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MMO Reference: DCO/2022/00007
Planning Inspectorate Reference: EN010125
Identification Number: 20050160

29 January 2025

Dear Sir or Madam,

Planning Act 2008, RWE Renewables UK Dogger Bank South (West) Ltd and RWE Renewables UK Dogger Bank South (East) Ltd Proposed Dogger Bank South Offshore Wind Farms Order

Deadline 1 Submission

On 10 July 2024, the Marine Management Organisation (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 RWE Renewables UK Dogger Bank South (West) Ltd and RWE Renewables UK Dogger Bank South (East) Ltd (the Applicant) for determination of a development consent order for the construction, maintenance and operation of the proposed Dogger Bank South Offshore Wind Farms (the DCO Application) (MMO ref: DCO/2022/00007; PINS ref: EN010125).

The DCO Application seeks authorisation for the construction, operation and maintenance of Dogger Bank South (DBS) Offshore Wind Farm (OWF), comprising of up to 100 wind turbine generators in DBS East and up to 100 wind turbine generators in DBS West together with associated onshore and offshore infrastructure and all associated development (the Project).

The DCO Application includes a draft development consent order (the DCO) and an Environmental Statement (the ES). The draft DCO includes, Marine Licence 1 (Schedule 10), Marine Licence 2 (Schedule 11), Marine Licence 3 (Schedule 12), Marine Licence 4 (Schedule 13) and Marine Licence 5 (Schedule 14) which are draft Deemed Consent under Part 4 (Marine Licensing) of MCAA 2009 (DML).

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,



Leah Cameron
Marine Licencing Case Officer

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1. Comments on Relevant Representations from other interested Parties

1.1 General Comments

1.1.1 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 statutory Interested Party. The MMO will maintain a watching brief for any concerns where DML conditions may be required.

1.2 Corporation of Trinity House of Deptford Strond (TH) (RR-008)

1.2.1 The MMO notes that TH is likely to have further comments on the DCO(s)/DML(s) throughout the process and will be keeping a watching brief on TH's written representations.

1.2.2 The MMO notes that TH have provided the Applicant with preferred wording for the clauses relating to the provision of aids to navigation under the DCO(s)/DML(s) and for the associated development that may be consented in respect thereof.

1.3 East Riding of Yorkshire Council (RR-012)

1.3.1 The MMO maintains a watching brief on the response from this Interested Party (IP).

1.4 Environment Agency (EA) (RR-015)

1.4.1 The MMO notes that the EA are currently considering whether the disapplication of the Environmental Permitting Regulations (England & Wales) 2016 (EPR), which relates to flood risk activities is appropriate or not. The MMO maintains a watching brief on the Environment Agency's written representations.

1.4.2 The MMO requests clarification on whether the cable crossings onshore are on sections of tidal rivers (E.g. below Mean High Water Springs (MHWS)) and whether they will be bored tunnels or trenches.

1.5 Historic England (RR-022)

1.5.1 Schedule 18 of the draft DCO (APP-027) contains provisions relating to habitats compensation. Associated with this are compensation plans relating to Kittiwake (APP-052) and Guillemot and Razorbill (APP-056), in addition to other documents. The MMO notes that Historic England is concerned that the compensation measures proposed may have an adverse effect on elements of the historic environment, which will need to be assessed and therefore have requested a Written Scheme of Investigation (WSI) is conducted in relation to the compensation measures proposed in the plans referred above. The MMO welcomes this.

1.5.2 The MMO notes that Historic England have requested that the present Outline Offshore WSI (APP-239) needs to appropriately consider mitigation and offsetting works in relation to pre-construction, construction, operation & maintenance, and decommissioning phases of proposed locations for installation of the Artificial Nesting Structures (ANS) (as described in the above referenced Project-Level Kittiwake Compensation Plan). The MMO welcomes this.

1.6 Lincolnshire Wildlife Trust (LWT) (RR-028)

1.6.1 The MMO note the LWT position that due to the cumulative impacts from the existing activities and developments, that there should be no further development on the Dogger Bank SAC, and that the LWT does not consider that compensation will be

sufficient to address the adverse impact on site integrity. The MMO defers to Natural England on this matter.

1.6.2 The MMO notes that LWT requested:

- That a minimum of 10% gain should be predicted using the Biodiversity Metric
- A biodiversity plan should be submitted for approval.
- Habitat should be secured for a minimum of 30 years via planning obligations and/conservation covenants

The MMO defers to Natural England on this matter.

1.6.3 The MMO notes that LWT request that adequate compensation is embedded within the project plan going forward. The MMO defers to NE on this matter.

1.6.4 The MMO also notes that LWT request expert topic groups are consulted on the impact assessments and the strategic mitigation and/or compensation plan. The MMO would welcome this and this should be included within any outline mitigation/compensation plan.

1.6.5 The MMO notes that the LWT 'disagree with the scoping out of direct damage and impacts to fish and shellfish, the limited consideration of potential cumulative impacts and the exclusion of appropriate consideration for disturbance from other noise sources and noise during operational/maintenance phases'.

1.6.6 The MMO notes that LWT has raised concerns regarding impacts to the sandeel stock within Dogger Bank SAC and that management strategies are implemented before irreversible damage occurs.

1.6.7 LWT strongly disagrees with the Applicant's decision to lower the appraised sensitivity to habitat disturbance, arguing that this is based on inaccurate recovery times for sandeel. With the majority of the DBS West array located within areas of high spawning potential for sandeel, LWT advises that both the direct and cumulative impacts of this development on this ecologically and economically important fish species be carefully considered. Ongoing measures aimed at improving population health and resilience for sandeel should also be taken into account in any decisions, and LWT expects that all perceived and anticipated impacts to the Dogger Bank sandeel population will be meticulously evaluated within the mitigation hierarchy, with proper due diligence given at each level'. The MMO generally defers to NE in relation to sandeel as prey but may provide further comments on this matter in due course.

1.6.8 LWT ask that the impacts of dredging and the disposal of dredged material be properly evaluated due to concerns regarding the direct impact and loss of important habitat for sandeel posed by these activities. The need for dredging within the Dogger Bank SAC should be minimised and the disposal of any dredged material should be either outside of the SAC or outside of important spawning seasons for both sandeel and Atlantic herring. LWT echoes and strongly supports Natural England's concerns regarding the planned submission timescales for this project. They do not feel that that Applicant is allowing for enough time to properly assess various aspects of the project and their potential harm on receptors. In summary, LWT has serious concerns about the potential impacts of this development on the Dogger Bank SAC, particularly regarding the sandeel population, habitat disturbance, and cumulative effects from multiple projects. The MMO generally defers to NE on the marine protected area aspect but will continue to be part of the discussions in relation to fish and when designating the

disposal sites.

1.7 Maritime and Coastguard Agency (MCA) (RR-031)

- 1.7.1 The MMO notes that the turbine layout will require MCA agreement prior to construction to minimise the risk to surface vessels, including rescue boats, and Search and Rescue aircraft operating within the site. As such, MCA will seek to ensure all structures are aligned in straight rows and columns, including any platforms. Any additional navigation safety and/or Search and Rescue requirements, as per MGN 654 Annex 5, will be agreed at the post consent stage. The MMO welcomes this.
- 1.7.2 Further, MCA will seek to ensure any turbine numbering system follows a 'spreadsheet' principle and is consistent with other windfarms in the UK. All lighting and marking arrangements will need to be agreed with MCA and Trinity House. The MCA requires all aviation lighting to be visible 360° and compatible with night vision imaging systems, as detailed in CAP 764 and MGN 654 Annex 5. The MMO notes and welcomes this.
- 1.7.3 The MMO notes that the MCA have stated that MGN 654 requires that hydrographic surveys should fulfil the requirements of the International Hydrographic Organisation (IHO) Order 1a standard, with the final data supplied as a digital full density data set, and survey report to the MCA Hydrography Manager. Further information can be found in MGN 654 Annex 4 supporting document titled 'Hydrographic Guidelines for Offshore Developers', available on our website: <https://www.gov.uk/guidance/offshore-renewable-energy-installations-impact-on-shipping>. This includes surveys during the pre-construction, post-construction and post decommissioning stages. We would like to highlight the need to provide the data in either GSF or CARIS format and that Total Vertical and Horizontal Uncertainty (TVU & THU) calculations must be provided. The MMO welcome this.
- 1.7.4 Particular attention should be paid to cabling routes and where appropriate burial depth for which a Burial Protection Index study should be completed and subject to the traffic volumes, an anchor penetration study may be necessary. Particular attention to burial depths and protection measures (if needed) will be required. It is noted in the embedded mitigation listed in Table 14.3 of Chapter 14 (APP-121) that a Cable Burial Risk Assessment (CBRA) will be carried out to inform this. If cable protection measures are required e.g. rock bags or concrete mattresses, the MCA would be willing to accept a 5% reduction in surrounding depths referenced to Chart Datum. This will be particularly relevant where depths are decreasing towards shore and potential impacts on navigable water increase, such as at the HDD location.
- 1.7.5 In an update to the project since PEIR it was noted that the Export Cable will now be High Voltage Direct Current (HVDC). Regarding HVDC there is a potential impact on ships compasses from the electro-magnetic field generated. It is noted in section 13.6 of the NRA (APP-124), Table 13-1, that mitigations to address this have been considered. However, a pre-construction compass deviation study may still be required on the expected electro-magnetic field. Should this go ahead, we would be willing to accept a three-degree deviation for 95% of the cable route. For the remaining 5% of the cable route no more than five-degree deviation will be attained. If this requirement cannot be met, further mitigation measures may be required including a post installation deviation survey of the cable route. This data must then be provided to the MCA and UKHO, as a precautionary notation may be required on the appropriate Admiralty Charts regarding possible magnetic anomalies along the cable route. The MMO requests that this detail is identified and agreed during examination so this can

be set out within the DMLs.

1.8 National Federation of Fisherman's Organisations (NFFO) (RR-034)

1.8.1 The MMO maintains a watching brief on the response from this Interested Party (IP).

1.9 Natural England (NE) (RR-039)

1.9.1 The MMO notes and supports Natural England's (NE) concerns regarding indirect effects on seabirds and marine mammals with regards to lack of assessments on prey abundance and distribution within the foraging areas of Annex I and Annex II species from designated sites.

1.9.2 The MMO notes and supports NE's concerns regarding the lack of robustness in consideration of ornithology impacts in the Applicants designing of the post-Preliminary Environmental Information Report (PEIR) reductions of the array areas.

1.9.3 The MMO notes NE's advice that baseline wave condition modelling should be updated to reflect the design parameters of the project being applied for.

1.9.4 The MMO notes NE's advice that Dobber Bank SAC should be included as a receptor in the Marine Physical Environmental EIA.

1.9.5 The MMO notes NE's advice that Dogger Bank D should be included in the in-combination assessment for impacts to Spurn Point.

1.9.6 The MMO notes NE advice that the worst-case predictions values for suspended sediment concentrations arising from the ECC should be updated in the EIA and/or RIAA

1.9.7 The MMO notes and supports NE's concerns that levels of compensation cannot be agreed until adequate impact assessments have been provided in line with Statutory nature conservation bodies (SNCB) advice. Additionally, the MMO supports that feasibility assessments for the predator eradication for guillemot and razorbill shortlisted should be provided as a matter of urgency.

1.9.8 The MMO notes NE's concerns that the construction and operation of DBS OWF will adversely affect the extent and distribution of Dobber Bank SAC Annex 1 sandbank features which would further hinder the restore objective.

1.9.9 The MMO note NE's comments that clarity is required on the use of cable protection at the Horizontal Direction Drilling (HDD) exit pits on the nearshore and clarification on the worst-case scenario in relation to landfall works (e.g. cofferdam usage).

1.9.10 The MMO notes NE's concerns that the conservation objectives for the Holderness Inshore MCZ would be hindered regarding cable protection being placed on the nearshore causing permanent disruption to nearshore and longshore sediment transport on the Holderness Coast and impact features of the Holderness Inshore MCZ, the Humber Estuary SAC and Smithic Bank.

1.9.11 The MMO notes NE's concerns the presence of cable protection measures on Dogger Bank may modify the hydrodynamic regime and further justification is needed for the volumes of predicted external cable protection within Dobber Bank SAC.

1.9.12 The MMO notes NE's concerns regarding Flamborough Front and that the Applicant should monitor potential changes to stratification, currents and primary productivity during pre-construction, post construction and the lifetime of the projects.

1.9.13 The MMO notes NE's concerns regarding a lack of commitment to the removal of cable/scour protection during decommissioning and that the worst-case scenario

should assess the impacts of leaving assets in situ if the DCO does not commit to removing them.

1.9.14 The MMO notes NE's advice that disposal options are explored to ensure sediment is deposited in similar sediment types.

1.9.15 We have reviewed and acknowledged NE responses and will keep a watching brief and will continue to review during the examination process.

1.10 RSPB (RR-049)

1.10.1 The MMO defers to the Statutory Nature Conservation Body (SNCB) on these matters (NE).

1.11 UK Chamber of Shipping (RR-0052)

1.11.1 The MMO will keep a watching brief on any written representations submitted by the UK Chamber of Shipping.

1.12 The Wildlife Trusts (TWT) (RR-057)

1.12.1 The MMO notes that TWT is still in the process of reviewing the application. The Wildlife Trusts will provide a more detailed view on their position in future deadlines. The MMO will keep a watching brief on any further written representations submitted by TWT.

1.12.2 The MMO notes that TWT only support site extension as compensation for the impacts to the SAC. This is the only measure that will ensure that recovery of Dogger Bank SAC will not be hindered and will meet legal obligations including:

- The coherence of the UK National Sites network, as required under 36 of the Offshore Habitats Regulations
- A well-managed and ecologically coherent network of Marine Protected Areas as required under Section 123 and 126 of the Marine and Coastal Access Act and international agreements such as OSPAR. • Environment Act MPA targets.

To be effective, site extension as a compensation must sit within a wider package of measures including:

- The implementation of the management of activities within any site extension.
- The development and implementation of a Dogger Bank SAC site recovery plan which should include:
 - A moratorium on all future development on Dogger Bank SAC and any site extension in the future. The SAC is in unfavourable condition, has reached carrying capacity and requires space to recover.
 - Enhanced protection to ensure there will not be a chain of compensation requirements in the future

1.12.3 The MMO notes that TWT does not agree with the Applicant's position on no Adverse Effect on Integrity (AEOI) on Dogger Bank SAC due to the impact of physical damage on the subtidal sandbank feature from the Project. The plan level assessment undertaken by The Crown Estate in April 2022 (The Crown Estate, 2022) and signed off by the Secretary of State in July 2022 (DESNZ, 2022) concluded habitat damage of 32.209km² which would delay restoration, which is contrary to the conservation objectives of the SAC

1.12.4 The MMO notes that TWT has an interest in the potential for the project to cause

underwater noise impacts to the Southern North Sea SAC, both alone and in combination with other activities. They will provide further details on this matter at the examination stage. The MMO will keep a watching brief on any written representations submitted by The Wildlife Trusts.

1.13 Yorkshire Wildlife Trust (RR-059)

1.13.1 The MMO will keep a watching brief on any written representations submitted by Yorkshire Wildlife Trust

2. Comments on Pre-Examination Procedural Deadline Submissions

2.1 General Comments

2.1.1 The MMO has reviewed the following documents:

- PDA-013 – The applicants Responses to Relevant Representations Revision 1
- RR-039 – Natural England’s Relevant Representation
- APP-095 - ES Chapter 1 – Marine Mammals
- APP-100 - ES Appendix 11-4 Interim Population Consequence of Disturbance (iPCoD) Modelling
- APP-101 - ES Appendix 11-5 – Cumulative Effects Assessment (CEA) Screening
- AS-028 – 8.24 Outline Offshore Operations and Maintenance Plan (revision 02) (Tracked)
- AS-052 - 6.1 Report to Inform Appropriate Assessment Habitats Regulations Assessment Part 2 of 4 - Annex I Offshore Habitats and Annex II Migratory Fish (Revision 3) (Tracked)
- AS-056 - 7.11.11.6 Environmental Statement Appendix 11-6 Unexploded Ordnance Clearance Information and Assessment (Revision 2) (Tracked)
- AS-081 - 8.27 Outline Scour Protection Plan (Revision 2) (Tracked)
- AS-083 - 8.28 Outline Fisheries Liaison and Co-existence Plan (Revision 2) (Tracked)
- AS-101 - 8.25 Outline Marine Mammal Mitigation Protocol (Revision 2) (Tracked)
- AS-103 – 8.26 In Principle Site Integrity Plan for the Southern North Sea Special Area of Conservation (Revision 2) (tracked)
- AS-104 - 10.38 Benthic Ecology Technical Note (Revision 1)
- AS-105 - 10.41 Heat Mapping Report: Atlantic Herring and Sandeel (Revision 1)
- AS-142 Appendix A Fish and Shellfish Ecology Environmental Statement
- AS-143 Appendix B Marine Mammal Environmental Statement Update
- AS-144 - Appendix C Marine Mammal Report to Inform Appropriate Assessment

Update

- AS-136 - 7.8.8.3 – Appendix 8-3 Marine Physical Process Modelling Technical Report
- AS-138 - 7.11.11.3 Appendix 11-3 Underwater Noise Modelling Report (revision 2)
- AS-140 - 7.11.11.4 Appendix 11-4 Interim Population Consequence of Disturbance iPCoD Modelling (Revision 2) (Tracked)

2.1.2 AS-052, AS-105 and AS-142 are still being reviewed and a response will be provided in Deadline 2

2.2 Benthic Ecology

2.2.1 The MMO notes that the Applicant confirms in Table 4.6.1 Section RR-030: 5.4.2 of the responses to relevant representations that suitable pre-construction surveys will inform appropriate micro-siting project infrastructure around Annex I / UK Biodiversity Action Plan (BAP) Priority Habitats.

2.2.2 The MMO understands that details of post-construction monitoring will be confirmed based on results of the pre-construction survey. Currently, the proposed strategy will be to repeat the pre-construction sampling (i.e. revisit the same location pre- and post-construction). However, the Applicant will take an adaptive approach to sampling effort and duration of the monitoring required. The MMO welcomes this commitment and notes that development of a suitable design to objectively monitor potential changes in e.g., the condition or extent of Annex I reef, must be completed prior to construction activities to correctly attribute any observed changes to the proposed development.

2.2.3 Statutory advice regarding compensation measures, as well as designated features and sites, is provided by the relevant Statutory Nature Conservation Body. The MMO defers to their expertise and recommendations on these matters.

2.2.4 The MMO also has comments held within Annex 1: Table 1: Points: 29, 82-85 which relate to Benthic Ecology.

2.3 Coastal processes

2.3.1 The MMO notes that NE has suggested that the need for 10% of cumulative cable length to be protected within the nearshore zones could be reduced and named examples from Northern Endurance Partnership and Hornsea Project Four where this has been done successfully. The MMO agrees that the cable protection should be reduced as much as possible to prevent any disruption within the nearshore zone. It has also been suggested that beach profile change monitoring should be undertaken regardless of the location of the trenchless technique to confirm beach recovery and monitor cable burial success. The MMO also agrees that this should be undertaken.

2.3.2 The MMO notes that originally re-powering was discussed in Chapter 5 of the ES, where it states that this may be considered at or near the end of the design life of the Project. The MMO agrees that if the re-powering were to be considered an option for this site at decommissioning that further consent or new EIA would be necessary even with similar design scenarios. This is because in 30 years' time, the baseline conditions may differ significantly and there may be new projects which are causing cumulative impacts on the area which will have not been considered within this ES. Also, the impacts of the updated turbines/engineering involved in a re-powering project over the new lifespan would not have been considered within this project ES. This should be committed to within the Application documents.

2.3.3 Re-powering was not discussed further within the Marine Physical Environment

chapter in decommissioning discussions and only discussion of the removal of wind turbine components and structures was mentioned. The MMO requests that mention of possibility for structures to be left in as a re-powering project would be beneficial for clarity. However, impacts should be properly assessed in an updated EIA over the lifetime of the project.

2.3.4 The MMO acknowledges the Applicants response in Table 4.6.1 Section RR-030 in 5.2.2 and 5.2.3. However more consideration is needed following the 30 -year lifespan of the project and how the changes of sediment gradients might change the baseline at the end of the project. The sediment gradients have been discussed in terms of the array area and the possibility of a potential of accretion of the seabed in the south with erosion of the seabed in the north of the area. Small changes such as these in this area could have the potential to have a wider impact over 30-year span to seabed features.

2.3.5 The MMO notes that the changes have been summarised by the Applicant in 3.1 of the Project Change Request as “The proposed changes would reduce the worst-case parameters assessed for Chapter 8 Marine Physical Environment. However, the extent of the reduction does not result in any changes to the outcomes of the original assessment presented within Chapter 8.”

2.3.6 The MMO notes that the modelling report has been changed for gravity base structure foundations and reduction of offshore platforms. However, in Section 8.3.4.2 (Construction activities and Sediment release) of the modelling document; the tables haven't been updated accordingly to the new array and inter-platform cabling lengths. The MMO requests clarity on why these aspects haven't been updated within the report?

2.3.7 The MMO also has comments within Annex 1: Table 1: Points: 70-75 which relate to Coastal Processes.

2.4 Fisheries and Shellfisheries

2.4.1 The MMO will provide a response at Deadline two or three for comments relating to Fisheries and Shellfish.

2.5 Underwater Noise

2.5.1 The MMO acknowledges the Applicant's process of preparing a change request relating to the relevant design parameters (Change Notification Letter - application reference 10.2) in relation to the removal of an intertidal HDD exit from the Projects Design Envelope, the removal of all platforms from the Offshore Export Cable Corridor, reductions in the numbers of platforms in the Array Areas and overall reductions in cable lengths within the Array Areas. The MMO notes that the DML conditions will be updated to address concerns if the Applicant's change request is accepted by the ExA.

2.5.2 The MMO acknowledges the Applicant's commitment to undertake underwater noise monitoring of the first four piles of each piled foundation type and that monitoring locations would be confirmed within post-consent monitoring plans that will be submitted prior to the commencement of piling. The MMO will review the post-consent monitoring plans and provide comments in due course.

2.5.3 The MMO acknowledges that Appendix 11-6 Unexploded Ordnance Clearance Information and Assessment (APP-102) will be updated with regards to potential mitigation options, including noise abatement systems (NAS) and the MMO will review

when this is available.

- 2.5.4 The MMO welcomes the Applicant's clarification on the columns presented in Table 11-6-3 of Appendix 11-6 Unexploded Ordnance Clearance Information and Assessment [APP-102].
- 2.5.5 The MMO acknowledges the incorrect referral to Table 11-6-5 of Appendix 11-6 Unexploded Ordnance Clearance Information and Assessment (APP-102) and the correct table is 11-6-6. The MMO welcomes that this report will be updated.
- 2.5.6 The MMO welcomes that the Applicant will update Table 6-9 within Appendix 11-3 Underwater Noise Modelling Report [APP-099] with the correct source level for low yield.
- 2.5.7 The MMO acknowledges that Table 4-2 of Appendix 11-3 Underwater Noise Modelling Report [APP-099] will be revised to be "7,500 strikes over 6 hours 20 mins per pile".
- 2.5.8 The MMO acknowledges the Applicant's response in Table 4.6.1 Section RR-030 5.7.5 with regards to the von Pein et al. (2022) study. However, the MMO considers that it is important to highlight recent and relevant findings from the peer-reviewed literature. The MMO highlights that when comparing the noise levels corresponding to strikes of different energies, it is essential to keep all the other relevant parameters (e.g., penetration depth, water depth) constant, and to refer to the same piling location and piling sequence, otherwise the change in noise levels will be determined by multiple other factors, not only the change in hammer strike energy. The MMO understands that the measurement data in von Pein et al. is intended only as an overall, statistical validation of scaling laws and is not suitable for deriving empirical trends directly from observation, such as the differences between the 3.5 metres (m) vs the 7.8 m piles or the apparent trend reversal at larger pile diameters. Establishing such trend details with any confidence directly from the measurements would require much more comprehensive datasets.
- 2.5.9 The MMO acknowledges that the validation of the von Pein et al. scaling laws is limited to observations of piles measuring up to 8.1 m diameter (while for the FEM models the upper limit was 12 m). Extrapolating this law to piles of 15 m would indicate an increase of 9-10 decibels (dB) in noise levels, compared to 4 m pile (however, this increase is about 4.5 dB when compared to an 8 m pile and only 1.5 dB over a 12 m pile). The MMO notes that Subacoustech's research indicates that pile diameter, although contributory, has a relatively small effect on noise emission. However, the MMO understands the details of this research has not been disclosed to the scientific community, while the currently available observational datasets do not extend to the pile diameter values anticipated for this development.
- 2.5.10 The MMO notes the study of von Pein et al. acknowledges the various limitations of their modelling and analysis (including limitations of the available validation datasets). However, the MMO highlighted this study as the potential implications of diameter scaling law on the modelling predictions and the magnitude of their impacts can be quite considerable. The MMO requests that this is updated.
- 2.5.11 The MMO thanks the Applicant for the clarification regarding Table 4.6.1 Section RR-030 5.7.7 on single/monopile installation in the Offshore Export Cable Corridor and the potential impact to grey seals. The MMO notes that the potential effects of underwater noise will be reassessed in the Request for Design Change – Environmental Assessment Update document and submitted during Examination.
- 2.5.12 The MMO acknowledges the comment by the Applicant in Table 4.6.1 Section RR-

030 5.7.8 and welcomes that large ranges will be monitored to test the validity of the underwater noise modelling in regards to Multi-leg foundations.

