applicant's approach to this exercise has not been sufficiently robust. Importantly, one of the Ørsted IPs developments – Barrow Offshore Windfarm, has been removed from the ornithology cumulative effects assessment, on the grounds that it is "approaching end of life". It appears the Applicant has wrongly assumed the end life for this development is 2028, which is not accurate. Barrow Offshore Wind Limited ("**Barrow**") is not aware of any requirement for additional consents or licences to continue operating this development beyond 2028. Therefore, this development should form part of the cumulative effects assessment.	The Applicant has undertaken a robust assessment of all potential impacts on offshore ornithology informed by appropriate data sources from site-specific surveys and detailed desktop studies, in accordance with relevant guidance. The assessment of potential impacts to offshore ornithology is presented in Chapter 12 Offshore Ornithology (REP1-032) and Report to Inform Appropriate Assessment (REP1-012). Additionally at Deadline 1 the Applicant has submitted a comprehensive Cumulative Effects Assessment (CEA) for ornithology, to gap fill historical projects for which there was no published quantitative data. This goes well beyond the approach that has been taken for consented offshore wind projects to date and considered to be precautionary and includes projects where there is expected to be limited

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		operational overlap based on understood decommissioning dates. In its advice to the Applicant, as well as the Mona and Morgan Offshore Wind Projects, regarding the 'gap-filling' of historic projects, Natural England (NE) stated that '*It is of note that some OWFs screened into the assessments may be nearing end-of-life with limited (or no) overlap with the proposed project. It would be appropriate to consider timelines and determine if any of these sites can be screened out*.' The Applicant therefore considers it appropriate to exclude Barrow OWF from its cumulative and in-combination estimates and is in line with the approach taken by the Mona and Morgan Offshore Wind Projects. The Environmental Impact Statement (EIS) submitted for the Barrow OWF (RSK Environment Limited 2002) assessed the impacts based on an operational lifetime of 20 years (Barrow OWF EIS Section 1.3). The Barrow OWF became operational in July 2006, therefore it is the Applicants understanding that as it is currently consented the operational phase of the Barrow OWF will come to an end in 2026. The Applicant requests that the Ørsted IPs provide evidence to support their position that the Barrow OWF will continue to operate beyond 2030 without requiring further consent.
WR-112-09	The Ørsted IPs note that, following consultation, the Applicant has provided a without prejudice derogation case in respect of lesser black-backed gull in respect of the Morecambe Bay and Duddon Estuary SPA and the Ribble and Alt Estuaries SPA and Ramsar sites.	The Applicant has provided the Examination Authority (ExA) with an Update on Without Prejudice Compensation Measures (REP1-093). Within this document the Applicant has provided further details

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	However, proposed compensatory measures are not confirmed and details of these measures are not yet secured, therefore they cannot be confident whether any measures will be appropriate.	on their position around each of these designated sites and the progression of compensation measures since the submission of the DCO Application in May 2024. The Applicant notes NE's position on compensation and its appropriateness as set out in Annex B1 of their Written Representations (REP1-097).
WR-112-10	Additionally, it is not clear whether agreement has been reached with the SNCBs regarding potential adverse effect on integrity of the Liverpool Bay SPA, and therefore whether a without prejudice derogation case should be provided for that site. The Ørsted IPs consider that should disagreement remain such a case should be provided by the Applicant, so that the parties can develop a proper understanding of the potential compensatory measures.	The Applicant has provided further information to Statutory Nature Conservation Body (SNCBs) to support its conclusions of no adverse effect on integrity in regard to Liverpool Bay /Bae Lerpwl Special Protection Area (SPA) at Deadline 1 (REP1-082). Notwithstanding this position, the Applicant has continued to engage with NE on this matter, to seek agreement where possible and to discuss the potential need for compensation. The potential need to explore compensatory measures for this site is also acknowledged in Update on Without Prejudice Compensation Measures (REP1-093).
WR-112-11	Finally, the Environmental Statement does not include an evaluation of the effects of stratification. This is not consistent with the approach taken in relation to the Morgan and Mona proposed offshore windfarms. Given the proximity of the Project to riverine systems as well as thermal stratified water and their associated hydrodynamic influences on the marine environment, the absence of such analysis potentially undermines a proper understanding of the Project's effects.	Stratification was raised by the Marine Management Organisation (MMO) at the Preliminary Environmental Information Report (PEIR) stage and discussed with the Applicant throughout the Evidence Plan Process (EPP), which led to the assessment provided in the ES. An evaluation of the effects of stratification has been undertaken in Section 7.6.3.3, Paragraphs 7.289 – 7.290 of Chapter 7 Marine Geology, Oceanography and Physical Processes (APP-044). In response to a meeting the Applicant attended with the MMO (30 September 2024) as part of the SoCG

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		process, the MMO responded with the following with regards to the assessment of stratification within Chapter 7 Marine Geology, Oceanography and Physical Processes (APP-044): "*…You have also discussed stratification of the water column. The present evidence for any longer-term impacts is insufficient to make any further challenge to the assessment provided. Therefore, at present the MMO has no further comments to make regarding the Marine Conservation Zone Assessment in relation to marine processes".*
WR-112-12	**Shipping and Navigation** Two of the Ørsted IPs, Barrow and Morecambe Wind Limited ("**MWL**"), are concerned regarding the Project's potential impacts on their developments in terms of shipping and navigation, given the level of proposed development in the East Irish Sea which gives rise to a complex cumulative impact scenario.	The Applicant notes this comment and considers it has undertaken a robust assessment of the Project's potential impacts on their developments in terms of shipping and navigation.
WR-112-13	The Project's Navigational Risk Assessment ("**NRA**") highlights the potential for main vessel routes in the area to be deviated creating a potential increase in vessel numbers in the vicinity of Barrow's and MWL's developments. However, it is unclear if this change creates increases to risk levels for their developments. In particular, Barrow and MWL are concerned regarding the increased allision risk and seek confirmation that any increased allision risk to their assets is within acceptable (not significant) parameters. Further engagement and information is therefore required from the Applicant to understand the effects of the Project on Barrow and MWL's developments. Confirmation of proposed ports is also required in order to understand changes in risk levels associated with Project vessels and how this will be managed.	The Applicant refers to Section 8.2 and Section 8.3 of the national risk assessment (NRA) (APP-073) which demonstrates that the only commercial/passenger routes that will be deviated closer to Barrow and West of Duddon Sands (WoDS) Offshore Wind Farms (OWFs) as a result of the Project-alone, are the routes between Heysham/Barrow and the Off Skerries Temporary Threshold Shift (TSS). These are minor routes, with fewer than one vessel per day, suggesting that there would a very limited increase in the vessel numbers in the vicinity of Barrow or WoDS OWF due to the Project. Nevertheless, the Applicant acknowledges that the deviations mean the vessels transit within 2nm of WoDS, and approximately 1nm closer to Barrow OWF, which could increase the risk

ID	Written Representation	Applicant comment
		of an allision, but this is no closer than existing shipping routes. The Applicant refers to Section 8.4.2 of the NRA (APP-073) which considers the impact of allision, including allision modelling, which showed that the allision likelihood for WoDS OWF is greatest on the southern structures, but these likelihoods remain very similar to the base case scenario. The operations and maintenance port is currently unknown but the Applicant will continue to engage with the Ørsted IPs throughout the development of this Project. The Outline Vessel Traffic Management Plan (APP-153) sets out that the final Vessel Traffic Management Plan will include the location of construction and operations and maintenance ports once they have been determined. The Applicant has secured the production of a VTMP in line with the Outline Vessel Traffic Management Plan (VTMP) (APP-153) in the draft DCO (APP-012) (Schedule 6 Condition 9(1)(j)). Engagement with existing operators on the VTMP would be undertaken, as appropriate, with approval required from the MMO, Trinity House and the Maritime Coastguard Agency (MCA).
WR-112-14	It is anticipated that some level of coordination will be required between developers and other sea users in the area which Barrow and MWL must be involved with. Barrow and MWL seek a formal commitment from the Applicant in respect of this, including to involvement in the development in post-consent plans, including the Vessel Traffic Management Plan (referred to by the Applicant in its responses to Barrow and MWL's relevant representations [PD1-011]) in relation to routes in proximity to their developments. Barrow and	Section 5.3 of the VTMP (APP-153) provides details on the continued engagement and supply of information to navigational stakeholders, including '*the Marine Navigation Engagement Forum and any specific regular consultation that is required with nearby operations e.g., oil and gas infrastructure as well as other offshore renewable projects*.'

ID	Written Representation	Applicant comment
	MWL consider it would be appropriate to be specified as consultees on these documents in the relevant deemed marine licence condition.	The Applicant therefore maintains that this includes consultation with the Ørsted IPs, without specifying each offshore renewable project in particular. Engagement with existing operators on the VTMP would be undertaken, as appropriate, with approval required from the MMO, Trinity House and the MCA. It would be inappropriate for the Applicant to specify individual developers and/or projects as consultees within the Deemed Marine Licence (dML) or draft DCO. Instead, it is the responsibility for the discharging authority (the MMO) in consultation with named stakeholders (Trinity House and the MCA) to consider which parties should be consulted (beyond what is already proposed in the VTMP).
WR-112-15	**Radar** As recorded in their respective relevant representations, Burbo Extension Limited ("**BEL**") and Walney Extension Limited ("**WEL**") are implementing appropriate mitigation in relation to potential impacts on the Warton Airfield Primary Surveillance Radar, and are concerned that the Project has the potential to adversely affect or increase the cost of this mitigation. It is noted that the Ministry of Defence ("**MoD"**) has objected to the Project on the grounds of unacceptable impacts on the radar system at BAE Warton (RR-021).	The Applicant continues to engage with the MOD, who would engage with BAE Systems (Operations) Ltd, regarding potential mitigation solutions for the Project, as appropriate to Warton Primary Surveillance Radar (PSR). Engagement to date is recorded within the Draft Statement of Common Ground with BAE Systems (Operations) Ltd and Defence Infrastructure Organisation (REP1-069). The Applicant has included a requirement to mitigate any impact to the Warton PSR within its update to the Draft Development Consent Order (Draft Development Consent Order_Rev 3 Clean and Draft Development Consent Order_Rev 3 Tracked) submitted at Deadline 2. PSR CAPEX cost sharing is dependent on the underlying terms of individual PSR agreements. The

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		Applicant considers that any arrangements Burbo Extension Ltd and Walney Extension Limited have in place are primarily a matter between them and the Ministry of Defence (MOD). Similarly, any mitigation required as a result of the Project would also primarily be a matter between the Applicant and the MOD.

Table 2.7 The Applicant's comments on Ørsted IPs Deadline 1 Submission (REP1-103)

ID	Relevant Representation	Applicant comment
WR-103-01	**1. Introduction** 1.1 This submission is provided in accordance with Deadline 1 of the examination timetable for the application by Morecambe Offshore Windfarm Limited (the "Applicant") for an Order under the Planning Act 2008 (the "Act") granting Development Consent for the Morecambe Offshore Windfarm Generation Assets (the "Project"). 1.2 We represent six owners of operational offshore windfarms in the East Irish Sea (as set out relevant representations RR-008, RR-014, RR-056, RR-088, RR-089, RR-093), who we refer to together as the "Ørsted IPs" for the purposes of this written representation. 1.3 This submission sets out the Ørsted IPs key arguments for why the Applicant is required to carry out a wake loss assessment. 1.4 This submission forms part of the Ørsted IPs' response to the Action Point 8 of the action points arising out of Issue Specific Hearing 1 [EV3-009] ("ISH1"), and responds to comments made by the Applicant on the Ørsted IPs relevant representations, in respect of wake loss [PD1-011]. Alongside this document, the Ørsted IPs have	The Applicant notes this response**.** The Applicant has not commented on the suite of academic research and articles provided as part of the Ørsted IPs' submission. The Applicant reserves the right to provide comments at a subsequent deadline once a full review has been undertaken.

ID	Relevant Representation	Applicant comment
	also submitted a suite of academic evidence detailing the likelihood of wake effects and an accompanying memorandum.	
WR-103-02	**2. Policy and regulatory requirements** 2.1 As outlined in the Ørsted IPs' relevant representations, the Ørsted IPs are concerned the Project will interfere with the wind speed and/or direction at their developments and will therefore adversely affect energy yields. Preliminary results of modelling commissioned by the Ørsted IPs demonstrates that wake effects will be material at their developments. 2.2 The Ørsted IPs' position is that the Applicant must carry out an assessment of this potential effect and take steps to avoid it. The Ørsted IPs consider this is required by the relevant policy and regulatory framework: 2.2.1 primarily, as an effect on an "other sea user" under the National Policy Statement for Renewable Energy Infrastructure (NPS-EN3); and 2.2.2 in the Environmental Impact Assessment ("EIA") process under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 ("EIA Regulations"), as relevant to the Applicant's climate change risk assessment. <u>Requirements of the NPS EN3</u> 2.3 The NPS-EN3, which is the primary policy for Secretary of State ("SoS") decision-making relating to renewable energy NSIPs (alongside NPS-EN1) requires effects of projects on sea users to be assessed and addressed. In particular, the following provisions are relevant: 2.3.1 Paragraph 2.8.197 requires that, where a potential offshore wind farm is proposed "close to existing operational infrastructure or has the potential to affect activities for which a licence has been issued by	The Applicant has addressed this comment regarding its position on the policy requirement and its climate change assessment in comments in ID WR-112-04 and WR-103-06. The Ørsted IPs has not shared results of its preliminary modelling study on wake effects with the Applicant and so cannot make further comments on these results.

