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MMO Reference: DCO/2021/00003
Planning Inspectorate Reference: EN010130
Identification Number: 20048765

13 December 2024

Dear Rod Macarthur,

Planning Act 2008, GTR4 Limited, Proposed Outer Dowsing Offshore Windfarm Order

Deadline 3 Submission

On 02 May 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 GTR4 Limited (the Applicant) for determination of a Development Consent Order (DCO) for the construction, maintenance and operation of the proposed Outer Dowsing Offshore Wind Farm (the DCO Application) (MMO ref: DCO/2021/00003; PINS ref: EN010130). The DCO includes Deemed Marine Licences (DMLs) in Schedules 10, 11, 12, 13, 14, 15 and 16.

The DCO Application seeks authorisation for the construction, operation and maintenance of Outer Dowsing offshore wind farm (OWF), comprising of up to 100 wind turbine generators together with associated onshore and offshore infrastructure and all associated development (the Project).

This document comprises comments in respect of the DCO Application, in response to Deadline 3.

This written representation is submitted without prejudice to any future representation the MMO may make about the DCO Application throughout the examination process. This representation is also submitted without prejudice to any decision the MMO may make on any associated application for consent, permission, approval or any other type of authorisation submitted to the MMO either for the works in the marine area or for any other authorisation relevant to the proposed development.

Yours sincerely,

[redacted]

Amelia Clarke
Marine Licensing Case Officer

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Contents

1. Comments on Applicant's Amended Application Documents

1.1 General Comments

1.1.1. The MMO would like to highlight the tight timeframe between Deadlines 2 and 3. The MMO have focussed on tabularising our comments at Deadline 2 into Annexes attached to this document to make it more clear to the Examining Authority (ExA) where issues are either addressed or still have not met a resolution. The MMO has however, provided some comments on the DCO/DMLs, which were not included in our Deadline 2 response (REP2-092) and these can be found in points 1.2.1 to 1.2.11 and in Annex 1. The MMO is aiming to provide further responses at Deadline 4.

1.2 DCO/Deemed Marine Licence

Article 6 Transfer of Benefit

1.2.1 The MMO still has concerns regarding Transfer of Benefit of the Order. In addition to the comments set out in Section 1 of REP1-056, the MMO has added further comments below and will provide an update to the Applicant as soon as possible and follow this up with a submission at Deadline 4.

1.2.2 Although the article stipulates the MMO will be consulted there is no requirement for the Secretary of State (SoS) to take into our comments and this will impact our duty as the regulatory authority of the DMLs as there is no power to the MMO to complete its regulatory duty.

1.2.3 As a matter of public law, the MMO does not think the Order can contain a provision transfer of Benefit of the DML as is being proposed. PA 2008 Section 120(3) should read against Section 120(4) and Part 1 of Schedule 5, which the MMO thinks limits what the Order can contain to provisions which deem a marine licence to be granted under the order and to the conditions that should be deemed attached to that licence. The MMO does not consider this to be sufficiently wide as to allow the inclusion of provisions which transfer the Benefit of the Order.

1.2.4 If the Order cannot contain a DML transfer provision for the reasons set out, then it cannot exclude Section 72 of Marine and Coastal Access Act 2009 (MCAA 2009) in the way proposed as Section 120(5) is limited to applying/modifying/excluding only those statutory provisions which relate to any matter for which a provision may be made in the order.

1.2.5 Overall, the MMO continues to raise objection to Article 6 and will provide further comments to the Applicant as soon as possible and follow that to the ExA at each deadline.

Maintain and Materiality

1.2.6 The MMO will review the updates provided and will provide the applicant with any updates and follow with supplying the updates Deadline 4.

Determination dates

1.2.7 Schedule 10 and 11, Part 2, Condition 14(4), includes a timescale to discharge documentation.

'...(4) The MMO must determine an application for approval made under condition 13 within a period of four months commencing on the date the application is received by the MMO, unless otherwise agreed in writing with the undertaker.'

The MMO maintains that it is inappropriate to put a timeframe on decisions of such a technical nature. The MMO would not willingly seek to constrain our ability to make an appropriate decision on post consent sign-off of plans and documentation, we would never

include such a restriction on any other consent. With such tight timeframes, the MMO cannot be confident that all concerns during consultation can be sufficiently addressed.

The MMO understands that the Applicant wishes to ensure there is a specific time scale by which a decision is made, and that the decision does not continue without resolution. However, if discharge was not granted, the undertaker would have to provide updated documentation which would restart the process and potentially cause unnecessary delay.

Maintenance Reporting

1.2.8 As previously stated, the request is to know the maintenance activities throughout the lifetime of the operation including understanding any impacts.

The MMO reiterates that the Offshore Operations and Maintenance Plan (OOMP) is a forward-looking document. By inclusion of the conditions suggested, the MMO maintains that it is imperative that maintenance reporting is submitted in order to reconfirm the applicability of the methodologies and frequencies of the licensable activities permitted by the licence.

Stages of construction

1.2.9 The MMO notes Schedules 10 and 11, Condition 13(1)(b) of which details the submission of a Construction Programme to the MMO.

Adaptive Management

1.2.10 The MMO maintains its position that with the inclusion of adaptive management, all parties are clear in what Is required if impacts exceed what was predicted in the environmental statement. The MMO considers that by the Applicant relying on the MMO to enforce our powers to vary the licence, this is an unnecessary step in any remedial action. This is a standard condition being requested for all offshore wind projects and should be included in the DML.

Force Majeure

1.2.11 The MMO considers that Force Majeure should be removed and the MMO resists its inclusion. The MMO will provide further comments at Deadline 4.

Environmental Statement (ES)

1.3 General Comments

1.3.1 The MMO provided further comments regarding the general comments raised in relation to the ES within our Relevant Representation (RR-042). Please see Annex 2.

1.4 Coastal Processes

1.4.1 The MMO provided further comments/justification on issues still remaining regarding Coastal Processes. Please see Annex 3.

1.5 Dredge, Disposal and Chemical Use

1.5.1 The MMO provided further comments/justification on issues still remaining regarding Dredge, Disposal and Chemical Use. Please see Annex 4.

1.6 Benthic Ecology

1.6.1 The MMO provided further comments/justification on issues still remaining regarding Benthic Ecology. Please see Annex 5.

1.7 Fish Ecology

1.7.1 The MMO provided further comments/justification on issues still remaining regarding Fish Ecology. Please see Annex 6.

1.8 Shellfish Ecology

1.8.1 The MMO provided further comments/justification on issues still remaining regarding Shellfish Ecology. Please see Annex 7.

1.9 Underwater Noise

1.9.1 The MMO provided further comments/justification on issues still remaining regarding Underwater Noise. Please see Annex 8.

1.10 Other Environmental Statement Chapters

1.10.1 The MMO provided further comments/justification on issues still remaining regarding other Environmental Statement chapters. Please see Annex 9.

1.11 Other Application Documents

1.11.1 The MMO provided further comments/justification on issues still remaining regarding other application documents. Please see Annex 10.

2. Comments on Stakeholders Deadline 2 responses

2.1 Maritime and Coastguard Agency (MCA) (REP2-071)

Responses to ExQ1

Q1 OG 1.7

2.1.1 The MMO notes that MCA are content with the conclusions and mitigation in Chapter 18 of the ES - Marine Infrastructure and Other Users (APP-073) and the Helicopter Access Report (APP-175). However, MCA warns that SAR aircraft should not be solely relied upon and that CAT helicopters may be required and this should be assessed at this stage.

Q1 SN 1.3

2.1.2 The MMO acknowledges that MCA is content that Outer Dowsing Offshore Wind has undertaken the Navigational Risk Assessment (NRA) in accordance with MCA guidance (MGN654) and NRA risk assessment methodology.