- 2.5.13 The MMO welcomes the Applicant's comments in Table 4.6.1 Section RR-030 5.7.9 that the In Principle Monitoring Plan will be updated in future revisions in regards to monitoring at large ranges during the construction phase would be required to validate any predictions from the underwater noise modelling presented in Appendix 11- 3.
- 2.5.14 The MMO acknowledges the Applicant's response in Table 4.6.1 Section RR-030 5.7.10 that the underwater noise modelling includes the Projects worst case scenarios without mitigation, which the MMO considers appropriate. However, alongside the worst-case modelling, the MMO requests modelling the effect of noise abatement technologies, so that the MMO and other regulators are informed of the risk reduction options available. This is particularly important for the assessment of cumulative impact from multiple activities, where the MMO and other regulators need to be informed of the measures available to reduce cumulative risk for specific populations and habitats.
- 2.5.15 The MMO acknowledges the Applicant's response in Table 4.6.1 Section RR-030 5.7.19 that they will be considering additional mitigation methods such as NAS to reduce the impact area and NAS is being included within the Projects' procurement strategy as an optional element to allow it to be called upon should it be required based on the final design parameters. The MMO considers that the Applicant should be considering NAS at the earliest opportunity.
- 2.5.16 The MMO notes the Applicant's response in Table 4.6.1 Section RR-030 5.7.20 that the Applicant's are considering additional mitigation methods, such as NAS, that are listed in the Outline MMMP [APP-249] and in the In Principle SIP for the SNS SAC [APP-250], should this be required once the final project design is available post-consent. Additionally, NAS is being included within the Projects' procurement strategy as an optional element to allow it to be called upon should it be required based on the final design parameters. The MMO notes that the Applicant plans to make amendments to the MMMP and therefore will keep a watching brief on NAS updates.
- 2.5.17 The MMO notes the Applicant has stated in Annex 1, Table 1 point 132 that changes will be made to Peak Sound Pressure Level (SPL_{peak}) source level as it should have been 273.4 dB and not 281.9dB based on a charge weight of 0.75 kilograms (kg). Along with the single strike Sound Exposure Level (SEL_{ss}) source level is also incorrect.
- 2.5.18 The MMO notes that Table 11-6-5 and Table 11-6-6 have been updated to include the predicted Permanent Threshold Shift (PTS) and TTS impact ranges for low yield for each marine mammal species considered. The predicted ranges appear somewhat larger than anticipated. Although this is not a significant issue as the ranges are overestimates rather than underestimates and thus more precautionary, the Applicant should review these values for accuracy. Please see Annex 1, Table 1, Point 132 as the Applicant states this will be updated and the MMO will keep a watching brief on this.
- 2.5.19 The MMO did previously highlight that the impact ranges presented for both monopile and pin pile foundations are significant, and the risk of potential impact is not going to be sufficiently mitigated using the standard measures that are typically employed (i.e., ADDs). At this stage in the process, and considering the sizable predictions, it is somewhat disappointing to see that no modelling has been presented to show the effect of noise abatement technologies (i.e., bubble curtains). This comment still

stands.

2.5.20 The MMO defers to NE for comments on the iPCoD modelling as well as for the information presented in Appendix C Marine Mammal Report to Inform Appropriate Assessment (RIAA).

2.6 Outline Marine Mammal Mitigation Protocol (MMMP) – AS-101

2.6.1 The MMO notes that Table 11-6-5 and Table 11-6-6 have been updated to include the predicted PTS and TTS impact ranges for low yield for each marine mammal species considered. The predicted ranges appear somewhat larger than anticipated. Although this is not a significant issue as the ranges are overestimates rather than underestimates and thus more precautionary, the Applicant should review these values for accuracy.

2.6.2 The MMO notes that the Applicant is updating the MMMP with regards to noise mitigation and piling. The MMO will keep a watching brief on this. Please see Annex 1, Table 1, Points 64-68 for more information.

2.7 Dogger Bank South Compensation Plans

2.7.1 The MMO generally defers to NE as the SNCB in relation to compensation. The MMO agrees in principle with 6.1.1 (APP-049) that individual projects requiring compensation where ecologically feasible compensation can only be delivered strategically or those requiring measures under development should have clarity on the process of quantifying the respective compensation required for each project.

2.7.2 6.1 (APP-048) sets out a reasonable methodology for quantifying an appropriate allocation however, 6.1 does not take into consideration the bounds and caveats of strategic compensation measures in development, notably Marine Protected Area designations/extensions particularly with regard to the cost implications setting compensation levels may bring. The logic set out in 6.1 may not be (depending on the development pathway of strategic compensation measures) directly applicable as written, should the selected compensation measure be required to meet certain criteria for ecological, economic, practicable, legal purposes that would necessarily enlarge the total compensation delivered. Figure 6.1 may therefore need to be amended to accommodate implications of (as yet unknown) criteria necessary to ensure practicable implementation of strategic compensation measures.

2.7.3 It is acknowledged that paragraph 6.1.2 (APP-050) references the methodology's intention to 'enable an adaptable approach to accommodate the compensation measures that is/are ultimately implemented'. The MMO takes it that this statement ensures the proposed methodology is not restrictive to accommodating such amendments. The need for government led agreement on how to share costs across multiple projects referenced at the end of 9.2.1 further confirms the MMO's reading of this statement.

2.7.4 *"Any such additional monitoring, should be appropriate to the monitoring of similar habitats within the MPA network"*. The MMO suggests this sentence is amended to accommodate reasonable strategic monitoring requirements that may be requested in support of strategic compensation implementation.

2.8 Outline Project Environmental Management Plan – Volume 8.21 – APP-245

2.8.1 The MMO notes that the onshore works have an invasive species management plan. The MMO understands invasive species management measures for the offshore works will be secured within the Project Environment Management Plan (PEMP) and Marine

Pollution Contingency Plan (MPCP) and welcomes this approach

- 2.8.2 The MMO requests a Legislative and Regulatory Compliance section is included within the document.
- 2.8.3 The MMO notes the Applicant has not committed to the check clean dry practice within section 6.3 - Invasive non native species. The MMO request the Applicant follows this procedure as best practice and this should be within the document.
- 2.8.4 Section 6.4.1 - Vessel good practice – the MMO notes that this is set out as best practice. The MMO understands flexibility is required in case of emergency issues but this is standard and the commitment should be more than “*where possible*”.
- 2.8.5 The Applicant has stated that designated members of the project team and the regulation must review the dropped object procedure before contractors may begin works. The MMO agrees with this.
- 2.8.6 The MMO notes section 1.4 Review process states that the ‘Outline PEMP will be formally reviewed and updated at least three months prior to construction commencing and the final version will be submitted to the MMO for approval. It will also be reviewed within three months of any significant changes. Significant changes may include:
- Progression of the Project(s) into the operation and maintenance or decommissioning phases;
 - Changes in roles and responsibilities of the Project Team;
 - Changes in legislative or other requirements; and
 - Changes to processes within the Projects’ EMS or associated parent documentation’

The MMO requests the PEMP is submitted at least 6 months prior to construction commencing.

The MMO also requests the wording above is updated to clarify the document will be updated and submitted to the MMO to approve any changes. All plans associated with the project must be up to date at the post consent stage to ensure the compliance team have the most up to date plans when conducting inspections.

2.9 Outline Scour Protection Plan – Volume 8.27 – APP-251

- 2.9.1 The MMO notes that the Applicant plans to update the Outline Scour Protection Plan for Deadline 2. The MMO plans to review the updated document and provide comments.
- 2.9.2 The MMO notes that the DCO permits the use of “*cable protection measures such as the placement of rock and/or concrete mattresses, with or without frond devices;*” (Work No 9A- B). Frond lines may be secured to a polyester webbing and whilst frond mats installed in the North Sea in 1984 remain in place today and have required no maintenance since being deployed, these are plastics. In addition, in Schedule 10 - 14 (Marine Licence 1-5) section 4, the substances and objects authorised for deposit at sea are - (g) plastics and synthetic material and (k) marine coatings, other chemicals and timber. Therefore, the Applicant should consider the risks of placing plastic infrastructure into the marine environment, should they degrade. This should be discussed in the Outline Scour Protection Plan (document 8.26).
- 2.9.3 The MMO notes the document is titled Outline Scour Protection Plan. However, within section 1.1 purpose of the document it states ‘This Outline Scour Protection and Cable

Protection Plan'. The document does not go into detail regarding the cable protection plan therefore the MMO requests clarity on the contents of the report. If cable protection is intended to be within this report a separate subheading should be added to separate the cable protection from the scour protection comments.

- 2.9.4 The MMO requests that a table outline the impacts to the presence of scour and cable protection is provided signposting where this has been assessed within the ES. Please see Norfolk Boreas Scour Protection and Cable Protection Plan as an example.
- 2.9.5 Please also include a description of the DML conditions that are linked to this plan or are related to any known cable protection/scour protection mitigation measures secured as a condition.
- 2.9.6 The MMO requests that a map of the project area is added to the outline plan and a commitment to include a map of the proposed scour (and if applicable cable protection) is provided in the final plan.
- 2.9.7 The MMO notes the Applicant has provided maximum parameters for the scour protection which is welcomed and noted that scour protection may be required. It would be beneficial if a high-level summary of the instances when scour protection is expected to be needed is provided.

3. Initial Statements of Common Ground (SoCG)

- 3.1.1 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 outside of the written process to ensure issues are being moved to resolution where possible.

4. Comments from Issue Specific Hearing 1 (ISH1) & ISH2

- 4.1.1 The MMO has reviewed EV4-003 Action Points from ISH1 (Day 1) held on Wednesday 15 January 2025 and will maintain a watching brief on Action Point 22.
- 4.1.2 The MMO has reviewed EV5-003 Action Points from ISH2 (Day 1) held on Wednesday 15 January 2025 and has the provided comments below.
- 4.1.3 The MMO has reviewed EV5-009 Recording of ISH2 - Session 3 - 15 January 2025 and EV5-010 Transcript of ISH2 - Session 3 - 15 January 2025 and notes the ExA has points in which require MMO comments. The MMO notes that Action Points 29, 30, 33 and 35 all relate to the following agenda item:

8. Underwater noise

8.1 Maximum hammer energies, noise abatement systems, the Marine Mammal Mitigation Protocol and the Site Integrity Plan.

8.2 Worst case piling scenario.

8.3 HRA assessment conclusions for Southern North Sea (SNS) Special Area of Conservation (SAC), Humber Estuary SAC and Berwickshire North Northumberland Coast SAC.

The MMO will take each topic in turn to answer action points directed to the MMO (30, 33 and 35).

Action Point 29 - Maximum hammer energies

- 4.1.4 The MMO notes that the ExA queried the 6000 kilojoule (kJ) maximum hammer energy for hammer piling with the Applicant and that this is higher than similar projects within the area. The MMO understands Dogger Bank A, B, C have a hammer energy of 4000

kJ and Norfolk Boreas and Vanguard has a hammer energy of 5000 kJ. The MMO also notes that Outer Dowsing is proposing 6500kJ.

- 4.1.5 The MMO notes that the maximum hammer energies are stipulated within the DMLs (Condition 15(7)) and should the noise monitoring set out in Condition 21 shows a breach above the hammer energy or that the worst case piles that may be yet to be completed would breach the maximum hammer energy then the MMO would look to do a compliance check and potentially stop the works until the MMO was content the works would be under the maximum hammer energy. If this was not possible then the Applicant would require a variation to the DCO/DML to allow a higher hammer energy. The MMO notes the Applicant is providing more information and will review these comments and provide a response at Deadline 2.

Noise abatement systems

- 4.1.6 The MMO believes NAS should be considered as standard to reduce noise at source. If NAS is to be used then this commitment should be on the DML and not within a plan (MMMP or SIP). There should also be stronger wording within the plans in relation to the procurement and availability of NAS and that this would not stop the use of NAS at the post consent stage. The MMO understands the Applicant is providing more information on the use of NAS at Deadline 1, the MMO will review these comments and provide a response at Deadline 2.
- 4.1.7 The MMO highlights to the Applicant and ExA that the Department for Environment Food and Rural Affairs (DEFRA) has issued a policy on reducing noise at source. This policy can be found at this web address:

[Reducing marine noise - GOV.UK.](#)

The MMO will submit a PDF version of the webpage at Deadline 2 if this is not submitted by NE or the Applicant at Deadline 1. The MMO would like to understand the Applicant's position on Noise Abatement Systems on the back of reviewing the published policy and the MMO will provide further comments in response to this.

MMMP & SIP

- 4.1.8 Please find comments on the MMMP in Annex 1, Table 1, points 66-70. The MMO will review any changes to these documents on the back of the DEFRA policy.

Worst case piling scenario

- 4.1.9 The MMO will review the Applicant's comments in relation to the worst case piling scenario. The MMO supports NE's comments.

HRA assessment conclusions

- 4.1.10 The MMO defers to NE in relation to the HRA conclusions. The MMO would highlight that for the SNS SAC the in combination is managed through the SNS SAC SIP. The MMO would highlight that without NAS it is getting increasingly difficult for the MMO to manage noise at the post consent stage and would request NAS is included at this stage.

5. Response to Applicants responsible to Relevant rep (PDA-013 and AS-048)

5.1.1 All comments are provided in Table 1 of Annex 1.

6. Remaining DCO/DML comments not agreed with Applicant

6.1.1 The MMO is currently reviewing the most recent version of the draft DCO and will provide a response at Deadline 2.

7. Notification by Statutory Parties of their wish to be considered as an IP by the ExA

7.1.1 The MMO wishes to be considered as an interested party by the ExA.

8. Notification of wish to have future correspondence received electronically

8.1.1 The following people request future correspondence to be received electronically:

██████████@marinemanagement.org.uk

██████████@marinemanagement.org.uk

██████████@marinemanagement.org.uk

Yours Sincerely,

██

Leah Cameron
Marine Licencing Case Officer

Enclosed: Annex 1

Annex 1

Table 1 – MMO Comments to Applicant’s Response to Relevant Representations

Benth	Applicant reference	Relevant representation comment	Applicants Response	MMOs Deadline 1 Response
1.	RR-030: 2.1	<p>General comments on the application</p> <p>Marine Policies and Plans The Applicant has provided a compliance assessment table within Volume 8: Policy Compliance Assessment Tables, which show they have had regard to the relevant marine policies and plans. This includes consideration of the National Policy Statements (NPS) for Energy (EN-1), NPS for Renewable Energy Infrastructure (EN-3), NPS for Electricity Networks Infrastructure (EN-5), and the East Inshore and Offshore Marine Plans, and the Northeast Inshore and Offshore Marine Plan.</p>	No response is required.	No response is required.
2.	RR-030: 3.1	<p>Development Consent Order (DCO) and Deemed Marine Licenses (DMLs) -APP-027</p> <p>Draft Development Consent Order- Major Comments The MMO has reviewed the draft DCO and provided detailed comments below and in Table 1 below.</p>	The Applicants have responded to the detailed comments below. See RR-030: 3.11 and Table 4.6.2.	The MMO notes the Applicant’s response and will provide an update at Deadline 2.
3.	RR-030: 3.2.1	<p>Unexploded Ordnance (UXO) The MMO welcomes the Applicant's commitment in 'Chapter 5- Project Description' to apply for a marine licence post-consent for UXO investigation and clearance. This will ensure appropriate mitigation is in place. The MMO would highlight that there is a requirement for the investigation marine licence to be applied for separately to ensure this</p>	The Applicants acknowledge this comment. Two separate marine licences would be applied for post-consent to allow for the investigation and clearance of any Unexploded Ordnance (UXO).	No response is required.

		information from the investigation is included within the clearance licence.		
4.	RR-030: 3.2.2	Currently the Applicant expects 41UXO clearances to be determined. The Applicant has assessed the impacts of UXO detonation within the ES - '8.29 Unexploded Ordnance (UXO) Risk Management- Potential UXO Predictive Numbers'.	The Applicants acknowledge this comment.	The MMO acknowledges the Applicants comment and will discuss further as part of the Marine Licence Application.
5.	RR-030: 3.2.3	The MMO notes that in Table 11-6-2 of Appendix 11-6 Unexploded Ordnance Clearance information and assessment, it is stated that "Underwater noise monitoring would be undertaken for all UXO clearances following the Protocol for In-Situ Underwater Measurement of Explosive Ordnance Disposal for UXO (National Physical Laboratory, 2020) (if required)". The MMO welcomes the proposal to undertake noise monitoring for all UXO clearance operations, although no further details are provided at this stage. We expect that this will be further discussed in due course.	The Applicants acknowledge this comment. Further discussion with the MMO on this point will occur as part of the marine licence application for UXO clearance during the post-consent phase.	The MMO acknowledges the Applicants comment and will discuss further as part of the Marine Licence Application.
6.	RR-030: 3.3.1	<p>Article 5 Benefit of the Order</p> <p>MMO requests the following sections are removed:</p> <p><i>"[...] (3) Subject to paragraph (6), the undertaker may with the written consent of the Secretary of State and where an agreement has been made in accordance with paragraph (2)(a), transfer to the transferee the whole of any deemed marine licences and such related statutory rights as may be agreed between the undertaker and the transferee, except where paragraph (8) applies, in which case no consent of the Secretary of State is required."</i></p>	<p>For the reasons set out below, the Applicants do not agree with the removal of the parts of Article 5 of the Draft DCO [APP-027] requested by the MMO.</p> <p>Paragraph (14) of Article 5 disapplies sections 72(7) and (8) of the Marine and Coastal Access Act 2009 in relation to a transfer or grant of the benefit of a Deemed Marine Licence (DML). The drafting is based on the Model Provisions and reflects a long- established precedent regarding the transfer of DCO powers and DMLs that has been endorsed by the Secretary of State (SoS) many times, including most recently in the Sheringham Shoal and Dudgeon</p>	The MMO notes the Applicant's response and will provide an update at Deadline 2.

"[...] (6) The Secretary of State must consult the MMO before giving consent to the transfer of the benefit of the whole of any deemed marine licences under paragraph (3)."

"[...] (9) Prior to any transfer or grant under this article taking effect the undertaker must give notice in writing to the Secretary of State, and if such transfer or grant relates to the exercise of powers in their area, to the MMO and the relevant planning authority."

"[...] (14) Section 72(7) and (8) of the 2009 Act do not apply to a transfer of grant of the benefit of the provisions of any deemed marine licences to another person by the undertaker pursuant to an agreement under this article save that the MMO may amend any deemed marine licence granted under Schedule 10 (Marine Licence 1: DBS East Project Offshore Generation - Work Nos. 1A, 4A and 7A), Schedule 11 (Marine Licence 2: DBS West Project Offshore Generation - Work No. 18, 48 and 78), Schedule 12 (Marine Licence 3: DBS East Project Offshore Transmission - Work Nos. 2A, 3A, 5A, 6A, 7A and BA), schedule 13 (Marine Licence 4: DBS West Project Offshore Transmission - Work Nos. 28, 38, 58, 68, 78 and 88), and Schedule 14 (Marine Licence 5: DBS East Project and DBS West Project Offshore Transmission - Work Nos. 5A, 58, 7A and 78) of the Order to correct the name of the undertaker to the name of a transferee or lessee under this article 5 (Benefit of the Order)."

Extensions DCO. Where a transfer of the DML is sought under Article 5, the SoS would consider the appropriateness of the party to whom the transfer or grant is proposed and would also take into account any representations made by the MMO before determining whether to grant consent, noting that Article 5 (paragraphs (6) and (9)) includes provisions requiring notification and consultation with the MMO where a transfer or grant of the benefit of a DML is proposed. From a procedural perspective, it is important that the DCO and any DML can be transferred together using the process set out in Article 5. It is considered important that the timing of any transfer or grant of powers/ authorisations under the DCO and a DML be aligned, as there is considerable overlap between the authorisations and the requirements/conditions. This justifies a departure from the procedure under the Marine and Coastal Access Act 2009. Having deemed the marine licence in the DCO, it is also appropriate that any transfer under the Order include the DML as part of the wider transfer- it is one element of the wider order powers and should not be separated out from the authority to construct, operate and maintain the Nationally Significant Infrastructure Project (NSIP) granted by the Order.

The Planning Act 2008 is clear that marine licences may be deemed in a DCO in appropriate areas (s149A) and that a DCO may include such further provisions ancillary to the operation of that DML (s122(3)), including transfer of the benefit. Section 122(5)(a) and (c)

			<p>set out that a DCO may "apply, modify or exclude a statutory provision which relates to any matter for which provision may be made in the order" or "include any provision that appears to the Secretary of State to be necessary or expedient for giving full effect to any other provision of the order". The ability to transfer a DML is related to the deeming and it is therefore a sensible, expedient part of the wider power to transfer the benefit of the order. Overall, the drafting of this article reflects the equivalent provision in recent offshore wind DCOs including Hornsea Three, Norfolk Boreas, Norfolk Vanguard, East Anglia One North, East Anglia Two, Awel y Mor, Hornsea Four and Sheringham Shoal and Dudgeon Extensions. As noted above, this article is necessary to provide the Applicants with the appropriate commercial freedom to sell or lease the authorised projects while ensuring that the SoS can control such sale or lease through the need to obtain their consent.</p>	
7.	RR-030: 3.4.1	<p>Explanation for the text amendments: Article 5(3) allows for the permanent transfer of the DML with the consent of the Secretary of State (SoS).</p>	The Applicants acknowledge this comment.	No response is required.
8.	RR-030: 3.4.2	<p>The proposed drafting represents a clear departure from the MCAA 2009, which would normally require the licence holder (here "the undertaker") to make an application to the MMO for a licence to be transferred. Instead, this provision operates to make the decision that of the undertaker, with the SoS providing consent to the transfer, rather than the MMO as the regulatory authority for marine licences considering the merits of any application for a transfer.</p>	Please refer to the response to RR-030: 3.3.1 above.	The MMO notes the Applicant's response and will provide an update at Deadline 2.

9.	RR-030: 3-4-3	<p>Article 5(6) is also of concern because there is no obligation for the SoS to take into account the views of the MMO when providing its consent. From a regulatory perspective it is highly irregular that a decision to transfer a licence should not be the decision of the regulatory authority in that area (the MMO).</p>	<p>This drafting follows precedent including the recently made Sheringham Shoal and Dudgeon Extensions Offshore Wind Farm Order 2024, where an almost identical submission was made by the MMO, and the wording of the equivalent article was specifically considered by the SoS. In that case the equivalent article as made (Article 5) provides: "(6)The Secretary of State must consult the MMO before giving consent to the transfer of the benefit of the whole of any deemed marine licences under paragraph (3)."The Applicants accordingly submits that this issue has been considered by the SoS, precedent should be followed and that it is not for the Applicant to impose requirements on the SoS as to how they deal with any views expressed by the MMO. This drafting is well precedented and cannot reasonably be described as 'highly irregular' in the context of offshore wind DCOs. In addition to Sheringham Shoal and Dudgeon Extensions as quoted above, this wording has also been included in multiple offshore wind DCOs, including (as examples and not an exhaustive list) Hornsea Four (Article 5(6)), Hornsea Three (Article 5(6)), East Anglia Three (Article 5(3)) and Galloper (Article 7(2)).</p>	<p>The MMO notes the Applicant's response and will provide an update at Deadline 2.</p>
10.	RR-030: 3.5	<p>Powers already existing to transfer. Article 5(14) explicitly disapplies sections 72(7) and (8) of MCAA 2009, which would otherwise govern these procedures. This conflicts with MMO's stated position that the DML granted under a DCO should be regulated by the provisions of MCAA 2009, and specifically by all provisions of section 72. Section 72(7)(a) permits a licence holder to make an application for a</p>	<p>The Applicants disagree that transfers of the DMLs should be regulated by the provisions of section 72 of the Marine and Coastal Access Act (MCAA) 2009. Where a transfer of a DML is proposed, the SoS would be looking at that in the context of all the provisions of the DCO. There are some Articles and Requirements relating to offshore matters within the DCO which overlap with the DMLs. In that context, it is entirely</p>	<p>The MMO notes the Applicant's response and will provide an update at Deadline 2.</p>

marine licence to be transferred, and where such an application is approved for the MMO to then vary the licence accordingly (s. 72(7)(b)). This power should be retained and used in relation to the DML granted under the DCO.

appropriate that the SoS has the ability to approve the transfer of a DML. Article 5(14) confirms that section 72(7) and (8) (variation, suspension, revocation and transfer) of the 2009 Act does not apply to a transfer of the DMLs falling within Article 5

5. Section 72(7) permits the licensing authority to transfer a marine licence to another person. Section 72(8) provides that "a licence may not be transferred except in accordance with subsection 7". Article 5 however provides for a transfer to take place in a different way to section 72(7). Since Article 5 is different from the precise wording of section 72(7) of the 2009 Act it is necessary to specify that section 72(7) only applies to a transfer not falling within Article 5 in order to enable Article 5 to operate. Without specifying this, Article 5 might be claimed to be inoperative because of adopting a different wording from section 72(7).