ID	Relevant Representation	Applicant comment
	government" the applicant should assess the potential effects on that development. 1 2.3.2 Paragraphs 2.8.344-2.8.345, which relate to SoS decision making, direct that where a project potentially affects other offshore infrastructure or activity, applicants should work with the relevant sector to minimise negative impacts, 2 and that the SoS should be satisfied that "the site selection and site design of a proposed offshore wind farm and offshore transmission has been made with a view to avoiding or minimising disruption or economic loss… to other offshore industries". 2.4 National Policy Statements are constructed with a clear formula, and the policies noted above should be read together. In order for the SoS to exercise decision-making under 2.8.345, the information required relating to the effects of the Project (as outlined in 2.8.197) must be provided. If this examination concludes without such information being provided, the SoS will be in a position where it cannot appropriately apply the policies of the NPS-EN3.	
WR-103-03	<u>Requirement for an assessment (paragraph 2.8.197)</u> 2.5 It is non-contentious that the Ørsted IPs' developments qualify as "existing operational infrastructure". 2.6 The Ørsted IPs consider their developments are "close to" the Project, as required by paragraph 2.8.197. There is no definition of "close" in the NPS for the purposes of this provision. 2.7 Therefore, what is close should be determined with reference to the purpose of this provision –that is, to understand how existing infrastructure will be impacted by a proposed development, such that decision-makers can understand those effects and be in a position to make decisions in accordance with paragraphs 2.8.344-2.8.345.	The Applicant has addressed this comment regarding its position on the policy requirement in the above comment in ID WR-112-04. The Ørsted IPs have not shared material that demonstrates the Project specifically is likely to have wake effects on the Ørsted IPs' developments. The Applicant's position is that there is no policy or legal requirement for the Applicant to submit a wake loss assessment.

ID	Relevant Representation	Applicant comment
	2.8 Therefore, what is considered “close” must be determined by reference to the likelihood of potential effects – there is no other meaningful basis for making this determination. 2.9 The Ørsted IPs have submitted a substantial portfolio of academic evidence which demonstrates that material wake effects can occur at farm-to-farm separation distances in excess of the distances between the Project and the Ørsted IPs’ developments. In addition, preliminary modelling commissioned by the Ørsted IPs indicates that the Project-alone effects on their developments will be material, ranging between 0.3% (at the least impacted development) to 1.4% (at the most impacted development) Annual Energy Production (“AEP”). This preliminary modelling indicates the cumulative effects of the Project along with the Mona and Morgan projects will be between 1.7-5.3% AEP. 2.10 As a result, the Ørsted IPs have demonstrated that material effects are likely to occur at their developments as a result of the Project and therefore are required to be assessed. 2.11 The Applicant appears to rely solely on the Crown Estate’s (“TCE”) siting criteria for the leasing process (that new offshore wind development must not be within 7.5km of existing development) as defining what should be considered close for the purposes of this provision. We note that this distance was developed for a completely separate process and was not based on an analysis of potential wake effects. This distance was not intended to regulate the understanding and assessment of effects of new developments on existing infrastructure and cannot be interpreted as a fixed buffer distance beyond which adjacent development can no longer be considered ‘close’. This is particularly true for wake loss, which is not solely determined by distance.	

ID	Relevant Representation	Applicant comment
	2.12 The Applicant has flagged one study, undertaken by Frazer-Nash consultancy, which states that, at separation distances “much larger than 20km” wake effects become vanishingly small. Based on this study, the Applicant considers a wake loss assessment is not required. We first note that the Applicant has misrepresented the findings of this report in stating that wake effects are vanishingly small “by 20km”4 – this finding relates to distances “much larger” than 20km. Some of the Ørsted IPs’ developments (for example, Walney 4) are less than or close to 20km from the Project. Therefore, even applying the Applicant’s (in our submission, incorrect) analysis, there could be a material impact on some of Ørsted IPs’ developments. 2.13 Regardless, we do not consider it is appropriate to rely on this study to understand the actual likely wake impacts of the Project. That study takes some generic, theoretical offshore wind farm pairs and looks at the balance in total production based on different densities and separation buffers, in order to inform TCE’s process of optimising the seabed. It cannot be relied on in the consenting process which aims to assess effects on other sea users. It is noted that this study post-dates the TCE’s imposition of a 7.5km separation distance and should not be interpreted as contributing to the rationale for this separation distance. 2.14 Further, as noted above, the Ørsted IPs have submitted a substantial portfolio of academic evidence which demonstrates that material wake effects can occur at farm-to-farm separation distances greater than the distances between the Project and the Ørsted IPs’ developments. 2.15 To date, the Applicant has chosen not to produce any evidence on this matter. Therefore, an assessment of the wake effects is clearly required.	

ID	Relevant Representation	Applicant comment
WR-103-04	<u>Secretary of State assessment (paragraphs 2.8.344-2.8.345)</u> 2.16 Having established that, on a proper construction of NPS-EN3, a wake assessment is required and given the Applicant has refused to consider this effect throughout the examination, we consider that the SoS is not currently in a position to be able to undertake the assessment under paragraph 2.8.345. 2.17 The level of impact indicated by the preliminary modelling commissioned by the Ørsted IPs is material. However, because the potential for this effect has been dismissed by the Applicant from the outset, it has not been considered during site selection or the design process, and therefore those processes have not been carried out "with a view to avoiding or minimising disruption or economic loss… to other offshore industries". 2.18 Additionally, given the Applicant's dismissal of this issue and refusal to work constructively with the Ørsted IPs, the SoS cannot be satisfied that the Applicant has worked "with the impacted sector to minimise negative impacts and reduce risks to as low as reasonably practicable" as required by 2.8.344. 2.19 The Ørsted IPs note that they consider there is potential that the level of effect predicted has the potential to impact long term decisions on the future viability of the Ørsted IPs' developments. The SoS should therefore give "substantial weight" to this factor in its decision-making, as directed by paragraph 2.8.347. 2.20 Until such an assessment is undertaken, the SoS cannot make its decision in accordance with the relevant paragraphs of the NPS-EN3. Therefore, the SoS cannot currently make its decision in	The Applicant has addressed this comment regarding its position on the policy requirement in the above comment in WR-112-04. The Applicant also notes the comment: "*the Ørsted IPs note that they consider there is potential that the level of effect predicted has the potential to impact long term decisions on the future viability of the Ørsted IPs' developments*". The Applicant considers this statement is a supposition not grounded in evidence and the "potential" to "impact long term decisions" falls a long way short of engaging NPS EN-3, paragraph 2.8.347 which refers to where "a proposed development is likely to affect the future viability". As such the Applicant does not agree that this paragraph directs the Secretary of State (SoS) to give substantial weight to these matters in its decision making.

ID	Relevant Representation	Applicant comment
	accordance with the NPS-EN3 as required by section 104 of the Planning Act 2008.	
WR-103-05	<u>Engagement under the NPS-EN3</u> 2.21 The NPS-EN3 directs applicants to engage with parties who will be impacted by a proposed development, including as follows: 2.21.1 2.8.200 directs applicants to "engage with interested parties in the potentially affected offshore sectors early in the pre-application phase of the proposed offshore wind farm, with an aim to resolve as many issues as possible prior to the submission of an application"; 2.21.2 2.8.203 provides that such engagement "should be taken to ensure that solutions are sought that allow offshore wind farms and other uses of the sea to co-exist successfully." 2.21.3 2.8.345 provides that applicants are expected to "work with the impacted sector to minimise negative impacts and reduce risks to as low as reasonably practicable". 2.22 While preliminary discussion on this issue has recently occurred, the Applicant's approach to engagement with the Ørsted IPs has not met the standards established by the provisions above. We would therefore invite the examining authority to ensure that this matter is properly evaluated so that it can be given appropriate consideration in decision-making. 2.23 The Ørsted IPs are keen to engage intensively with the Applicant to resolve this issue, including on a process for the assessment of wake effects.	A summary of engagement and consultation with Ørsted IPs is provided in the Statement of Common Ground with Ørsted Interested Parties (REP1-073). The Applicant undertook engagement with potentially affected interested parties, including Ørsted during the pre-application phase as set out in the Consultation Report (APP-015) and in accordance with the NPS-EN3 (see Volume 4 - National Policy Statements Accordance Report (APP-033)). While no impacts to the Ørsted IPs' assets were identified by the assessments, the Applicant engaged with the Ørsted IPs to address the issues raised in its response to Statutory Consultation. As part of that engagement the Ørsted IPs agreed to provide information demonstrating the potential impacts to its assets from the Project so that it could be considered by the Applicant. The Applicant has still not received the information evidencing potential impacts to the Ørsted IPs' assets, which has meant the Applicant has not been able to consider potential impacts. The Applicant requires reciprocal engagement from interested parties to undertake meaningful engagement and resolve issues. The Applicant is actively pursuing engagement with the Ørsted IPs throughout the Examination process.

ID	Relevant Representation	Applicant comment
WR-103-06	<u>EIA process</u> 2.24 Wake loss is also relevant to the Applicant's EIA, in relation to the climate change benefits of the Project. 2.25 Regulation 5(2) of the EIA Regulations sets out the factors for which significant effects should be assessed, including 'climate'. Effects on climate are further elaborated on in under Schedule 4 (Information for inclusion in Environmental Statements), which relevantly provides that "the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions)" should be assessed. 2.26 The Applicant has carried out an assessment of the Project's impacts in respect of climate change in its Environmental Statement (Volume 5 - Chapter 21 - Climate Change) [APP-058]. This assessment includes a net assessment of the GHG emissions arising from the Project. It includes a finding that in the operational phase, the Project will have a beneficial effect on GHG emissions which would be significant EIA terms. While the Ørsted IPs do not dispute that the Project will result in avoided emissions, they consider that the assessment contains inaccuracies, in that it does not account for the loss of renewable generation at their developments, arising from the Project. It includes a finding that in the operational phase, the Project will have a beneficial effect on GHG emissions which would be significant EIA terms. While the Ørsted IPs do not dispute that the Project will result in avoided emissions, they consider that the assessment contains inaccuracies, in that it does not account for the loss of renewable generation at their developments, arising from the Project.	The Applicant has addressed this comment regarding its position on the policy requirement in the above comment ID WR-112-05. The Applicant has assessed the potential effects to the climate in Volume 5 - Chapter 21 - Climate Change (APP-058). The chapter comprises a GHG assessment and a Climate Change Resilience Assessment (CCRA) to consider the potential effects related to climate change during the construction, operation and maintenance and decommissioning phases of the Project. The GHG assessment was undertaken in accordance with the IEMA guidance 'Guide: Assessing Greenhouse Gas Emissions and Evaluating their Significance' (2022). This guidance document provides a topic-specific methodology for assessment of GHGs and determining the significance of emissions generated by a project. The EIA Regulations require an assessment of "likely" "significant" effects, and as such there is a threshold of proportionality before the requirement to carry out an assessment is engaged. It is notable that there is no published guidance by industry or professional bodies that suggests such an assessment is required, or how such an assessment would be undertaken. It was also not requested in the scoping opinion received in relation to the Project. For these reasons, and the reasons set out in ID WR-112-05, it is the Applicant's position the effects on the

ID	Relevant Representation	Applicant comment
	2.27 Therefore, its assessment in EIA terms is likely inaccurate. The information presented in the EIA must be accurate in order for the SoS to be able to assess the Project's benefits and adverse effects, when determining the application.	climate have been accurately assessed in accordance with the EIA Regulations.
WR-103-07	**2. Policy and regulatory requirements** 2.1 As outlined in the Ørsted IPs' relevant representations, the Ørsted IPs are concerned the Project will interfere with the wind speed and/or direction at their developments and will therefore adversely affect energy yields. Preliminary results of modelling commissioned by the Ørsted IPs demonstrates that wake effects will be material at their developments. 2.2 The Ørsted IPs' position is that the Applicant must carry out an assessment of this potential effect and take steps to avoid it. The Ørsted IPs consider this is required by the relevant policy and regulatory framework: 2.2.1 primarily, as an effect on an "other sea user" under the National Policy Statement for Renewable Energy Infrastructure (NPS-EN3); and 2.2.2 in the Environmental Impact Assessment ("EIA") process under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 ("EIA Regulations"), as relevant to the Applicant's climate change risk assessment. <u>Requirements of the NPS EN3</u> 2.3 The NPS-EN3, which is the primary policy for Secretary of State ("SoS") decision-making relating to renewable energy NSIPs (alongside NPS-EN1) requires effects of projects on sea users to be assessed and addressed. In particular, the following provisions are relevant:	The Applicant has addressed this comment regarding its position on the policy requirement in the above comment in ID WR-112-04.