Q1 SN 1.3

2.1.3 The MMO acknowledges that MCA is content that the appropriate traffic data has been collected in accordance with MGN654.

Q1 SN 1.5

2.1.4 The MMO acknowledges that MCA agrees that all areas of agreement or areas under discussions have been covered in the draft SoCG. Further discussions will be held with the Applicant in due course.

2.2 Historic England (HE) (REP2-068)

Q1 HE 1.4

2.2.1 The MMO notes that HE has stated that some area may require more detailed geoarchaeological modelling to target trench evaluation to islands and shores and margins of ancient dryland.

2.2.2 The latest updated DCO text for Requirement 17 Archaeology (AS1-024) has been noted by HE that it addresses the need for the results of necessary further archaeological evaluation work (reporting post-DCO) to sit alongside the submitted outline onshore written scheme of investigation for archaeological works to inform the specification of archaeological mitigation works.

Q1 HE 1.5

2.2.3 HE acknowledges that the archaeological clerk of works as detailed in the Onshore Written Scheme of Investigation (OWSI) (PD1-052) and Schedule of Mitigation (PD1-058 and PD1-059) provides reassurance to the robustness of measures, however this is reliant on the control and discharge of requirement 17 for the Written Schemes of Investigation. The MMO notes that HE has listed revisions to the OWSI.

2.2.4 The MMO notes that the vibration levels in PD1-071 are conservative and that monitoring and control for noise and dust is presented in the Outline Noise and Vibration Plan. However, HE has deferred to the Highway Authority to provide further comment regarding vibration limits.

2.3 Lincolnshire County Council (REP2-069)

Q1 SV 1.9

2.3.1 The MMO notes that this question asks whether there would be any merit in the consideration of details contained within the Design Approach Document (APP-292) and the Design Principles Statement (APP-293) to inform 'good design' of offshore infrastructure, particularly the Offshore Reactive Compensation Platforms (ORCPs). The MMO notes that Lincolnshire County Council states that they are unlikely to comment on offshore elements of the scheme.

Q1 SE 1.1

2.3.2 The MMO acknowledges that Lincolnshire County Council has stated that the main areas of concerns regarding impacts to tourism relate to the beaches and coastal resorts, and the detrimental impact from construction activities. The MMO notes that Lincolnshire County Council requests that main constructions activities should take place outside of the main tourism season (April to September).

2.4 Royal Society for the Protection of Birds (RSPB) (REP2-081)

Responses to ExQ1

Q1 HRA 2.3

2.4.1 The MMO notes that the RSPB have provided clarification is why it considers that an insufficient evidence base regarding compensation has been provided for previous projects.

Q1 OR 1.2

2.4.2 The MMO notes that RSPB have clarified that there are no further assessment methodology matters that have been omitted.

Q1 OR 1.4

2.4.3 The MMO notes that RSPB is consulting their technical advisors regarding Closure of the English and Scottish North Sea waters or sandeel fishing

2.5 Environment Agency (EA) (REP2-067)

Responses to ExQ1

Q1 DCO 1.4, Q1 NV 1.3 and Q1 NV 1.4

2.5.1 The MMO notes that the EA is having productive discussions with the Applicant regarding flood risk activity permits and supporting evidence for the Flood Risk Assessment (FRA).

Q1 WE 1.5

2.5.2 The MMO notes that the EA considers that they have received sufficient information that the works around Fosdyke Bridge should not increase the risk of flooding in that area.

2.6 Natural England (NE) (REP2-074)

Q1 BE 2.2

2.6.1 The MMO notes that NE has reserved commenting further regarding ES conclusions until the further information requested by NE is provided.

Q1 BE 2.3

2.6.2 The MMO acknowledges that NE consider that issues regarding suspended sediment concentration and seabed level changes remain unresolved. NE has requested clarification regarding maximum design scenario seabed clearance parameters.

Q1 BE 2.4

2.6.3 The MMO notes that NE has advised that their concerns are not yet addressed relating to operations and maintenance activities. These activities may exert the same pressures as the construction phase, dependant on what is being undertaken.

Q1 BE 2.4

2.6.4 The MMO welcomes that NE is satisfied with the scour volumes maximum design scenario. However, they have advised that these are validated through modelling. The MMO will continue to be part of the discussions relating to securing any mitigation, monitoring or other conditions required within the DMLs.

Q1 BE 2.6

2.6.5 The MMO understands that NE considers that, by not using the recommended NE and Joint Natura Conservation Committee (JNCC) best practice for cumulative assessment, there are implications for the projects and level of data included and considered in the cumulative impact assessment (EIA) and in-combination assessment (HRA).

Q1 BE 2.8

2.6.6 The MMO notes that NE has welcomed the Applicant's justification concerning lack of evidence for secondary scour and have welcomes the use of Hornsea One OWF as rational. However, NE is uncertain of the comparability between the two sites considering differences of seabed mobility.

Q1 FSE 1.6

2.6.7 NE has highlighted the uncertainty regarding the long-term effects of the sandeel fishing ban in English and Scottish waters of the North Sea, which came into effect on 26 March 2024. The MMO notes that NE do not consider it necessary to factor in the closer into the impact assessment.

Q1 HRA 1.5

2.6.8 The MMO notes that NE has provided further justification in why they consider the worst-case scenario for Annex I Sandbanks from the placement of cable protection in the Inner Dowsing Race Bank North Ridge (IDRBNR) Special Area of Conservation (SAC) to not be assessed. NE has noted that the applicant has committed to using removable cable protection, but have highlighted that this is not secured. The MMO notes that NE states that 'Without further assessment and securing mitigation measures Natural England is unable to advise with certainty that the impacts wouldn't exceed 5,760m2 of permanent habitat loss.' The MMO will continue to be part of the discussions relating to securing any mitigation or other conditions required within the DMLs.

Q1 HRA 1.6

2.6.9 The MMO understands that NE will be providing further advice at Deadline 3 on suitable habitat for Annex I reef.

Q1 HRA 1.7

2.6.10 The MMO acknowledges NE's response regarding securing the avoidance of cable protection in shallow nearshore areas. The MMO notes that NE has requested clarity from the Applicant for mitigation measures proposed and whether any cable crossings are anticipated within the nearshore. The MMO will continue to be part of the discussions relating to securing any mitigation or other conditions required within the DMLs.

Q1 HRA 2.2

2.6.11 The MMO notes NE's response regarding the Department for Environment, Food & Rural Affairs (DEFRA) Best Practice Guidance on developing compensatory measures for Marine Protected Areas and that the recommendations in draft form will not have implications for the Project, out with what NE has provided in their relevant representations.

Q1 HRA 2.3

2.6.12 The MMO notes that NE has provided comments regarding compensation measures on other DCO Orders, to inform the ExA on why it considers the level of information for this Project to be lacking.

Q1 HRA 2.4

2.6.13 The MMO notes that NE has stated that they were content, based on the evidence produced, to reduce the length of time the proposed Artificial Nesting Structures (ANS) for Hornsea Four to be in place before operation.

Q1 HRA 2.14

2.6.14 The MMO understands that NE does not consider there is merit in progressing project-specific benthic compensation measures owing to the difficulties in delivery. The MMO maintains a watching brief on the outcome relating to securing any mitigation, monitoring or other conditions required within the DMLs.

Q1 OR 1.2

2.6.15 The MMO acknowledges NE's outstanding issues relating to offshore and intertidal ornithology (REP2-095) and welcomes that some issues have now been resolved with the production of the Offshore Restricted Build Area (ORBA) documentation. The MMO maintains a watching brief on the outcome relating to securing any mitigation, monitoring or other conditions required within the DMLs.

Q1 OR 1.4

2.6.16 The MMO notes that NE has explained the uncertainty regarding the level of benefits to both sandeels and seabirds from the closure of the English and Scottish North Sea waters for sandeel fishing, and that there are no plans to monitor sandeel populations following the closure.