The Applicants also note that this approach is aligned with "good practice point 11" in the Planning Inspectorate Advice Note 15: drafting Development Consent Orders (2018), which states that "Applicants should give careful consideration to the terms of the transfer Article they include in their draft DCO so as to ensure that it reflects how they envisage the NSIP being operated post-consent and, if possible, avoid potential inconsistencies between how DCO and DML transfer arrangements would operate." The Applicants' approach is intended to ensure that inconsistencies in the transfer arrangements do not arise.

11.	RR-030: 3.6	<p>Inconsistencies with PINS guidance</p> <p>The wording is inconsistent with the PINS Guidance on how DMLs should operate within a DCO. Advice Note Eleven, Annex B - Marine Management Organisation National Infrastructure Planning (planninginspectorate.gov.uk) provides that where the undertaker chooses to have a marine licence deemed by a DCO, the MMO, "will seek to ensure wherever possible that any deemed licence is generally consistent with those issued independently by the MMO".</p>	<p>The Applicants note the MMO's position but do not agree that the wording is inconsistent with the Planning Inspectorate Advice Note 11: Advice on working with public bodies in the infrastructure planning process, Annex B - MMO (2024). The Applicants note that the Planning Inspectorate Advice Note does not contain language that is absolute and that the advice is qualified by the wording "wherever possible" and "generally". The Applicants submit that the DMLs contained in the Draft DCO [APP-027] are "generally consistent" with those issued independently by the MMO but, for the reasons given above, there is good reason for the transfer provisions in article 5 to depart from the procedure set out in the MCAA 2009. The wording of Article 5 is well-precedented and has been accepted by the SoS many times in the context of offshore wind farm DCOs, most recently in the DCO for Sheringham Shoal and Dudgeon Extensions.</p>	<p>The MMO notes the Applicant's response and will provide an update at Deadline 2.</p>
12.	RR-030: 3.7	<p>Inconsistent with intention of the DCO regime</p> <p>Under the DCO legislative regime, it remains possible for developers (undertakers) to seek consent for a marine licence directly with the MMO (rather than having a DML integrated into the DCO). This flexibility underlines the fact that the DCO process simply integrates the existing mechanism for granting a marine licence. It should not therefore be used as a vehicle to alter or distort established processes and procedures, such as those for the transfer of a marine licence.</p>	<p>The Applicants note the MMO's position but for the reasons set out above, submit that the drafting of Articles and the transfer mechanism provided for the DMLs is appropriate, necessary and has been accepted by the SoS many times.</p>	<p>The MMO notes the Applicant's response and will provide an update at Deadline 2.</p>
13.	RR-030: 3.8	<p>Undermining enforcement capabilities of the MMO</p>	<p>The Planning Act 2008 is clear that marine licences may be deemed in a DCO in appropriate areas (s149A) and that a DCO may</p>	<p>The MMO notes the Applicant's response and will provide an update at Deadline 2.</p>

		<p>Piecemeal changes to aspects of the marine licence regime by way of the DCO can undermine the ability to enforce the marine licence. Under the DCO, it remains the MMO who will be responsible for enforcing marine licences (both deemed or granted independently). It is therefore vital that all marine licences are clear and enforceable. Consistency is a key element in achieving this, and this is best achieved by ensuring that the MMO has full responsibility for the marine licence process.</p>	<p>include such further provisions ancillary to the operation of that DML (s122(3)), including transfer of the benefit. Section 122(5)(a) and (c) set out that a DCO may "apply, modify or exclude a statutory provision which relates to any matter for which provision may be made in the order" or "include any provision that appears to the Secretary of State to be necessary or expedient for giving full effect to any other provision of the order". The ability to transfer a DML is related to the deeming and it is therefore a sensible, expedient part of the wider power to transfer the benefit of the order.</p> <p>The MMO will remain the responsible body for enforcing the DMLs and the transfer provisions in Article 5 do nothing to undermine this position. The drafting of Article 5 is well-precedented and the Applicants submit that therefore it does not represent a piecemeal change to any aspect of the marine licence regime. The drafting of Article 5 is consistent with other comparable offshore wind DCOs; the Applicants are not seeking to introduce new or un-precedented drafting. The Applicants' position is that the provisions of the DMLs are clear and enforceable.</p>	
14.	RR-030: 3.9	<p>Purpose of Secretary of State written consent is unclear.</p> <p>Not only is this unnecessary (given that Parliament has already created a statutory regime for such a process), but it is also unclear what purpose the written consent of the SoS actually serves here.</p> <p>For example:</p>	<p>Where a transfer of the DML is sought under Article 5, the SoS would consider the appropriateness of the party to whom the transfer or grant is proposed and would also take into account any representations made by the MMO before determining whether to grant consent, noting that Article 5 (paragraphs (6) and (9)) includes provisions requiring notification and consultation with the MMO</p>	<p>The MMO notes the Applicant's response and will provide an update at Deadline 2.</p>

		<p>If the intention is for the undertaker to be able to transfer the benefits under the terms of the DCO outside the established procedures under MCAA 2009 (which the MMO opposes), why is it considered necessary or appropriate for the SoS to 'approve' the transfer of the DML (even going so far as to include an obligation to consult the MMO?).</p> <p>It is also unclear what criteria the SoS would be taking in determining whether to approve any transfer, and how this would differ from a consent granted by MMO under MCAA 2009?</p>	<p>where a transfer or grant of the benefit of a DML is proposed. It is for the SoS to determine the criteria that they would take into account when determining whether to approve any transfer.</p> <p>The Applicants submit that the transfer provisions in Articles are necessary and that there are good reasons why any transfer should not be governed by the MCAA 2009, set out above in the response to RR-030: 3.5.</p>	
15.	RR-030: 3.10	<p>Practical concerns</p> <p>It is unclear how the wording would work in practice. It would be necessary to vary the licence to change the details of the licence holder.</p>	<p>As stated above, the drafting of Article 5 is not novel. The approach has been accepted by the SoS on multiple previous occasions and therefore has been deemed to be administratively workable.</p>	<p>The MMO notes the Applicant's response and will provide an update at Deadline 2.</p>
16.		<p>The transfer of the licence would happen first, and then the licence would still need to be varied. After the transfer of the licence, the new licensee would have a marine licence which would still be in the name of the licensee who had transferred the licence. The new licensee would have no authorisation to carry out any acts until the variation had taken place and until the variation had been affected, the old licence holder would remain liable for any actions undertaken.</p> <p>Once again this creates additional confusion and administrative layers in lieu of relying on the existing legislative provisions. The procedure under s. 72 MCAA avoids this issue, which is an additional reason why it is preferred.</p> <p>(a) Because of this confusion and potential duplication, it is the position of the MMO that these provisions should be removed,</p>	<p>Article 14(5) expressly allows the MMO to amend any DML granted under Schedules 10 -14 of the Draft DCO [APP-027] to correct the name of the undertaker to the name of the new transferee or lessee under Article 5.</p> <p>The dual approach of the SoS amending a DCO and the MMO varying any related DML to reflect changes that affect both consents is often relied upon when non- material changes to DCOs and DMLs are made post-consent.</p> <p>For the reasons stated above, the Applicants are of the position that relying on the procedure under section 72 of the MCAA 2009 is not appropriate in the context of any transfer of the DCO and DMLs under Article 5.</p>	<p>The MMO notes the Applicant's response and will provide an update at Deadline 2.</p>

		and that any transfer should be subject to the existing regime under the MCAA 2009, with the decision maker remaining the MMO.		
17.	RR-030: 3.11	<p>Schedule 10-Schedule 14 DMLs</p> <p>3.11.1 The MMO has provided detailed comments in Table 1 below. Please find a summary of the main concerns below.</p> <p>Determination dates: The MMO strongly considers that it is inappropriate to put timeframes on complex technical decisions of this nature. The time it takes the MMO to make such determinations depends on the quality of the application made, the complexity of the issues and the amount of consultation the MMO is required to undertake with other organisations to seek resolutions.</p> <p>3.11.3 The MMO's position remains that it is inappropriate to apply a strict timeframe to the approvals the MMO is required to give under the conditions of the DML, given this would create disparity between licences issued under the DCO process and those issued directly by the MMO, as marine licences issued by the MMO is not subject to set determination periods. This applies for the following conditions:</p> <ul style="list-style-type: none"> • Extension of time Periods (condition 8 on DML 1 and 2, condition 6 on DML 3 and 4 and condition 4 on DML } • Pre-construction plans and documentation (condition 15 on DML 1 and 2, condition 13 on DML 3 and 4 and • condition 11 on DML s) 	<p>3.11.1 The Applicants have responded to the MMO's detailed comments in Table 1 below and</p> <p>3.11.3 The Applicants require certainty that the discharge of conditions under the DMLs will not cause undue delay to the delivery of the Projects. The Applicants note that, whilst the MMO is not subject to set determination periods for the discharge of conditions for marine licences issued by the MMO, the MMO does aim to make a decision on most marine licence applications within 13 weeks of an application being validated. It would therefore seem reasonable that the MMO is able to make a decision on the discharge of conditions within a period double that length. The Applicants therefore submit that six months is a reasonable amount of time for the MMO to determine any approvals sought, noting that the provisions of the DMLs (condition 8 on DML 1 and 2, condition 6 on DML 3 and 4 and condition 4 on DML 5) do allow for an alternative timeframe to be agreed between the MMO and the undertaker, which could be utilised in the unlikely event that six months was not sufficient in individual cases.</p> <p>3.11.4 The Applicants welcome the MMO's confirmation that it does not delay determining whether to grant or refuse such approvals unnecessarily. This supports the Applicants' position that six months should be a sufficient amount of time for such approvals to be considered, noting that an alternative timeframe</p>	The MMO notes the Applicant's response and will provide an update at Deadline 2.

		<ul style="list-style-type: none"> • Site integrity plans (condition 16 on DML 1 and 2 and condition 14 on DML 3 and 4) <p>3.11.4 Whilst the MMO acknowledges that the Applicant may wish to create some certainty around when it can expect the MMO to determine any applications for an approval required under the conditions of a licence, and whilst the MMO acknowledges that delays can be problematic for developers and that they can have financial implications, the MMO stresses that it does not delay determining whether to grant or refuse such approvals unnecessarily. The MMO makes these determinations in as timely a manner as it is able to do so.</p> <p>3.11.5 The MMO's view is that it is for the developer to ensure that it applies for any such approval (with all information required) in sufficient time as to allow the MMO to properly determine whether to grant or refuse the application. The MMO believes that if time scales are included within the DML for plans, then these should be 6 months and not 4 months.</p> <p>3.11.6 However, without prejudice to this position, the MMO is open to discussions on which documents should be 6 months and which documents could be 4 months, in order to take into account the concerns that the Applicant may have.</p>	<p>can be agreed in the unlikely event that six months was not sufficient in individual cases.</p> <p>3.11.2, 3.11.5 and 3.11.6 The Applicants' position is that the submission of certain plans for approval at least four months prior to commencement of operation of licensed activities is appropriate and precedented (for example Hornsea Four and East Anglia One North OWFs). Notwithstanding that, the Applicants welcome that the MMO is open to discussion on this point and will therefore seek to agree the relevant timescales with the MMO and update the Examining Authority (ExA) once those discussions have taken place</p>	
18.	RR-030: 3.12	<p>Definition of maintenance</p> <p>The MMO notes that the works permitted under the definition of 'maintain' are not linked or limited to the Outline Offshore Operations and Maintenance Plan (OOOMP) or those assessed in the ES. The MMO considers that these works</p>	<p>The Applicants do not consider that the wording within the definition of "maintain" in the Draft DCO [APP-027] and in each DML in schedules 10 - 14 of the Draft DCO [APP-027] needs to be updated. The purpose of the Infrastructure Planning (Environmental Impact</p>	<p>The MMO notes the Applicant's response and will provide an update at Deadline 2.</p>

		<p>should be restricted to those that have been assessed and consented and the definition should clearly demonstrate this. This comment also applies to schedules 10-14 (see also MMO's comments on definition of 'maintain' in Table 1, point 5).</p>	<p>Assessment) Regulations 2017 is to identify the likely significant environmental effects that will arise from a project. That facilitates the relevant decision maker making an informed decision on the likely effects of the project before they grant or refuse consent. The detail in an Environmental Statement (ES) is not intended to be wholly prescriptive. That is not how the Environmental Impact Assessment (EIA) regime operates. In undertaking an EIA, a developer has to make certain assumptions about how the project will be undertaken, particularly in respect of the operation and maintenance phase. Key parameters that underpin the assessment will then be included in the terms of the consent granted. Where relevant, these key parameters relating to issues including, but not limited to, numbers of maintenance vessel movements, cable repair quantities, remedial cable protection quantities and number of jack-up activities have been included within the worst case scenario tables across ES chapters and within the assessments of operations and maintenance activities.</p>	
19.	RR-030: 3-13	<p>Decommissioning The Applicant discussed decommissioning with the MMO on 9 August 2024 via email. The Applicant has clarified that decommissioning is not covered by the DMLs as this will be subject to a separate marine licence application at the time of decommissioning. The Applicant has</p>	<p>The Applicants acknowledge this comment and confirms that a draft decommissioning plan would be submitted prior to the construction of the Projects, as presented in Chapters Project Description [APP-071], paragraph 193 "<i>...a draft of which would be submitted prior to the construction of the Projects. The</i></p>	<p>The MMO acknowledges the Applicants comments. The MMO is currently reviewing the requirement for a decommissioning plan within the DML and will provide an update in due course.</p>

		<p>stated that while some DML conditions reference decommissioning, this is to ensure that the project complies with the approved plans/schemes until completion of decommissioning.</p> <p>3.13.2 However, the MMO notes that works cannot commence until the decommissioning plan has been approved by the SoS. 'Offshore decommissioning 7.- (1) No DBS East Project offshore works may commence until a written decommissioning programme in compliance with any notice served upon the undertaker by the Secretary of State pursuant to section 105(2)(a) of the 2004Act has been submitted to the Secretary of State for approval. (2) No DBS West Project offshore works may commence until a written decommissioning programme in compliance with any notice served upon the undertaker by the Secretary of State pursuant to section 105(2) of the 2004Act has been submitted to the Secretary of State for approval'.</p> <p>3.13.3 The MMO is reviewing the decommissioning process and will provide comments in due course</p>	<p><i>decommissioning plan and programme would be updated during the Projects' lifespan in accordance with requirements."</i></p>	
20.	RR-030: 3.14.1	<p>Disposal Sites The MMO notes that the Applicant is proposing five new Disposal Sites (one associated with each DML) (Disposal Site Characterisation Report Figure 3:1). These are the following:</p> <ul style="list-style-type: none"> • East Array Offshore Export Cable Corridor Disposal Site • West Array Offshore Export Cable 	<p>Section 3 (paragraph 25) of the Disposal Site Characterisation Report [APP-242] presents the proposed disposal areas whilst Figure 3-1 displays the five different proposed disposal sites. The Offshore Export Cable Corridor is listed twice as DBS East or DBS West could be developed in isolation. Annex 1 also includes coordinates to delineate the five proposed disposal sites.</p>	<p>The MMO acknowledges the Applicants comment and will provide a response in Deadline 2.</p>

		<p>Corridor Disposal Site</p> <ul style="list-style-type: none"> • DBS East Array Area Disposal Site • DBS West Array Area Disposal Site • Inter-Platform Cable Corridor Disposal Site <p>However, in the main text of the document, the Applicant is proposing only four disposal sites. This should be clarified within the document. The disposal site(s) must also be clearly named within the appropriate DML.</p>	<p>The Applicants will update the appropriate DMLs to add the names of the relevant disposal sites and will submit an updated Draft DCO [APP-027] at Deadline 1.</p>	
21.	RR-030: 3.14.2	<p>The MMO notes that the Applicant intends to dispose of any sediment removed from within the Dogger Bank Special Areas of Conservation (SAC) during construction within the SAC. This is to ensure that no sediment is lost from the sandbank habitat. The MMO welcomes this but has concerns that this will allow sand to be placed on non-sand bank habitat within the SAC and potentially alter features. The MMO requests the condition is updated to state that dredged material is disposed on the same material type. This is to prevent dredged material being deposited on sensitive habitats. The MMO has provided recommended wording below (see condition comments in Table 1, point 77).</p>	<p>Please see the Applicants' response to point 77 in Table 4.6.2.</p>	<p>The MMO acknowledge the Applicant comments and will provide a response in Deadline 2.</p>
22.	RR-030: 3.14.3	<p>The MMO notes that "the disposal of dredged material has the potential to release sediment bound contaminants, such as heavy metals and hydrocarbons into the water column. However, levels of contaminants throughout the Offshore Development Area are generally very low. Elevated levels of arsenic, which are typical of the region, have been recorded at some locations, however regional information available indicates that these levels are below the range identified as being typical for the area and they are not at concentrations considered</p>	<p>The Applicants acknowledge this comment and welcome MMO's agreement.</p>	<p>No response required.</p>

		to pose an unacceptable risk to the marine environment". The characterisation report is therefore sufficient to designate the disposal sites.		
23.	RR-030: 3.14.4	The MMO is working to designate the disposal sites and will provide an update in due course.	The Applicants acknowledge this comment.	No response required
24.	RR-030: 3.15	Chemicals in the marine environment The MMO notes that the DCO permits the use of "cable protection measures such as the placement of rock and/or concrete mattresses, with or without frond devices;" (Work No 9A- B). Frond lines may be secured to a polyester webbing and whilst frond mats installed in the North Sea in 1984 remain in place today and have required no maintenance since being deployed, these are plastics. In addition, in Schedule 10 - 14 (Marine Licence 1-5) section 4, the substances and objects authorised for deposit at sea are - (g) plastics and synthetic material and (k) marine coatings, other chemicals and timber. Therefore, the Applicant should consider the risks of placing plastic infrastructure into the marine environment, should they degrade. This should be discussed in the Outline Scour Protection Plan (document 8.26).	The Applicants acknowledge this request and will update the Outline Scour Protection Plan [APP-251] in line with the request for Deadline 2.	The MMO acknowledges the Applicant's comment and will review the updated document and provide a response in Deadline 3.
25.	RR-030: 3.16.1	Drafting Conditions The MMO notes the Applicant has provided a flowchart in the '1.4 Guide to the application' which shows which documents have been submitted as part of this DCO application and which documents will be submitted post-consent. The MMO notes that multiple conditions are linked to the same document.	The Applicants acknowledge this comment. The linkages between multiple documents and multiple conditions is intentional. This reflects the structure of conditions within the DMLs, the documents prepared in support of the DCO application and those intended to be produced in fulfilment of DML conditions in due course.	The MMO acknowledges the Applicant's comment.

26.	RR-030: 3.16.2	All conditions should clearly refer to the 'deemed marine licence' not the 'marine licence' to ensure accuracy.	The Applicants will review the terminology used in the Draft DCO [APP-027] and submit an updated Draft DCO [APP-027] for Deadline 1.	The MMO acknowledges the Applicants comment and will provide a response in Deadline 2.
27.	RR-030: 3-16.3	The Applicant should ensure all references in conditions link to the correct section as there are multiple numbering errors.	The Applicants will review and update where necessary the cross-references in the conditions of the DMLs and submit an updated Draft DCO [APP-027] for Deadline 1.	The MMO acknowledges the Applicants comment and will provide a response in Deadline 2.
28.	RR-030: 3.16.4	<p>The MMO notes that while the Applicant has provided design parameter conditions for each DML, some of the key design parameters are not included. This includes:</p> <ul style="list-style-type: none"> • The maximum number of piles, per day and per project and for both projects combined and separately (this should not exceed the overall total for the entire project assessed within the ES). • The maximum hammer energy for both pin pile and mono pile respectively. • The maximum dredge depth. • The maximum dredge volume per DML (this should not exceed the overall total for the entire project assessed within the ES); and • The maximum disposal volume per DML (this should not exceed the overall total for the entire project assessed within the ES). • All the maximum design parameters for the marine licensable activities must be clearly stated within the DML conditions. 	The Applicants acknowledge this comment and will make appropriate updates to the DMLs to reflect the comments made by the MMO and submit an updated Draft DCO [APP-027] for Deadline 1.	The MMO acknowledges the Applicant's comment and will provide a response in Deadline 2.
29.	RR-030: 3-16.5	<p>Invasive Species Management</p> <p>The MMO notes that OWF projects present potential vectors and stepping stones to other offshore infrastructure and the coast. The MMO advise that monitoring of non-native invasive species (NIS) is undertaken to manage colonisation of infrastructure during the</p>	Through the employment of biosecurity measures embedded into the Projects' design (as detailed in Table 9-3 of Chapter g Benthic and Intertidal Ecology [APP- 085]), the potential for the spread and colonisation of non-native invasive species (NIS) will be negligible. As such the Applicants believe that monitoring of	The MMO is reviewing this comment and will provide an update in due course.

		operation lifetime.	NIS during the operational stages of the Projects is not required.	
30.	RR-030: 3.16.6	The MMO notes that the onshore works have an invasive species management plan. The MMO understands invasive species management measures for the offshore works will be secured within the Project Environment Management Plan (PEMP) and Marine Pollution Contingency Plan (MPCP) and welcomes this approach.	The Applicants welcome agreement from the MMO on this approach.	No response required
31.	RR-030: 3.17	<p>Additional Conditions Reporting of impact pile driving</p> <p>To comply with UK requirements on noise reporting, the MMO requests this condition is added to both Schedule 10, Schedule 11, Schedule 121 and Schedule 132.</p> <p>"25.-(1) Only when driven or part-driven pile foundations are proposed to be used as part of the foundation installation the undertaker must provide the following information to the Marine Noise Registry-</p> <ul style="list-style-type: none"> (a) prior to the commencement of each stage of construction of the licensed activities, information on the expected location, start and end dates of impact pile driving to satisfy the Marine Noise Registry's Forward Look requirements: (b) at six-month intervals following the commencement of pile driving or by 25 March for works which take place in the preceding year January to December (whichever is earlier), information on the locations and dates of impact pile driving to satisfy the Marine Noise 	The Applicants acknowledge this comment and will make appropriate updates to the DMLs to reflect the comments made by the MMO and submit an updated Draft DCO [APP-027] for Deadline 1.	<p>The MMO welcomes the Applicant providing updates to the DML. The MMO has made further updates to the condition on the back of discussions with JNCC and updates to the marine noise registry. Please can the condition be updated to:</p> <p><i>"25.-(1) In the event that driven or part-driven pile foundations are proposed to be used as part of the foundation installation the undertaker must provide the following information to the Marine Noise Registry—</i></p> <ul style="list-style-type: none"> <i>(a) no less than six months prior to the commencement of each stage of construction of the licensed activities, information on the expected location, start and end dates of impact pile driving to satisfy the Marine Noise Registry's Forward Look requirements,</i> <i>(b) within two weeks after commencement of each stage of construction of the licensed activities, information on the location, start and end dates of impact pile driving to satisfy the Marine Noise Registry's Forward Look requirements;</i>