ID	Relevant Representation	Applicant comment
	2.3.1 Paragraph 2.8.197 requires that, where a potential offshore wind farm is proposed "close to existing operational infrastructure or has the potential to affect activities for which a licence has been issued by government" the applicant should assess the potential effects on that development. 1 2.3.2 Paragraphs 2.8.344-2.8.345, which relate to SoS decision making, direct that where a project potentially affects other offshore infrastructure or activity, applicants should work with the relevant sector to minimise negative impacts, 2 and that the SoS should be satisfied that "the site selection and site design of a proposed offshore wind farm and offshore transmission has been made with a view to avoiding or minimising disruption or economic loss… to other offshore industries". 2.4 National Policy Statements are constructed with a clear formula, and the policies noted above should be read together. In order for the SoS to exercise decision-making under 2.8.345, the information required relating to the effects of the Project (as outlined in 2.8.197) must be provided. If this examination concludes without such information being provided, the SoS will be in a position where it cannot appropriately apply the policies of the NPS-EN3.	
WR-103-08	**3. Practicality of undertaking an assessment** 3.1 The Ørsted IPs also take this opportunity to highlight that wake effects are capable of being modelled. Specialist consultants who work with the offshore wind industry have developed software and models to assist the industry in understanding energy yield and wake effects, and there is a substantial amount of academic research into how wake can be modelled. Opensource models created by respected academic institutes are also available for anyone to use. 3.2 While certain assumptions must be made in carrying out such assessments, these can be made on an educated basis to provide a	The Applicant has addressed this comment regarding its position on the policy requirement in the above comment ID WR-112-06.

ID	Relevant Representation	Applicant comment
	range of robust likely outcomes. Therefore, an assessment of wake effects is possible from a technical perspective, and the Ørsted IPs consider there are no practical barriers to one being undertaken. 3.3 The Ørsted IPs maintain that modelling of the wake loss impacts of the Project is an exercise which should be undertaken by the Applicant, and they are best placed to do so due to their access to information regarding site layout and design. The Ørsted IPs are happy to work with the Applicant on any such assessment, including through the provision of any necessary information regarding their developments.	

2.7 Eversheds Sutherland on behalf of Spirit Energy (REP1-116)

Table 2.8 The Applicant's comments on Spirit Energy written representation

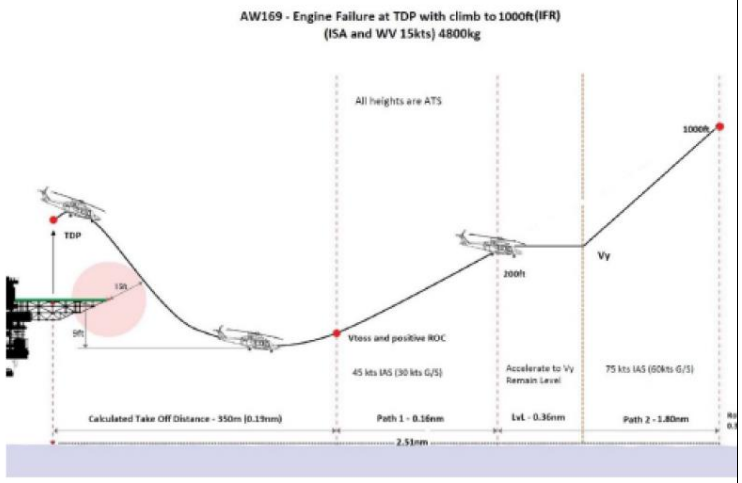
ID	Written Representation	Applicant comment
Introduction		
WR-116-01	'Spirit Energy' is the trading name used by Spirit Energy Limited and its subsidiaries, including Spirit Energy Production UK Limited, a group which collectively conducts European oil and gas operations. We are instructed by Spirit Energy (Spirit) in relation to the proposed development consent order application (the Application) made by Morecambe Offshore Windfarm Ltd (the Applicant) for the proposed Morecambe Offshore Windfarm Generation Assets (the Project).	The Applicant notes this response. As outlined below, the Applicant has provided initial comments on Spirit's Written Representation and Deadline 1 Submission. However, the Applicant will provide a detailed response at Deadline 3.

ID	Written Representation	Applicant comment
	Further to Spirit's Relevant Representation [RR-077] (RR), which provided background to Spirit's assets and operations, this Written Representation comprises an update on the status of Spirit's objection and further information to inform the Examining Authority's understanding of Spirit's concerns.	
WR-116-02	Spirit maintains its objection to the Application in its current form, in light of its unacceptable impacts on Spirit's assets and operations. In particular with respect to: ▪ Aviation related safety and consequential impacts on Spirit's operations; ▪ Shipping and navigational impacts within the vicinity of Spirit's offshore installations; ▪ The implications with respect to Spirit's decommissioning activities and obligations; and ▪ The implications of the Project with respect to Morecambe Net Zero (MNZ) and the UK's carbon capture utilisation and storage (CCUS) ambitions and targets. The remainder of this Written Representation adopts the abbreviations and acronyms (and related definitions) in Spirit's response dated 8 October 2024 [PD1-019] to the Examining Authority's Rule 9 Letter dated 4 September 2024 [PD-006].	The Applicant has commented upon the concerns raised by Spirit Energy within The Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35) and the following references to the document: ▪ Appendix A: The Applicant's Comments on Spirit Energy and Harbour Energy Aviation Access Study Report (Document Reference 9.35.1) ▪ Appendix B: Helicopter Access IMC Corridor (Document Reference 9.35.2) ▪ Appendix C: Helicopter Supporting Information Technical Note (Document Reference 9.35.3)
Aviation related safety		
WR-116-03	Spirit refers to its submissions at Part 5 of its RR. In summary, Spirit identified the following aviation related concerns: ▪ A minimum 1.5 nautical mile (nm) "buffer zone" between the siting of wind turbines and the "active" AP-1, DP-1	The Applicant has commented upon aviation related concerns within The Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35) and the following references to the document:

ID	Written Representation	Applicant comment
	and Calder “heli-decks” was inadequate for the purposes of ensuring safe helicopter arrivals and departures to and from (and between) its Affected Assets (as more particularly described in the RR). ▪ The Applicant’s assessment of the implications of helicopter flight restrictions (including daylight and visual flight rules (VFR)) that apply where there is the potential siting of wind turbines within proximity of oil and gas installations was not fit for purpose. ▪ The consequence of the two preceding issues is significant implications for the safe operation of all of the Affected Assets and related uncertainty over Spirit’s residual ability to comply with health and safety regulatory requirements. ▪ The only way to effectively mitigate that safety risk whilst ensuring the continued operation of the Affected Assets (themselves of national significance) is for the Applicant to increase the “buffer zone” between the siting of wind turbines and the Affected Assets.	▪ Appendix A: The Applicant's Comments on Spirit Energy and Harbour Energy Aviation Access Study Report (Document Reference 9.35.1) ▪ Appendix B: Helicopter Access IMC Corridor (Document Reference 9.35.2) ▪ Appendix C: Helicopter Supporting Information Technical Note (Document Reference 9.35.3)
WR-116-04	Spirit has (at its own expense) engaged the services of AviateQ International Limited (AviateQ), a global aviation consultancy, to provide specialist aviation assurance support to review the Applicant’s proposals and, in light of those, determine the implications for safe continued operation of helicopter flights to, from and between the Affected Assets. The preliminary findings of AviateQ informed Spirit’s submissions in its RR.	The Applicant notes this response.

ID	Written Representation	Applicant comment
	AviateQ is a global aviation consultancy company that offers credible aviation assurance, consultancy, and Aviation Technical Authority services to the offshore industry. They are known within the industry for their high standards and dependability undertaking numerous annual UK industry Search and Rescue (SAR) and Commercial Air Transport (CAT) audits on behalf of peer companies. AviateQ also run a Joint Oil and Gas Aviation Audit (JOGAA) programme covering all four major helicopter operators in the UK on behalf of multiple clients. AviateQ's team are qualified pilots and licensed aircraft engineers who have also received their Auditor and Lead Auditor training certificates. They have been assessed and certified as meeting the requirements of ISO 9001:2015 for their Quality Management System and the Provision of Aviation Consultancy services for customers globally by the British Assessment Bureau.	
WR-116-05	Following submission of Spirit's RR, and as specified at paragraph 5.5 and 5.44 of the RR, AviateQ has now carried out an updated assessment that draws on input from NHV, the operator of the helicopters that fly to and from the Affected Assets, and assesses the impact on helicopter flying operations assuming turbine tip heights of up to 310 metres (the Updated AviateQ Report). The Updated AviateQ Report is enclosed at Appendix A.	The Applicant has provided detailed comments on the Updated AviateQ Report in Appendix A: The Applicant's Comments on Spirit Energy and Harbour Energy Aviation Access Study Report (Document Reference 9.35.1).
WR-116-06	Taking into account the findings in the Updated AviateQ Report, Spirit confirms that it maintains its aviation related concerns expressed in its RR and summarised at paragraph 2.1 above. It supplements those submissions as follows.	The Applicant has commented upon aviation related concerns in The Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35) and Appendix A: The Applicant's Comments on Spirit Energy and Harbour Energy Aviation Access Study Report (Document Reference 9.35.1).

ID	Written Representation	Applicant comment
Applicant's view of 1.5nm buffer (Visual Flight Rules)		
WR-116-07	The Applicant's position is that a 1.5nm "buffer zone" between wind turbines and the "active" AP-1, DP-1 and Calder "heli-decks" provides a sufficient unobstructed airspace requirement to: a) safely descend on approach and land at offshore oil and gas platforms using visual flight rules (**VFR**); and b) safely depart offshore oil and gas platforms and achieve sufficient altitude in VFR. Indeed it is the Applicant's position that 1.26nm applies and thus the 1.5nm is a precautionary minimum obstacle free distance. The assessment work carried out by AviateQ, as summarised at paragraphs 5.7 and 5.8 of Spirit's RR, has already demonstrated that 1.5nm is inadequate.	The Applicant has provided detailed comments on the Updated AviateQ Report in The Applicant's Response to Spirit Energy Deadline 1 Submissions Appendix A: The Applicant's Comments on Spirit Energy and Harbour Energy Aviation Access Study Report (Document Reference 9.35.1).
3.9nm buffer (IFR)		
WR-116-08	Spirit had identified in its RR (at paragraph 5.43) that at least 3.3nm of unobstructed airspace was required in Instrument Flying Conditions (IFC) based on the early work undertaken by AviateQ. However, as advised in paragraph 5.44 of the RR, Spirit identified that further work to be undertaken by AviateQ could demonstrate that an increased unobstructed distance was necessary in order to operate safely using Instrument Flight Rules (IFR). At the time of writing the RR, AviateQ were completing a review of the helicopter analysis which has now concluded, with the results set out in the Updated AviateQ Report. This review highlighted that the One Engine Inoperative (OEI) take off profile had omitted to include the level of acceleration period required from take-off safety speed to achieve the best rate of climb speed required for the AW169 helicopter airframe.	The Applicant has provided detailed comments on the Updated AviateQ Report in Appendix A: The Applicant's Comments on Spirit Energy and Harbour Energy Aviation Access Study Report (Document Reference 9.35.1) A detailed analysis of the take-off distance required is provided in Section 4.3 of Appendix C: Helicopter Supporting Information Technical Note (Document Reference 9.35.1). The Applicant disagrees with distance stated in the AviateQ Report and has submitted a detailed response in Appendix A: The Applicant's Comments on Spirit Energy and Harbour Energy Aviation Access Study Report (Document Reference 9.35.1).

ID	Written Representation	Applicant comment
	This has resulted in a change from the minimum distance of 3.3nm to an updated minimum distance of 3.9nm from existing infrastructure for IFR flying.	
WR-116-09	The Examining Authority is directed to Figure 14A of the Updated AviateQ Report (extracted below). The Examining Authority is also directed to pages 26 to 28, and page 31, of the Updated AviateQ Report for further technical justification.  **Figure 14A** ***AW169 Profile View Distance Required OEI Climb to 1,000ft*** This figure summarises the AW169 profile distance requirements for OEI take off with climb to 1000 feet. The figure does not take into account a rate one turn distance of 0.35nm and 1nm legal obstacle clearance requirement which must be added to the profile distance of 2.51nm noted above.	The Applicant has provided detailed comments on the Updated AviateQ Report in Appendix A: The Applicant's Comments on Spirit Energy and Harbour Energy Aviation Access Study Report (Document Reference 9.35.1). A detailed analysis of the take-off distance required is provided in Section 4.3 of Appendix C: Helicopter Supporting Information Technical Note (Document Reference 9.35.3). The Applicant disagrees with distance stated in the AviateQ Report and has submitted a detailed response in Appendix A: The Applicant's Comments on Spirit Energy and Harbour Energy Aviation Access Study Report (Document Reference 9.35.1).