Q1 OG 1.3

2.6.17 The MMO welcomes NE's background regarding the DEFRA led project for strategic compensation which includes the possibility of SAC extensions.

3. Comments on the Applicant's Responses to The ExA's First Written Questions (ExQ1) (REP2-051)

Q1 BE 2.1

3.1.1 The MMO notes that the Applicant has signposted to where mitigation measures for Sandbanks are secured within the DML and following outline plans:

Outline Cable Specification and Installation Plan (CSIP) (REP2-0xx), as required by Condition 13(1)(d)(ii), Part 2, Schedule 11. This includes removable cable protection in the IDRBNR SAC and that no jack-up vessel will be used within the SAC.

Outline Biogenic Reef Mitigation Plan (REP2-0xx), as required by Condition 13(1)(j), Part 2, Schedule 11, which includes micrositing to avoid Sabellaria spinulosa reef.

Q1 BE 2.7

3.1.2 The MMO notes that the Applicant is intending to produce a Project specific Sandwave Levelling Assessment at Deadline 3, the MMO will review this document once submitted and provide comments in due course.

Q1 CM 1.9

3.1.3 The MMO acknowledges that the Applicant has included aviation mitigation within the Aids to Navigation Plan (as noted within the Schedule of Mitigation, REP2-039) secured though Condition 13(1)(i) of Part 2 of Schedules 10 and 11 DMLs and has highlighted the need to an Emergency Response and Cooperation Plan (ERCoP) secured through Condition 15 of Part 2 of Schedules 10 and 11 DMLs.

Q1 CC 1.4

3.1.4 The MMO notes the Applicants response to the explanation of the management strategies for offshore cables if they become exposed post decommissioning. The Applicant has stated that Project Infrastructure could 'potentially' include that cables remain in situ.

3.1.5 The MMO welcomes the clarification that the landfall cables under the sea defence will be installed at a depth of between 15-17 metres (m) and between 11-12m deep under the beach to avoid the potential for exposure.

Q1 CF 1.1

3.1.6 The MMO welcomes the ExA's question regarding whether fishing activities could take place within any part of the array once operational. The MMO notes the Applicant's Commercial Fisheries Impact Assessment (APP-069). The MMO defers to the National Federation of Fishermen's Organisations and Sussex Inshore Fisheries and Conservation Authorities, along with standalone representatives on matters of commercial fisheries. However, the MMO has asked the Applicant (REP2-092) to review the published report called 'Spatial distribution of under 12m fishing activity and sensitivity to offshore wind development in the east marine plan areas (MMO1382).' which outlines the findings of the evidence project of the under 12m fishing fleet's activity in the east marine plan areas and their sensitivity to Offshore Wind Farms. The MMO will continue to be part of the discussions relating to securing any mitigation, monitoring or other conditions required within the DMLs.

Q1 CF 1.3

3.1.7 The MMO notes that the minimum spacing between turbines is set out in requirement 2(1)(d) of the DCO and that the maximum number of turbines is set out in Schedule 1 (Authorised project), Part 1 (Authorised development) of the DCO. The final array layout plan is secured by condition 13(1)(a) of the Schedule 10 DML.

Q1 FSE 1.1

3.1.8 The MMO notes the Applicant's response to the ExA's question regarding assessment of effects on herring. The MMO will review and respond in due course, however, the MMO has noted further comments regarding impacts to Herring in our Deadline 2 response (Section 1.6, REP2-092).

Q1 FSE 1.4

3.1.9 The MMO notes the Applicant's response to the ExA's question regarding temporal restrictions on piling in other made DCOs. The MMO will review and respond in due course, however, the MMO has noted further comments regarding the need for piling restrictions in our Deadline 2 response (Section 1.6, REP2-092).

Q1 FSE 1.5

3.1.10 The MMO acknowledges the Applicant's comments regarding implications of a temporal restriction on piling. The MMO has noted further comments regarding the need for piling restrictions in our Deadline 2 response (Section 1.6, REP2-092). Given that the overlap of noise contours from piling in the array with the area of 'active' spawning ground is driven by piling in the western portion of the array, the MMO considers that the recommended temporal mitigation can be applied spatially, so that piling within the eastern portion of the array can be carried out at any time. This is likely to require some additional modelling to determine an east/west 'boundary' within the array which can be applied to the DML condition and attached as work plans. The MMO has provided further information regarding the ANS sites and the proposed pilling restriction in our Deadline 2 response (Section 1.6, REP2-092.

Q1 FSE 1.6

3.1.11 The MMO notes the Applicant's response to the longer-term effects of the sandeel fishing ban on sandeel populations in English and Scottish waters of the North Sea which came into effect on 26 March 2024.

Q1 HOE 1.7

3.1.12 The MMO notes that the Applicant will submit its decommissioning plans in accordance with the requirements of the draft DCO (Document 3.1) Requirements 7 (Offshore Decommissioning) and 24 (Onshore Decommissioning), and that these plans will be prepared in accordance with the Energy Act 2004 and legislation/best practice at the time of decommissioning. The MMO is currently reviewing the requirements for decommissioning within the DML and will provide an update in due course.

Q1 HRA 1.4

3.1.13 The MMO notes the Applicant's response to NE's recommendation for the ORCP to not be sited in the Greater Wash Special Protected Area to avoid disturbance to red-throated diver. The MMO maintains a watching brief on the outcome relating to securing any mitigation, monitoring or other conditions required within the DMLs.

Q1 HRA 2.2

3.1.14 The MMO acknowledges that Applicant's response to queries regarding best practice guidance on developing compensatory measures for Marine Protected Areas. The MMO maintains a watching brief on the outcome relating to securing any mitigation, monitoring or other conditions required within the DMLs.

Q1 HRA 2.4

3.1.15 The MMO notes the Applicant's comments on the implications of ANS structures being in place for two full breeding seasons, and that the Applicant has submitted a change request (REP2-064) to amend the Order to reduce the length of time for the ANS to be in place prior to operation of the Project. This change reduces the length from three full breeding seasons to two. The MMO defer to NE for further comment and the MMO will keep a watching brief on the outcome relating to securing any mitigation, monitoring or other conditions required within the DMLs.

Q1 MM 1.2

3.1.16 The MMO notes the Applicant's response to the maximum hammer energy of 6,600 kilojoules (kJ) query.

Q1 MM 1.3

3.1.17 The Applicant is correct that the marine European Protected Species (EPS) licensing body is the MMO, and that Applicant correctly identifies that the MMO does not issue a Letter of No Impediment (LoNI) for marine EPS licences. EPS licences are applied for at the post consent stage when project design and methods are better understood.

Q1 MM 1.4

3.1.18 The MMO welcomes the clarifications regarding definitions of 'piling events' and 'offshore platforms.'

Q1 MM 1.6

3.1.19 The MMO notes the Applicant's resistance to fully committing to the use of Noise Abatement Systems (NAS), noting that the In Principle Southern North Sea Site Integrity Plan (SIP) (PD1-048) references the potential use of NAS. The need to reduce noise at source (noise abatement) is especially pressing given the wider context of the current ramp up of offshore wind development at unprecedented scale in the North Sea. The MMO maintains that reducing noise at source is the most effective measure to reduce the risk of potential impact. Thus, the MMO reiterates that it is in the Applicant's interest to plan for noise abatement measures at the earliest opportunity and to incorporate such measures into relevant mitigation plans.

Q1 OG 1.5

3.1.20 The MMO notes that the Applicant considers there not to be any further mitigation with regards to potential vessel access and displacement to other offshore infrastructure. the MMO will keep a watching brief on the outcome relating to securing any mitigation, monitoring or other conditions required within the DMLs.