		<p>Registry's Close Out requirements; and (c) within 12 weeks of completion of impact pile driving or by 25 March for works which take place in the preceding year January to December (whichever is earlier), information on the locations and dates of impact pile driving to satisfy the Marine Noise Registry's Close Out requirements.</p> <p>(2) The undertaker must notify the MMO in writing of the successful submission of Forward Look or Close Out data pursuant to paragraph (1) above within seven days of the submission.</p> <p>(3) For the purpose of this condition, "Forward Look" and "Close Out" mean the requirements as set out in the UK Marine Noise Registry Information Document Version 1 (July 2015) as amended, updated, or superseded from time to time."</p>		<p><i>(c) at six month intervals following the commencement of pile driving, information on the locations and dates of impact pile driving to satisfy the Marine Noise Registry's Close Out requirements by 7 April for winter season October – March inclusive and 7 October for summer season April – September inclusive or within 12 weeks of completion of impact pile driving whichever is earlier."</i></p>
32.	RR-030: 3.18	<p>Maintenance reporting To ensure the MMO is able to know the maintenance activities throughout the lifetime of the operation including understanding any impacts, the MMO requests this condition is added to both Schedule 10 -Schedule 14. "26.- (1) An annual maintenance report must be submitted to the MMO in writing within one month following the first anniversary of the date of commencement of operations, and every year thereafter until the permanent cessation of operation. (2)The report must provide a record of the licensed activities as set out in condition 3 during the preceding year, the timing of activities and methodologies used.</p>	<p>The Applicants acknowledge this comment and will make appropriate updates to the DMLs to reflect the comments made by the MMO and submit an updated Draft DCO [APP-027] for Deadline 1.</p>	<p>The MMO acknowledges the Applicant's comment and will review the updates and provide a response in Deadline 2.</p>

		<p>(3) Every fifth year, the undertaker must submit to the MMO in writing, within one month of that date, a consolidated maintenance report, which will-</p> <p>(a) include a review of licensed activities undertaken during the preceding five years with reference to the reports submitted in accordance with condition XX (1) of this licence.</p> <p>(b) reconfirm the applicability of the methodologies and frequencies of the licensable activities permitted by this licence for the remaining duration of this licence.</p>		
33.	RR-030: 3-19	<p>Mitigation - seasonal restrictions To ensure it is clear to all involved, the MMO requests any seasonal restrictions for any activities are clearly conditioned as a stand-alone condition and not within an additional plan.</p>	<p>The Applicants have committed to seasonal restrictions on piling with the Electrical Switching Platform (ESP) search area (being the area shown on the works plans for Work Nos. 6A and 6B). This commitment is secured as standalone conditions 24 in DML3 and DML4 of the Draft DCO [APP-027]. The Applicants do not anticipate any further seasonal restrictions being required, but the MMO's position is noted. If the Applicants do make any additional commitments to seasonal restrictions, these will be included as standalone conditions to the relevant DML(s).</p>	<p>The MMO welcomes the Applicant's commitment to adding standalone seasonal restriction conditions if required.</p>
34.	RR-030: 3.20	<p>Ornithological Monitoring The MMO request a specific ornithological monitoring condition is added to the Deemed Marine Licences. This is to ensure the monitoring report and results are submitted. The MMO note ornithological monitoring is discussed within the Outline In Principle Monitoring Plan.</p>	<p>The Applicants disagree that there is a need for a specific ornithological monitoring condition in the DML as this is already secured through the submission and approval of the construction programme and monitoring plan under the relevant conditions of the DMLs (Draft DCO [APP-027]) (conditions 15(1)(b), 20, 21 and 22 of DMLs 1 and 2; conditions 13(1)(b), 18, 19 and 20 of DMLs 3 and 4; and conditions 11(1)(b), 14, 15 and 16 of DML 5). The construction programme and monitoring plan must accord</p>	<p>The MMO would highlight that a number of projects include Ornithological monitoring as a separate document, this is best practice due to the detailed discussions required. Due to the number of issues raised on ornithology the MMO believes that a separate plan is the best place for ornithological monitoring to be as it enables specific discussions on a complex topic. In addition to this if the</p>

			with the IPMP [APP-247], which includes (at section 1.6.7) outlines of the in-principle monitoring proposed in relation to offshore ornithology. The construction programme and monitoring plan must be submitted to and approved by the MMO.	ornithological discussions are ongoing there could be a delay to the discharge of other monitoring as in the current format there would be no possibility of a phased approach to discharging parts of the IPMP.
35.	RR-030: 3.21.1	<p>Piling Restrictions</p> <p>The MMO request piling restriction conditions are included within the DML 1 (Schedule 10) and DML 2 (Schedule 11). In particular the MMO notes that up to 4 piles within 24 hours will be undertaken across DBS West and DBS East. How does the Applicant intend to split this across the DMLs and ensure that the overall number assessed in the ES is not exceeded?</p>	The Applicants acknowledge this comment and will make appropriate updates to the DMLs to address the concerns raised by the MMO and submit an updated Draft DCO [APP-027] for Deadline 1.	The MMO acknowledges the Applicant's comment and will provide a response in Deadline 2.
36.	RR-030: 3.21.2	The MMO requests that no piling activity within the Offshore Export Cable Corridor (ECC) between the months of August and October is undertaken to mitigate for disturbance to the Banks population of Atlantic herring via impulsive underwater noise impacts. The MMO however note there is already a seasonal piling restriction covering this time period in DML 3 (Schedule 12, Condition 24), DML 4 (Schedule 13, Condition 24).	<p>The Applicants are in the process of preparing a change request relating to the relevant design parameters. The ExA was notified of the Applicants' intention to make this change request on the 8 October 2024 (Change Notification Letter [application reference 10.2]). It is expected that the change request will be submitted in December 2024 following some targeted consultation. The change request relates to the removal of an intertidal HDD exit from the Projects Design Envelope, the removal of all platforms from the Offshore Export Cable Corridor, reductions in the numbers of platforms in the Array Areas and overall reductions in cable lengths within the Array Areas.</p> <p>The change request will be supported by a Request for Design Change - Environmental Assessment Update document which will describe any resultant changes to the assessment conclusions presented in the ES,</p>	The MMO acknowledges the Applicant's comment and will keep a watching brief on this point.

			<p>thus informing a consultation with relevant stakeholders (as agreed by the ExA) as part of the change request process. All the changes are expected to be positive i.e. reducing or removing impacts. The change proposed of relevance to these representations is the removal of all platforms from the Offshore Export Cable Corridor, which would mean that no piling activity will take place within the Offshore Export Cable Corridor.</p> <p>If this request is accepted by the ExA, the Applicants would expect this to address the concern raised by the MMO.</p> <p>Notwithstanding the proposed change, the Applicants do not anticipate any further seasonal restrictions being required, but the MMO's position is noted. If the Applicants do make any additional commitments to seasonal restrictions, these will be included as standalone conditions to the relevant DML(s).</p>	
37.	RR-030: 3.21.3	<p>In addition, given that the ECC route goes through areas of 'high' and 'very high' potential spawning habitat for herring, it is necessary for a temporal restriction to be placed on works which interact with the seabed along the ECC route (including seabed preparatory works, cable trenching etc.) during the Banks herring spawning season (1 August-31 October inclusive). This restriction should apply to both construction and maintenance activities. Activities such as trenching and cable burial cause direct disturbance to the seabed and are likely to cause direct harm to adult herring engaged in spawning, as well as herring eggs and early developmental stage (yolk-sac) larvae. It may be possible for this restriction to be refined spatially given that some areas of</p>	<p>The Applicants welcome the MMO's pragmatism in the potential for the spatial refinement of the proposed temporal restriction. A Heat Mapping Report which will be submitted at Deadline 1, will present an updated heat map using the Kyle-Henney <i>et al.</i> (2024) methodology, and utilise Particle Size Analysis (PSA) data to ground-truth the underlying EMODnet data layers. Areas characterised as unsuitable potential spawning habitat by the PSA data (aligning the Folk classifications with the description of unsuitable habitat in Kyle-Henney <i>et al.</i> (2024) will be deemed as 'not a potential spawning habitat for Atlantic herring'.</p> <p>It is noted that entrainment of adult Atlantic herring is not considered a significant impact</p>	<p>The MMO acknowledges the Applicant's comment and will provide a response in due course.</p>

		<p>the cable route offshore are not situated within the herring spawning ground. However, any spatial refinement will be subject to the provision of an appropriately formed 'heat' map (see comments in point 5.5.3), which draws on the correct data and provides an accurate characterisation of the herring spawning habitat potential along the cable route. Sight of the individual data layers used to form the 'heat' map for herring will enable us to interrogate data on sediment suitability and larval abundance in more detail for use when applying a restriction spatially.</p>	<p>pathway in the context of an EIA for aggregate dredging (MMO, 2013, 2022 in Kyle-Henney <i>et al.</i>, 2024). The same rationale can be applied to cable installation due to similarities in activity on the seabed (albeit of lower magnitude than aggregate dredging). International Herring Larvae Survey (IHLS) larval abundance data will be presented in the Heat Mapping Report to provide additional context, and to characterise the importance of potential spawning habitat within the Offshore Export Cable Corridor. IHLS sampling stations may not be located directly within the Offshore Export Cable Corridor, and as such, the IHLS data-layer may overrepresent importance at a site-specific scale (Kyle-Henney <i>et al.</i>, 2024). The restriction as proposed in its current form does not align with the most recent restrictions pertaining to herring spawning in the North Sea. The Heat Mapping Report will assess the suitability of the proposed temporal restrictions, whilst also further refining regions of the development area where herring spawning potential is 'moderate' to 'higher' based on best available data.</p>	
38.	RR-030: 3.21.4	<p>The MMO welcomes that there will also be no piling activity within the Offshore ECC during the winter season (October to March inclusive) to ensure that no potential significant disturbance occurs within the SNS SAC. The MMO also welcome that there will be no concurrent monopile installation for the Electrical Switching Platform (ESP) in the Offshore ECC with the Project Array Areas concurrently. However, a condition should be added to DML 3 (Schedule 12) and DML 4 (Schedule 13) to state this.</p>	<p>The Applicants are in process of preparing a change request relating to the relevant design parameters. The ExA was notified of the Applicants' intention to make this change request on the 8 October 2024 (Change Notification Letter [application reference 10.2]). It is expected that the change request will be submitted in December 2024 following some targeted consultation. The change request relates to the removal of an intertidal HDD exit from the Projects Design Envelope, the removal of all platforms from the Offshore</p>	<p>The MMO acknowledges the Applicant's comment and will provide a response in Deadline 2.</p>

			<p>Export Cable Corridor, reductions in the numbers of platforms in the Array Areas and overall reductions in cable lengths within the Array Areas. The change request will be supported by a Request for Design Change - Environmental Assessment Update document which will describe any resultant changes to the assessment conclusions presented in the ES, thus informing a consultation with relevant stakeholders (as agreed by the ExA) as part of the change request process. All the changes are expected to be positive i.e. reducing or removing impacts. The change proposed of relevance to these representations is the removal of the ESP from the Projects Design Envelope, which would mean that no piling activity in relation to the ESP would occur. If this request is accepted by the ExA, the Applicants would expect this to address the concern raised by the MMO. Notwithstanding the proposed change, the MMO's position is noted and updates to the DML conditions to address the concern will be made in due course if the Applicants' change request is not accepted by the ExA.</p>	
39.	RR-030: 3.21.5	<p>The MMO requests clarity on if any dredging or clearance activities will take longer than 3 years from commencement? If this will occur, the following sediment sampling condition must be included in their the DMLs.</p> <p>Sediment Sampling The undertaker must submit a sample plan request in writing to the MMO for written approval of a sample plan. (2) The sample plan request must be made-for capital dredging, at least six months prior to</p>	<p>The Applicants are not able to confirm at this stage whether any dredging or clearance activities will take longer than three years from commencement and on that basis, will update the Draft DCO [APP-027] to include a sediment sampling condition in the DMLs.</p>	<p>The MMO acknowledges the Applicant's comment and appreciates the changes to be made. The MMO will provide an update at Deadline 2.</p>

		<p>the commencement of any capital dredging; or for maintenance dredging, at least six months prior to the end of every third year from the date of the previous sediment sample analysis.</p> <p>(3)The sample plan request must include details of-</p> <p>the volume of material to be dredged; the location of the area to be dredged; details of the material type proposed for dredging; the type and dredging methodology (including whether it is a capital or maintenance dredge, depth of material to be dredged and proposed programme for the dredging activities); and the location and depth of any supporting samples.</p> <p>(4) Unless otherwise agreed by the MMO, the undertaker must undertake the sampling in accordance with the approved sample plan.</p>		
40.	RR-030: 4.1	<p>Other Application Documents General Comments</p> <p>Where projects contain plans that impact both the MMO below MHWS (in the DML), and the Local Planning Authority (LPA) (in the DCO) and there are issues raised with duplication of the requirement, the MMO requests that the Applicant submits the full plan to be approved by both MMO and Council prior to works commencing for their respective approvals under each jurisdiction. Whilst there is a geographic overlap within which the LPA and the MMO operate, their jurisdictions, and therefore their approval, are not. As with other cases, where the MMO and Local Planning Authority have separate consents, they will seek to work together to reduce duplicating unnecessary burden.</p>	The Applicants acknowledge this comment.	No response required

41.	RR-030: 4.2	<p>Cable Statement-Volume 8-APP-244</p> <p>The MMO requests 'Section 1.2 Purpose of the Cable Statement' is updated to state how and when the final cable statement will be agreed. This should state that the final document will be submitted to the MMO for approval. The MMO requests 'Section 1.4.5.2 UXO clearance' is updated to clarify that separate marine licence consents are required for UXO surveys and clearance (see 3.2 for further detail).</p>	<p>The Applicants acknowledge this comment and will make the requested updates to sections 1.2 and 1.4.5.2 of the Cable Statement [APP-244] for Deadline 2.</p>	<p>The MMO acknowledges the Applicant's comment and will provide a response in Deadline 3.</p>
42.	RR-030: 4-3	<p>Outline Project Environmental Management Plan -Volume 8.21-APP-245</p> <p>The MMO is still reviewing this and will provide comments at Deadline 1.</p>	<p>The Applicants acknowledge this comment.</p>	<p>Please see section 2.7 Outline Project Environmental Management Plan within this Deadline 1 response document.</p>
43.	RR-030: 4.4	<p>Outline Written Scheme of Investigation (Offshore) Volume 8.22 -APP-246</p> <p>The MMO has no comments at this time and defers to Historic England.</p>	<p>The Applicants acknowledge this comment.</p>	<p>No response required.</p>
44.	RR-030: 4.5.1	<p>Outline Offshore Operations and Maintenance Plan -Volume 8.24-APP-248</p> <p>The MMO notes in Section 1.1, paragraph 5 that the Applicant has defined 'maintenance'. This definition should be updated to reflect the changes requested in section 3.12 above.</p>	<p>Please see the Applicants' response to RR-030: 3.12. The Applicants acknowledge this comment and will review the definition of 'maintenance' within the Outline Offshore Operations and Maintenance Plan [APP- 248]. An update of the Outline Offshore Operations and Maintenance Plan [APP- 248] and Draft DCO [APP-027] will be submitted at Deadline 1.</p>	<p>The MMO acknowledges the Applicant's comment and will provide a response in Deadline 2.</p>
45.	RR-030: 4-5-2	<p>The MMO notes in Section 2.2 Discharging Consent Conditions, paragraph 23 that the Applicant states: 'Additional activities not outlined in this schedule may, if relevant, require future consents such as a Marine Licence under the Marine and Coastal Access Act 2009. Such activities will be</p>	<p>No response is required.</p>	<p>No response required.</p>

		discussed with the MMO prior to their undertaking, with relevant additional Marine Licences secured if appropriate'. The MMO welcomes this commitment.		
46.	RR-030: 4-5-3	Table 2.2 (below) shows the "Footprint of Potential Cable Re-Burial and Cable Protection Replacement for Both DBS East and DBS West". Column 4 shows "DBS East or DBS West Together", these numbers are different to the sum of the individual projects- please can this be clarified within the document. Table 2.2 - "Footprint of Potential Cable Re-Burial and Cable Protection Replacement for both DBS East and DBS West.	The Applicants acknowledge this comment. The reason the "Footprint of Potential Cable Re-Burial and Cable Protection Replacement" for DBS East or DBS West in isolation is lower than the sum presented for both Projects together reflects the fact that there may be inter-Project platform cabling which would only be present should both Projects be constructed. This explanation will be presented in an update to the Outline Offshore Operations and Maintenance Plan [APP-248] presented at Deadline 1.	The MMO acknowledges the Applicant's comment and will provide a response in Deadline 2.

Parameter	DBS East In Isolation	DBS West In Isolation	DBS East + West Together
Minimum estimated number of replacement - lifetime quantity	9	9	17
Maximum estimated inter platform repair/replacement - lifetime quantity	2	2	6
Minimum estimated number of replacement - seabed disturbance per event (m')	6,000	6,000	6,000
Minimum estimated area Array Area disturbance over Projects operational lifespan (m')	66,000	66,000	1.39.000
Maximum estimated offshore export replacement - lifetime quantity	7	5	12
Maximum estimated offshore	6,000	6,000	6,000

export eaDie repa-rs/replacemen t - seabed disturbance per event (m')				
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47. RR-030:
4-5-4

The MMO notes that the list of activities to be undertaken during the operations and maintenance phase is provided as Table 2-3. This list is considered to be a live document which will be updated for the final Outline Operations and Monitoring Plan(s) and will be sent to the MMO for approval. This is appropriate.

- The MMO notes that the Table 2-3 Cables states a new licence will not be required for "New cable protection including at new locations up to the limits set out for the Projects as a whole during construction in the relevant Deemed Marine Licences, including protection at J tubes and cable crossings" and Wind turbine and platform foundations states "Additional and replacement scour protection around foundations, within the limits set out for the Projects as a whole during construction in the relevant Deemed Marine Licences, including at locations not protected as part of construction activities".
- This is not appropriate as new cable or scour protection placed in an area where there was no protection during construction is not classed as 'maintenance'. New cable or scour protection is not maintaining the

The Applicants acknowledge this comment. The requested amendment to clarify that a separate licence will be sought for the deposit of new cable and scour protection in areas where no protection was installed during construction will be made in an update to the Outline Offshore Operations and Maintenance Plan [APP-248]. The wording related to "New cable protection beyond the maximum, in terms of both volume of material and area covered, set out in for construction under the relevant Deemed Marine Licences" and "New scour protection beyond the maximum, in terms of both volume of material and area covered, set out in the relevant Deemed Marine Licences" will be updated to clarify that protection in new areas will require a separate Marine Licence. The updated Outline Offshore Operations and Maintenance Plan [APP-248] will be presented at Deadline 1. By way of clarification, detail related to scour protection for offshore platforms is presented under the heading "Wind Turbine and Platform Foundations" within Table 2-3.

The MMO acknowledges the Applicant's comment and will provide a response in Deadline 2.

		<ul style="list-style-type: none"> existing cable or scour protection. Although the ES assesses a maximum parameter, the MMO views cable protection as a high-risk activity and therefore placing cable protection throughout the lifetime of the licence that was not placed during the construction phase should not be included within the OMP. A separate licence should be applied for. The wording on the rows "New cable protection beyond the maximum, in terms of both volume of material and area covered, set out in for construction under the relevant Deemed Marine Licences" and "New scour protection beyond the maximum, in terms of both volume of material and area covered, set out in the relevant Deemed Marine Licences" must be updated accordingly. <p>For the Offshore Platforms section -is scour protection required in this section? Please update as above if this is required.</p>		
48.	RR-030: 4.6	<p>Outline Scour Protection Plan -Volume 8.27-APP-251</p> <p>The MMO requests 'Section 1.1 Purpose of this document' is updated to state how and when the plan will be agreed. This should state that the final scour protection plan will be submitted to the MMO for approval.</p>	The Applicants acknowledge this comment and will update the Outline Scour Protection Plan [APP-251] in line with the request.	The MMO acknowledges the Applicant's comment and welcome the update. Please see Section 2.9 of this Deadline 1 response letter for more information on the Outline Scour Protection Plan.
49.	RR-030: 4.7.1	<p>Outline Fisheries Liaison and Co-existence Plan-APP-252</p> <p>The MMO notes the Applicant states 'The Marine Management Organisation will not act as arbitrator or be involved in any commercial</p>	The Applicants welcome agreement from the MMO on this point.	No response required.

		negotiations with any association/ organisation, and/ or individual fishermen'. This is appropriate.		
50.	RR-030: 4.7.2	The MMO requests the below text in Section 1.2 paragraph 6 is updated to remove the word 'material'. All changes to the Fisheries Liaison and Co-existence Plan must be submitted to the MMO for approval.	The Applicants acknowledge this comment and will update the Outline Fisheries Liaison and Co-existence Plan [APP-252] in line with the request.	The MMO acknowledges the Applicant's comment and will review the updated document in due course.
51.	RR-030: 4-7-3	'The MMO will be consulted on any material changes to the FLCP. At the time of Offshore Transmission Owner (OFTO) Transaction, post construction, RWE and Masdar will make the latest finalised FLCP available to the OFTO for their awareness'.	The Applicants acknowledge this comment.	No response required.
52.	RR-030: 4.8.1	Outline Vessel Traffic Monitoring Plan -APP-254 The MMO has no comments at this time and defers to the Maritime and Coastguard Agency (MCA).	The Applicants acknowledge this comment.	No response required.
53.	RR-030: 4.9.1	Habitat Regulations Assessment (Volume 6-Part 1 of 4 Introduction and Terrestrial Ecology-APP-045 The MMO notes the following embedded mitigation incorporated into the design of the project: 'An Ecological Management Plan (EMP) will be developed in accordance with the Outline Ecological Management Plan (OEMP) (Volume 8, application ref: 8.10). The OEMP includes but is not limited to pre-construction, construction, and post mitigation measures relating to habitats, hedgerows, birds, bats, badgers, otters, water voles, reptiles, GCN, and other protected or notable species where relevant. The OEMP includes but is not limited to pre-construction, construction, and post mitigation	No response is required.	No response required.

		measures relating to habitats, hedgerows, birds, bats, badgers, otters, water voles, reptiles, greater crested newt (GCN), and other protected or notable species where relevant. The EMP will include details of any long-term mitigation and management measures relevant to terrestrial ecology and ornithology and nature conservation. The EMP will be developed in consultation with the relevant stakeholders.'		
54.	RR-030: 4.9.2	The MMO understands this will be secured in the DCO Schedule 1 Requirements (12) 'Ecological Management Plan'. Reference to this plan is not made within the DMLs. The MMO considers this is appropriate as the plan is for onshore terrestrial impacts. However, the Applicant should confirm no offshore mitigation and management measures will be secured within this document which relates to the marine licensable activities. However, the Applicant should confirm no offshore mitigation and management measures will be secured within this document which relates to the marine licensable activities.	The Applicants confirm that no offshore mitigation and management measures would be secured within the Ecological Management Plan.	The MMO acknowledges the Applicant's comment and considers the matter closed.
55.	RR-030: 4.10	Habitat Regulations Assessment (Volume 6 - Part 2 of 4 Annex I Offshore Habitats and Annex II Migratory Fish-APP-046) The MMO thanks the Applicant for setting out how the embedded mitigation are secured in the DCO or DMLs (Table 6-2). The MMO supports the above inclusion of the embedded mitigation and the methods used to secure these measures.	The Applicants welcome agreement from the MMO on this point.	No response required.
56.	RR-030: 4.11	Habitat Regulations Assessment (Volume 6 - Part 3 of 4 Annex II Marnie Mammals) -APP-047 The MMO thanks the Applicant for setting out how the embedded mitigation and additional	The Applicants welcome agreement from the MMO on this point.	No response required.

		mitigation are secured in the DCO or DMLs (Table 8-2, Table 8-3 respectively). 4.11.2 The MMO supports the above inclusion of the embedded mitigation and the methods used to secure these measures.		
57.	RR-030: 4.12	Habitat Regulations Assessment (Volume 6-Part 4 of 4 Marine Ornithological Features)-APP-048 The MMO thanks the Applicant for setting out how the embedded mitigation are secured in the DCO or DMLs (Table 9-9). The MMO notes that compensation measures are required, and these have been secured on the DCO (See Schedule 18 Compensation Measures). The MMO defers to NE regarding the appropriateness of the compensation.	The Applicants acknowledge this comment.	No response required.
	RR-030: 4.13	Marine Conservation Zone Assessment Screening Report -Appendix A- Volume 8.17.1-APP – 241 The MMO defer to Natural England as the SNCB.	The Applicants acknowledge this comment.	No response required.
58.	RR-030: 4.14	Stage 1 Marine Conservation Zone Assessment Screening Report - Volume 8.17 - APP-240 The MMO thanks the Applicant for setting out how the embedded mitigation and additional mitigation are secured in the DCO or DMLs (Table 5-5). 4.14.2 The MMO defer to Natural England as the SNCB.	The Applicants acknowledge this comment.	No response required.
59.	RR-030: 4.15.1	In Principal Monitoring Plan (IPMP)-APP-247 The MMO considers most of the comments provided in our Section 42 response has been addressed satisfactorily. However, the MMO has the following comments to make: In Principle Monitoring Plan: The MMO raised previous comments in relation to what are the expectations and mitigations	The Applicants have amended the commitment that no jack-up activities will occur with the Holderness Inshore Marine Conservation Zone (MCZ), to also include anchoring. Therefore, there is no longer any potential for direct impacts during cable installation activities to occur within the MCZ. As such, no monitoring is required for direct impacts on the MCZ. The	The MMO welcomes the changes made by the Applicant and will review the IPMP and confirm this matter can be closed in due course.