ID	Written Representation	Applicant comment
	The total calculated unobstructed airspace when operating in IFR must be at least 3.86nm.	
1.9nm buffer (VFR)		
WR-116-10	The Updated AviateQ Report demonstrates that, for the AW169 helicopter, there must be at least 1.9nm of unobstructed airspace when operating in VFR between wind turbines and any part of the Affected Assets1. At least 1.9nm would be the minimum safe distance in order to: ▪ For arrival: ensure the helicopter positioning into the wind onto the Final Approach Sector and thereafter performing a stabilised landing onto the helideck. See Figure 8 of the Updated AviateQ Report. ▪ For departure: accommodate an engine failure on departure from a helideck, accommodate an OEI climb to 500 feet in VFR as well as the turn away from the turbine array. See Figure 7A of the Updated AviateQ Report.	The Applicant disagrees with distances proposed by Spirit Energy. The Applicant has provided a detailed response to the AviateQ Report submitted by the Spirit Energy in Appendix A: The Applicant's Comments on Spirit Energy and Harbour Energy Aviation Access Study Report (Document Reference 9.35.1).
WR-116-11	There are no operational mitigations which overcome the requirement for buffers for safe helicopter access and egress whilst maintaining compliance with regulatory requirements. Accordingly physical mitigation is required by increasing the distance between the turbines and the Affected Assets.	The Applicant has provided potential operational mitigations as set out within Appendix B: Helicopter Access Instrument Meteorological Conditions (IMC) Corridor (Document Reference 9.35.2). Further supporting information is provided in Appendix C: Helicopter Supporting Information Technical Note (Document Reference 9.35.3).

ID	Written Representation	Applicant comment
Analysis of buffer zones		
WR-116-12	The appropriate physical distance must be considered in the context of the wider implications of VFR only flying which, for the reasons that follow in this Written Representation, materially compromise the operational efficiency of Spirit's operations with consequential (and potentially very severe) safety implications. As a result, there is a necessity for Spirit to retain the ability to fly at night and in restricted weather conditions – which requires operating using IFR. It is acknowledged by the Applicant that a minimum buffer distance of 1.5nm is well under the minimum unobstructed airspace required to fly using IFR. Spirit's aviation technical authority also consider 1.5nm to be well under the minimum unobstructed airspace required to fly using VFR, with the UK North Sea Operators Group having reached agreement in February 2023 that, whenever wind turbines are located within 3nm of an offshore oil and gas facility, all flights to the facilities shall be restricted to VFR.	The Applicant has provided an analysis of the impact on helicopter operations in Appendix 17.1: Helicopter Access Study (APP-081). Also submitted is Appendix C: Helicopter Supporting Information Technical Note (Document Reference 9.35.3) that addresses this issue in detail. The Applicant is proposing to provide an obstacle free take-off zone to the southwest of the Morecambe South Platform which will permit take-off into IMC (as set out within Appendix B: Helicopter Access IMC Corridor (Document Reference 9.35.2)). This can permit most operations in IMC and at night, as an equivalent level of safety to current operations can be demonstrated.
WR-116-13	In short, with a 1.5nm or indeed a 1.9nm buffer, Spirit's helicopter operations will be constrained to VFR flying, which prevents night time flying (outside daylight hours conditions) and subject to restrictions on flying in certain weather conditions (instrument meteorological conditions (IMC)).	The Applicant has submitted Appendix C: Helicopter Supporting Information Technical Note (Document Reference 9.35.3) that addresses this issue in detail.
WR-116-14	The Examining Authority is directed to paragraph 5.10 of Spirit's RR for further details of the flight restrictions. The safety and efficiency issues related to flight delays and cancellations associated with VFR only flying are set out in detail in the RR.	The Applicant accepts that there will be a logistical impact on Spirit Energy's operations. The Applicant does not agree that there will be a safety impact. The Applicant has provided detailed comments on operational impacts within the Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35).

ID	Written Representation	Applicant comment
WR-116-15	A VFR flying restriction is unacceptable for the reasons set out above. On the same basis, IFR must continue to be permitted. Thus to determine what is an acceptable minimum buffer zone between the Affected Assets and wind turbines, it is necessary to answer the following question: what is the minimum unobstructed airspace required to fly safely to, from and between the Affected Assets in IFR?	The Applicant has submitted Appendix C: Helicopter Supporting Information Technical Note (Document Reference 9.35.3) that addresses this issue in detail. The Applicant is proposing to provide an obstacle free take-off zone to the southwest of the Morecambe South Platform which will permit take-off into IMC. This can permit most operations in IMC and at night, as an equivalent level of safety to current operations can be demonstrated. This proposal is set out in Appendix B: Helicopter Access IMC Corridor (Document Reference 9.35.2).
WR-116-16	We refer to paragraph 2.17 which cites a minimum 3nm threshold agreed by the UK North Sea Operators Group. The Applicant will also be aware that the imposition of a minimum 3nm airspace requirement is now the subject of consideration by the UK Civil Aviation Authority (CAA). Based on its discussions with the CAA, Spirit understands that the 3nm restriction to aviation operations outside daylight hours will be secured by a regulatory change in 2025.	The Applicant has provided detailed comments on the Civil Aviation Authority (CAA) Rule Change within the Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35).
WR-116-17	In summary, Spirit's aviation buffer requirements can be categorised as follows: ▪ 1.9nm - Minimum distance for safe CAT operations for both platform approach and OEI take off in VMC conditions using VFR; and ▪ 3.9nm - Minimum distance for safe CAT operations for both platform approach and OEI take off in IMC conditions using IFR.	The Applicant does not accept the distances stated by Spirit Energy and has submitted comments on the AviateQ Report in the Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35).
Impact Analysis		

<table>
<tr><th>ID</th><th>Written Representation</th><th>Applicant comment</th></tr>
<tr><td>WR-116-18</td><td>The RR stated that if a wind farm was introduced within the minimum 3.3nm distance, then VFR only flying would cause the following delays and cancellations to Spirit’s Central Processing Complex (CPC) and Normally Unmanned Installations (NUIs):

<table><tr><th></th><th>CPC flights Delayed/Cancelled</th><th>NUI flights Delayed/Cancelled</th></tr><tr><td>Annual Average Loss</td><td>14%</td><td>23%</td></tr><tr><td>Winter Loss</td><td>24%</td><td>39%</td></tr></table></td><td>The Applicant has met with Spirit Energy on several occasions to discuss the impact on helicopter operations. The Applicant disagrees with many of the assumptions used by Spirit Energy in their calculations. This is outlined within Appendix A: The Applicant's Comments on Spirit Energy and Harbour Energy Aviation Access Study Report (Document Reference 9.35).</td></tr>
<tr><td>WR-116-19</td><td>This impact is considerably greater than the impact analysis that the Applicant has shared in its DCO submissions. This is despite the parties using the same historic flight, weather data, and flying restrictions.</td><td>The Applicant has met with Spirit Energy on several occasions to discuss the impact on helicopter operations. The Applicant disagrees with many of the assumptions used by Spirit Energy in their calculations. The areas of disagreement are set out within Appendix A: The Applicant's Comments on Spirit Energy and Harbour Energy Aviation Access Study Report (Document Reference 9.35)</td></tr>
<tr><td>WR-116-20</td><td>Since Spirit’s RR was submitted on 19 August 2024, Spirit has met with the Applicant to try and understand the differences in impact analysis, particularly the underlying assumptions that inform the findings.

It is Spirit’s understanding that the differences can be attributed to differing inputs including:
Blackpool airport opening times;
daylight and darkness times;</td><td>The Applicant has submitted Appendix C: Helicopter Supporting Information Technical Note (Document Reference 9.35.3) which provides further analysis.</td></tr>
</table>

ID	Written Representation	Applicant comment
	▪ wind speed and wave height; and ▪ the use of a different calculation methodology.	
WR-116-21	As a result of this workstream, Spirit has undertaken to review and revise its impact analysis (as was set out more fully in Appendix D of the RR) to align, where reasonable, with the Applicant's base inputs. This includes by way of making updates to the daylight/darkness assumption to Sunset/Sunrise +/-45 minutes to allow for 15-minute flying time to/from Blackpool (compared to the previous assumption based on +/-30 minutes). Spirit has also committed to updating heliport opening hours to 0700-2100 to align with the Applicant's assumptions.	The Applicant notes this response and appreciates Spirit Energy's cooperation in discussing the assumptions.
WR-116-22	Wind speed and wave height have been tested and have been deemed to have such negligible impact that they will remain as they were. Spirit understands that the Applicant shares this view.	The Applicant agrees.
WR-116-23	Initial work indicates that, even if Spirit adopt the aforementioned base assumptions preferred by the Applicant, the conclusions of the impact analysis would still differ from those identified by the Applicant, with much more severe implications for Spirit's operations. Spirit will share any updated impact analysis with the Examining Authority and the Applicant as discussions in this regard continue to evolve.	The Applicant notes this response.
WR-116-24	The remaining misalignment would appear to be in relation to the Applicant's assumptions around the way Spirit operates in the East Irish Sea, and the 'sectoring' calculation methodology used by the Applicant. This has allowed the Applicant to show a partial impact to a multi-legged flight, as opposed to treating the flight as a whole - which would in reality incur a much greater impact as a consequence of that 'partial' impact.	The Applicant is conducting additional analysis using Vantage Passenger (s) On Board (POB) flight data provided by Spirit Energy. This is intended to submitted at Deadline 3.

ID	Written Representation	Applicant comment
WR-116-25	From discussions with the Applicant, Spirit is aware that its analysis splits flights into multiple sectors, representing individual trips and stops on the flight route. Conversely, Spirit's analysis treats each multi-leg flight plan as one flight as it is not possible to cancel separate sections of multi leg flights, or one sector of a multi sector flight. Any routing changes must be made prior to the aircraft's departure from Blackpool which will cause a further 1 hour delay for aircraft departure. It must follow that the Applicant's assumption is not correct and not a true representation of the aviation operations executed by Spirit in the East Irish Sea. Where Spirit will show a whole flight being impacted, the Applicant's analysis may only show half, or even less of the flight being impacted.	The Applicant has provided detailed comments on the Updated AviateQ Report in Appendix A: The Applicant's Comments on Spirit Energy and Harbour Energy Aviation Access Study Report (Document Reference 9.35.1).
WR-116-26	The impact on Spirit's normally unmanned installations (NUIs) is of particular concern as transport to NUIs require an early outbound flight and a late return flight to maximise offshore working hours. Delays in the morning, which may then be compounded by a much earlier end to the day due to night flying restrictions, may impede Spirit's operations to the point that the work is not possible to achieve in the time that remains. Accommodation at the NUI is limited to emergency overnight accommodation only.	The Applicant is conducting additional analysis using Vantage POB flight data provided by Spirit Energy. This will be provided at Deadline 3.
WR-116-27	For the purposes of this submission, a summary of the way Spirit operates (as described above) is illustrated at Appendix B. Spirit has also taken the Applicant through the way Spirit's aviation operations are managed and has participated in a Q&A session.	The Applicant notes this response and appreciates Spirit Energy's collaboration.
WR-116-28	Spirit understands from recent discussions with the Applicant that it is planning to revise its calculation methodology. Spirit	The Applicant has provided detailed comments on the Updated AviateQ Report in Appendix A: The Applicant's

ID	Written Representation	Applicant comment
	awaits further information and is committed to reviewing the updated analysis from the Applicant when it is available (as well as updating its own to take account of the Applicant's preferred assumptions – see paragraph 2.27).	Comments on Spirit Energy and Harbour Energy Aviation Access Study Report (Document Reference 9.35.1).
VFR Safety Implications		
WR-116-29	Whilst the precise extent of impacts is the subject of further assessment and discussion between the parties, what is clear is that there will still be a material impact in terms of delays and cancellations to flights. As explained in paragraphs 5.17 to 5.42 of the RR, this has consequential implications for the safe operation of Spirit's assets in terms of transportation risk, emergency evacuation, non-emergency downmanning and enforcement risks. Spirit makes the following additional submissions in this regard.	The Applicant notes this comments and has responded subsequent rows. The Applicant's analysis of aviation operations suggests that impact to helicopter flying will be minimal. In the event of an emergency, any evacuation will likely be by lifeboat or Search and Rescue (SAR) helicopter. The latter is not subject to the same limitations as Commercial Air Transportation (CAT) helicopters are and is unlikely to be affected by the Project.
Transportation Risk		
WR-116-30	Restrictions on Spirit's ability to access NUIs to complete scheduled Maintenance, Inspection and Testing (MIT) activities will have a direct negative impact on risk exposure to the personnel carrying out this maintenance.	The Applicant has provided comment in Section 8.1 of The Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35).
WR-116-31	Flight restrictions will shorten the productive working window on each platform, requiring a significant number of additional trips to complete scheduled MIT activities over the course of a year.	The Applicant has provided comment in Section 8.1 of The Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35).
WR-116-32	Each flight taken by personnel carries with it a quantifiable risk, and significantly increasing the number of flights required to deliver the current volume of MIT activity will therefore significantly increase personnel transportation risk. Risk tolerability limits are defined in the Health and Safety Executive publication 'Reducing Risks, protecting People'; commonly	The Applicant has provided comment in Section 8.1 of The Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35).