Q1 OG 1.14

3.1.21 The MMO agrees with the Applicant that the Race Bank disposal site (HU126) is now disused.

Q1 OG 1.15

3.1.22 The MMO notes the Applicants comments regarding vessel trips and that the trip numbers will be included in the vessel management plan contained within the project environmental management plan. The MMO notes Condition 14(5), Part 2, Schedules 10 and 11 of the DMLs requires that the licensed activities are carried out in accordance with the approved plans, unless otherwise agreed in writing with the MMO.

Q1 OG 1.16

3.1.23 The MMO welcomes the Applicant's signposting to where impacts from the ORCP and biogenic reef restoration areas have been considered (within Section 18.7 of APP-073).

Q1 OG 1.20

3.1.24 The MMO notes the Applicant's comments regarding Eastern Green Link 3 and 4 cables and that the Applicant will review the scoping report for Eastern Green Link 3 and 4 in order to provide an update. The MMO will keep a watching brief on the outcome relating to securing any mitigation, monitoring or other conditions required within the DMLs.

Q1 OG 1.24

3.1.25 The MMO welcomes the ExA's query regarding there being no reference to cable depth within DML Schedule 10, Part 2 - Condition 13(1)(d)(ii) and DML Schedule 11, Part 2 Condition 13 (1)(d)(ii). The MMO notes that the Applicant's response states that a minimum target burial depth of 1m is included in the updated CSIP (REP2-033) and that the conditions require that the CSIP must be in accordance with outline CSIP.

Q1 SN 1.1

3.1.26 The MMO notes the Applicant's tabularised response to the query regarding the mechanisms that are in place for adaptive management to address greater than predicted effects in the Navigational Risk Assessment (NRA). This response includes the relevant plans as required by the DMLs. Although the Applicant has stated that monitoring reports 'will ensure MCA requirements under Marine Guidance Note (MGN) 654 are met, which state that the MCA would expect the opportunity to discuss any changes identified as part of this monitoring, since the submission of the NRA.' However, the MMO considers that the Conditions themselves do not allow for adaptive management to be enforced, and the Applicant's comment instead relies on discussions but leaves room for the Applicant to dispute adaptive management.

Q1 SN 1.6

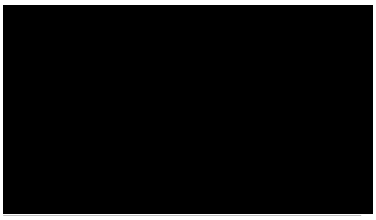
3.1.27 The MMO acknowledges the Applicant's comment and the MMO notes that there are no plans to submit an outline decommissioning plan. The MMO considers that an Outline decommissioning plan should be presented into the Examination for review.

4. Comments on the Update to the Statement of Commonality of Statements of Common Ground (REP2-047)

4.1.1. The MMO agrees with the statement in Table 1 of the document regarding the SoCG with the MMO in that the Applicant is making positive progress to resolve matters. However, the MMO is incorrectly referenced as the MCA in column 4. Ongoing issues relate mainly to fish as discussed in Annex 6, along with ongoing issues relating to the draft DCO/DML.

4.1.2. The MMO welcomes future engagement with the Applicant and hopes to resolve the remaining points on our SoCG in a timely manner.

Yours sincerely,



Amelia Clarke
Marine Licensing Case Officer

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6. Annex 1

Table 1 detailing MMO and the Applicant's comments regarding Marine Plans and DCO/DML comments raised within MMO's Relevant Representation (RR-042)

Marine Plan Policies					
General Comments					
Ref	MMO Relevant Representation (RR-042)	Applicant Response (PD1-071)	MMO Deadline 1 Response (REP1-056)	Applicant Deadline 2 Response (REP2-053)	MMO Response
RR-042.001	Paragraph Number: 2.11 Marine Plans The Environmental Statement (ES) correctly identified that the proposed development is within the East Marine Plan areas. The MMO requests that all policies are reviewed within a table to show compliance. This must be produced as the Secretary of State must use the East Marine Plan when making planning decisions for the sea, coast, estuaries and tidal waters, as well as developments that impacts these areas, such as infrastructure. The relevant marine plan policies that should be met can be identified using the Explore Marine Plans tool and policy information on the following website: https://www.gov.uk/guidance/explore-marine-plans Although some Marine Plan Policies are discussed under	The Applicant submitted a Policy Compliance Document (AS-012) on 31st July 2024. This includes consideration of the Marine Policy Statement and the East Inshore and East Offshore Marine Plans. A full assessment of relevant Marine Plan Polices relevant to the Project can be found in Table 1 of section 6, from page 798. The Applicant therefore considers that the creation of an additional document would be superfluous and is not required as the information requested by the MMO is included within the Policy Compliance Document (AS-012).	The MMO mentioned in our Deadline 1 submission (REP1-056), that we acknowledged that the Applicant has produced a Policy Compliance Document (AS-012). Section 6, Table 1 includes an assessment of Marine Plan Policies and welcomed the signposting provided by the Applicant. The MMO is therefore satisfied that the Marine Policy considerations remain as part of this document, and there does not need to be an additional document created as this would be duplication. However, we did note that policies E-ECO-1 and E-TR-3 appear to be missing. These should be added to Table 1 to ensure all policies are considered.	The Applicant welcomes the MMO's support of the Policy Compliance Document (AS-012) submitted as a response to the Rule 17 Letter. The Applicant agrees with the MMO that the submission of an additional document would be duplication. In relation to policies E-ECO-1 and E-TR-3, the Applicant understands these policies are directed at decision / plan makers but confirms as follows for completeness: ▪ E-ECO-1 – "Cumulative impacts affecting the ecosystem of the East marine plans and adjacent areas (marine, terrestrial) should be addressed in decision-making and plan implementation." Although the Applicant is not the decision maker or plan	The MMO welcomes the Applicant comments and considers that this is now addressed.

	the relevant chapters to which they relate, MMO requires the Applicant to detail how the proposed project is compliant with the relevant marine plans by producing a marine plan policy assessment in one document.			implementation, cumulative impacts affecting the ecosystem of the East marine plans and adjacent areas have been considered throughout the Environmental Statement (ES) in each of the assessment chapters. The approach to assessing cumulative effects is set out in Appendix 2 Offshore Cumulative Effects Assessment Approach (APP-147) and Appendix 3 Onshore Cumulative Effects Assessment Approach (APP-148) ▪ E-TR-3 – "Proposals that deliver tourism and/or recreation related benefits in communities adjacent to the East marine plan areas should be supported." As the Project does not deliver tourism and/ or recreation related benefits, this policy is not considered relevant for the Applicant to comment on.	
Development Consent Order (DCO) and Deemed Marine Licences (DMLs)					
Ref	MMO Relevant Representation (RR-042)	Applicant Response (PD1-071)	MMO Deadline 1 Response (REP1-056)	Applicant Deadline 2 Response (REP2-053)	MMO Response
RR-042.002	Paragraph Number: 3.1.1 Draft Development Consent Order The MMO has reviewed the draft DCO and provided	The comment is noted by the Applicant.	The MMO welcomes that the Applicant has noted this comment.		