		<p>may be needed. This includes if there will be monitoring in relation to the MCZ. As the IPMP does not include MCZ monitoring the MMO has concerns in relation to the Holderness Inshore MCZ. The Applicant states that: '<i>As the Offshore Export Cable Corridor construction buffer zone overlaps with the Holderness Inshore MCZ, there still exists the potential for direct impacts from anchoring events during cable installation activities.</i>' Therefore, if any anchoring events do happen in the MCZ area, the MMO would expect that monitoring would be required to ensure that the prediction of no impact is validated.</p>	<p>IPMP [APP-247] will be updated during the examination process.</p>	
<p>60.</p>	<p>RR-030: 4.15.2</p>	<p>The In Principle Monitoring Plan (IPMP) has been produced to provide the basis for delivering the monitoring measures as required by the conditions contained within the DMLs for the DBS OWFs. The report confirms that if piled foundations are used in the final project design, underwater noise monitoring of the first four piles of each piled foundation type would be undertaken with the methods agreed with the MMO and relevant SNCB in the pre-construction period (point 3.21). This is in keeping with the standard requirements for OWF developments. The MMO would like the report updated to ensure a commitment that the first four piles monitored would be the worst-case scenario piles. Monitoring of less impactful piles would not validate the predictions of the worst-case scenario assessed within the ES.</p> <p>Please provide more information on the timing of these proposed surveys, and the expectations (i.e., what the</p>	<p>The Applicants recognise the importance of monitoring in the management and verification of the Projects' actual effects. The Applicants reiterate that they are committed to undertake underwater noise monitoring of the first four piles of each piled foundation type, as confirmed within the IPMP [APP-247] and that this approach is in line with the standard requirements for offshore wind farm developments. Monitoring locations would be confirmed within post-consent monitoring plans that will be submitted prior to the commencement of piling.</p> <p>The Applicants reiterate that the exact detail, including timings and expectations, of the proposed surveys would be agreed through the development of topic-specific monitoring plans that would be produced prior to the start of construction, as conditioned in the DMLs. The Applicants note that the details of monitoring programmes for Dagger Bank Creyke Beck A & B (now Dagger Bank A and B) and Dogger Bank Teesside A & B</p>	<p>The MMO's current position is that at least 2 of the first four piles should be the worst case piles, this has changed from previous OWF examinations due to the monitoring being provided on projects in the construction stage and issues raised by the SNCBs. The MMO understands that the Applicant's require flexibility as usually the first four piles are softer sediment to ensure the equipment is working as expected. The MMO requires commitment that 2 of the worst case piles will be monitored, this may be after the first four piles but this would allow the predictions to be validated. This commitment should be updated within the condition. The MMO is currently reviewing the condition wording with SNCBs including the submission date of the data and may suggest updated wording in due course. The MMO welcomes further discussions with the</p>

		monitoring is intended to observe), plus the Applicant's intentions should the observations not meet these expectations i.e., the express intention is monitor bed recovery in Holderness inshore MCZ and Smithic bank, plus scour impacts, implying potentially extensive surveying, interpretation and reporting requirements.'	(now Dogger Bank C and Sofia) have been agreed at the post-consent stage account of the actual construction programmes and details of the works to be undertaken and would use the same approach, as is described in the IPMP [APP-247].	App on this request and how it can be captured within the DML.
61.	RR-030: 4.16.1	In Principle Site Integrity Plan (SIP) for the Southern North Sea (SNS) Special Area of Conservation (SAC) - APP-250 The MMO notes that within the final SIP, the Applicants would provide an up to date in-combination assessment using the most recent information on other schemes and planned programmes in order to inform the final assessment. This would include consideration of all data provided through both the Regulators SNS Activity Tracker and the Developers Activity Tracker shared between the key OWFs within (or within 26km of) the SNS SAC. The Applicant is willing to liaise directly with other OWF schemes to ensure the best information and most accurate detail is used to inform these assessments. The MMO welcome this approach	The Applicants welcome agreement from the MMO on this point.	No response required.
62.	RR-030: 4.16.2	The MMO request a map of the Southern North Sea SAC and the projects' location in relation to this be added to the document for context.	The Applicants acknowledge this request, the figure will be added to an updated version of the In Principle Site Integrity Plan (SIP) for the Southern North Sea (SNS) Special Area of Conservation (SAC) [APP-250], which will be provided at Deadline 1.	The MMO acknowledges the Applicant's comment and will review the document and provide comments in due course.
63.	RR-030: 4.16.3	The MMO request the following sections are also included within the SIP: Introduction The Southern North Sea SAC Project Description Project Commitments	The Applicants acknowledge this request and will include the requested section in an updated version of the In Principle SIP for the SNS SAC [APP-250], which will be provided at Deadline 1.	The MMO acknowledges the Applicant's comment and will review the document and provide comments in due course..

		<p><u>In Principle Management and Mitigation Measures</u> Measure X: Scheduling of UXO Clearance Measure X: Clustering of UXO devices Measures Not Applicable Other Mitigation Measures outside the scope of the SIP</p>		
64.	RR-030: 4.17.1	<p>Outline Marine Mammal Mitigation Protocol -Volume 8.25 -APP-249 The MMO welcome that the Applicant will be considering all suitable mitigation options including the use of Noise Abatement when developing the final MMMP (as stated in Table 1-2). However, the MMO requests that a specific section regarding noise abatement is added to the MMMP. At this stage the MMO considers there is clear justification and evidence that noise abatement measures will be required for the project, to reduce the risk of potential impact on marine receptors.</p>	<p>The Applicants acknowledge this request and will add a section on the potential use of noise abatement systems (NAS) as mitigation into the Outline Marine Mammal Mitigation Protocol (MMMP) [APP-249], which will be provided at Deadline 1. The Applicants are considering the use of NAS as mitigation for underwater noise, and the use of it will be dependent on the final project design and determined at the post-consent stage. NAS is being included within the Projects' procurement strategy as an optional element to allow it to be called upon should it be required based on the final design parameters.</p>	<p>The MMO acknowledges the Applicant's comment and will review the document and provide comments in due course..</p>
65.	RR-030: 4.17.2	<p>The MMO has reviewed the Outline Marine Mammal Mitigation Protocol (MMMP) and largely agrees with the approach set out in the document. The Outline MMMP is clear and informative and in keeping with other OWF developments. The only reservation at this stage is regarding the breaks in piling, as per Section 3.1.6 of the document. The current version of the MMMP has been updated to state that: "For any breaks in piling of more than 10 minutes but less than two hours, as long as MMObs and/or PAM Ops have been in continuous watch and no marine mammals are detected within the MA during the break period</p>	<p>The Applicants acknowledge this request and will update the Outline MMMP [APP- 249] to follow the breaks in piling procedure as stated in Joint Nature Conservation Committee (JNCC) guidelines for piling (2010). This will be provided at Deadline 1</p>	<p>The MMO acknowledges the Applicant's comment and will review the document and provide comments in due course..</p>

		then piling can recommence with an altered soft-start procedure (e.g. five to six blows of the hammer at starting hammer energy) before continuing as required, provided there are no marine mammals within the Monitoring Area".		
66.	RR-030: 4.17.3	This procedure is something that will need to be agreed with the MMO and Natural England. It was previously raised during the PEIR consultation that the JNCC (2010) guidance recommends that if there is a pause in piling operations for a period of greater than 10 minutes, then the pre-piling search and soft-start procedure should be repeated before piling recommences. If a watch has been kept during the piling operation, the Marine Mammal Observer (MMO) or PAM (Passive Acoustic Monitoring) operative should be able to confirm the presence or absence of marine mammals, and it may be possible to commence the soft start immediately. However, if there has been no watch, the complete pre-piling search and soft-start procedure should be undertaken. The guidance recommends that the soft-start duration should be a period of not less than 20 minutes. Any requested variation from a 20-minute soft-start should be agreed with the relevant agency and regulator.	The Outline MMMP [APP-249] will be updated to match the JNCC (2010) guidance on piling. This will be provided at Deadline 1.	The MMO acknowledges the Applicant's comment and will review the document and provide comments in due course..
67.	RR-030: 4.17.4	The Applicant has acknowledged and responded to this comment received on the PEIR regarding the MMMP: "Regarding breaks in piling and restarting of installation, this is a method that has been previously applied and approved at other offshore wind farm projects successfully. Due to the improvements in scientific understanding and the development of a better knowledge base of the efficacy of certain mitigation	The Applicants acknowledge this comment.	No response required.

		measures recommended in the JNCC (2010) protocol, further discussion regarding breaks in piling, the recovery rates of marine mammals will be undertaken post consent before the finalisation of the MMMP".		
68.	RR-030: 4.17.5	The MMO welcomes that further discussions on this matter will take place before finalisation of the MMMP.	The Applicants welcome further discussion with the MMO on this point.	The MMO acknowledges the Applicants comment and will provide a response in deadline 2.
69.	RR-030: 5.1	<p>General Comments Decommissioning</p> <p>5.1.1 No final decision regarding the final decommissioning policy for the offshore project infrastructure including landfall, has yet been made. It is also recognised that legislation and industry best practice change over time. It is likely that offshore project infrastructure will be removed above the seabed and reused or recycled where practicable. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and will be agreed with the regulator.</p> <p>5.1.2 It is anticipated that for the worst-case scenario, the impacts will be no greater than those identified for the construction phase. A decommissioning plan for the offshore works would be submitted prior to any decommissioning commencing. Whilst the MMO recognises that no final decisions as to the exact process or extent of works to decommission the projects will be made for some time, this response is not acceptable at the ES stage for a project of this nature and scale. This response was also raised as unacceptable when it was presented at the PEIR</p>	<p>The Applicants acknowledge the MMO's comments regarding decommissioning. The Applicants' approach to assessing decommissioning impacts within the ES has followed the industry standard approach and is proportionate to the level of information available to consider on the topic at this time.</p> <p>Each ES chapter has a "Potential Effects During Decommissioning" section which describes the impacts of relevance and details how/ if they differ from construction.</p> <p>The decommissioning sequence will generally be the reverse of construction and will involve similar types and numbers of vessels and equipment. As such, the effects of decommissioning will be comparable or less than those during the construction phase.</p>	<p>It has been discussed that a section/table is included within the ES that combines each chapters decommissioning detail and scope. This is to give a clearer overview of impacts at the decommissioning stage within one section.</p> <p>The MMO is currently reviewing the requirement for an outline decommissioning plan and condition within the DML and will provide comments in due course.</p>

		<p>stage. A high-level outline of the works anticipated during the decommissioning phase, and the likely impacts arising from them, have been provided within PEIRs and ESs for other wind farm projects of a similar size. It is understood that this information is indicative given that the period of decommissioning will not occur for 30+ years, however this information is necessary for a complete assessment.</p> <p>5.1.4The MMO requests the Applicant to amend the ES chapters by incorporating a section which clearly outlines the anticipated impacts to receptors from the decommissioning stage of the development. All impacts scoped into the decommissioning phase must be appropriately assessed in the ES so that it is clear to the examining authority that the Applicant has put sufficient thought into the impacts that their proposed development will have on the environment at all stages of its lifecycle. Presenting an incomplete assessment for a development of this nature and scale is not acceptable</p>		
70.	RR-030: 5.2.1	<p>Coastal Processes (Chapters - Marine Physical Environment)-APP-071</p> <p>The MMO notes that consideration of the 30-year operational lifespan hasn't been discussed, in terms of what might be predicted would be happening at the end of the operational lifespan. This should be addressed. The MMO would like the Applicant to discuss the following within the cumulative impacts assessment:</p>	This comment is an introduction to comments RR-030: 5.2.2. to RR-030: 5.2.6 and so no response is required. See responses RR-030: 5.2.2. to RR-030: 5.2.6 below.	No response required.

71.	RR-030: 5.2.2	<p>Does the associated reduction in sediment transport rate result in new 'gradients' in transport across any many features or significant transport pathways, because sediment will be progressively removed from areas where the transport rate increases in the direction of transport?</p>	<p>Tidal currents are the dominant driver of bedload sediment transport across the Array Areas, and hence changes in tidal current velocities (bed shear stress) induced by the infrastructure would change sediment transport rates. The Applicants agree that changes to tidal currents could potentially alter the gradients of sediment transport from one area to another along sediment transport pathways over the 30-year operational lifespan of the Projects.</p> <p>The bed shear stress model outputs predict that (in general) the infrastructure would induce a reduction in sediment transport rates across the south of the Array Areas with a predicted increase across the north of the Array Areas. Residual sediment transport is approximately south-east to north-west, and so there is potential for less sediment to be transported (supplied) from the south to the north of the arrays, with more sediment from north of the arrays lost further to the north. This could potentially lead to accretion of the seabed in the south with erosion of the seabed in the north.</p> <p>However, these morphological changes are not significant over 30 years because the changes in bed shear stress are less than 3% of the baseline bed shear stress and would then remain constant during the operational lifespan. Change of this magnitude would have insignificant long-term effects on the mobilisation and sediment transport characteristics of the seabed sediments across the arrays. The sediment transport gradients would be effectively unchanged by the presence of the infrastructure.</p>	<p>The MMO is currently reviewing this point and will provide a response in due course.</p>
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			There would be no cumulative impacts on sediment transport gradients given there will be no overlap of the changes to bed shear stresses of DBS and other infrastructure. This is because the predominant south-east to north-west residual sediment transport direction is away from, not towards, the other offshore wind farms on Dogger Bank.	
72.	RR-030: 5.2.3	The size of the sedimentary features may mean that any eventual impacts due to small changes may take many years or decades to be manifest, but the projects have an (initial) lifetime of 30 years, and there are many adjacent developments of similar nature which may be introducing their own gradients.	Given the resulting bed shear stress would only be 3% higher or lower than the baseline bed shear stress means the changes in erosion and accretion patterns of sedimentary features would have no significant manifestation over decadal time periods. Adjacent offshore wind farm developments of a similar nature are likely to introduce their own changes in sediment transport gradients, but they would not overlap with any changes induced by DBS, and so there would be no cumulative impacts.	
73.	RR-030: 5.2.4	The MMO would like the Applicant to clarify the text in 8.8.4.1, paragraph 368. Is the number of a 1 in 1 year return period, correct? This is being described as a highly unlikely scenario, however the MMO would deem a 1 in 100-year return period to be highly unlikely; or a 1 in 10 year would better fit this description. Whereas a 1 in 1 year return period suggests over a 30-year life span that this scenario, while infrequent, is likely to happen numerous times. Please could the Applicant check and update the text if incorrect.	A wave model has been run using three return periods. These were a 1 in 100-year event to represent extreme conditions, a 1 in 1 year event to represent the largest storm in a year and 50th percentile to represent typical daily conditions. The paragraph in question (paragraph 368 of Chapter 8 Marine Physical Environment [APP-080]) indicates that a cumulative wave effect of DBS with Hornsea Project Four could potentially only occur during a 1 in 1 year event. Given the 1 in 1 year event represents one storm over a period of one year, it means that this scenario would materialise only about 30 times over the operational lifespan of the Projects. Also, for a cumulative impact to occur the storm waves would have to approach from the north-east, which would be an	The MMO is currently reviewing this point and will provide a response in due course.

			<p>infrequent occurrence because the dominant waves are from the north and north-west. The cumulative impact would therefore be infrequent (from both occurrence and wave directional perspectives) and short-lived. The Applicants agree that a 1 in 100-year event would be even more unlikely than a 1 in 1 year event. However, from the perspective of cumulative impact, the zone of influence of DBS is greater under the 1 in 1 year event compared to the 1 in 100-year event because the longer wave period during the extreme scenario reduces the energy lost through diffraction as the wave passes by the structures. Hence, the potential for a geographical overlap with Hornsea Project Four is greater for a 1 in 1 year event than a 1 in 100-year event.</p>	
74.	RR-030: 5.2.5	<p>Table 8.1 states the design parameters in Chapter 8 (Marine Physical Processes) of the ES. The MMO has a query over this volume for the changes on suspended sediment concentration and transport due to seabed preparation for foundation installation: 'Maximum volume of sediment disturbed due to seabed preparation (including scour protection)-57,325 m³'. Is there an explanation for how this volume was calculated? The MMO would have expected this to have been a higher volume.</p> <p>Please can the Applicant provide clarification on to how this volume was calculated?</p>	<p>The seabed preparation area for eight monopile foundations including scour protection is 49,778m². The seabed preparation area for one gravity-based foundation is 64,871m². The maximum thickness of seabed preparation is 0.5m. Hence, the worst case scenario for the volume of sediment disturbed due to seabed preparation (including scour protection) is: $(49,778 \text{ [area]} \times 0.5 \text{ [thickness]}) + (64,871 \times 0.5) = 57,325\text{m}^3$</p>	The MMO welcomes this explanation, and considers the matter closed.
75.	RR-030: 5.2.6	<p>The MMO notes there are proposed embedded mitigation measures outlined in Table 8.3 of the E.S which relates to marine physical processes. These include the use of scour protection, consideration of methods around piling</p>	The Applicants acknowledge this comment.	No response required.

		foundation types and cable burial and offshore export cable burial. These are all measures that the MMO would expect to see for a project of this nature and should be clearly reflected in the DML.		
76.	RR-030: 5-3-1	<p>Dredge and Disposal (Chapter 8- Marine and Physical Environment-APP-080)</p> <p>The MMO notes site-specific surveys and information sources were provided in Table 8-6 (Chapter 8-Marine and Physical Environment). Chemical characterisation was undertaken on twenty-eight samples that were collected and analysed by SOCOTEC (an MMO validated laboratory for trace heavy metals including arsenic, polyaromatic hydrocarbons (PAHs), total hydrocarbon content (THC), polychlorinated biphenyls (PCB) and di and tri butyl tin (DBT and TBT). Levels of metals observed were all less than the action level one with the exception of arsenic in three samples (ST161 and ST164 in the cable corridor and one in the DBS West array area), although this not unusual in England in some areas. For PAHs the levels in all samples were observed to be low as were the levels of PCBs for all stations that were seen to be below the limits of detection. Therefore, the MMO agrees with the Applicant's comment that the sediment contaminant concentrations are deemed to be low risk from a sediment disposal perspective, and in line with comments made at the intertidal ecology expert topic group meeting held on the 29 January 2024.</p>	The Applicants welcome agreement with the MMO on this point.	No response required.

77.	RR-030: 5-3-2	The MMO agrees with the findings and comments in the disposal site characterisation report. The MMO agrees that 'maintain reuse recycling' and other recovery options for the project are not appropriate for the disturbed/dredged and that this material should be released/allowed to return to the area within which it was removed. Drill arisings are anticipated to remain around the base of the monopiles although some dispersion should be anticipated. Table 7-3 of the characterisation report presents a summary of the worst-case sediment disposal quantities which in total would be a maximum of 63,519,020m ³ . Please see Table 1, point 47 within this document for further information.	The Applicants welcome the MMOs agreement with findings and comments in the Disposal Site Characterisation Report [APP-242]. Please see the response to point 47 in Table 4.6.2.	No response required
78.	RR-030: 5-3-3	It is anticipated that only 5% of the offshore platforms and turbine locations will require drilling, no information on contaminant data in drill arisings is presented from the boreholes in the characterisation report, however in section 8.1 Marine and Physical Environment Responses the Applicant has stated that the drilled piles would only release geological material (i.e., uncontaminated material) depth samples therefore are not generally collected for offshore windfarms in relation to sediment contaminant assessments which the MMO deem acceptable.	The Applicants welcome agreement with the MMO on this point.	The MMO welcomes the Applicant's agreement on this matter.
79.	RR-030: 5-3-4	The MMO notes there is potential for overlap with some carbon and capture storage (CCS) projects and some other cables (Eastern Green Link 3 and 4) that are in the early phases of development/consultation, but limited information is currently available. Other subsea cables like Eastern Green Link 2 and Northern Endurance CCS, whilst having spatial overlap,	The Applicants welcome agreement with the MMO on this point.	The MMO welcomes the Applicant's agreement on this matter.

		are not expected to temporally align and so no cumulative effects from cable laying are anticipated. The MMO notes that the site characterisation for disposal of any overlap will be completed within their assessments and consent.		
80.	RR-030: 5.3.5	The MMO agrees with mitigation measures to reduce the disturbance of sediment and requirements for dredging by placing different foundations in different areas to reduce the requirement for levelling etc.	The Applicants welcome agreement with the MMO on this point.	The MMO welcomes the Applicant's agreement on this matter.
81.	RR-030: 5.3.6	It should be noted that there are no agreed upper action level 2 (AL2) threshold values for polyaromatic hydrocarbons, the MMO suggests that the reference to AL2 for THC is removed from point 70 in the Disposal site Characterisation report.	The Applicants acknowledge this comment and will remove this in a future revision of the Disposal Site Characterisation Report [APP-242].	The MMO welcomes the Applicant's agreement to remove this point from the Disposal Site Characterisation Report [APP-242] and will confirm this matter is closed once the updated document has been reviewed.
82.	RR-030: 5-4-1	Benthic ecology (Chapter 9- Benthic and Intertidal Ecology-APP-085) The design of the pre-construction monitoring survey will be submitted to the MMO at least four months prior to the first survey and will be designed to ensure that the effects on habitats from the Project construction are in line with those assessed in the ES and HRA (document referenced in paragraph 8 of chapter 9 in the ES). The MMO agrees with the approach to survey design whereby the Applicant will interpret the pre-construction geophysical data (multibeam and side scan sonar) prior to the collection of sediment samples from across the array, and within the cable export area that coincides with the Dagger Bank SAC. However, the MMO requests that the design of the pre-construction monitoring survey is submitted at least six months prior to the first survey. (points	The Applicants welcome MMO's agreement with the survey design and will amend the submission of the design of the pre-construction monitoring survey to be submitted at least six months prior to the first survey.	The MMO welcomes the Applicant's agreement on this matter.

		3.11.2-3.11.6).		
83.	RR-030: 5-4-2	The MMO recommends that the Applicant interprets the available geophysical data to inform a ground truthing survey (using seabed imagery) to confirm the presence/ absence of Annex I biogenic reef along the entire cable route. This will enable adequate micro-siting to avoid Annex I reef and identify areas where this may not be possible. This is in line with developments of a similar nature.	Table 9-3 within Chapter 9 Benthic and Intertidal Ecology [APP-085] details the commitment to pre-construction surveys and micro-siting. Pre-construction surveys will be undertaken to determine the presence of potential Annex I/ UK Biodiversity Action Plan (BAP) Priority Habitats within the proposed wind turbine locations or the Offshore Export Cable Corridor. The preconstruction survey methodology would be agreed with the MMO in consultation with Natural England. The survey design would be based on best practice at the time and is anticipated to consist of a mixture of geophysical, drop-down video (DDV) and grab surveys (as applicable) to ensure a comprehensive ground-truthing of the proposed final wind turbine locations and cable route design. Initial geophysical surveys will be reviewed with DDV ground truthing surveys to confirm presence as appropriate. This shall then be used to inform detailed layout design in the design plan and will inform the mitigation scheme requirements. These pre-construction surveys are secured in conditions 15 and 20 of DMLs 1 and 2, conditions 13 and 18 of DMLs 3 and 4; and conditions 11 and 14 of DML 5.	The MMO is reviewing this response and will provide comments at Deadline 2.
84.	RR-030: 5-4-3	The MMO broadly agrees with the approach set out by the Applicant regarding the pre-construction monitoring survey to determine the presence of Annex I/ UK Biodiversity Action Plan (BAP) Priority Habitats within the development area and inform the detailed layout design to avoid as necessary. However,	Please see the response to RR-030: 5.4.2, above.	The MMO is reviewing this response and will provide comments at Deadline 2.