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	referred to as R2P2 {hyperlink: https://www.hse.gov.uk/enforce/expert/r2p2.htm}	
WR-116-33	Paragraph 128 of this document defines the upper acceptable limit of a risk of death to any individual per annum. This terminology has been translated across industry in Quantitative Risk Assessments (QRA's) as Individual Risk Per Annum (IRPA): ▪ Each return flight between CPC and a NUI contributes to the Individual Risk Per Annum (**IRPA**) for each person on the intervention crew (this is the risk of fatality per year); ▪ Personnel within the interventions team are already subject to the highest levels of Individual Risk of all worker groups due to the substantial contribution of in-field transport risk from regular intervention visits to the NUIs; ▪ Increasing the total required interventions per team member would almost double their in-field transportation risk, and increase their overall IRPA by 15%.	The Applicant has provided comment in Section 8.1 of The Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35).
WR-116-34	Such a significant increase in transportation risk has the potential to present a significant regulatory challenge and burden on Spirit to demonstrate that risks remain As Low As Reasonably Practicable (ALARP), as further described in Part 4 of Spirit's RR. The additional risk exposure would also require submission of a material change to the Safety Case in accordance with the Offshore Installations (Offshore Safety Directive)(Safety Case etc) Regulations 2015. This would require acceptance by the Competent Authority – acceptance	The Applicant has previously addressed comments on transportation risk within Comment ID RR-077-43 and enforcement risk within Comment ID RR-077-46 of the Applicant's Response to Relevant Representations (Document Reference PD1-011). The Applicant has provided comment in Section 8.4 of The Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35).

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	is not guaranteed, and the Competent Authority may require Spirit to explore other options to reduce transportation risk.	
Emergency Evacuation		
WR-116-35	Under the Offshore Installations (Prevention of Fire and Explosion, and Emergency Response) Regulations 1995 (PFEER), Spirit is required to establish suitable arrangements that will ensure, so far as is reasonably practicable, the safe evacuation of all persons. In compliance with PFEER we have identified our preferred means of evacuation as the normal means of getting people to and from the installation – for all Morecambe Hub installations, this is helicopter transport. Alternative means of evacuation are available by lifeboat to account for occasions where weather conditions or the nature of a major accident emergency makes helicopter evacuation impracticable. However evacuation by lifeboat exposes personnel to higher risks than the preferred means of evacuation by helicopter. Furthermore, given the multi-jacket design of the CPC, helicopter evacuation is less likely to be impaired by a fire or explosion event than would otherwise be the case and would potentially remain a credible means of evacuation. Restrictions that could compromise Spirit's ability to access offshore installations by helicopter have the potential to place a higher reliance on lifeboat evacuation than would otherwise be the case, and hence increase risks to personnel. Spirit's acknowledges that national SAR provisions would not be affected but other helicopter operators are not guaranteed	The Applicant has previously addressed comments on emergency evacuation within Comment ID RR-077-44 of the Applicant's Response to Relevant Representations (Document Reference PD1-011). The Applicant has provided comment in Section 8.2 of The Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35).

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	to respond, potentially delaying helicopter evacuation efforts and increasing likelihood of Offshore Installation Manager (OIM) opting for lifeboat evacuation.	
Non-Emergency Downmanning		
WR-116-36	Spirit are reliant on helicopter transportation for the 'downmanning' of offshore installations. Put simply, in the event of significant health, safety or welfare issues, there are no other viable options to downman the asset. The availability of national SAR services to support non-emergency downmanning has been explored by Spirit to mitigate risks associate with the Project. However, discussions with the SAR provider have confirmed that the service is designed to cover 'life and limb' emergencies only, and could not credibly be called upon for situations where there is no imminent threat to life. Alternative means of evacuation by lifeboat are available for use in an emergency but these are only suitable for situations requiring rapid evacuation in response to an imminent threat to life e.g., hydrocarbon fire. Under the Health and Safety at Work Act 1974, Spirit is required to reduce risks to the workforce so far as is reasonably practicable and the ALARP guidance published by the Health and Safety Executive builds on this general duty of care to provide the guiding principles for risk related decision making.	The Applicant has previously addressed comments on downmanning within Comment ID RR-077-45 of the Applicant's Response to Relevant Representations (Document Reference PD1-011). The Applicant has provided comment in Section 8.3 of The Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35).

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	Under this framework, use of lifeboats to downman the installation in the event of a significant health, safety or welfare issue evacuation could not be demonstrated to be ALARP. Restrictions that could compromise Spirit's ability to access offshore installations by helicopter would therefore severely limit its ability to downman a large population in a reasonable timeframe, extending their exposure to the health, safety or welfare threat.	
Shipping and navigation impacts		
WR-116-37	Spirit refers to its submissions at Part 6 of its RR. In summary, Spirit identified the following shipping and navigation related concerns: ▪ First, that the Project would increase the number of marine vessels in the vicinity of the Affected Assets and licensed blocks. ▪ Second, that a lack of sea room will place restrictions on the use of larger vessels such as drilling rigs, crane barges and accommodation vessels. ▪ Third, that there is a far higher risk of emergency production shutdowns due to vessels on collision course with platforms or breakdowns caused as a result of emergency shutdowns and waiting for repairs. In addition, there is the risks related to the displacement of third-party passing traffic towards Spirit's assets, increasing the traffic density and hence risk of collision.	The Applicant has commented upon shipping and navigation related concerns within the subsequent rows of this table.

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	▪ Fourth, that there will be a new requirement for designated access paths and exclusion areas in addition to the 500m exclusion zone around each platform. ▪ Fifth, that the protective provisions in Part 3 of Schedule 3 of the draft DCO [PD1-002] only secure a 1.5nm buffer between the "active" AP-1, DP-1 and Calder "heli-decks" (which may be removed or change location). A 1.5nm marine buffer zone must therefore be secured independently of any corresponding aviation related buffer zone. ▪ Sixth, that wind turbines near Spirit's Radar Early Warning System (REWS) can interfere with its performance (with consequential risk to safe operations). Spirit maintains its shipping and navigation related concerns expressed in its RR and summarised at paragraph 3.1 above. It supplements those submissions as follows.	
Temporary structures		
WR-116-38	For the purpose of the RR and this Written Representation, reference to "wind turbine" shall be deemed to include any structure or vessel, temporary or permanent, placed in the advancement of the Project. Where Spirit requests distances or restrictions of a shipping and navigation nature, such distances or restrictions extend to temporary infrastructures (such as buoys or any other windfarm construction support vessels including jack up installation vessels) and not only to turbines.	The Applicant notes this response.
Collision risk and mitigation		

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WR-116-39	In terms of quantifying the collision risk and related mitigation requirements, it is informative to revisit a Vessel Collision Risk Assessment (VCRA) for the East Irish Sea installation located within Morecambe Hub Asset that was carried out by Spirit in 2021. The main objectives of the assessment were as following: ▪ Identify the passing merchant vessel activity within 10nm of the installations; ▪ Identify the fishing vessel activity in the vicinity of the installations; ▪ Identify the infield vessel activity associated with the installations; ▪ Estimate the vessel collision frequencies associated with the installations; ▪ Estimate the consequences in terms of impact energy.	The Applicant notes this response. The Applicant requests that the Vessel Collision Risk Assessment (VCRA) is submitted by Spirit Energy.
WR-116-40	In addition, a review of the effectiveness of Collision Risk Management and REWS system was undertaken together with site-specific inputs for the Morecambe Hub Installations, including the emergency response and rescue vehicle (ERRV) procedures. This identified that an overall collision risk reduction of 64% was estimated, i.e., in 64 out of 100 scenarios, the ERRV will be effective in recovering an errant vessel on a projected collision course.	The Applicant notes this response. The Applicant requests that the VCRA is submitted by Spirit Energy.
WR-116-41	Existing annual passing powered collision frequencies for the Morecambe Hub Installations are noted below. This analysis was undertaken to understand annual collision frequency	The Applicant notes this response.

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	between offshore infrastructure and passing/drifting vessels in order to implement the appropriate collision mitigations by determining the level of risk and support vessels required to minimise this risk. Each offshore installation has an impact energy assessment with the maximum energy the infrastructure can withstand during the collision prior to catastrophic failure (MJ: Megajoules).	
WR-116-42	For the avoidance of doubt, the figures presented in the table are not individual risk to personnel, they are the predicted collision frequency for different vessels for each asset. **Platform** — **Annual Collision Frequency vs Impact Energy** 0-5 MJ / 5-10 MJ / 10-15 MJ / 15-50 MJ / 50-100 MJ / 100-200 MJ CPC: 4.5E-09 / 9.1E-09 / 1.4E-08 / 1.4E-08 / Negligible / Negligible DP6: 3.8E-07 / 7.6E-07 / 1.1E-06 / 1.1E-06 / Negligible / Negligible DP8: 9.8E-09 / 2.0E-08 / 2.9E-08 / 7.1E-06 / 1.5E-05 / 2.4E-05 Calder: 3.3E-09 / 6.6E-09 / 9.9E-09 / 3.0E-08 / 5.4E-08 / 7.7E-07 DPPA: 4.0E-07 / 8.0E-07 / 1.2E-06 / 4.6E-06 / 2.3E-05 / 3.1E-05	The Applicant notes this response.
WR-116-43	The highest annual passing powered collision frequency associated with the Morecambe Hub Installations was therefore estimated to be 1.1 x 10-4 for the DPPA platform, corresponding to a collision return period of approximately 9,000 years. Annual passing drifting collision frequencies for the Morecambe Hub Installations is estimated to be 5.9 x 10-07 for the DP8 platform**,** corresponding to a collision return per approximately 4.1 million years. These rates reflect the fact that a drifting collision is generally a low probability event. However, when considered as a risk to	The Applicant acknowledges that the presence of the windfarm site will change shipping routes, which can result in a change in encounters resulting in a change in collision risk. As a result, this risk was assessed using collision frequency modelling based on a 15% estimated increase in traffic, as detailed in Section 8.5 of the Navigation Risk Assessment (NRA) (APP-073). Through the NRA process, the overall risk has been assessed as acceptable. The assessment of collision risk undertaken within the NRA has been agreed with the Maritime and Coastguard Agency (MCA) to be in compliance with Marine Guidance Note (MGN) 654.

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	people, a small collision risk can translate into a significant increase to individual risk to an already highly exposed workforce. The contribution to individual risk from ship collision events is calculated within the QRA using the ship collision impact frequency and fatality fraction for the given impact energy of each collision; currently the average contribution to IRPA from ship collision is 2.11E-05 and contributes from 15% to 46% to IRPA for different worker groups; the overall IRPA is therefore very sensitive to changes in merchant shipping density and proximity to our assets – any change in risk exposure will require a material change to the safety case. We will not be able to quantify or understand the full impact on individual risk from changes in shipping routes / shipping density without a detailed ship collision risk assessment being carried out to determine the ship impact frequency for the future routes and levels of shipping traffic, and an update of the QRA to assess the impact on IRPA for these impact frequencies.	
WR-116-44	There is no annual collision frequency evaluation similar to the above available in the Volume 5 Chapter 14 Shipping and Navigation, Appendix 14.1 Navigation Risk Assessment [APP-073] and Appendix 14.2 Cumulative Regional Navigation Risk Assessment [APP-074]. However Spirit note that the proposed offshore wind farm will impact the vessel traffic routes to/from the ports of Barrow, Heysham and Liverpool.	The Applicant acknowledges that the presence of the windfarm site will change shipping routes, which can result in a change in encounters resulting in a change in collision risk. As a result, this risk was assessed using collision frequency modelling based on a 15% estimated increase in traffic, as detailed in Section 8.5 of the NRA (APP-073). Through the NRA process, the overall risk has been assessed as acceptable. The assessment of collision risk undertaken within the NRA has been agreed with the MCA to be in compliance with MGN 654.
WR-116-45	The majority of vessel routes from the Port of Liverpool will be directed further away from the existing Morecambe Hub Installations to the west. Thereby further reducing the	The Applicant notes this response.