	comments below. The MMO are currently undertaking a detailed review and will provide further comments on the DCO at Deadline 1 and during the course of the examination.				
RR-042.003	Paragraph Number: 3.2.1 Unexploded Ordinance The MMO would like clarity on if the investigation of and the detonation of UXO's are included within the licenced activities. These are not part of any of the Works order or set out within the activities of Schedule 10 & 11, however a draft UXO marine mammal mitigation plan is proposed.	Whilst the impacts from unexploded ordnance (UXO) clearance have been assessed within the relevant chapters of the Environmental Statement, the Applicant is not seeking consent at this stage for the investigation of and clearance of UXO due to the degree of uncertainty regarding the number of UXO which may need to be cleared. Such activities are therefore not included within the scope of the licenced activities, as discussed with the MMO during the pre-application Evidence Plan Process as noted in Appendix 5.1.5. Evidence Plan Process Consultation (APP-052). Prior to the commencement of offshore construction for the Project, a marine licence application will be made to the MMO for the investigation of potential UXOs and the clearance of confirmed UXOs. A formal UXO Clearance Marine Mammal Mitigation Protocol (MMMP) will be	The MMO notes that the Applicant has stated that they are not seeking consent at this stage for the investigation of and clearance of Unexploded Ordinance (UXO) due to the degree of uncertainty regarding the number of UXO which require clearing. The MMO notes the Applicant intends to apply for a marine licence application for the investigation of potential UXOs and their clearance prior to the commencement of offshore construction. A formal UXO Clearance Marine Mammal Mitigation Protocol (MMMP) will be drafted and submitted as part of the marine licence application. The MMO agrees with this approach.	The comment is noted by the Applicant.	The MMO is satisfied that this comment can be closed.

		drafted and submitted as part of the marine licence application, which will be based on the best available evidence at that point in time. The Applicant submitted an Outline MMMP for UXO Clearance Activities (APP-280) as part of the suite of application documents in response to advice from Natural England to do so. The Outline UXO MMMP is intended to demonstrate that effective mitigation measures are available to mitigate the impacts of UXO clearance to negligible, however the measures proposed within the marine licence application and associated MMMP pre-construction will be based on best practice and up to date evidence at that point in time.			
RR-042.004	Paragraph Number: 3.3.1 Arbitration Schedule 19 proposes a new enhanced Appeals procedure for the Applicant should the MMO refuse an application for approval under a condition, or fail to determine the application for approval by certain 'determination dates' which have been inserted into the DML in Schedule 20. This Appeals procedure is	Article 38 (Arbitration) of the draft DCO makes provision for disputes arising under the provisions of the DCO, unless otherwise provided for, to be settled by arbitration however paragraph (2) of Article 38 restricts the scope of this and confirms that matters for which the consent or approval of the Secretary of State or the MMO is required will not be subject to arbitration. The Arbitration Rules set out in Schedule 19 therefore do not	The MMO understands that arbitration does not apply to the MMO in this application. The MMO thanks the Applicant for clearly setting out that the Arbitration and Appeals procedures set out in the DCO do not apply to the DMLs. This is reflected in Article 38 (2): "38…(2) Any matter for which the consent or approval of the Secretary of State	The MMO's position on Arbitration and Appeals is welcomed by the Applicant.	The MMO is satisfied that this comment can be closed.

	not available for other marine licence holders. The MMO strongly requests that the Appeals procedure for the MMO is removed from both the DCO.	apply to matters which require the consent or approval of the MMO. Paragraph (2) of Article 39 (Requirements, appeals, etc.) gives effect to Schedule 20 (procedure for discharge of requirements) which provides a procedure for the discharge of requirements. This does not apply to the discharge of conditions under the Deemed Marine Licences (DMLs). The Arbitration and Appeals procedures set out in the DCO therefore do not apply to the DMLs.	or the Marine Management Organisation is required under any provision of this Order shall not be subject to arbitration."		
RR-042.005	Paragraph Number: 3.3.2 Arbitration Appeals are already available to the Applicant in the form of an escalated internal procedure and judicial review ("JR"), and therefore, including any additional appeal mechanism within the DCO and DML is unnecessary. The Marine Licensing (Licence Application Appeals) Regulations 2011 apply a statutory appeal process to the decisions that the MMO makes regarding whether to grant or refuse a licence or conditions which are to be applied to the licence.	See Applicant's response to 3.3.1 above.	Please see MMO's further response to 3.3.1 above.	The MMO's position on Arbitration and Appeals is welcomed by the Applicant.	The MMO is satisfied that this comment can be closed.

	However, they do not include an appeal process to any decisions the MMO is required to give in response to an application to discharge any conditions of a marine licence issued directly by us. Therefore, if the DCO were to be granted with the proposed appeal process included, this would not be consistent with the existing statutory processes. This amendment would be introducing and making available to this specific Applicant, a new and enhanced appeal process which is not available to other marine licence holders, creating an unlevel playing field across the regulated community. These proposals go against the statutory functions laid out by parliament. The private nature of the arbitration process does not align with the public functions and duties of the MMO. The removal of the MMO decision-making function, and its placement into the hands of a private arbitration process, is inconsistent with the MMO legal function, powers and responsibilities, which was never intended by Parliament in enacting the Planning Act 2008 or MCAA 2009. The MMO also consider that arbitration would				

	not be consistent with p.4 of Annex B of the PINS Guidance Note 11, which states that "the MMO will seek to ensure wherever possible that any deemed licence is generally consistent with those issued independently by the MMO". Inclusion of a different mechanism for determination of disputes in respect of DMLs would not be consistent with Marine Licences issued independently by the MMO.				
RR-042.006	Paragraph Number: 3.3.3 Arbitration In addition to this, the MMO emphasises that we are an open and transparent organisation that actively engages, and maintains excellent working relationships with, industry and those it regulates. The MMO discharges its statutory responsibilities in a manner which is both timely and robust in order to fulfil the public functions vested in it by Parliament. The scale and complexity of Nationally Significant Infrastructure Projects creates no exception in this regard and indeed it follows that where decisions are required to be made, or approvals given, in relation to these developments of significant public interest,	See Applicant's response to 3.3.1 above.	Please see MMO's further response to 3.3.1 above.	The MMO's position on Arbitration and Appeals is welcomed by the Applicant.	The MMO is satisfied that this comment can be closed.

	only those bodies appointed by Parliament should carry the weight of that responsibility. Since its inception the MMO has undertaken licensing functions on over 130 DCOs, comprising some of the largest and most complex operations globally. The MMO is not aware of an occasion whereby any dispute which has arisen in relation to the discharge of a condition under a DML has failed to be resolved satisfactorily between the MMO and the applicant, without any recourse to an 'appeal' mechanism.				
Transfer of Benefit of the Order					
Ref	MMO Relevant Representation (RR-042)	Applicant Response (PD1-071)	MMO Deadline 1 Response (REP1-056)	Applicant Deadline 2 Response (REP2-053)	MMO Response
RR-042.007	Paragraph Number: 3.4.1 The MMO understands that Article 6 – Transfer of Benefit is drafted in a similar way to previous consents granted by the Secretary of State (SoS), however the MMO has major concerns over the wording.	As acknowledged by the MMO, Article 6 (Benefit of the Order) is a standard provision with significant precedent in DCOs. The article is particularly important in offshore wind DCOs as the regulatory regime requires the transmission infrastructure to be transferred to an offshore transmission owner (OFTO). The wording of Article 6 reflects current practice and is considered appropriate in the context of the draft DCO. The Applicant has responded to the MMO's specific comments in the rows below.	The MMO position in RR-042, points 3.4.1 - 3.4.5 has not changed. The MMO disagrees with the Applicant stance on this. The MMO is reviewing the comments made and will respond in due course.	The comment is noted by the Applicant.	The MMO still has concerns regarding Transfer of Benefit of the Order. The MMO are currently reviewing and will provide comments at Deadline 4.