		<p>the MMO notes this does not seem to be reflected in the Applicant's assessment of the significance of effect on the BAP priority habitat 'Piddocks with a sparse associated fauna in Atlantic circalittoral very soft chalk or clay' identified in the DBS (East) array, whereby no additional mitigation is proposed to diminish adverse effects of the development on this habitat. The MMO defers to the SNCB regarding the impact of construction activities on 'Piddock' habitat and recommends the Applicant provides further clarification on specific mitigation measures to avoid Piddock' habitat.</p>		
85.	RR-030: 5.4.4	<p>The MMO notes that currently the requirement for post-construction benthic monitoring, as part of the licence conditions of the DML, will be informed by the presence of habitats of principle importance identified through pre-construction survey. It is the MMO's understanding that if none are found, there is no requirement for benthic monitoring and any assessment of the impact to the benthic assemblage will be carried out independently. Inclusion of the requirement to provide the information on the "as built plan" of the development (relevant sections of the draft DCO referenced in paragraph 9) will allow subsequent assessment of any change from the pre-construction condition of the benthic environment by informing the design of future research surveys.</p>	<p>The IPMP [APP-247] details the pre-construction surveys that would be undertaken to determine the presence of potential Annex I/ UK BAP Priority Habitats/ sandeel within the Array Areas or the Offshore Export Cable Corridor. Grab sampling would be undertaken in the Array Areas, Inter-Platform Cable Corridor and in the area of the Offshore Export Cable Corridor that overlaps with the Dogger Bank SAC. The sampling stations would be selected to capture the different range of habitats and environments identified in the ES, in order to ensure that they are representative of the benthic environment in the Dogger Bank area. The survey methodology would be agreed with the MMO in consultation with Natural England. No benthic sampling is proposed for the section of the Offshore Export Cable Corridor that lies outside the Dogger Bank SAC. The requirement for this may be reviewed following the pre-construction survey and dependent on the final location of the export cables (i.e. if</p>	<p>The MMO welcomes the Applicant's comments on this point.</p>

			<p>they are within close proximity of any UK BAP Priority Habitats).</p> <p>The detail of the post-construction monitoring will be confirmed based on the pre-construction results. However, at this stage the assumed strategy is to sample the same locations pre and post-construction, whilst taking an adaptive approach to the sampling effort and duration of the monitoring that is required.</p>	
86.	RR-030: 5.5.1	<p>Fish ecology (Chapter 10 - Fish and Shellfish Ecology-APP-091)</p> <p>Table 10.3 of the Fish Ecology Chapter details the sources the Applicant has used to inform their characterisation of the existing environment. This table is surprisingly brief for a project of this scale and nature, and it appears that details of several data sources used to inform elements on the Fish Ecology Chapter (for example, vessel monitoring (VMS) data and "Centre of Environment, Fisheries and Aquaculture Science (Cefas) Inshore Fishing Activity" data) are missing. The Applicant should update this table to reflect all of the data sources used to inform the Fish Ecology Chapter.</p>	<p>A number of additional sources of information were used to characterise the Fish and Shellfish Ecology baseline and are cited throughout section 10.5 (Chapter 10 Fish and Shellfish Ecology [APP-091]). It is acknowledged that the datasets mentioned within this comment may have been appropriate to include within the cited table, noting that these are referenced within section 10.5 in the context of the Latta <i>et al.</i> (2013) and Reach <i>et al.</i> (2013) methodologies. However, as these methodologies will be updated within a Heat Mapping Report, the 2013 methodologies (and associated data) will become outdated. The relevant datasets pertaining to the new methodology will be provided within the Heat Mapping Report at Deadline 1.</p> <p>Other citations, which were not referenced within the ES chapter, were used in the development of Appendix 10-2 Fish and Shellfish Technical Appendix [APP-094]. Details of these data sources are included below:</p> <ul style="list-style-type: none"> • EMODnet: European Marine Observation and Data Network. Available online at: 	<p>The MMO acknowledges the Applicant's comment and will provide a response in due course.</p>

			<p>https://emodnet.ec.europa.eu/en [Accessed September 2024].</p> <ul style="list-style-type: none"> IUCN Red List: IUCN. 2024. The IUCN Red List of Threatened Species. Version 2024-1. Available online at: https://www.iucnredlist.org. [Accessed September 2024]. FishBase: Froese, R. and D. Pauly. Editors. 2024. FishBase. World Wide Web electronic publication. Available online at: www.fishbase.org [Accessed September 2024]. <p>MarLIN: Marine Life Information Network, 2016. Marine Life Information Network. Plymouth: Marine Biological Association of the United Kingdom. Available online at: www.marlin.ac.uk. [Accessed September 2024].</p>	
87.	RR-030: 5-5-2	Habitat suitability assessments for herring and sandeel are presented within Chapter 10. For herring and sandeel, 'heat' map outputs have been provided to indicate areas of seabed with potential to provide sandeel habitat or herring spawning habitat, following the MarineSpace methodologies (2013a and 2013b for sandeel and herring respectively). This approach is appropriate; however, a number of clarifications are needed with respect to the data used to form the 'heat' maps presented for herring and sandeel. These include:	No response is required.	No response required.
88.	RR-030: 5-5-3	Herring potential spawning habitat 'heat' map: The Applicant has used International Herring Larvae Survey (IHLS) data for the Banks herring population for the years 2011-2016. As standard, the MMO requires 'heat' maps to incorporate a minimum of 10 years of IHLS data, which is in line with the MarineSpace (2013b) method. The	All comments relating to the use of the Reach et al. (2013) herring suitability heat mapping methodology will be addressed in the Heat Mapping Report (to be provided at Deadline 1), which will present the updated Kyle-Henney et al. (2024) method. It is noted that the preferred habitat type (based	The MMO acknowledges the Applicant's comment and will provide a response in due course.

timeseries of data incorporated into the Applicant's 'heat' map, is not only an insufficiently short timeseries to inform the 'heat' map but also does not represent the most recently available IHLS data for the Banks herring stock. This should be corrected.

The Applicant has also incorporated a "Cefas Inshore Fishing Activity 2010-2012" data layer; however, it is not clear what this data is. A search of publicly available data suggests this data layer may present "inshore fishing activity intensity as determined from fishing vessel sightings", which raises questions as to how the data was gathered, the fishing gear type used, and how this data is applicable to herring (i.e. how can the Applicant be confident that inshore vessels were catching herring using pelagic gears). The timeseries of the data is also insufficiently short. 2-3 years of inshore fishing data does not provide sufficiently representative spatial coverage, and the MMO notes from Figure 10.7c that there is very little coverage for the area south of Flamborough Head, despite there being an established inshore fishing fleet based in Bridlington. These points need to be clarified.

The Applicant also uses less VMS data (years 2011-2016) than is detailed in the Reach et al., (2013) and MarineSpace Ltd (2013b) methods. As outlined in points i and ii above, 5 years of data does not provide sufficiently representative spatial coverage, nor does the data range used by the Applicant represent the most recently available VMS data. A minimum of 10 years of the most recently available VMS data should be incorporated. In fact, the updated MarineSpace 'heat' mapping methodology prescribes that a timeseries of 2006-present should be used to

on the Folk 16 classification) are Gravel and sandy Gravel, with marginal habitat type being gravelly Sand.

		<p>form the VMS data layer. The MMO notes from Figure 10.79, that the Applicant has classified Sand as a preferred sediment type for herring. This is incorrect. Preferred sediment types for herring are Gravel and Sandy Gravel, and the marginally preferred sediment type for herring is Slightly Gravelly Sand. This must be amended. The Applicant has categorised their 'heat' scores into four categories. This is not necessarily incorrect, however in the original 2013 methodologies 'heat' is presented as a number score (2-15) which is then categorized as indicating a level of 'heat' (medium, high etc.), and both the number score and corresponding level of 'heat' are generally presented. Given the other uncertainties with the Applicant's 'heat' maps it would be helpful if the Applicant could clarify how they have grouped the scored layers and determined their 'low' to 'very high' categories</p>		
89.	RR-030: 5.5.4	<p>Sandeel potential habitat 'heat' map: vi. Given the similarities in the presentation of 'heat' in the Applicant's potential sandeel habitat 'heat' map, the MMO considers several of the clarifications outlined above are also required with regard to sandeel. As outlined above in point ii and iii, the range of data used to form the VMS data layer should be clarified. The same clarifications are also required of the "Cefas Inshore Fishing Activity 2010-2012" data layer which also appears to have been incorporated into the sandeel potential habitat 'heat' map.</p>	<p>The Applicants acknowledge this comment. The Heat Mapping Report (to be provided at Deadline 1) will include an update from the Latta <i>et al.</i> (2013) sandeel suitability methodology to the Reach <i>et al.</i> (2024) methodology as requested.</p>	<p>The MMO acknowledges the Applicant's comment and will provide a response in due course.</p>

		<p>The 'heat' map for sandeel presented in Figure 10.5 loosely follows the original 2013 method, which is not incorrect however the updated 'heat' mapping methodology for sandeel includes several new data layers which provide a stronger characterisation of sandeel potential habitat. These include the Wright et al., (2019) sandeel fishing areas and the Sandeel Presence data layer which draws on data from the Cefas OneBenthic database which provides direct anecdotal evidence of sandeel presence (as caught in grab samples) in the region. OneBenthic sandeel presence data can also be used to support and supplement the Applicant's own site-specific sandeel data.</p>		
90.	RR-030: 5.5.5	<p>At the time of writing, the Preliminary Environmental Information Report (PEIR), MarineSpace (2013a and 2013b) represented the current and most appropriate 'heat' mapping methodologies for herring and sandeel and were recommended as the approach the Applicant should follow at the scoping stage. However, MarineSpace Ltd, in consultation with the MMO and Cefas Fisheries Advisors, have published updated versions of the methodologies (Kyle-Henney et al., 2023 and Reach et al., 2023) which take into account changes in data availability which have occurred since the original method was published and incorporate new data to enhance the 'heat' mapping process. Based on the uncertainties with the data used, the MMO's confidence in the Applicant's current habitat suitability 'heat' maps for herring and sandeel is undermined and with this in mind, the MMO requests that the Applicant revises their potential herring spawning habitat and potential</p>	<p>The Applicants acknowledge this comment. The Heat Mapping Report (to be provided at Deadline 1) will include an update from the Latta <i>et al.</i> (2013) methodology to the Reach <i>et al.</i> (2024) methodology for sandeel; and the Reach <i>et al.</i> (2013) methodology to the Kyle-Henney <i>et al.</i> (2024) methodology for Atlantic herring as requested.</p>	<p>The MMO acknowledges the Applicant's comment and will provide a response in due course.</p>

		sandeel habitat 'heat' maps preferably using the updated version of the MarineSpace methodologies.		
91.	RR-030: 5.5.6	In addition to this the individual data layers (e.g. sediment data, 10 years of amalgamated IHLS data, VMS data etc.) should be presented in mapped form in a technical addendum to the ES for both herring and sandeel. Given that the Dagger Bank and Flamborough Head regions are regions of high importance for herring and sandeel, it is important that the habitat suitability 'heat' maps are correctly formed from appropriate data so that accurate assessments of the likely impacts can be made	The Applicants acknowledge this comment. The Heat Mapping Report, which will be provided at Deadline 1, will include the individual data layers used to create the heat maps.	The MMO acknowledges the Applicant's comment and will provide a response in due course.
92.	RR-030: 5-5-7	It was previously recommended that the Applicant should supplement their sandeel habitat assessment with data from the North Sea Sandeel Survey (NSSS), which is carried out in Sandeel Area 1 in December each year. This is a targeted sandeel dredge survey that has been carried out since December 2004 and includes a number of stations in and around the DBS OWF. This survey also represents the best source of abundance data for sandeel in the Dagger Bank region, which is an area of known high importance for sandeel as acknowledged by the Applicant throughout the ES. It is disappointing that the Applicant has not presented this data to support their assessment of sandeel habitat suitability. The NSSS data can be downloaded from ICES at Datras: Download (ices.dk). A minimum of 10 years of the most recently available data must be presented in an appropriate format to support the Applicant's habitat suitability assessment.	This information is not specifically referred to within the Reach <i>et al.</i> (2024) methodology, and therefore is not directly used within the heat map unless it is a contributing dataset to the Cefas OneBenthic sandeel presence database. The OneBenthic dataset is the preferred source of sandeel presence data due to its regional distribution of datapoints, and ability to be updated with future datasets. It is noted that Cefas and the MMO did not request the North Sea Sandeel Survey (NSSS) data to be included during the development of the updated (2024) heat mapping methodology. As the heat mapping methodology utilised OneBenthic sandeel presence data, as approved by Cefas, this data-layer will be utilised within the Heat Mapping Report, provided at Deadline 1, to inform sandeel presence.	The MMO acknowledges the Applicant's comment and will provide a response in due course.

93.	RR-030: 5.5.8	The Applicant has carried out site-specific benthic surveys, the results of which are included in the Environmental Features Report. The MMO notes from Figure 2.1 of the Environmental Features Report that both grab and drop-down video sampling was carried out throughout the western portion of the DBS West Array, but it appears that only grab sampling was carried out in the eastern half of the DBS East Array. The MMO notes from the report that taxa were recorded to the lowest possible taxonomic level, and Appendix B of the report includes the survey logs indicating that sandeel presence in grab samples was recorded. The MMO supports the Applicant's use of sandeel presence data from site-specific surveys to support their characterisation of the site for sandeel habitat.	The Applicants acknowledge this comment.	No further comments required.
94.	RR-030: 5.5.9	It should be noted that the sampling methods used in the site-specific benthic surveys (grab sampling, 2metre (m) beam trawl and drop-down video/photography) are not suitable for targeting sandeel and so an absence of sandeel from sample stations should not be interpreted as an absence of sandeel from those locations.	The Applicants acknowledge this comment. The limitations of such survey techniques are described in further detail by Reach <i>et al.</i> (2024) and will therefore be embedded within the Heat Mapping Report which will be provided at Deadline 1.	The MMO acknowledges the Applicant's comment and will provide a response in due course.
95.	RR-030: 5.5.10	It was raised in the PEIR review that the Applicant's sandeel habitat suitability assessment refers to both sandeel spawning habitat, and sandeel supporting habitat interchangeably, which is not accurate. Sandeel are demersal spawners and their eggs form batches which attach to the seabed, but the method described by Latta <i>et al.</i> , (2013) which is used to generate the 'heat' map output assesses sandeel habitat suitability i.e., areas of seabed with higher or lower suitability to	The Applicants acknowledge this comment, terminology will be clarified within the Heat Mapping Report which will be provided at Deadline 1.	The MMO acknowledges the Applicant's comment and will provide a response in due course.

		<p>provide sandeel habitat, not spawning habitat. Sandeel display a high level of site fidelity and so importance is placed on maintaining suitable habitat, as sandeel will inhabit a suitable area for their lifecycle, and spawn in and within the vicinity of the sediments which they inhabit. This should be updated.</p>		
96.	RR-030: 5.5.11	<p>There are several clarifications needed regarding the data which has been used to generate the Applicant's 'heat' map for sandeel. This includes clarifications on the 'heat' categories presented, as well as several of the data layers used to formulate the final output. The Applicant has supported their characterisation of habitat for sandeel by overlaying the 'heat' map with sampling points where observations of sandeel were made during site- specific benthic surveys. These observations from drop-down video and grab samples indicate that sandeel were observed at 26 out of the 104 sampling stations (as indicated in Figure 10.5). It should be noted however that an absence of sandeel from sample stations should not be interpreted as a complete absence of sandeel from those locations and additional data sources are available which should be used to supplement and support the characterisation of sandeel presence and abundance.</p>	<p>The Applicants acknowledge this comment, please see response above.</p>	<p>The MMO acknowledges the Applicant's comment and will provide a response in due course.</p>
97.	RR-030: 5.5.12	<p>The Applicant has presented a 'heat' map of potential herring spawning habitat loosely following the methodologies described by Reach et al., (2013) and MarineSpace et al., (2013b) in Figure 10.7a. Each of the component layers of the potential herring spawning habitat heatmap are presented in Figures 10.7b to 10.79. Currently, Figure 10.7a shows that the</p>	<p>The updated heat mapping methodologies will be presented within the Heat Mapping Report and provided at Deadline 1. All comments relating to the heat mapping methodology will be addressed by the update. It is noted that the 2024 updated methodology removes the categorisation of heat, and instead utilises a continuous heat scale and</p>	<p>The MMO acknowledges the Applicant's comment and will provide a response in due course.</p>

		DBS OWF ECC is set to be laid directly through an area of seabed with very high potential as herring spawning habitat. The DBS OWF array areas overlap areas of seabed with no, low and medium potential as herring spawning habitat. It should be noted that there are several significant clarifications needed regarding the data which has been used to generate the Applicant's 'heat' map for herring. This includes clarifications on the 'heat' categories presented, as well as several of the data layers used to formulate the final output.	expert judgement to identify potential spawning habitats.	
98.	RR-030: 5.5.13	The Applicant's 'heat' map of potential sandeel habitat currently shows that the entire DBS OWF array is located over an area of seabed with medium to high potential for sandeel habitat. Figure 10.5 shows that the export cable route also overlaps areas of seabed with medium to high potential for sandeel habitat, with some small areas of very high potential around the 12 nm inshore waters boundary.	The Applicants acknowledge this comment.	The MMO acknowledges the Applicant's comment and will provide a response in due course.
99.	RR-030: 5.5.14	With respect to herring, Figure 10.7a shows that the DBS OWF export cable route is set to be laid directly through an area of seabed south of Flamborough Head with high and very high potential as herring spawning habitat. The DBS OWF array area itself overlaps with areas of seabed which have a much lower potential to provide herring spawning habitat (encompassing areas with no, low and medium potential as herring spawning habitat).	The Applicants acknowledge this comment.	The MMO acknowledges the Applicant's comment and will provide a response in due course.
100.	RR-030: 5.5.15	The underwater noise (UWN) contours presented in Figures 10.8 - 10.10 show that a significant amount of the herring spawning ground at Flamborough Head will be affected under each of these piling scenarios. It is disappointing that the Applicant has not been	The Applicants are in process of preparing a change request relating to the relevant design parameters. The ExA was notified of the Applicants intention to make this change request on the 8th October 2024 (Change Notification Letter [application reference 10.2]). It is expected	The MMO acknowledges the Applicant's comment and will provide a response in due course.

proactive in their approach to the piling impact assessment and has not considered the use of noise abatement systems (NAS), such as bubble curtains, as a means of reducing the range of impact from UWN relative to herring.

that the change request will be submitted in December 2024 following some targeted consultation. The change request relates to the removal of an intertidal HDD exit from the Projects Design Envelope, the removal of all platforms from the Offshore Export Cable Corridor, reductions in the numbers of platforms in the Array Areas and overall reductions in cable lengths within the Array Areas. The change request will be supported by a Request for Design Change - Environmental Assessment Update document which will describe any resultant changes to the assessment conclusions presented in the ES, thus informing a consultation with relevant stakeholders (as agreed by the ExA) as part of the change request process. All the changes are expected to be positive i.e. reducing or removing impacts. The change proposed of relevance to this comment is the removal of the ESP. If the intended changes are accepted by the ExA, piling along the Offshore Export Cable Corridor will be removed from all construction scenarios. The remaining overlapping UWN impacts referenced in this comment pertain to the 135dB distances included within these figures following requests during previous consultation. However, the position is maintained that the source from which this threshold is derived (Hawkins *et al.* 2014) is not fit for purpose, as per the reasons provided in the Underwater Noise Memo provided on 2nd November 2024. Primary reasons include, but are not limited to, differences in species (herring were not the target species of the paper), and the environment (study undertaken in a quiet loch,

			<p>as opposed to a busy region of the North Sea) within which the study was undertaken, and an absence of evidence that the behavioural changes noted within the study could be considered as an impact, particularly when considered at a population level.</p> <p>Further, statements within this study by the author confirm that: <i>"In this paper, data have been presented on the levels of impulsive sound to which sprat and mackerel respond. However, these data cannot yet be used to define the sound exposure criteria. More detailed studies of the behaviour of these species are required to establish whether the responses observed are likely to result in adverse effects upon the survival of individuals."</i></p> <p>Within a follow-up paper (Popper and Hawkins, 2014), this is expanded on further, with authors stating that they do not consider findings appropriate when defining underwater noise impacts on the study-specific species, let alone herring which were not considered within the paper: <i>"We would stress, however, that it would be premature to use these data to define sound exposure criteria for sprat and mackerel. Other schools of the same species, under different conditions, might respond differently"</i>.</p> <p>Therefore, the impacts of underwater noise on fish species relevant to this development are considered to be those defined within Popper <i>et al.</i> 2014, as presented within Figures 10-8-to 10-10 (Chapter 10 Fish and Shellfish Ecology, Figures [APP-092]).</p> <p>In relation to NAS, the Applicants are considering the use of NAS as mitigation for underwater noise, and the use of it will be</p>	
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			dependent on the final project design and determined at the post-consent stage. NAS is being included within the Projects' procurement strategy as an optional element to allow it to be called upon should it be required based on the final design parameters.	
101	RR-030: 5.5.16	Of the two Projects, DBS East represents the worst-case scenario in isolation. The worst-case scenario footprint of temporary habitat disturbance and direct damage associated with the construction phase of DBS East is approximately 31km' (11.2 km' footprint for all generation asset construction works, including the array and inter-platform cables, and offshore platforms and foundations, and the footprint for the construction of all transmission assets, including the offshore export cable installation, is 19.8 km2).	The Applicants acknowledge this comment.	The MMO acknowledges the Applicant's comment and will provide a response in due course.
102	RR-030: 5.5.17	The MMO disagrees with the Applicant's conclusion that impacts associated with UWN and vibration for the three piling scenarios will have a minor adverse effect on fish with a swim bladder used in hearing (herring) and can therefore be considered as "not significant in EIA terms". This conclusion is unacceptable given the extent of the noise disturbance which has been modelled by the Applicant. Throughout their assessment, the Applicant has recognised that Temporary Threshold Shift (TTS) effects and behavioural disturbances will occur across regions of high and very high potential for herring spawning, as well as areas of medium spawning potential.	The Applicants are in process of preparing a change request relating to the relevant design parameters. The ExA was notified of the Applicants intention to make this change request on the 8th October 2024 (Change Notification Letter [application reference 10.2]). It is expected that the change request will be submitted in December 2024 following some targeted consultation. The change request relates to the removal of an intertidal HDD exit from the Projects Design Envelope, the removal of all platforms from the Offshore Export Cable Corridor, reductions in the numbers of platforms in the Array Areas and overall reductions in cable lengths within the Array Areas. The change request will be supported by a Request for Design Change - Environmental Assessment Update document which will describe any resultant changes to the assessment conclusions	The MMO acknowledges the Applicant's comment and will provide a response in due course.

			<p>presented in the ES, thus informing a consultation with relevant stakeholders (as agreed by the ExA) as part of the change request process. All the changes are expected to be positive i.e. reducing or removing impacts. The change proposed of relevance to this comment is the removal of the ESP. If the intended changes are accepted by the ExA, piling along the Offshore Export Cable Corridor will be removed from all construction scenarios. In this scenario potential TTS impacts are not expected to extend into seabed habitat which has a higher potential (suitable) to support spawning for Atlantic herring, however this will be confirmed within the Heat Mapping Report submitted at Deadline 1.</p> <p>Should these changes not be accepted by the ExA, the embedded mitigation relating to restrictions on piling along the Offshore Export Cable Corridor will be implemented to reduce potential impacts to regions of the development area where herring spawning potential is 'moderate' to 'higher' based on best available data</p>	
103.	RR-030: 5.5.18	<p>The Applicant also provides the spatial area (km²) over which the effects of TTS and behavioural responses will be felt by hearing sensitive fish in their assessment, as well as the relative proportion of the Fish Ecology Study area:</p> <ul style="list-style-type: none"> i. Under the scenario of one project being developed in isolation (2 monopiles installed concurrently), TTS onset is likely to occur across an area of 8,033 km² for each pile installed (29.9% of the Fish Ecology Study area). Behavioural responses 	The Applicants acknowledge this comment.	The MMO acknowledges the Applicant's comment and will provide a response in due course.

		<p>based on the single threshold criteria of 135dB re 1µPa2s is modelled to occur across an area of 26,493 km² (99% of the Fish Ecology Study area).</p> <p>ii. Under the scenario for monopile installation at the potential ECC platform location, TTS onset is likely to occur across an area of 5,500 km² for each pile installed (20.5% of the Fish Ecology Study area). Behavioural responses are modelled to occur across an area of 24,444 km² (91% of the Fish Ecology Study area).</p> <p>Under the scenario for concurrent pin piling at the DBS West, DBS East and the ECC platform locations, TTS onset is likely to occur across an area of 15,000 km² (55.8% of the Fish Ecology Study area). Behavioural responses are modelled to occur across an area of 31,724 km² (exceeding the Fish Ecology Study area).</p>		
104.	RR-030: 5.5.19	<p>These values, alongside the UWN modelling, demonstrate the vast spatial extent across which physiological (TTS) and behavioural impacts will be experienced by herring. Throughout their assessment, the significance and likelihood of behavioural impacts to herring in identified as lower risk than it should be. For example, the Applicant has modelled the range of impact for behavioural responses based on the recommended single threshold criteria of 135dB re 1µPa2s from Hawkins et al. (2014), which is appropriate. However, the Applicant states that the "information within Hawkins et al. (2014) strongly indicates that impacts at a population level are not likely to occur at the</p>	Please see the response to RR-030 5.5.15.	The MMO acknowledges the Applicant's comment and will provide a response in due course.