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	likelihood of vessel collision with the offshore platforms outlined above.	
WR-116-46	Conversely, the commercial vessel routes to/from the Port of Barrow and Heysham will either be moved closer to the Morecambe Hub Installations, or re-routed to the east of the proposed windfarm array. Such scenarios has been evaluated under Section 8.3 of the Volume 5 Appendix 14.1 – Navigation Risk Assessment [APP-073] as a 'Barrow/Off Skerries TSS commercial route future case passage plan(s)'. However there are no regulatory requirements for commercial shipping to follow proposed routes. The corollary is that the vessel collision risk must be assumed to still exist in evaluating the Applicant's proposals.	While there are no regulatory requirements for commercial shipping to follow the futurecase passage plans presented in the NRA (APP-073), these futurecase passage plans were prepared based on detailed consultation and engagement with the operators to ensure the assessment captured the most likely routes that would be taken. The assessment of collision undertaken within the NRA has been agreed with the MCA to be in compliance with MGN 654. The Applicant further notes that vessels are currently free to route past Spirit assets as they see fit in line with regulatory requirements.
WR-116-47	With the traffic patterns in the East Irish Sea expected to change as a direct result of the proposed windfarm development, Spirit request that the Applicant conducts a similar VCRA to re-evaluate the above findings with up-to-date data accounting for the introduction of the proposed wind farm with further periodical re-evaluations following windfarm generation asset installation at least every 3-5 years to validate the traffic pattern developed in the Applicant and Spirit's VCRA.	The risk of collision was assessed using collision frequency modelling based on a 15% estimated increase in traffic, as detailed in Section 8.5 of the NRA (APP-073). The assessment of collision undertaken within the NRA has been agreed with the MCA to be in compliance with MGN 654.The Applicant notes the following option: The Applicant could unpack and develop the collision risk modelling (CRM) embedded in the NRA and provide a quantitative assessment of allision risk for base case and future scenarios to Spirit Energy. The Applicant would need to review the detail of the VCRA report referred to, to ensure appropriate comparisons. The Applicant requests that this is submitted by Spirit Energy.
WR-116-48	As the changes are all required as a consequence of the Project, the costs for the updated analysis must be borne by the Applicant.	As outlined above, the Applicant does not consider further analysis is necessary. However the Applicant will engage with Spirit in relation to this matter.
Aids to Navigation		

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WR-116-49	The Calder 110/7a platform, located 0.9km to the western boundary of the windfarm site has an Aids to Navigation (AtoNs) marking with a white light displaying morse 'U'. Spirit is the designated duty holder, and therefore operator, of the East Irish Sea fields including Calder, licenced by Chrysaor Resources (Irish Sea) Limited (a Harbour Energy plc group company). It is a duty holder obligation to maintain the offshore AtoNs and provide collision guard cover during the AtoNs non-availability and servicing period, including submission of PON10 notification (Petroleum Operations notice no.10 for reporting non-compliance with Consent Conditions under part 4A of the Energy Act 2008, including the failure of Aids to Navigation).	The Applicant notes this response.
WR-116-50	This cover is normally performed by Spirit's ERRV. However, with the ERRV being engaged in the ongoing monitoring of the REWS system, and specifically new limitations being imposed on the REWS system as a consequence of the Project, Spirit will no longer be able to continue to use the ERRV as a guard vessel cover. This will necessitate Spriit contracting an additional guard vessel for the period of the AtoNs failure or maintenance.	The Applicant considers that no credible reason is given for additional Emergency Response and Rescue Vehicle (ERRVs) (and none is postulated by the Operator). An ERRV is provided dependent on the number of persons that may evacuate, with clear industry guidance on this. The Applicant will provide a detailed response on Spirit Energy's REWS system at Deadline 3.
WR-116-51	This impact is also as a direct consequence of the Project. Accordingly the costs for the contracting guard vessel must be borne by the Applicant.	Refer to response to Comment ID WR-116-50.
Distances for Well Interventions		
WR-116-52	Whilst the need for coexistence between offshore wind farms and CO2 storage facilities is accepted by Spirit, it is important to recognise the challenges that the presence of the Project may present for future (nationally significant) CCUS projects in this area. In particular, as part of an application for a Carbon	The Applicant notes this response. The Applicant is committed to co-existence and will continue to engage with Spirit Energy on protective provisions which appropriately accommodate Spirit Energy's potential future operations.

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	Storage Permit for MNZ, Spirit as the Carbon Storage licence operator is required to submit an approved Monitoring Plan and an associated Corrective Measures Plan.	
WR-116-53	A Monitoring Plan commits the operator to repeated acquisition of various type of survey data to confirm the emplacement of the injected CO2 in the subsurface conforms to operator's models and that the CO2 is being contained within the storage site.	The Applicant notes this response.
WR-116-54	Spirit has identified three old exploration and appraisal wells and six abandoned development wells within the boundary of "Work No. 1" (Wind Turbine Generators and Inter-Array Cables) as shown on the Offshore Works Plan [APP-007].	The Applicant notes this response.
WR-116-55	All of these wells have been abandoned in line with current regulatory requirements. Integrity problems are therefore not anticipated. However, Spirit is obliged as part of its Monitoring Plan to monitor the area for potential leakage of CO2 from the wells and to secure mitigation arrangements in its Corrective Measures Plan in order to address any CO2 leakage that may occur.	The Applicant notes this response.
WR-116-56	As part of its Corrective Measures Plan, it may be necessary for Spirit to mitigate a CO2 leakage from a legacy well due to elevated reservoir pressure from CO2 injection. Spirit can control most of the wells by entering the well from above. However, for two wells (110/08-2 and development well C5) Spirit would need to drill a relief well from an offset location to enter the leaking well at a greater depth.	The Applicant notes this response. A detailed response will be provided at Deadline 3.
WR-116-57	To repair a well in case of leakage (including wells 110/08-2 and C5) would require moving a mobile drilling rig over the well to re-enter it. During operations there would be a 500m exclusion zone around the rig (reflecting the circular dashed areas in the plan below). The 500m exclusion zones overlap	The Applicant notes this response. A detailed response will be provided at Deadline 3. The Applicant notes that the 500m zone is to prevent unauthorised vessels from interacting with an installation

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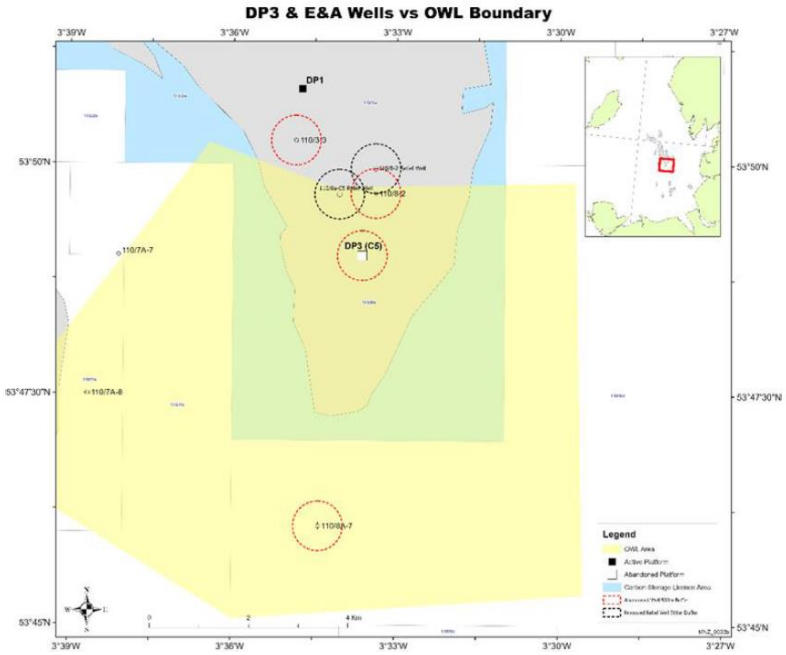
	with Work No. 1 as shown on the Offshore Works Plan [APP-007]. 	and threatening its safety and also the vessels. For a static wind turbine, these considerations do not apply.
WR-116-58	Whether Spirit is left with enough space between turbines for the exclusion zone will depend upon the precise location of the turbines relative to the wells and contingent on the rig being manoeuvred into position within the spacing of the wind turbines. This level of detail is not provided in Spirit's protective provisions (or elsewhere) in the draft DCO [PD1-002].	The Applicant has submitted updated protective provisions in favour of Spirit Energy at Deadline 2 (Document Reference 3.1). The Applicant will continue to engage with Sprit Energy on the drafting of protective provisions, and as set out in within The Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35) considers that protective provisions, supplemented by a commercial or

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		side agreement as necessary, would be the most appropriate mechanism for reaching agreement between the parties.
WR-116-59	Well intervention must take into account the need for: ▪ safe navigation of a self-elevating jack-up drilling rig and the towing vessel spread; ▪ deployment of anchors for precise rig positioning; ▪ as identified above, a 500m safety zone around the drilling rig; and ▪ access corridors for offshore supply vessels and ERRVs.	The Applicant notes this response.
WR-116-60	The following distances are required based on operational requirements: ▪ Rig Safety zone – 500m exclusion zone; ▪ Rig access corridor – 1 nm (1.8km) wide to allow vessel spread of 3 x Anchor Handling Vessel (AHVs) / tugs and the rig to arrive to well location; ▪ Unobstructed zone for deployment of anchors for positioning – 1790m minimum (noting that this is different to the decommissioning vessel and rig anchoring requirements for larger vessels in paragraph 5.4.2); ▪ Supply vessel and ERRV access corridors – at least 2 x access/egress corridors each 1 nm (1.8km) wide to allow safety access and evacuation of the supply vessel and an ERRV.	The Applicant notes this response. A detailed response will be provided at Deadline 3.

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WR-116-61	The anchor deployment zone is based on Spirit's recent experience with Jack-up rig – Borr Ran performing decommissioning plugging and abandonment activities in the East Irish Sea. The rig anchor pattern consisted of 4 x anchors deployed to a distance of 500m from the rig positioned at the well centre. Taken together, the total distance requirements comprised: 500m anchor line distance + 90m average AHVs length + 100m work wire payout + further 1000m clearance for the vessel. Thus in total 1690m. That distance does not take into account anchor slippage where a further 100m length for a piggy back anchor may be required.	The Applicant has commented upon decommissioning concerns within The Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35).
WR-116-62	In addition, a rig positioned, for either an above well intervention or by an offset relief well, would still be subject to the significant aviation restrictions within the offshore wind farm area. See Part 2 (aviation related safety) of this Written Representation.	The Applicant notes this response. It is noted that the Applicant has committed to a 1.5nm buffer zone for above sea surface infrastructure from Central Processing Complex (CPC) and Calder platforms, and a 500m distance either side of pipelines and umbilical's (as secured in protective provisions in the draft Development Consent Order (DCO) (APP-012)) to enable rig access the vicinity of the Project.
WR-116-63	Enquiries regarding the use of Walk to Work (W2W) rather than using helicopters for crew change from the rigs in such circumstances have been made. However Spirit consider that the W2W vessel to rig interface is a significant challenge since very few W2W systems can reach the lower deck of a jack-up drilling rig. Thus the number of suitable W2W vessels is very limited and they may not be available when required.	The Applicant considers that normal practice in the United Kingdom Continental Shelf (UKCS) is to use helicopters for crew changes. This is the case for Spirit Energy's manned installations and there is no reason why this would not be the case for any mobile drilling rig – including jack ups. The availability of a W2W system and a W2W vessel are fundamentally different things. A W2W system can be added to any suitable vessel, but not all vessels will be suitable for this due to stability and other issues. Overall, there are few W2W systems on the market and if some can reach the rig, this is a good situation to be in. Vessel

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		availability may then be restricted, but there are many vessels that could be considered.
WR-116-64	An alternative would be to construct a lower access deck to interface with the W2W vessel. This would add cost and also add the time to design the deck, gain the rig's certifying authority's approval and to construct the deck. Whilst this was being done, any leak from a legacy well would continue.	The Applicant notes this response. The Applicant questions whether this is practicable.
WR-116-65	In addition, the rig would have to have this activity included in its Safety Case, which would not be the case for many rigs. This would either greatly restrict the availability of a suitable drilling rig or would necessitate the lengthy process (over 6 months) to have a modified Safety Case prepared and accepted.	The Applicant considers that W2W would need to be included in the rig's safety case, though as material change, it is a relatively straightforward one.
WR-116-66	Using W2W rather than helicopters is a significant restriction and would also have consequences should emergency evacuation be required, delaying to unacceptable level the safe evacuation of the drilling rig in the case of an emergency. The alternative of using lifeboats exists but that cannot be a credible primary solution in the context of Spirit's Corrective Measures Plan.	The Applicant considers that emergency lifeboats are the normal means of evacuation as helicopter evacuation cannot be achieved quickly enough and the helideck may be affected by the incident requiring the evacuation. Emergency evacuation using W2W could be achieved much more quickly than helicopter evacuation, though, as per helicopter evacuation, it may not be possible in an emergency.
WR-116-67	For the foregoing reasons, Spirit consider that a standalone vessel collision strategy including vessel detection capability (REWS – see paragraph that follows) and rig emergency evacuation should be developed due to an inability to perform routine and unconstrained CAT operations within the windfarm array for rig personnel evacuation. Due to aviation restrictions, the rig's ERRV requirements should be reviewed and, potentially, a higher specification vessel and/or secondary ERRV vessel must be considered to support well intervention activities.	The Applicant considers that no credible reason is given for additional ERRVs (and none is postulated by the Operator). An ERRV is provided dependent on the number of persons that may evacuate, with clear industry guidance on this. The Applicant will provide a detailed response on Spirit Energy's Radar Early Warning System (REWS) system at Deadline 3.