RR-042.008	Paragraph Number: 3.4.2 Article 6(1)-(2) gives the right to permanently transfer the benefits of the DCO including the deemed marine licences (DML) in Schedule 11,12& 13 to a third party with the consent of the SoS. Part 2: Article 6(1)-(2) "6.—(1) Subject to this article, the provisions of this Order have effect solely for the benefit of the undertaker. (2) Subject to paragraph (3), the undertaker may with the written consent of the Secretary of State— (a) transfer to another person ("the transferee") any or all of the benefit of the provisions of this Order (including the deemed marine licences) and such related statutory rights as may be agreed between the undertaker and the transferee;" The MMO considers that this is a clear departure from the 2009 Act, 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	The provisions contained within paragraphs (1) and (2) of Article 6 are long established in offshore wind DCOs and the appropriateness and legality of such provisions in light of the provisions of the Marine and Coastal Access Act 2009 have been debated at length during previous offshore wind DCO examinations but ultimately Examining Authorities and the Secretary of State have considered such provisions to be appropriate. To depart from well-established precedent would be prejudicial to the Applicant. With respect to the MMO's comment querying why it should be the Secretary of State approving the transfer (in the event that paragraph (6) does not apply), this is to reflect the fact that it is the SoS that grants the DCO (which includes the DMLs, as well as various other powers and obligations) and so the Applicant considers that in the event of a transfer of the whole or part of a DCO (which includes DMLs), it is appropriate that the SoS (as the relevant regulator in the case of DCOs) should approve this as there may be considerations that go beyond the DMLs (for example,	The MMO position in RR-042, points 3.4.1 - 3.4.5 has not changed. The MMO disagrees with the Applicant stance on this. The MMO is reviewing the comments made and will respond in due course.	The comment is noted by the Applicant.	The MMO are currently reviewing and will provide comments at Deadline 4.

	undertaker, with the Secretary of State (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. Parliament has already created a statutory regime for such a process and it is unclear what purpose the written consent of the SoS actually serves. 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 2009 Act, the MMO queries why is it considered necessary or appropriate for the SoS to 'approve' the transfer of the DML. 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 the MMO under the existing 2009 Act regime. Because of this confusion and potential duplication, it is the position of the MMO that these provisions are removed and that any transfer should be subject to the existing regime under the 2009 Act, with the decision maker remaining the MMO.	interactions with articles, requirements or other Schedules which relate to offshore matters). Furthermore, it is likely that any transfer will relate to works and powers within the DCO in addition to licensed activities under the DMLs and so it would not be appropriate or practical to require the consent of the SoS in respect of the DCO aspects only and the consent of the MMO in respect of the DML aspects as this would create duplication. It is worth noting that given the regulatory context in which the offshore wind industry sits, it is unlikely that a transfer will take place to a transferee that does not hold a licence under the Electricity Act 1989 and so in most circumstances, paragraph (6) will apply and the approval of the SoS will not be required. In such circumstances, paragraphs (8) to (11) provide for a robust notification process whereby the undertaker must notify the SoS, and where relevant, the MMO, of the transfer. Paragraph (9) reflects the wording set out in earlier DCOs (for example, Hornsea Three, Hornsea Four, East Anglia ONE North, East Anglia TWO, Norfolk Vanguard etc) and was			

		drafted in response to comments from and in consultation with the MMO on those earlier projects to ensure the information provided within the notification meets the requirements of the MMO. The Applicant does not consider there to be any duplication under the current drafting and indeed considers that the MMO's proposed approach would create duplication and potentially confusion (particularly if the SoS were to approve the non-DML elements of a transfer and the MMO were to refuse the transfer of the DML aspects, or if the period taken for each authority to grant consent differed significantly). The Applicant therefore considers the transfer and notification process set out within Article 6 to be appropriate, fit for purpose and in line with established precedent.			
RR-042.009	Paragraph Number: 3.4.3 This Article 6(2)(b) gives the right to temporarily transfer the benefits of the DCO (including DML) to a third party. Article 6(2)(b)	The Applicant notes that there may be some confusion here as Article 6(2)(b) operates in the same way was Article 6(2)(a) and transfers under this provision will also be subject to Secretary of State approval where paragraph (6) does not apply. The MMO's comment that SoS consent is not	The MMO position in RR-042, points 3.4.1 - 3.4.5 has not changed. The MMO disagrees with the Applicant stance on this. The MMO is reviewing the comments made and will respond in due course.	The comment is noted by the Applicant.	The MMO are currently reviewing and will provide comments at Deadline 4.

	"6(2)(b) grant to another person ("the lessee") for a period agreed between the undertaker and the lessee any or all of the benefit of the provisions of this Order (including the deemed marine licences) and such related statutory rights as may be so agreed, except where paragraph (6) applies, in which case the consent of the Secretary of State is not required." The MMO resists the inclusion of this article. Here the written consent of the SoS is not required. The MMO does not recognise that this would create a more streamlined system. Rather it simply operates to create an additional administrative procedure for marine licences (and one not envisaged by Parliament) and with no clarity in how it will operate.	required under paragraph (b) is therefore not entirely correct. As noted in response to 3.4.2 above, this paragraph follows established precedent and has been included in numerous DCOs granted by the Secretary of State.			
RR-042.010	Paragraph Number: 3.4.4 The MMO has concerns regarding Article 6(3) Article 6(3) "6(3) The Secretary of State must consult the MMO before giving consent to the transfer or grant to another person of the benefit of any or all of the provisions of	The Applicant considers that the obligation on the Secretary of State to consult the MMO is entirely appropriate and sufficient and is drafted in standard terms. It is not necessary or indeed standard practice in DCOs to explicitly include text requiring the views of bodies consulted on matters to be considered or taken into account as this would be done as a matter of course.	The MMO position in RR-042, points 3.4.1 - 3.4.5 has not changed. The MMO disagrees with the Applicant stance on this. The MMO is reviewing the comments made and will respond in due course.	The comment is noted by the Applicant.	The MMO are currently reviewing and will provide comments at Deadline 4.

	any of the deemed marine licences." The MMO notes that there is no obligation for the SoS to take into account the views of the MMO when providing its consent. Furthermore, there is no obligation for the MMO to be informed of the decision of the SoS, notwithstanding its impact on the MMO as the licencing authority. 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) but instead should be subject to such a cursory process as is set out in Article 6(1)-(3). The MMO thus resists this change as unworkable. As explained above, Articles 6 (1)-(3) sets out what is effectively a new non-legislative regime for the variation and transfers of marine licences. In support of these provisions, Article 6(12) explicitly disapplies sections 72(7) and (8) of the 2009 Act, which would otherwise govern these procedures.	With respect to notifying the MMO of the SoS' decision, the Applicant expects that the Secretary of State would publish any decision granting consent to a transfer request (as is the case with Secretary of State approvals under a DCO) and so the MMO would be made aware of the Secretary of State's decision in the usual way. Further drafting to clarify this would be unnecessary and inconsistent with the drafting elsewhere in the DCO. In addition, paragraph (8) requires the MMO to be notified by the undertaker prior to any transfer taking effect, if the transfer relates to the exercise of powers in their area. See the Applicant's response to 3.4.2 above in respect of the other points raised by the MMO in this comment.			

RR-042.011	Paragraph Number: 3.4.5 Article 6(12) "(12) Section 72(7) and (8) of the 2009 Act do not apply to a transfer or grant of the whole or part of the benefit of the provisions of any of the deemed marine licences to another person by the undertaker pursuant to an agreement under this article 6 (benefit of the Order) save that the MMO may amend any deemed marine licence granted under Schedule 11, Schedule 12 or Schedule 13 of the Order to correct the name of the undertaker to the name of a transferee or lessee under this article 6 (benefit of the Order)." This conflicts with the MMO's stated position that the DML granted under a DCO should be regulated by the provisions of 2009 Act, and specifically by all provisions of section 72. Section 72(7)(a) of 2009 Act permits a licence holder to make an application for a 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 that should be retained and used in relation to the DML granted under the DCO and the	See the Applicant's response to 3.4.2 above. With respect to the MMO's comment about Article 6 being inconsistent with Advice Note Eleven, the Applicant does not agree with this interpretation. The Advice Note states: "Where developers choose to have a marine licence deemed by a DCO, it is envisaged that developers will seek to agree the draft marine licence with the MMO prior to submitting their DCO application to the Planning Inspectorate. The conditions included in a marine licence should be enforceable, clear and sufficiently detailed to allow for monitoring and enforcement. The MMO will seek to ensure wherever possible that any deemed licence is generally consistent with those issued independently by the MMO." The Applicant considers that the text quoted from the Advice Note relates to the content of a DML rather than the mechanism for transferring DMLs.	The MMO position in RR-042, points 3.4.1 - 3.4.5 has not changed. The MMO disagrees with the Applicant stance on this. The MMO is reviewing the comments made and will respond in due course.	The comment is noted by the Applicant.	The MMO are currently reviewing and will provide comments at Deadline 4.