		<p>135dB re 1µPa2s range as a result of works within the Offshore Development Area. Therefore, although the area encompassed by the 135dB re 1µPa2s behavioural response threshold is extensive it is not considered to represent a realistic area of likely significant effects". This is not entirely accurate and a discussion of why the 135 dB SELss threshold is recommended for the purposes of modelling behavioural responses in herring and hearing sensitive fish is provided in Appendix 1.</p>		
105.	RR-030: 5.5.20	<p>The MMO strongly disagrees with the Applicant's assertion that "effects associated with underwater noise and vibration via impact piling and UXO within the Array Area are likely to occur. This effect is likely to result in a change that is noticeable but within natural variation, due to the limited presence of potential Atlantic herring spawning grounds within the area". The herring spawning ground off Flamborough Head cannot be considered 'limited' as it is the main and only substantive spawning ground for the Central North Sea (Banks) herring stock, and the importance of the spawning ground off Flamborough Head to the health of the North Sea population cannot be understated. The latest ICES advice (2024) for herring in Subarea 4 and divisions 3.a and 7.d, autumn spawners (North Sea, Skagerrak and Kattegat, and eastern English Channel) notes that a continuous decline in the spawning population of North Sea herring has been observed over recent years. Given their concerns, ICES has proposed a reduction in the fishing quota of 22.5% for North Sea herring (to 412,383 tons in 2025). ICES further advises that no activities that might have a negative</p>	<p>The position of potential herring spawning grounds will be discussed further in the Heat Mapping Report (to be submitted at Deadline 1), which utilises the updated Kyle-Henney <i>et al.</i> (2024) method. In the context of the development, high and very high potential herring spawning grounds are present along a discrete section of the Offshore Export Cable Corridor. No high or very high potential herring spawning grounds are present within either of the proposed Array Areas. The thresholds provided for behavioural response associated with underwater noise in association with piling that may occur in these regions of high and very high potential herring spawning along the Offshore Export Cable Corridor are not considered appropriate for the determination of potential impact, as described in the response to RR-030 5.5.15.</p>	<p>The MMO acknowledges the Applicant's comment and will provide a response in due course.</p>

		<p>impact on the spawning habitat of herring (e.g., extraction of gravel and offshore renewable energy) should occur unless the effects of these activities have been assessed and shown to be non-detrimental. At present, ICES is not fully able to quantify the level and relative impact of cumulative non-fisheries anthropogenic factors on the reproductive capacity of the stock. However, the Flamborough Head region represents an area of significance both for the Banks herring stock and the wider North Sea herring population and ICES' recommendation highlights the important link between habitat protection and population recovery (ICES, 2024). With this in mind, the MMO has provided several recommendations for temporal restrictions on noise generating activities at the DBS OWF (piling and UXO clearance) which are necessary to ensure that adult herring and their eggs and larvae are protected during their spawning season when their sensitivity to disturbance will be heightened. Please see points 5.5.26-5.5.33 for further details.</p>		
106.	RR-030: 5.5.21	<p>For both construction scenarios, the Applicant has concluded that "the low magnitude of impact for both Projects together (DBS East and DBS West), combined with the medium sensitivity of effect for the demersal fish, pelagic fish, and shellfish receptor groups, results in the assessment that temporary habitat disturbance and direct damage has a minor adverse effect, and is therefore not significant in EIA terms. No additional mitigation measures are considered to be required". This assessment encompasses the effects of direct habitat disturbance for both</p>	<p>As stated in previous responses to comments, the Heat Mapping Report will provide updated figures based on the Kyle-Henney et al. (2024) and Reach et al. (2024) methodologies to include the updated heat mapping methods identifying potential Atlantic herring spawning habitat and sandeel supporting habitat respectively. It should be noted that the assessment of significance is based upon a defined EIA methodology, which assesses the sensitivity of a receptor to an impact and the exposure/magnitude of the impact (based upon</p>	<p>The MMO acknowledges the Applicant's comment and will provide a response at Deadline 2.</p>

herring and sandeel, and the MMO do not agree with the Applicant's conclusion. As per comments in points 5.5.2-5.5.4 the MMO's confidence in the Applicant's 'heat' maps for potential herring spawning habitat and potential sandeel habitat is limited owing to clarifications needed as to the data used. The Applicant has correctly identified that herring and sandeel are both species with demersal spawning habits and so have a heightened sensitivity to disturbance of the seabed. The Applicant also recognised that this means herring and sandeel must therefore be considered more sensitive to temporary habitat disturbance and direct damage, especially in relation to their spawning and nursery areas. With this in mind the MMO has requested a temporal restriction on construction activities which interact with the seabed along the ECC route in order to prevent direct harm to adult herring engaged in spawning, as well as herring eggs and early developmental stage (yolk-sac) larvae. Please see further comments in point 3.5.33.

the project description). Despite Atlantic herring and sandeel having a greater sensitivity to effects associated with seabed disturbance than other pelagic and demersal fish, this does not automatically result in the determination that an effect is significant. For example, the potential effects of cable installation are spatially limited in extent within potential Atlantic herring spawning habitat, especially when compared to the extent of potential habitat within the wider Humber region. Whilst some spawning activity has the potential to be disturbed (in the absence of temporal mitigation), the EIA will determine whether this would (Significant)/would not (Not Significant) result in a potential impact to the Banks spawning population through risk assessment. When considering the PSA data from project-specific surveys within the Offshore Development Area, the area of the Offshore Export Cable Corridor identified as higher potential spawning habitat is not fully supported by ground-truthing samples. The Heat Mapping Report will investigate such PSA data and make an assessment as to the suitability of the EMODnet data (which utilises British Geological Survey data) in informing the heat map at a project-specific scale, and conclusions will be adjusted as necessary. The restriction as proposed in its current form does not align with the most recent restrictions pertaining to herring spawning in the North Sea, both in its temporal and spatial restriction. The Heat Mapping Report will assess the suitability of the proposed temporal restrictions, whilst also further refining regions of the development area where herring spawning

			potential is 'moderate' to 'higher' based on best available data.	
107.	RR-030: 5.5.22	In addition to this, sandeel spawn in the areas that they inhabit, and therefore loss and disturbance to their habitat arising from construction activities has the potential to cause significant impact to sandeel at a population level. Consideration should also be given to the fact that sandeel represent a key prey source for many animals at various trophic levels (including birds, marine mammals and other fish), and that localised reduction in prey abundance due to decreased sandeel (and herring) populations in the vicinity of the DBS OWF sites during the construction programme will have potentially far-reaching effects.	The applicant acknowledge this comment changes to prey resource, including sandeel, has been considered in Chapter 11 Marine Mammals [APP-095], Chapter 12 Offshore Ornithology [APP-103] and Appendix B Sandeel Habitat Potential in the Dagger Bank SAC and Southern North Sea SAC [APP-050].	The MMO acknowledges the Applicant's comment and will provide a response in due course.
108.	RR-030: 5.5.23	The whole of the DBS OWF array area is located within the boundary of the Dagger Bank SAC, where sandeels are listed as a key species component of the characteristic communities of Dagger Bank SAC and play an important role in the biological 'structure and function' of the SAC's designated sandbank feature (MMO, 2022). Further to this, the sandeel stock 1r (covers the southern North Sea) has repeatedly fallen below biological reference points since 2004, indicating that the sandeel stock is poor condition (ICES, 2020). At present, the Applicant is proposing multiple construction scenarios, which could see DBS East and West developed sequentially over 7 years, or in isolation over a period of 5 years each. This represents a significant amount of disturbance over a significant period of time, in a region which is known to be of high importance for	It is noted that the sandeel population within the Dagger Bank SAC is not currently under fishing pressure, as a result of a new UK Government bylaw. Fishing pressure results in mortality and localised population decline through the removal of individuals, whereas the installation of cables and piling of wind turbine generator foundations are not likely to result in comparable adult mortality, only displacement and TTS during the construction phase of the development. This is similar in effect to the offshore aggregate dredging industry, where sandeel are not considered at risk of entrainment by the dragheads that directly remove sediment (Reach <i>et al.</i> (2024)). The potential impacts of displacement and TTS are assessed within the EIA, and whilst they may have the potential for temporary effects, this would be spatially limited and sandeel have	The MMO acknowledges the Applicant's comment and will provide a response in due course.

		sandeel.	an ability to recover to disturbed areas (unless disturbed areas represent a change in habitat structure - e.g. rock berms and turbine foundations). These impacts are not considered to have a significant impact on sandeel at a population level.	
109	RR-030: 5.5.24	The MMO does not consider that the Applicant's conclusion that no additional mitigation is sufficient. It is not sensible to recommend that all works which disturb areas of seabed with medium, high or very high potential as sandeel habitat be prohibited as this would prevent the development of DBS in its entirety given the project's location.	The Applicants acknowledge this comment. The MMO supports a sandeel monitoring study (see RR-030: 5.5.25 below) proposed by the Applicants to allow impacts on sandeel populations to be understood.	The MMO acknowledges the Applicant's comment and will provide a response in due course.
110	RR-030: 5.5.25	The MMO notes that the Applicant has proposed pre- and post- construction monitoring for sandeel which the MMO supports.	The Applicants acknowledge this comment.	No response required.
111	RR-030: 5.5.26	The Applicant has outlined a number of embedded mitigation measures in Table 10.3 which are measures to be secured as commitments within the DML. These include: <ul style="list-style-type: none"> i. No piling activity within the Offshore ECC between the months of August and October to mitigate for disturbance to the Banks population of Atlantic herring via impulsive underwater noise impacts unless otherwise agreed with the relevant stakeholders. ii. Minimising the use of scour protection and external cable protection for any stretches of unburied cables and cable crossings. There will be no concurrent monopile installation for the ECC platform with the project array areas concurrently.	No response is required.	No response required.

		Commitment to burying offshore export cables to 0.5-1.5m (depending on cable location) where practicable (subject to a cable burial risk assessment) to increase the distance between the offshore export cables and the seabed surface.		
112.	RR-030: 5.5.27	The MMO does not believe the embedded mitigation measure as sufficient to mitigate the likely significant impacts to herring from UWN as a result of piling and UXO clearance.	<p>The Applicants are in the process of preparing a change request relating to relevant design parameters. The ExA was notified of the Applicants intention to make this change request on 8th October 2024 (Change Notification Letter [application reference 10.2]). It is expected that the change request will be submitted in December 2024 following some targeted consultation. The change request relates to the removal of an intertidal HDD exit from the Projects Design Envelope, the removal of all platforms from the Offshore Export Cable Corridor, reductions in the numbers of platforms in the Array Areas and overall reductions in cable lengths within the Array Areas. The change request will be supported by a Request for Design Change - Environmental Assessment Update document which will describe any resultant changes to the assessment conclusions presented in the ES, thus informing a consultation with relevant stakeholders (as agreed by the ExA) as part of the change request process. All the changes are expected to be positive i.e. reducing or removing impacts.</p> <p>The change proposed of relevance to this comment is the removal of the ESP. If the intended changes are accepted by the ExA, piling along the Offshore Export Cable Corridor will be removed from all construction scenarios. The potential effects of underwater noise will</p>	The MMO acknowledges the Applicant's comment and will provide a response in due course.

			<p>be reassessed in the Request for Design Change- Environmental Assessment Update document and submitted during the examination process. Please refer to the response to RR-030: 5.5.15 for the potential behavioural effects of underwater noise on Atlantic herring spawning activity. NAS is being included within the Projects' procurement strategy as an optional element to allow it to be called upon should it be required based on the final design parameters. Should removal of the ESP not be accepted by the ExA, it is acknowledged that proposed temporal mitigation relating to restrictions on work on the seabed along the Offshore Export Cable Corridor may be considered applicable to piling along the Offshore Export Cable Corridor as well, in order to reduce potential impacts to regions of the development area where herring spawning potential is 'moderate' to 'higher' based on best available data.</p>	
113.	RR-030: 5.5.28	<p>The Applicant has provided the additional modelling requested at the PEIR and Figures 10.8-10.10 show significant overlap for the effects of TTS and behavioural disturbance with areas of high and very high potential spawning habitat for herring for all of the piling scenarios modelled. This is particularly alarming as UWN propagating from the DBS OWFs in the central North Sea has potential to create an acoustic barrier to herring as they follow their migration clockwise through the central North Sea (Cushing, 2001). Such disturbance also has the potential to deter gravid adult herring from migrating to their spawning grounds which has implications for the recruitment success of the stock.</p>	<p>The Applicants would like the MMO / Cefas to evidence underwater noise barrier effects on North Sea Atlantic herring migration (particularly at level <TTS), as there is no publicly available literature on the topic, and this is not an effect typically seen in offshore wind farm EIAs.</p>	<p>The MMO acknowledges the Applicant's comment and will provide a response in due course..</p>

114.	RR-030: 5.5.30	Given the significant extent of overlap for the effects of TTS and behavioural effects with the herring spawning ground under the various scenarios, the importance of Flamborough Head spawning ground and the ongoing decline in the spawning population of North Sea herring and the Applicant's current proposals do not provide adequate protection for adult spawning herring because no NAS technologies have been included, it is necessary to recommend a temporal restriction on all piling and UXO clearance activities during the Banks herring spawning season (1st August- 31st October inclusive).	See response to RR-030: 5.5.15 regarding behavioural effects. In addition, NAS is being included within the Projects' procurement strategy as an optional element to allow it to be called upon should it be required based on the final design parameters.	The MMO acknowledges the Applicant's comment and will provide a response in due course.
115.	RR-030: 5.5.31	The MMO notes the UXO clearance activities will be applied for under a separate marine licence application and therefore further discussions regarding timing restrictions for UXO clearance activity will be undertaken during this consent process.	The Applicants acknowledge this comment.	No response required.
116.	RR-030: 5-5-32	Please clarify whether the embedded mitigation measure outlined in point above includes all piling scenarios, and if not, amend this mitigation to make that the case. The MMO agrees that, given the location of the ECC platform within the herring spawning ground, no piling of any type should be undertaken at this location during the herring spawning season (1st August- 31st October inclusive).	The Applicants are in process of preparing a change request relating to the relevant design parameters. The ExA was notified of the Applicants intention to make this change request on the 8 th October 2024 (Change Notification Letter [application reference 10.2]). It is expected that the change request will be submitted in December 2024 following some targeted consultation. The change request relates to the removal of an intertidal HDD exit from the Projects Design Envelope, the removal of all platforms from the Offshore Export Cable Corridor, reductions in the numbers of platforms in the Array Areas and overall reductions in cable lengths within the Array Areas. The change request will be supported by a Request for Design Change -	The MMO acknowledges the Applicant's comment and will provide a response in due course.

			<p>Environmental Assessment Update document which will describe any resultant changes to the assessment conclusions presented in the ES, thus informing a consultation with relevant stakeholders (as agreed by the ExA) as part of the change request process. All the changes are expected to be positive i.e. reducing or removing impacts.</p> <p>The change proposed of relevance to this comment is the removal of the ESP. If the intended changes are accepted by the ExA, piling along the Offshore Export Cable Corridor will be removed from all construction scenarios. The potential effects of underwater noise will be reassessed in the Request for Design Change- Environmental Assessment Update document and submitted during the examination process. Other embedded mitigation discussed within RR-030: 5.5.26 will be included regardless of piling approach.</p>	
117.	RR-030: 5.5.33	In addition, given that the ECC route goes through areas of 'high' and 'very high' potential spawning habitat for herring, the MMO welcomes the temporal restriction to be placed on works which interact with the seabed along the ECC route (including seabed preparatory works, cable trenching etc.) during the Banks herring spawning season (1st August - 31st October inclusive).	Embedded restriction measures presented within Table 10-3 (Chapter 10 Fish and Shellfish Ecology [APP-091]) apply only to a restriction on piling along the Offshore Export Cable Corridor. These embedded restrictions do not apply in relation to works which interact with the seabed along the Offshore Export Cable Corridor that are not piling (including seabed preparatory works, cable trenching etc.).	The MMO acknowledges the Applicant's comment and will provide a response in due course.
118.	RR-030: 5.5.34	This restriction should apply to both construction and maintenance activities. Activities such as trenching and cable burial cause direct disturbance to the seabed and are likely to cause direct harm to adult herring engaged in spawning, as well as herring eggs and early developmental stage (yolk-sac)	A temporal restriction on activities involving seabed disturbance as proposed in its current form does not align with the most recent restrictions pertaining to herring spawning in the North Sea, both in its temporal and spatial restriction. The Heat Mapping Report will assess the suitability of the proposed temporal	The MMO acknowledges the Applicant's comment and will provide a response in due course.

		larvae.	restrictions, whilst also further refining regions of the development area where herring spawning potential is 'moderate' to 'higher' based on best available data.	
119.	RR-030: 5-5-35	It may be possible for this restriction to be refined spatially given that some areas of the cable route offshore are not situated within the herring spawning ground. However, any spatial refinement will be subject to the provision of an appropriately formed 'heat' map (points 5.5.2-5.5.4), which draws on the correct data and provides an accurate characterisation of the herring spawning habitat potential along the cable route. Sight of the individual data layers used to form the 'heat' map for herring will enable us to interrogate data on sediment suitability and larval abundance in more detail for use when applying a restriction spatially.	The restriction as proposed in its current form does not align with the most recent restrictions pertaining to herring spawning in the North Sea. The Heat Mapping Report will assess the suitability of the proposed temporal restrictions, whilst also further refining regions of the development area where herring spawning potential is 'moderate' to 'higher' based on best available data.	The MMO acknowledges the Applicant's comment and will provide a response in due course.
120.	RR-030: 5.5.36	The MMO is supportive of the Applicant's proposal to monitor sandeel habitat suitability and recognise that, at this stage, the proposal is high level, however the MMO does not consider that simply monitoring the sediment composition only will be sufficient in this case. The seabed beneath the DBS OWF project area, as well as the wider Dagger Bank region, will be undergoing a significant amount of disturbance as a result of offshore wind developments in the coming years. The Dagger Bank represents a region of high importance for sandeel, so much so that the whole Dagger Bank SAC was closed to bottom towed fishing in an effort to protect its designated sandbank features. Sandeels are listed as a species component of the characteristic communities of the Dagger Bank SAC and play an important role in the biological structure and function of	The Applicants acknowledge this comment. The embedded mitigation to minimise the footprint of hard substrata (e.g. cable protection) where feasibly possible will act in tandem with the monitoring of substrate type to reduce potential impacts on sandeel. As previously noted, the potential disturbance to sandeel habitat will be limited in the long term to the footprint of turbine foundations and additional hard substrata placed on the seabed. Disturbance caused by cable laying and associated activities is expected to be short term, and sandeel are expected to fully recover in areas where no additional hard substrata is installed.	The MMO acknowledges the Applicant's comment and will provide a response in due course.

		<p>the SAC's designated sandbank feature (MMO, 2022). Further to this, the sandeel stock 1r has repeatedly fallen below biological reference points since 2004, indicating that the sandeel stock is in poor condition (ICES, 2020). The development of the DBS OWF represents a significant source of disturbance to sandeel, lasting for a significant period of time, in a region which known to be of high importance for sandeel. With this in mind, the MMO note the Applicant will be undertaking pre and post construction monitoring for sandeel habitat suitability (See Table 1-4 of In Principle Monitoring Plan -APP-247). This monitoring should ensure that the construction of the DBS OWFs does not significantly deteriorate the areas of medium, high and very potential habitat which fall within the array area and cable route. The MMO has made recommendations as to what we expect monitoring to entail. However, the MMO recognises that more detailed discussions on a suitable monitoring program will be needed and should include input from the SNCB (Natural England).</p>		
121.	RR-030: 5-5-37	<p>At a minimum, the monitoring strategy should include analysis of sediment samples collected from various areas within the DBS array and surrounding areas (namely, from the primary impact zone (PIZ) in the main array area, the secondary impact zone (SIZ) immediately surrounding the array area, a reference area surrounding the SIZ (which theoretically would not have be disturbed during construction and would therefore act as a control), and from the export cable corridor).</p>	<p>The Applicants acknowledge this comment. As stated in RR-030: 5.5.36, the MMO recognise that the proposal is high level at this stage. Detail pertaining to the monitoring strategy will be discussed post-consent.</p>	<p>The MMO acknowledges the Applicant's comment and will provide a response in due course.</p>

122.	RR-030: 5.5.38	PSA of the sediment samples would allow for categorisation of the samples following the method described in Latta et al. (2013) and as retained in Reach et al. (2023) to determine whether the sediments are considered 'preferred', 'marginal' or 'unsuitable' as sandeel habitat.	The Applicants acknowledge this comment, please see the response to RR-030: 5.5.37 above.	The MMO acknowledges the Applicant's comment and will provide a response in due course..
123.	RR-030: 5.5.39	Statistical analyses of this PSA data would then allow for differences in sediment composition from the different areas of the array (PIZ, SIZ etc.) to be compared between the baseline (pre-construction) and subsequent post-construction surveys over multiple years.	The Applicants acknowledge this comment, please see the response to RR-030: 5.5.37 above.	The MMO acknowledges the Applicant's comment and will provide a response in due course.
124.	RR-030: 5.6.1	Shellfish (Chapter 10 - Fish and Shellfish Ecology-APP-091) The overall impact toward shellfish has been assessed as not significant for construction operations, therefore the Applicant has not proposed any monitoring during or post construction.	The Applicants acknowledge this comment.	No response required.
125.	RR-030: 5.6.2	However, from the evidence provided, the Applicant has acknowledged that shellfish species are of high commercial value and potential spawning/nursery grounds are present at the site. In addition, the Applicant has not conducted any site-specific surveys to assess shellfish ecology. The MMO requests the Applicant considers a monitoring program for shellfish species.	Throughout the impact assessment, no impacts were determined to have the potential for significant effect on shellfish populations. The presence of potential spawning/ nursery grounds, as well as the high commercial value of the shellfish stocks across the region are considered within the impact assessment and have been considered in forming a determination of no significant impact for shellfish. Sources used to determine the fish and shellfish ecology baseline draw on both commercial and scientific datasets and provide an informed picture of local shellfish populations. Site-specific surveys were not undertaken to inform the Chapter 10 Fish and Shellfish Ecology [APP-091], as project specific	The MMO acknowledges the Applicant's comments and will provide a response at Deadline 2.

			<p>surveys on fish and shellfish often fail to provide an accurate representation of local baselines due to the limited temporal window over which they may realistically occur. Significant variation in species richness and abundance as a result of seasonal variation is better captured in landings data and long term scientific data sets, as have been used within this assessment. Monitoring would have been considered to validate the predictions made within the impact assessment had there been a sufficient uncertainty associated with these predictions. However, given the high level of confidence held in the impact assessment outcomes, it is not considered proportionate to include additional monitoring requirements. Therefore, the monitoring of shellfish populations within the region is not determined as likely to provide further insight into the potential impacts of the Projects</p>	
126.	RR-030: 5.6.3	<p>For example, conducting appropriate surveys and gear types for each species are recommended such as potting surveys for European lobster (<i>Homarus Gammarus</i>), Brown crab (<i>Cancer pagurus</i>) and Common whelk (<i>Buccinum undatum</i>), dredge for King scallops (<i>Pecten maximus</i>) and queen scallops (<i>Aequipecten opercularis</i>), and trawl for Norway lobster (<i>Nephrops norvegicus</i>) to more accurately determine the impact upon shellfish populations within the array area. Conditions for the approval of this shellfish monitoring plan and submission of the results must be included within the DMLs as part of the In Principle Monitoring Plan.</p>	<p>Please see the response to RR-030: 5.6.2.</p>	<p>As above in response to 5.6.2, the MMO acknowledges the Applicant's comment and will provide a response at Deadline 2.</p>

127.	RR-030: 5.6.4	There were no specific mitigation measures identified in relation to shellfish, however the MMO agrees with the embedded mitigation measures which were summarised in Table 10-3 of the ES-Chapter 10- Fish and Shellfish Ecology.	The Applicants acknowledge this comment and welcome MMO's agreement.	No response required.
128.	RR-030: 5.7.1	<p>Underwater Noise (Chapter 11- Marine Mammals -APP-095 and Chapter 25- Noise - APP-201)</p> <p>The MMO notes that several embedded mitigation measures are proposed in Chapter 11 - Marine Mammals. These are either secured via the Marine Mammal Mitigation Protocol for piling and/or DML Conditions. The embedded mitigation includes soft start and ramp-each piling event would commence with a soft-start at a lower hammer energy followed by a gradual ramp-up for at least 20 minutes to the maximum hammer energy required (the maximum hammer energy is only likely to be required at a few of the piling installation locations). This is appropriate; soft start procedures may help to reduce the total number of dangerous exposures in terms of auditory injury.</p>	The Applicants acknowledge and welcome agreement with the MMO on the soft start procedure.	The MMO welcomes the Applicants agreement on this matter.
129.	RR-030: 5.7.2	<p>Comments on Appendix 11-6 Unexploded Ordnance Clearance Information and Assessment:</p> <p>It is appropriate that the estimation of the source noise level for each charge weight has been carried out in accordance with the methodology of Soloway and Dahl (2014), which follows Arons (1954) and the Marine Technical Directorate Ltd (MTD) (1996). This is the standard and recommended practice that we would expect to see.</p>	<p>The Applicants note that potential mitigation options, including NAS, are listed within Appendix 11-6 Unexploded Ordnance Clearance Information and Assessment [AP- 102] which would be finalised post consent.</p> <p>The Applicants acknowledge and welcome the agreement of the estimation of the noise source levels. An explanation of the low-yield clearance will be added to a future revision of Appendix 11-6 Unexploded Ordnance Clearance Information and</p>	The MMO welcomes the Applicant's amendments and will keep a watching brief for these changes.