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Radar Early Warning System		
WR-116-68	Spirit refer to paragraphs 6.18 to 6.21 of the RR which identifies impacts on Spirit's Radar Early Warning Systems (REWS).	The Applicant notes this response**.** The Applicant has provided initial comments on Spirit's Written Representation and Deadline 1 Submission. However, the Applicant will provide a detailed response on Spirit Energy's REWS system at Deadline 3.
WR-116-69	REWS are critical radars installed onboard offshore oil and gas platforms to monitor nearby vessels to provide protection against collisions. Wind turbines near REWS can interfere with the system due to their large and varying returns, radar shadows and overloading of the track table.	The Applicant notes this response.
WR-116-70	The Applicant has attempted to assess the impact of the Project on REWS within Appendix 17.2 of its ES (PINS Document Reference: 5.2.17.2). Having reviewed this assessment, Spirit's technical team identified a number of incorrect assumptions which are considered to undermine the assessment and the extent of likely impacts on Spirit's REWS system and consequently the safety of its installation. These observations were summarised in Appendix E of the RR. Spirit would also direct the Examining Authority to its responses to the comments by the Applicant on Appendix E as set out in the Applicant's Response to Relevant Representations [PD1-011]. The REWS system is a critical system for the duty holder under Safety Case regulations to manage 'Major Accident Hazards' under the Offshore Installations (Offshore Safety Directive)(Safety Case etc) Regulations 2015. Such 'Major Accident Hazards' include which hazards involving the risk of collisions with passing and errant vessels. In addition, the REWS system is also used to assist in preventing damage to the subsea infrastructure including pipelines and cables.	The Applicant notes this response. As noted, the Applicant has previously undertaken an assessment of the Project on REWS within Appendix 17.2 Radar Early Warning System Technical Report (APP-082). The Applicant will provide a detailed response on Spirit Energy's REWS system at Deadline 3.

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WR-116-71	Spirit has an installed REWS system based on the current area layout, traffic routes and without the Project south from south east of the CPC platform.	The Applicant notes this response.
WR-116-72	Due to close proximity of the windfarm and limitations outlined in the Appendix E of the RR, Spirit consider that this system would require significant upgrades with a solid state radar for an increased detection performance in poor weather conditions and for vessel detection within the windfarm array.	The Applicant will provide a detailed response on Spirit Energy's REWS system at Deadline 3.
WR-116-73	It is also recognised that current position of the REWS system on AP1 platform (part of the CPC) has no identified blind sectors (an area shadowed by another object that you cannot physically see an approaching vessel) within the proposed location of the windfarm array. Any or all blind sectors will be introduced by the Project.	The Applicant will provide a detailed response on Spirit Energy's REWS system at Deadline 3.
WR-116-74	As a direct result of the introduction of the proposed wind farm, the REWS system would require to be upgraded, including in respect of Automatic Identification System (**AIS**) equipment with a full integration of vessel target data into the REWS system in order to mitigate collision further by providing additional collision monitoring capability.	The Applicant will provide a detailed response on Spirit Energy's REWS system at Deadline 3.
WR-116-75	It is important to note that AIS is not a replacement for a radar system, which remains the primary sensor for collision avoidance for the following reasons: ▪ AIS relies on active transmission of data; ▪ AIS systems can be switched off, or may go off in the event of a loss of power on the vessel; ▪ AIS may not be working; ▪ AIS may have inaccurate information entered such as vessel position or heading;	The Applicant will provide a detailed response on Spirit Energy's REWS system at Deadline 3.

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	▪ AIS may be spoofed or falsely used; ▪ AIS carriage requirements mean that AIS is not mandatory for vessels <300grt.	
WR-116-76	Furthermore, the UK Health and Safety Executive does not recognise AIS as a standalone system and it should be seen as complementing existing collision detection arrangements (i.e. radar), not replacing them.	The Applicant will provide a detailed response on Spirit Energy's REWS system at Deadline 3.
WR-116-77	The ongoing monitoring of the REWS is managed by the field ERRV which is manned for 24/7 operations with the watch keepers subject to required training. The current ERRV vessel manning is designed to support existing operations and the level of watch keeping requirements. However those requirements will have to be reviewed in order to account for additional monitoring of blind sectors inside the windfarm array.	The Applicant will provide a detailed response on Spirit Energy's REWS system at Deadline 3.
WR-116-78	In addition, Spirit Energy's Morecambe Hub asset consists of multiple NUI installations which are being guarded by the ERRV vessel where the vessel has to provide collision monitoring support simultaneously to up-to 4 x manned platforms (manned CPC and 3 x manned NUI platforms). Such vessel collision monitoring support may no longer be possible due to the physical limitations of the REWS system imposed by the windfarm array and ERRV's Automatic Radar Plotting Aid (ARPA) system capability.	The Applicant will provide a detailed response on Spirit Energy's REWS system at Deadline 3.
WR-116-79	Furthermore, vessel collision monitoring support is required in all environmental conditions for all offshore infrastructure (manned and unmanned installations) including environmental conditions which impact radar detection performance. As a result, the degradation of the REWS performance and additional demands on the ERRV's ARPA system has the potential to impact Spirit's ability to safely perform offshore operations.	The Applicant will provide a detailed response on Spirit Energy's REWS system at Deadline 3.

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	During the main ERRV crew change periods every 28 days, the REWS monitoring is also being managed by the CPC platform, where additional manning and suitable training will be required due to imposed operational restrictions of the windfarm array. In the event of REWS system equipment failure and close proximity of the windfarm, the ERRV ARPA system will not be able to provide adequate coverage inside/outside windfarm array and Spirit may not be able to maintain its performance standard for vessel collision, and all other field NUI operations will be ceased. In such scenario, Spirit may have to shutdown offshore production operations and to demobilise all non-essential personnel from CPC platform until the system will be operational.	
MNZ		
WR-116-80	As set out in paragraphs 3.6 to 3.9 of the RR, the Morecambe Hub fields will play a pivotal part in the UK's journey to net-zero. Once the gas fields have ceased natural gas production, repurposing the reservoirs and associated infrastructure for carbon storage is of paramount importance to ensure the UK can meet its Net Zero targets. As a result, Spirit's vision for repurposing of the fields has been endorsed by the UK Government through the award of Carbon Storage Licence CS010 in September 2023, pursuant to section 18 of the Energy Act 2008 (the CS010 Licence).	The Applicant notes this response. The Applicant will provide a detailed response on this section at Deadline 3.
WR-116-81	Spirit are obliged to carry out specific activities pursuant to its CS010 Licence issued by the North Sea Transition Authority (NSTA), including those associated with monitoring and corrective actions (the Examining Authority is directed to 3.21 to 3.36 of this Written Representation). Spirit must also comply with its obligations to undertake the project in accordance with *NSTA Stewardship Expectations* including Expectation 5:	The Applicant notes this response.

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	robust project delivery and preparation of a development plan which sets out the proposed optimised plan for the project development.	
WR-116-82	The OGA expects the operator to ensure that the front end preparation will secure maximum value to the CCUS project. This scope includes studying the project options including pipeline, cable routing and optimised offshore infrastructure locations to identify the optimised development and report the outcome to the OGA in an above-ground select phase report by mid-2025, and subsequently in a development plan in mid-2027. The front end preparation has identified the following effects of the Project on the CS010 development options:	The Applicant notes this response. The Applicant is also committed to co-existence and will continue to engage with Spirit Energy on protective provisions which appropriately accommodate Spirit Energy's potential future operations.
WR-116-83	**Pipeline routing** – due to the Project, Spirit would require the offshore CO2 pipeline from the carbon source (Peak Cluster) to the MNZ store to be longer. That is because the pipeline cannot be laid via the shortest route to the preferred well location due to access restrictions i.e. not passing through the Project area. The effect of the Project is therefore an increase in the length of the CO2 pipeline with associated increase in capital cost for material, pipeline installation (including cable crossing) duration and associated inspection and maintenance over the lifetime of the pipeline.	The Applicant notes this response.
WR-116-84	**Offshore facilities design** - the offshore CO2 injection facilities will be located at the well location. The Project has an impact on the well locations which has an effect on the design of the offshore CO2 injection facilities. As a result, Spirit may not be able to proceed with the most optimal location and design of its facilities. The outcome will be increased equipment requirements with associate capital costs. The increase in equipment has two subsequent effects. First, an increased jacket size to support the increase in equipment with associated increase in installation and inspect and	The Applicant notes this response and will provide a detailed comment at Deadline 3.

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	maintenance capital and operational cost. Second, an increased power requirement with associated operational costs.	
WR-116-85	**Access to the offshore facilities during installation and operation** – a likely option for the location of the offshore CO2 injection facilities is in the vicinity of the manned CPC. The Project has an effect on the access to the existing Central Processing Complex (as identified in the aviation and shipping and navigation sections of the RR and this Written Representation). A CO2 injection facility would be subject to the same or similar limitations and associated consequences.	The Applicant notes this response and will provide a detailed comment at Deadline 3.
WR-116-86	**Offshore surveys** - to inform the CO2 facilities design and in advance of the submission for the development plan to the OGA, offshore surveys need to be undertaken. These are planned for 2025, 2026 and 2027. Given the location of the Project over the CS010 area, the construction and operations of the Project could significantly limit the access to the area.	The first construction activities are expected to commence towards the end of Q1 2028 with the installation of the foundations for the WTGs and OSPs. This realistic and expected programme is set out in Section 3 of Response to Actions arising from Preliminary Meeting and Issue Specific Hearing 1 (ISH1) (REP1-086).
WR-116-87	The Examining Authority is directed to the following clause included in CS010: *Para 39. Without prejudice to clause 37 (Ministry of Defence) and clause 38 (Relationship with fishing industry), when planning any activity or operation under this licence, the Licensee shall* ***take into consideration any activities being undertaken, or likely to be undertaken, in the licensed area or that impact, or are likely to impact, such licence activities or operations****.*	The Applicant notes this clause.

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WR-116-88	The Examining Authority is also directed to the following clauses included in CS010 which, as a consequence of the Project and its related implications identified above, may present particular challenges for Spirit: *Para 6.1 In respect of both the North Morecambe and South Morecambe potential storage sites, the Licensee shall by 30th June 2025 complete and submit to the OGA an above-ground select phase report including but not limited to:* *a) a pipeline CO2 transportation study evaluating the technical and commercial feasibility of an East Irish Sea storage cluster, including interconnectivity between the potential Morecambe Bay CO2 storage project and the potential Liverpool Bay CO2 storage project; and* b) *a shipped CO2 transportation study evaluating the technical and commercial feasibility of ship-borne transportation of CO2 to the potential Morecambe Bay CO2 storage project.* c) *Para 9.1 By 31st December 2026…an outline concept-select assessment of the pipeline/transportation, facility and well options being considered, a forecast range of injection volumes during the operational term, and the associated carbon dioxide phase management engineering considerations. The timing of well abandonment and facility removal should be considered;* *Para 10.2 Storage site(s) and complex(es) development plan; including the carbon dioxide pipeline/transportation and injection facilities.*	The Applicant notes this clause.

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Decommissioning		
WR-116-89	Spirit retains serious concerns regarding the Project's implications on the ability to perform safe and efficient decommissioning activities throughout the East Irish Sea, in accordance with its Seaward Production Licences with references P.251 (6 July 1976), P.1483 (13 June 2007) and P.153 (10 July 1972) (**SPLs**) and the Petroleum Act 1998. Specifically, Spirit maintains its concerns expressed at paragraph 7.1 of the RR and makes the following supplementary submissions.	The Applicant has commented upon decommissioning concerns within The Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35).
Increase in vessels and helicopters		
WR-116-90	Decommissioning activities are currently being planned for the early to mid-2030's. It a requirement under the Petroleum Act 1998 for operators to fulfil decommissioning obligations in their entirety to allow the applicable licence block to be relinquished.	The Applicant notes this response.
WR-116-91	The number of vessels (transiting and undertaking decommissioning) in the vicinity during the period of decommissioning will increase above normal operations. Helicopter operations to conduct crew change on vessels would continue throughout. Relevant categories of vessels and associated time periods to enable decommissioning operations to be completed include:	The Applicant notes this response.
WR-116-92	**Rig/ barge P&A campaign** across all Morecambe hub assets (DP6, DP1, DP8, DPPA, Rhyl subsea have wells) to safely decommission wells, clean the platform topsides and pipelines. Duration of the campaign would be approximately 24 months (36 wells + weather). Personnel on Board (POB) ~125 crew changing via helicopter – every 2 weeks with ad-hoc flights depending on operational requirements.	The Applicant notes this response.