	MMO therefore resists the inclusion of this article 6(12) to disapply these provisions. The key concern held by the MMO is that Article 6 operates to override and/or unsatisfactorily duplicate provision that already exist within MCAA 2009 for dealing with variations to marine licences. Such provisions are also inconsistent with the PINS Guidance on how DMLs should operate within a DCO. Advice Note Eleven, Annex B – Marine Management Organisation | National Infrastructure Planning (https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advicenotes/an11-annex-b/) provides that where the undertaker choses 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." Article 6 as drafted is not in compliance with this guidance.				
RR-042.012	Paragraph Number: 3.5.1 The MMO strongly considers that the activities authorised under the DCO and DML should be limited to those that are assessed within the EIA, and the statement that activities will be limited to those that 'do not	The text referred to by the MMO can be found in the context of (1) amendments to approved details (i.e. where a plan or document has been approved under a requirement of the DCO or a condition of the DML and the Applicant requests approval of an	The MMO notes the Applicant's response and is reviewing the comments made and will respond in due course.	The comment is noted by the Applicant.	The MMO are currently reviewing and will provide comments at Deadline 4.

	give rise to any materially new or materially different environmental effects' should be updated to clarify this.	amendment to the approved plan) and (2) in relation to the approval of maintenance activities. With respect to the amendment of approved details, the wording is contained in Requirement 29 of the DCO and in paragraph 9 of the DMLs contained in Schedule 10 to 15 and paragraph 8 of the DML contained in Schedule 16. The text in the DMLs states: "Any amendments to the details, plan or scheme must be in accordance with the principles and assessments set out in the environmental statement, and approval for an amendment may be given only where it has been demonstrated to the satisfaction of the MMO that the amendment is unlikely to give rise to any materially new or materially different environmental effects from those assessed in the environmental statement." The provision clearly states that any amendments "must be in accordance with the principles and assessments set out in the environmental statement" and therefore the provision is not seeking to			

		enable the undertaker to undertake works beyond what has been assessed in the ES. Rather, the provision clarifies the position regarding amendments to approved plans. The Applicant therefore does not agree with the MMO's proposed alternative text or the MMO's comments at 3.5.2 – 3.5.7. It should also be noted that this is standard text appearing in very similar terms in numerous DCOs and DMLs, including Hornsea Project Three, Hornsea Project Four, Norfolk Vanguard, Sheringham Shoal and Dudgeon Extensions and East Anglia ONE North and East Anglia TWO and has therefore been accepted by the Secretary of State as being appropriate. Turning to the approval of maintenance activities, the wording raised by the MMO can be found in paragraph (4) of condition 4 of the DMLs in Schedules 10 and 11 and condition 2 of the DMLs in Schedules 12 to 16. The text in paragraphs (1), (2) and (4) of this condition in the DMLs is as follows:		

		“(1) The undertaker may at any time maintain the authorised scheme, except to the extent that this licence or an agreement made under this licence provides otherwise. (2) No maintenance works whose likely effects are not assessed in the environmental statement may be carried out, unless otherwise approved by the MMO. […] (4) Where the MMO’s approval is required under paragraph (2), approval may be given only where it has been demonstrated to the satisfaction of the MMO that the approval sought is unlikely to give rise to any materially new or materially different environmental effects from those assessed in the environmental statement.” The reason for including the text “unless otherwise approved by the MMO” in paragraph (2) is because there may be maintenance activities which were not envisaged at the point of undertaking the EIA but that are relatively minor in nature or would not give rise to any materially new or materially different effects beyond those assessed in the ES. The inclusion of this text is necessary to enable such			

		activities to be approved by the MMO through this condition rather than potentially requiring a further marine licence which would be disproportionate in the context. The materiality threshold is well established in DCO precedent. The MMO states that the "inclusion of the word materially essentially means that the undertaker makes the decision as to what is and what is not material. Under EIA it is for the appropriate authority to determine what the likely significant effects will be and how those should be mitigated." The Applicant disagrees with this statement as paragraph (4) makes it clear that it is for the MMO to determine whether it is satisfied that the approval sought is unlikely to give rise to any materially new or materially different environmental effects from those assessed. Historically, DMLs did not include a condition clarifying the maintenance works that can be undertaken however this condition, including the text in paragraph (4) has been included in the Hornsea Three DMLs. The Applicant notes that this text is also included in			

		the Examination version of the Rampion 2 DMLs yet the issue raised by the MMO here was not included in the final principal areas of disagreement submitted by the MMO prior to the Examination closing. Indeed, in its Written Representation dated 27 February 2024 in respect of the Rampion 2 Application, the MMO specifically requested the text “do not give rise to any materially new or materially different environmental effects to those assessed in the environmental information” to be included in the relevant condition. In its Relevant Representation dated 16 August 2024 in respect of the Morecambe Offshore Windfarm Generation Assets Application the MMO also suggested including this text in the amendment of approved details condition. It is therefore not clear why the MMO is now departing from wellestablished precedent and is actively recommending the inclusion of this text in the DCOs and DMLs for other offshore wind farm projects but is raising concerns with it in the context of this application.			
RR-042.013	Paragraph Number: 3.5.2 The MMO considers that wording should be updated to	See the Applicant’s response to 3.5.1 above.	The MMO notes the Applicant’s response and is reviewing the comments made and will respond in due course.	The comment is noted by the Applicant.	The MMO are currently reviewing and will provide comments at Deadline 4.

	‘do not give rise to any new or different environmental effects to those assessed in the environmental information’. This also applies to the definition of “maintain”.				
RR-042.014	Paragraph Number: 3.5.3 The intention behind EIA is to protect the environment by ensuring that in deciding whether to grant a development consent for a project, and in deciding what conditions to attach to that consent, the decision has full knowledge of what the likely significant environmental effects of the project/development will be. That knowledge then guides the consent process and what conditions, if any, to attach to the consent. Additionally, there is considerable public consultation under the EIA process because the process recognises the importance of local knowledge in environmental decision making.	See the Applicant’s response to 3.5.1 above.	The MMO notes the Applicant’s response and is reviewing the comments made and will respond in due course.	The comment is noted by the Applicant.	The MMO are currently reviewing and will provide comments at Deadline 4.
RR-042.015	Paragraph Number: 3.5.4 The EIA legislation was designed to apply to those plans/projects which could be sufficiently detailed and particularised at the application stage, to allow the consenting decision to be taken in the full knowledge of what the likely significant effects of that plan or	See the Applicant’s response to 3.5.1 above.	The MMO notes the Applicant’s response and is reviewing the comments made and will respond in due course.	The comment is noted by the Applicant.	The MMO are currently reviewing and will provide comments at Deadline 4.