In general, the predicted ranges look plausible, and reasonably match our predictions. We note that the report predicts a Permanent Threshold Shift (PTS) range of 13 km for very-high frequency (VHF) cetaceans and a 968 kilogram (kg)+ donor charge weight. This is different (somewhat slightly smaller) than our predictions, where we estimate a PTS range of -14.1 km using the methodology from Soloway and Dahl (2014). Nevertheless, the report acknowledges that an acoustic deterrent device (ADD) alone will not be sufficient to mitigate the potential risks to harbour porpoise (see paragraph 59 of Appendix 11-6). The MMO agrees that alternative mitigation measures such as noise reduction options could and should be required (e.g. bubble curtains) to avoid injury to this European Protected Species (EPS). It is noted that low yield is only mentioned once in the report, in Table 11-6-4 where a (SPL_{peak}) source level of 281.9 (dB re 1µPa@ 1m) is given. There is no further assessment as such of low yield, or an indication as to what the assumed charge weight is. Low yield, however, is further discussed in Appendix 11.3.

Table 11-6-3 (below for reference): The first column lists the UXO devices potentially present. The middle column presents the Net Explosive Quantity (NEG) for the UXO sizes potentially present. The final column in the table presents the NEG for the UXO devices included within the assessment. It is not clear how these NEQ values in the final column relate to the other two columns. The table should be updated to clarify this:

Assessment [APP-102]. The Applicants would like to highlight that not including the underwater noise modelling results for UXO clearance method low-yield was an error and are grateful for the identification. Results will be added to Table 11-6-5 and Table 11-6-6 in a future revision of Appendix 11-6 Unexploded Ordnance Clearance Information and Assessment [APP-102]. In Table 11-6-3 of Appendix 11-6 Unexploded Ordnance Clearance Information and Assessment [APP-102]; the first column lists the UXO devices with the documented Net Explosive Quantity (NEG) values in the second column. The third column in the table represents the NEG value that is taken forward for the underwater noise modelling. The Applicants note the error within Table 11-6-6 of Appendix 11-6 Unexploded Ordnance Clearance Information and Assessment [APP-102] (MMO signposted the incorrect table) and confirm that the TTS SPL_{pk} threshold for High Frequency (HF) cetaceans is 224dB re 1µPa and will be updated in a future revision of the report. Regarding Table 6-9 within Appendix 11-3 Underwater Noise Modelling Report [APP-099], the Applicants are grateful for identifying an error in the source levels. For a 750g charge, the Source Level should be 273.4dB SPL_{pk} and 218.2dB SEL_{ss}. This will be rectified in a future revision of the report.

Table 11-6-3 Selection of UXO Potentially Present at the Projects

UXO devices potentially present	NEQ for UXO sizes potentially present	NEQ for UXO devices included within the following assessment
• German SC-50 Bomb	• 25kg	• 25kg
• British 250lb MC Bomb	• 55kg	• 55kg
• British 500lb MC Bomb	• 116kg	• 120kg
• WWI German V Mine	• 163kg	• 240kg
• German SC-500 Bomb	• 220kg	• 525kg
• British 1000lb MC Bomb	• 239kg	• 698kg
• WWII U-Boat Torpedo (Multiple Variants)	• 280kg	
• German LMB Mine	• 483kg	
• German SC-1000 Bomb	• 554kg	
	• 620kg	

Table 11-6-5: Please note that the TTS SPL_{peak} threshold for High Frequency (HF) cetaceans) (i.e., Bottlenose dolphin, common dolphin, and white-beaked dolphin) is 224 dB re 1µPa and not 230 dB re 1 µPa.

The unweighted SPL_{peak} and SEL_{ss} source levels used for the UXO clearance modelling are appropriately provided in Table 6-9 of the report. Please could Subacoustech explain how they obtain a SPL_{peak} source level of 281.9 dB for low yield? The report earlier states that "as with the low order clearance, the low yield clearance still generates sound from the donor charge. Based on recent tests from clearance using the HYDRA system at the Seagreen Alpha and Bravo offshore wind farm development sites (Cook and Banda, 2021), the donor charge is predicted to be 750 g, which will be used in the calculations of noise impact on the environment".

130. RR-030: 5-7-3

Comments on Appendix 11-3 Underwater Noise Modelling Report:

The Applicants acknowledge this comment and will make appropriate updates to the DMLs to address the concerns raised by the MMO and

The MMO welcomes this update and will provide a response in Deadline 2.

		<p>The report is largely transparent and informative, and it refers to appropriate noise exposure criteria for marine mammals and fish. The report considers various piling scenarios to assess the risk of potential impact on foundations, or four pin pile foundations installed per vessel. Importantly, there is also the potential for multiple piling rigs to be operating concurrently. The following concurrent scenarios have been considered:</p> <p>Concurrent monopile foundations (a total of four piles per day, two per site)</p> <p>Two sequentially installed piles at DBS East: S location; and</p> <p>Two sequentially installed piles at DBS West: W location.</p> <p>Concurrent multi-leg foundations (a total of 12 piles per day, four per site).</p> <p>Four sequentially installed piles at DBS East: S location;</p> <p>Four sequentially installed piles at DBS West: W location; and</p> <p>Four sequentially installed at the export cable route (ECR) platform search area: SW location.</p> <p>The above scenarios must be clearly conditioned on the DMLs to ensure that the worst-case piling scenario is not exceeded</p>	<p>submit an updated Draft DCO [APP-027] for Deadline 1.</p>	
131.	RR-030: 5-7-4	<p>Table 4-2 presents the piling profile including the soft start and ramp up scenario used for the monopile foundation modelling. The bottom of the table states that there will be "7,500 strikes over 5 hours 20 mins per pile". This should be "<i>7,500 strikes over 6 hours 20 mins per pile</i>" and should be updated within the document.</p>	<p>The Applicants acknowledge that the MMO is correct and will update this in the next revision of Appendix 11-3 Underwater Noise Modelling Report [APP-099].</p>	<p>The MMO welcomes this update and will provide a response upon review of the updated document.</p>

132.	RR-030: 5.7.5	<p>Section 5.1 presents the maximum predicted unweighted SPL_{peak} and the single strike sound exposure level (SEL_{ss}) noise levels at a range of 750 m from the source. As we have previously advised for other offshore wind noise modelling reports, we appreciate the inclusion of this information, in addition to the source level values, as the values at 750 m correspond to true field noise values that should (in principle) be verifiable by monitoring measurements. Focusing on the SEL_{ss} metric (see Table 5-2 below for reference), we observe that the monopile values (for a 15 m diameter pile and 6,000 Kilojoule (kJ) hammer energy) are only 2 decibels (dB) above the corresponding pin-pile values (for 5 m diameter piles and 2,500 kJ hammer energies). We note that this is somewhat at odds with the emerging evidence from literature, which suggests that the pile diameter is a very important factor in the scaling of piling noise (von Pein et al., 2020). At the same time, we are aware that the INSPIRE model is based on existing empirical data, which presumably does not yet exist for the parameters relevant to the monopile foundations at this wind farm, and thus needs to be extrapolated up to the scale anticipated for the current application.</p>	<p>The Applicants do not agree that the variation in parameters leads to as great a difference in underwater noise levels (at "source", or at any position) as would be suggested by von Pein <i>et al.</i> (2022). Following their methodology would lead to predictions of noise, noise impacts and impact ranges that would be vastly greater than have been monitored in real situations. We do not believe that the data presented in that paper supports its conclusions.</p> <p>The intentions of the paper represent a welcome contribution to the literature, but we would urge caution in the application of their conclusions. The authors apply a relatively simplistic calculation methodology, stating effectively that the effect of a doubling in energy leads to a 3dB increase in noise level for any doubling of energy e.g. 500kJ to 1,000kJ, or 3,000kJ to 6,000kJ. In practice it is much more complex than this, and the increases at higher energies lead to an increase much lower than 3dB.</p> <p>They also appear to greatly overestimate the effect of diameter. Their validation data in section 5.2 for pile diameter, although fitting in wide bounds of 7.5dB, also show empirical noise levels that appear to be trending down at the largest pile diameters and are almost identical at 3.5m diameter as at 7.8m.</p> <p>Subacoustech's research indicates that pile diameter, although contributory, has a relatively small effect on noise emission. As above, a scaling law leading to an increase of 9-10dB as a result of a changing pile diameter alone would produce noise level predictions that would be much greater than have been seen in direct measurements and lead to a greatly over-conservative assessment.</p>	<p>The MMO acknowledges the Applicant's comments and will provide a response in Deadline 2.</p>
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133.	RR-030: 5.7.6	<p>Monopile foundations (Section 5.2):The report highlights that two foundation scenarios have been considered for this study;</p> <p>(i) a monopile foundation scenario, installing a 15m diameter pile with a maximum blow energy of 6,000 kJ in all locations; and</p> <p>(ii) Multi-leg foundation scenarios, installing a 4m diameter pile (array locations) or 3.8 m diameter pile (ECR platform search area locations) with a maximum hammer energy of 3,000 kJ.</p>	No response required	No response required.
134	RR-030: 5-7-7	<p>It appears that only a single monopile installed in 24 hours has been considered for the ECR platform search area locations, whereas for all other locations, a total of 2 monopiles installed in 24 hours has been considered. Please clarify why this is the case.</p>	<p>This was because with two concurrent monopiles in the Offshore Export Cable Corridor, the potential impact to grey seal for TTS was high, the Applicants therefore restricted concurrent piling in the Offshore Export Cable Corridor at the time of the ES. However, the Applicants are in process of preparing a change request relating to the relevant design parameters. The ExA was notified of the Applicants intention to make this change request on the 8th October 2024 (Change Notification Letter [application reference 10.2]). It is expected that the change request will be submitted in December 2024 following some targeted consultation. The change request relates to the removal of an intertidal HDD exit from the Projects Design Envelope, the removal of all platforms from the Offshore Export Cable Corridor, reductions in the numbers of platforms in the Array Areas and overall reductions in cable lengths within the Array Areas. The change request will be supported by a Request for Design Change - Environmental Assessment Update document which will describe any resultant changes to the assessment conclusions presented in the</p>	<p>The MMO acknowledges the Applicant's comments and will provide a response in Deadline 2.</p>

			<p>ES, thus informing a consultation with relevant stakeholders (as agreed by the ExA) as part of the change request process. All the changes are expected to be positive i.e. reducing or removing impacts.</p> <p>The change proposed of relevance to this comment is the removal of the ESP. If the intended changes are accepted by the ExA, piling along the Offshore Export Cable Corridor will be removed from all construction scenarios. The potential effects of underwater noise will be reassessed in the Request for Design Change- Environmental Assessment Update document and submitted during the examination process.</p>	
135	RR-030: 5.7.8	<p>Multi-leg foundations (Section 5.3): 5.7.8 As the MMO advised for the PEIR, for these kind of predictions (i.e., PTS out to 26 km, with receptors fleeing a few additional tens of km further away from their starting positions indicated by the PTS zones), much depends on the Received Levels far beyond 750 therefore, monitoring at large ranges during the construction phase would be required to validate these predictions, otherwise it is rather speculative, and small changes in propagation assumptions can have large effects on these long-range predictions.</p>	<p>The Applicants acknowledge this comment and will refer to this when finalising the IPMP [APP-247], to ensure large ranges are monitored to validate the underwater noise modelling results.</p>	<p>The MMO acknowledges the Applicant's comment but would expect this to be clear within the outline IPMP.</p>
136	RR-030: 5-7-9	<p>The Applicant has acknowledged (in their consultation response log) that monitoring at large ranges during the construction phase would be required to validate any predictions from the underwater noise modelling presented in Appendix 11- 3. The proposed approach would be agreed and outlined, where relevant, including in relevant plans. The MMO cannot see reference to this within the In Principle</p>	<p>The Applicants acknowledge this comment and will update the IPMP [APP-247] in a future revision to include this detail.</p>	<p>The MMO acknowledges the Applicant's comment and review the updated IPMP.</p>

		Monitoring Plan and request the plan is updated.		
137	RR-030: 5.7.10	The impact ranges presented for both monopile, and pin pile foundations are significant, and the risk of potential impact is not going to be sufficiently mitigated using the standard measures that are typically employed (i.e., ADDs). At this stage in the process, and considering the sizable predictions, it is somewhat disappointing to see that no modelling has been presented to show the effect of noise abatement technologies (i.e., bubble curtains). The MMO request that the Applicant considers noise abatement measures at the earliest opportunity and provides this modelling early in the Examination process.	The Applicants have ensured that the underwater noise modelling have included the Projects worse case scenarios without mitigation. NAS is being included within the Projects' procurement strategy as an optional element to allow it to be called upon should it be required based on the final design parameters.	The MMO notes the Applicant's response and will provide an update on underwater noise modelling at Deadline 2.
138	RR-030: 5.7.11	Concurrent location piling (Section 5.4):The MMO requested during the PEIR consultation that further information regarding the fleeing behaviour of animal agents assumed for modelling in the case of concurrent piling scenarios (2 or 3 simultaneous piling locations) is provided, as specific details were missing from the report. Appendix 11-3 itself has not been updated.	The Applicants responded to the MMO's query during the PEIR consultation on page 18 of Appendix 11-1 Marine Mammal Consultation Responses [APP-097]: The response to the relevant query is provided below. <i>"Acknowledged. The underwater noise modelling assessment for calculation of noise exposure from multiple piling sources active simultaneously is undertaken by first generating a sound field surrounding the sources, combining noise radiating from each piling location. The animal noise exposure is calculated assuming the animal begins at each one of the piling locations in sequence. The radius of impact (whether for stationary or fleeing) is then calculated, in the same way as for single pile locations, but of course with a greater overall spread of noise, both spatially and, potentially, temporally. This process is repeated at the starting position of each noise</i>	The MMO notes the Applicant's response and will provide an update on underwater noise modelling at Deadline 2.

			<i>source, representing all of the potentially worst case locations. This results in an output for each of the piling locations. For each assessment metric (e.g. LF cetacean SELcum PTS), these results are overlaid and a combined contour drawn around the perimeter to calculate the total maximum cumulative impact area."</i>	
139	RR-030: 5.7.12	The Applicant has provided further information in the response to the previous consultation comments. Specifically, and for reference, the Applicant has provided the following: "The underwater noise modelling assessment for calculation of noise exposure from multiple piling sources active simultaneously is undertaken by first generating a sound field surrounding the sources, combining noise radiating from each piling location. The animal noise exposure is calculated assuming the animal begins at each one of the piling locations in sequence. The radius of impact (whether for stationary or fleeing) is then calculated, in the same way as for single pile locations, but of course with a greater overall spread of noise, both spatially and, potentially, temporally. This process is repeated at the starting position of each noise source, representing all of the potentially worst-case locations. This results in an output for each of the piling locations. For each assessment metric (e.g. LF cetacean SELcum PTS), these results are overlaid, and a combined contour drawn around the perimeter to calculate the total maximum cumulative impact area".	No response required. Please see response to RR-030: 5.7.13.	Please see response below.
140	RR-030: 5-7-13	We thank the Applicant for this information and would request that this is included within the underwater noise modelling report. This is to ensure that all information is clearly within the secured documents if the project is consented	The Applicants will include this in the next revision of the Appendix 11-3 Underwater Noise Modelling Report [APP-099].	The MMO notes the Applicant's response and will provide an update at Deadline 2.

		and helps with post consent discharging.		
141	RR-030: 5.7.15	A more realistic assumption would have the animal agents aiming to move in the direction of lowest noise levels relative to their current position (for example, along trajectories representing the "steepest descent" of combined noise levels from all sources). Another noteworthy result of the assumed fleeing behaviour are the effect zones with a "hole in the middle" shape (like the VHF cetacean PTS contour in Figure 5-4 and mentioned on page 58). It can be argued that this hole is a model artefact: a receptor that starts fleeing from within this hole (and thus "by definition" it does not accumulate PTS levels of exposure) would move into and then cross the PTS zone surrounding this hole along its 6+ hours journey, and could thus conceivably accumulate a larger noise exposure than an agent that starts directly (and is moving away) from this PTS zone.	This is indeed likely to be a more realistic assumption and appears to be in accordance with individual based modelling principles. However, it is also much more complex, and would probably represent a non-worst case situation.	The MMO notes the Applicant's response and will provide an update at Deadline 2.
142	RR-030: 5.7-16	The explanation of this apparent paradox consists in the fact that the agents starting directly from the PTS zone are not necessarily moving away from it (or away from the highest noise levels) but could be moving along it (like from one source towards another, as highlighted above). In the absence of this behaviour (fleeing into other sources), the probable outcome would be three separate PTS zones (one around each source and not connected).	The Applicants acknowledge this comment.	No response required.
143	RR-030: 5.7.17	Overall, it can be argued that the fleeing behaviour assumed by the model (i.e., radially away from each source) results in larger effect	The Applicants would agree that improvements and aspiration for greater realism in movement modelling would be of benefit. However, at this	The MMO notes the Applicant's response and will provide an update at Deadline 2.

		<p>zones (i.e., more precautionary results) than those resulting from other assumptions (like moving in the direction of lowest noise levels we suggested above). However, it should also be noted that the fleeing behaviour of animals in such complex scenarios (multiple simultaneous noise source) is a rather uncertain topic and thus a degree of precaution is not unwarranted.</p>	<p>stage, the worst case scenario provided by the modelling undertaken provides a strong basis for the precautionary assessment presented here.</p>	
144.	RR-030: 5.7.18	<p>Noise Abatement</p> <p>In Chapter 11 Marine Mammals, the document notes that based on a swim speed of 1.5 metres per second (m/s), prior to monopile installation, the ADD would need to be activated for a minimum of 145 minutes to "ensure" harbour porpoise were beyond the maximum 13 km PTS impact range, or 134 minutes (based on a swim speed of 3.25 m/s) to "ensure" minke whale are beyond the 26km range. The document further acknowledges that:</p> <p>"Tougaard et al. (2014) critically evaluated ADDs and the harbour porpoise noise criteria and found that avoidance of mostly 'mid-frequency' devices were at ranges between 1 and 7.5km. This indicates that even if the ADD is used for the 145 minutes a disturbance range of 13km might not be reached. The use of ADDs for 145 minutes has the potential to cause disturbance and may be deemed as excessive. Therefore, the assessments for disturbance during ADD activation is based on 80 minutes for monopiles. Through consultation with regulators, the maximum an ADD can be operated will be confirmed in the final MMMP prior to construction and will be based on the final pile design".</p>	<p>No response is required. Please see response to RR-030: 5.7.19.</p>	<p>Please see comments below.</p>

145	RR-030: 5.7.20	The MMO welcomes the Applicant's commitment to consider all suitable mitigation options, including the use of noise abatement measures within the outline MMMP. However, at this stage the MMO believes there is clear justification and evidence that noise abatement measures will be required for the Project, to reduce the risk of potential impact on marine receptors. The MMO requests that the modelling and mitigation requirements is updated to include Noise Abatement measures throughout all documents.	The Applicants are considering additional mitigation methods, such as NAS, that are listed in the Outline MMMP [APP-249) and in the In Principle SIP for the SNS SAC [APP-250), should this be required once the final project design is available post- consent. NAS is being included within the Projects' procurement strategy as an optional element to allow it to be called upon should it be required based on the final design parameters.	The MMO welcomes the additional of NAS and will keep a watching brief on this subject as set out within Section 2.5 of this Deadline 1 response.
146	RR-030: 6.1	Summary General Comments Update as required. The MMO has multiple concerns in relation to both the details within the ES and the conditions within the DMLs. We strongly request that the Applicant proactively engages with the MMO throughout the process in order to ensure the assessment is as smooth as possible and agreements can be reached through the Statement of Common Ground (SoCG) or Principle of Disagreement (PAD).	The Applicants acknowledge the MMO's comment and welcome continued engagement throughout the examination process. A draft SoCG has been prepared and has been shared with the MMO.	The MMO acknowledges the Applicant's comment and will continue to engage throughout the process.
147	RR-030: Appendix 1	Modelling behavioural responses 135dB SELss threshold as a behavioural impact threshold for herring (startle response). The criteria for behavioural responses included in the Popper et al., (2014) guidelines are qualitative and broad by nature, owing to the inherent difficulties in quantifying the various ecological and behavioural responses of fish species to underwater noise at varying distances. As a result, given that these criteria can only be broadly defined, they can neither be considered conservative or unconservative.	Please see the response to RR-030: 5.5.15, and the Underwater Noise Memo provided on 2 nd November 2024.	Please see point 5.5.15 above.

Furthermore, qualitative behavioural criteria cannot be easily mathematically modelled to illustrate a range of impact. Accordingly, this cannot be done appropriately with qualitative criteria. Determination of the maximum spatial extent of likely behavioural impacts can only be achieved by modelling a suitable quantitative threshold, based on the best available evidence.

For the purpose of modelling behavioural responses in herring at their spawning ground, a threshold of 135dB (SELss) is recommended by the MMO as a conservative indicator of the risk of a behavioural response, especially for clupeid fishes such as herring. This 135-dB threshold is based on research by Hawkins et al., (2014), who exposed wild schooling sprat to short sequences of repeated impulsive playback sounds at different sound pressure levels, to resemble that of a percussive pile driver. Observed behavioural responses included the breakup of fish schools. The sound pressure levels to which the fish schools responded on 50% of the presentations were 163.2 and 163 dB re 1 μ Pa (peak-to-peak), and as a result the concluded single strike sound exposure level was 135 dB re 1 μ Pa²-s.

The MMO recognise that this may be a conservative threshold as the Hawkins study was carried out in Lough Hyne, which is an enclosed, quiet coastal sea loch, where fish were not accustomed to heavy disturbance from shipping and other sounds (Hawkins et al., 2014). However, sprat are a clupeid species, closely related and anatomically similar to herring, and similarly sensitive to underwater sound (sprats also possess a swim bladder involved in

<p>hearing). Given an absence of other peer-reviewed empirical evidence of behavioural responses in clupeid fishes to support an alternative threshold for impulsive noise, Hawkins et al., (2014) is currently considered the best available scientific evidence by the MMO, and as such, 135dB is deemed an appropriate threshold for modelling behavioural responses. Notwithstanding, the MMO would be willing to consider the use of an alternative quantitative threshold for modelling behavioural responses in herring (or a similar clupeid fish), should the Applicant be able to provide one which is based on suitable, peer-reviewed literature.</p> <p>It is accurate that the 135dB SELSS threshold was determined based on sprat schooling in the water column rather than sprat (or herring) engaged in spawning. However, there is little empirical evidence to indicate how herring (or sprat) engaged in spawning activity may respond to impulsive piling noise. For example, herring may display a biological drive to spawn regardless of the UWN disturbance, however, it is equally possible that such disturbance may cause herring to abandon necessary migrations to the gravel beds on which they need to spawn in order to escape the disturbance, potentially resulting in reduced spawning success and limited recruitment of herring larvae into the Irish Sea stock. In the absence of appropriate, empirical evidence indicating that herring will continue to spawn when subject to significant UWN disturbance, a precautionary approach, based on the best available, peer-reviewed evidence, should be adopted (ICES, 2003, 2015,</p>		
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		2018). For the reasons given above, the MMO consider that the 135dB (as per Hawkins et al., 2014) is a precautionary, but appropriate threshold for the purpose of modelling behavioural responses in herring at their spawning ground.		
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