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WR-116-93	**Construction preparation** using a construction support vessel, across all platforms to carry out preparation for removal activities, including activities such as separation of the topsides and jacket, installation of lifting points and sea-fastening to enable safe removal by a heavy lift vessel. Approximately ~3 months per asset – POB is not yet known but rotations by helicopter would be required throughout the year.	The Applicant notes this response.
WR-116-94	**Removal vessel campaign** across all assets (AP1, CPP1, DP1, FL1, DP6, DP8, DPPA) to undertake safe lifting and removal of topsides and jackets in a single lift, relocate to a barge and sail to a disposal location onshore. Duration assumed to be 1 month per asset (jacket & topsides together including any barge transfer) – POB is not yet known but rotations would be required by helicopter (Pioneering Spirit as an example can have a POB up to 571).	The Applicant notes this response.
WR-116-95	**Subsea removal campaign** across Morecambe assets to remove sub-surface structures (Rhyl) and complete pipeline decommissioning including any remediation.	The Applicant notes this response.
WR-116-96	**Additional vessels** such as ERRV and platform supply vessels (PSVs), and survey vessels used to undertake post-decommissioning surveys for pipelines and areas where infrastructure has been removed.	The Applicant notes this response.
Access Restrictions		
WR-116-97	Although all wells require plugging and abandoning (P&A) within the Morecambe offshore area, the access to DP1 to undertake decommissioning of eight wells is directly impacted by the area of the proposed wind farm P&A using a rig or barge and associated access corridors for ERRV and PSVs would require the following:	The Applicant notes that there is 1.5nm between DP1 and the unconstrained area. This is considered sufficient for rig and heavy lift vessel access. It will also be sufficient for supply vessel and ERRV access.

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	▪ Rig access corridor required to be a minimum of 1 nm (1.8km) wide to allow vessel spread of 3 x AHVs/Tugs and the rig to arrive to DP1 location in the Central Processing Complex ▪ Unobstructed zone for decommissioning heavy lift removal vessel and rig positioning including deployment of anchors required to a minimum of 1.5nm (2.8km) (noting that this is different to well access requirements in 3.29.3) ▪ Supply vessel and ERRV access – at least 2 x access/egress corridors each a minimum of 1 nm (1.8km) wide to allow safety access and evacuation of the supply vessel and an ERRV.	
Platform Removals		
WR-116-98	The Project has potential implications on the ability for heavy lift vessels to safely manoeuvre, resulting in specific access restraints to DP1, CPP1 and AP1 installations (i.e. the CPC). A minimum obstruction free radius of 1.5nm surrounding each platform to allow heavy lift vessels into position is required (see the figure below). Clear pathways are needed to allow for stand by and drift off positions and space for associated vessels (e.g. barges, tugs and/or anchor handlers) to operate safely in addition to the presence of the heavy lift vessel in the area.	Refer to response to Comment ID WR-116-97.

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	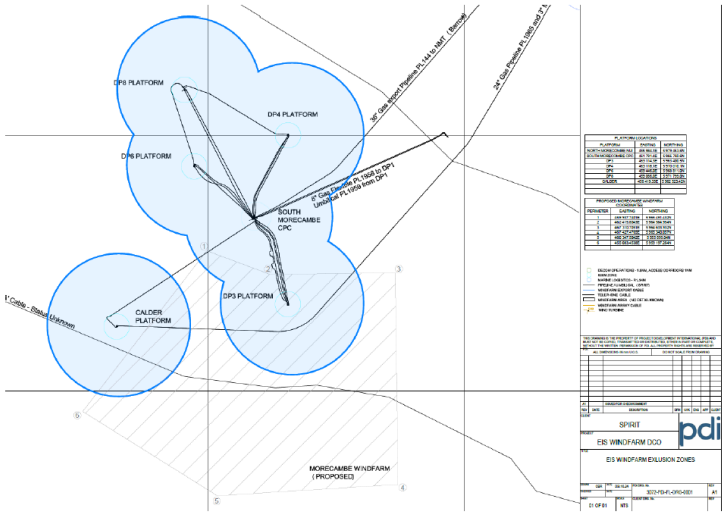	
WR-116-99	Spirit considers that a lack of “sea room” will be one of the main impacts of the Project for vessels operating in support of Spirit’s oil and gas activities placing restrictions on the use of larger vessels such as heavy lift vessels (the Pioneering Spirit as an example is 382m in length). Designated access paths and exclusion areas in addition to the 500m exclusion zone around each platform will be required for these vessels and the associated barges in order for Spirit to be able to safely remove assets and fulfil respective decommissioning obligations. If there is a situation (such as a mechanical failure, changing weather conditions or an operational change of plan) with the vessel still under command, the vessel would retreat to the standby position which would be at a safe distance and usually a drift off position, requiring appropriate sea room to be able to do so.	The Applicant notes the response. However, the installations concerned are a minimum of 1.5nm from the unconstrained area. Spirit Energy have not provided any evidence as to why the wind farm should impact on these activities.

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Flight Restrictions		
WR-116-100	Rotation flights to rigs to enable crews to change out would be applicable for P&A and removals vessels that are on location for long periods of time to undertake the work will be impacted by restricted ability to fly to the asset (requirement for an aviation buffer zone noted elsewhere) within the CPC area. The result of this will be delays or cancellations due to the restrictions that would be imposed. This could result in an extension to the overall decommissioning schedule. Spirit's initial assessment of the additional cost associated with these impacts has been assessed to be well in excess of £10 million.	The Applicant maintains that the Protective Provisions secured for operation can also be maintained into the decommissioning phase in order to reduce any disruption. Furthermore, the Applicant considers that additional measures can further reduce disruption during decommissioning. For example, hiring another helicopter would give greater flexibility and solve most of any arising issues. The Applicant requests that Spirit Energy provide a detailed breakdown of the cost range provided.
Decommissioning obligations		
WR-116-101	The location of the Project prohibits completion of seabed verification clearance activities and impacts Spirit's ability to close out the decommissioning programmes. The decommissioned DP3 asset and pipelines are entirely within the proposed wind farm area. The infrastructure at DP3 has been removed, however buried pipelines remain *in-situ*.	The Applicant considers it is common practice for pipelines to be cleaned and left in situ as the cost and environmental impact of removal exceeds the benefits of removal. The buried decommissioned pipelines will not affect the Project or vice versa. Surveys can also be performed by Remotely operated vehicles (RoV) with minimal space requirements. Therefore, there is no issue identified.
WR-116-102	Spirit is required to close out the decommissioning programme with OPRED by demonstrating the seabed is clear of oilfield debris that could present a snagging hazard to other users of the sea, such as fishermen. Within the proposed area, a 500m corridor either side of all pipelines, including those decommissioned, will be required. The activity to verify seabed will be conducted by a third party and will be undertaken alongside decommissioning of the whole Morecambe field once decommissioning is complete.	The Applicant notes this response. The protective provisions included in the draft DCO (Document Reference 3.1) for the benefit of Spirit Energy include a buffer zone of 500m on either side of and directly above any pipelines or cables used by Spirit Energy.

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WR-116-103	In addition, pipelines/ cables that have not yet been decommissioned and do not have an approved decommissioning programme, require a minimum of 500m either side of pipelines/cables to ensure safe access. Until an approved decommissioning programme is agreed with OPRED, it is not known what the decommissioning approach will comprise. However, over and above inspection surveys, there is the potential requirement for access to allow cutting, removal, dredging, removal of stabilisation such as mattresses and access to install rock protection.	The Applicant is committed to working with Spirit on pipeline decommissioning. The Applicant notes that it is common practice for redundant pipelines to be cleaned then left in-situ.
WR-116-104	Furthermore, post-decommissioning surveys are required in these areas for a period of time until the regulator, OPRED, is satisfied that these are no longer required (when any pipelines or material remaining *in-situ* no longer presents a risk to other users of the sea). Work within the wind farm development area (laying cables, surveys, for example) will need to demonstrate that it will not have an impact on Spirit's decommissioning obligations (for example, by operations negatively impacting Spirit's pipelines that remain *in-situ*).	The Applicant is committed to working with Spirit to allow Spirit's obligations to be met. The protective provisions included in the draft DCO (Document Reference 3.1) for the benefit of Spirit Energy include a buffer zone of 500m on either side of and directly above any pipelines or cables used by Spirit Energy. This would extend to any decommissioned infrastructure that remained in-situ.
Supplementary Figures		
WR-116-105	For the purpose of providing a visual aid to this submission, Spirit has prepared Figure 1 of Appendix C which shows existing offshore infrastructure in proximation to, and crossing, Spirit's assets in the East Irish Sea, including the windfarms either already constructed or proposed. Spirit has further provided a visual indication of the measures requested in this submission in Figure 2 of Appendix C.	The Applicant notes this response.

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Design Parameters		
WR-116-106	The design parameters in Table 2 of Requirement 2 of Schedule 2 of the DCO [PD1-002] for the maximum diameter of monopiles of 12m for the wind turbine generators on monopile foundation is 2m wider than the modelled turbine geometry used in the Appendix 17.2 Radar Early Warning System Technical Report [APP-082] for calculating shadowing effect and blind sectors for the Spirit Energy Radar Early Warning System installed on CPC platform offshore. The effect is being calculated using tower diameter of 10m and transition piece diameter of 10.3m outlined in the Figure 3.1 of the aforementioned report [APP-082]. However monopile foundations can be installed with the height of up-to 100ft above the sea level and the designed parameters for the diameter of monopiles is larger than tower/transition piece diameter. If the design parameters are 2m wider than the modelled turbine geometry then the shadow sectors may be larger than anticipated in the REWS study resulting in the reduced performance of our REWS system on CPC.	The Applicant will provide a detailed response on Spirit Energy's REWS system at Deadline 3.
Status of negotiations		
WR-116-107	Since submission of its RR on 19th August 2024, discussions have been held with the Applicant as to the steps required to addressed Spirit's concerns. This has included discussions with respect to progressing the terms of revised protective provisions. Spirit have received details of the Applicant's legal advisors and contact has been made with a view to progressing protective provisions on all non-aviation related matters including shipping and navigation, MNZ and decommissioning matters. The terms of the protective provisions, and capacity for agreement, will be informed by ongoing technical discussions between the parties. However, it	The Applicant has submitted updated protective provisions in favour of Spirit Energy at Deadline 2 (Document Reference 3.1). The Applicant will continue to engage with Sprit Energy on the drafting of protective provisions, and as set out in within The Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35) considers that protective provisions, supplemented by a commercial or side agreement as necessary, would be the most appropriate mechanism for reaching agreement between the parties.

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	is expected that the content of this Written Representation, will provide the framework for the drafting and negotiation of protective provisions.	
WR-116-108	With respect to aviation, Spirit has particular concerns with respect to ensuring the continued safe and efficient operation of helicopter flights to, from and between its offshore installations. A meeting between the parties and its respective technical advisors was held on Thursday 31st October. Updated analysis from the Applicant is awaited.	The Applicant has provided detailed comments on the Updated AviateQ Report in Appendix A: The Applicant's Comments on Spirit Energy and Harbour Energy Aviation Access Study Report (Document Reference 9.35.1).
WR-116-109	Spirit's position is that there is a limitation on the parties ability to meaningfully negotiate aviation related protective provisions.	The Applicant notes the position of Spirit Energy. The Applicant has submitted updated protective provisions in favour of Spirit Energy at Deadline 2 (Document Reference 3.1). The Applicant will continue to engage with Sprit Energy on the drafting of protective provisions, and as set out in within The Applicant's Response to Spirit Energy Deadline 1 Submissions (Document Reference 9.35) considers that protective provisions, supplemented by a commercial or side agreement as necessary, would be the most appropriate mechanism for reaching agreement between the parties.
WR-116-110	Spirit is engaging with the Applicant on Statements of Common Ground (SoCG). Spirit provided a response to the original SoCG drafted by the Applicant on 25 November 2024.	The Applicant submitted the initial draft SoCG with Spirit Energy (REP1-075) with their updates as tracked changes as requested by Spirit Energy. The Applicant will continue to engage with Spirit Energy on the drafting of updates to the SoCG, which will be submitted in accordance with the updated Examination Timetable as set out in the Rule 8 letter (PD-010).

ID	Written Representation	Applicant comment
Conclusion		
WR-116-111	For the foregoing reasons, Spirit maintains its objection to the Application.	The Applicant's position is as set out above. Notwithstanding this, the Applicant is content to enter into, and will continue to progress, an agreement to facilitate cooperation and co-existence to the extent appropriate in addition to protective provisions. The Applicant is committed to continuing to work with Spirit towards a mutually agreeable position.

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