	project would be. In such circumstances, it would be unnecessary to create a legal obligation under the order which requires the activities to remain within what was assessed under the EIA, because the consent authorises the detailed and well particularised project, assessed in the EIA to be carried out, and therefore, providing the development is constructed as per the consent, those works would, by default, remain within the parameters of the EIA.				
RR-042.016	Paragraph Number: 3.5.5	See the Applicant's response to 3.5.1 above.	The MMO notes the Applicant's response and is reviewing the comments made and will respond in due course.	The comment is noted by the Applicant.	The MMO are currently reviewing and will provide comments at Deadline 4.
	The difficultly identified with EIA, as was discussed in the Rochdale Envelope case, is that to deal with an outline planning case, where the project will flex over time, you need to undertake the EIA at the outline permission stage when there is not enough detail to properly identify what the final design of the project will actually be. In the case of Rochdale the court was saying things could remain flexible providing the EIA took account of the need for evolution of the project over time and assessed the likely significant effects within clearly defined parameters, and then the consent granted imposed	See the Applicant's response to 3.5.1 above.	The MMO notes the Applicant's response and is reviewing the comments made and will respond in due course.	The comment is noted by the Applicant.	The MMO are currently reviewing and will provide comments at Deadline 4.

	conditions to ensure that the process of evolution kept within the parameters of the EIA. Whilst there might not be an express provision that you can point to in the legislation that says that a project cannot exceed the effects assessed in the EIA, it is implied (or the purpose of EIA would be undermined) and the Rochdale case discusses this.				
RR-042.017	Paragraph Number: 3.5.6 In this DCO and the DML, the Applicant is wanting flexibility in terms of the design details (both in terms of some of the construction details, and in relation to some of the maintenance activities). Where those design details are not finalised at the application stage, the Applicant is wanting to retain some flexibility and is proposing that the works that can be carried out should be restricted to those which do not give rise to materially new or materially different environmental effects to those assessed in the EIA. The concern with this is that the inclusion of the word materially here would allow the undertaker to carry out works whose effects are outside of the likely significant effects assessed in the EIA, providing they do not do so materially, i.e. in any	See the Applicant's response to 3.5.1 above.	The MMO notes the Applicant's response and is reviewing the comments made and will respond in due course.	The comment is noted by the Applicant.	The MMO are currently reviewing and will provide comments at Deadline 4.

	significant way, greatly, or considerably. This is not what the purpose of the EIA process is, and it runs contrary to the purpose of EIA. The other issue with this is that whilst the undertaker is responsible for producing the environmental information and statement on which the EIA decision is based, the appropriate authority is responsible for the EIA consent decision, the inclusion of the word materially essentially means that the undertaker makes the decision as to what is and what is not material. Under EIA it is for the appropriate authority to determine what the likely significant effects will be and how those should be mitigated.				
RR-042.018	Paragraph Number: 3.5.7 The MMO does not consider that it is appropriate to use the word material in these circumstances. If the Applicant wants the flexibility of not being prescriptive about the design from the start, the Order and the DML granted through it should restrict works which can be carried out to those which do not give rise to any new or different environmental effects to those assessed in the EIA.	See the Applicant's response to 3.5.1 above.	The MMO notes the Applicant's response and is reviewing the comments made and will respond in due course.	The comment is noted by the Applicant.	The MMO are currently reviewing and will provide comments at Deadline 4.
Schedule 16					
Ref	MMO Relevant Representation (RR-042)	Applicant Response (PD1-071)	MMO Deadline 1 Response (REP1-056)	Applicant Deadline 2 Response (REP2-053)	MMO Response

RR-042.019	Paragraph Number: 3.6.1 Schedule 16 of the DML enables the recreation of Annex I Reef as a compensation measure within Inner Dowsing Race Bank North Ridge (IDRBNR) Special Area of Conservation (SAC) and that this will be considered as part of the Habitats Regulations Assessment (HRA) for the DCO/DML rather than a separate post consent marine licence. The MMO defers to Natural England as statutory nature conservation body (SNCB) and supports any comments in relation to benthic compensation.	The comment is noted by the Applicant.			The MMO welcomes that the Applicant has noted that we defer to Natural England as statutory nature conservation body (SNCB) and that we support any comments in relation to benthic compensation.
RR-042.020	Paragraph Number: 3.6.2 The MMO notes that some of the potential compensation areas of search are located where The Crown Estate has recently issued seabed lease areas to the Aggregates Industry. The MMO queries whether this has been taken into account. We acknowledge that this is wider seabed issue and the MMO will continue to work with relevant interested parties to address this and provide further comments throughout Examination accordingly.	As set out in ES Chapter 4 Site Selection and Consideration of Alternatives (APP-059), the Applicant refined the areas for biogenic reef from the wider area presented at PEIR. This included the removal of any areas that overlap with aggregate areas that have a marine licence under the Marine and Coastal Access Act 2009 and have obtained a Production Agreement from The Crown Estate. The aggregate areas noted by the MMO have been awarded Exploration and Option agreements, and it is only once a Production Agreement is entered into and/or a marine			The MMO notes the comments made by the Applicant.

		licence application made would the spatial extent of such aggregate areas be known. As such, at this stage the Applicant considers it to be entirely appropriate to include these areas identified for the creation and re-creation of biogenic reef.			
Schedule 20					
Ref	MMO Relevant Representation (RR-042)	Applicant Response (PD1-071)	MMO Deadline 1 Response (REP1-056)	Applicant Deadline 2 Response (REP2-053)	MMO Response
RR-042.021	Paragraph Number: 3.7.1 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, and the complexity of the issues and the amount of consultation the MMO is required to undertake with other organisations to seek resolutions. 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 are not subject to set determination	See Applicant's response to 3.3.1 above.	Schedule 10 and 11, Part 2, Condition 14(4), includes a timescale to discharge documentation. ...(4) The MMO must determine an application for approval made under condition 13 within a period of four months commencing on the date the application is received by the MMO, unless otherwise agreed in writing with the undertaker. The MMO maintains that it is inappropriate to put a timeframe on decisions of such a technical nature. The MMO would not willingly seek to constrain our ability to make an appropriate decision on post consent sign-off of plans and documentation, we would never include such a restriction on any other consent. With such tight timeframes, the MMO cannot be confident that all concerns during consultation can be sufficiently addressed.	The Applicant notes that condition 14(2) of Part 2 of Schedule 10 of the draft Development Consent Order (dDCO) provides for an approval period of at least four months unless otherwise stated. Following consultation with Natural England and the MMO, the Applicant revised the draft DCO to increase the approval period from four to six months for those plans which may have particular complexities, as requested by Natural England. Of particular concern to the MMO, the MMMP (condition 13(1)(f) of Part 2 of Schedule 10 of the draft DCO) and the SIP (Condition 22(3) of Part 2 of Schedule 10 of the draft DCO) provide for a six month period (3.1). The Applicant wishes to highlight that the provisions of Condition 14(4), Part 2 of	Schedule 10 and 11, Part 2, Condition 14(4), includes a timescale to discharge documentation. ...(4) The MMO must determine an application for approval made under condition 13 within a period of four months commencing on the date the application is received by the MMO, unless otherwise agreed in writing with the undertaker. The MMO maintains that it is inappropriate to put a timeframe on decisions of such a technical nature. The MMO would not willingly seek to constrain our ability to make an appropriate decision on post consent sign-off of plans and documentation, we would never include

	periods. 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 a timely manner as it is able to do so. The MMO's view is that it is for the developer to ensure that it applies for any such approval in sufficient time as to allow the MMO to properly determine whether to grant or refuse the approval application.		The MMO understands that the Applicant wishes to ensure there is a specific time scale by which a decision is made, and that the decision does not continue without resolution. However, if discharge was not granted, the undertaker would have to provide updated documentation which would restart the process and potentially cause unnecessary delay.	Schedules 10 and 11 would apply in the event that the MMO neither approved nor refused the relevant application for approval made under condition 13, Part 2 of Schedules 10 and 11, within the four month period. As the wording of condition 14(4) specifically allows the Applicant and the MMO to agree a different period, the Applicant would anticipate that, in the event of updated documentation being required, this would be requested by the MMO and a reasonable adjustment to the timescale would be made, rather than the application for approval being refused and the process recommenced causing unnecessary delay.	such a restriction on any other consent. With such tight timeframes, the MMO cannot be confident that all concerns during consultation can be sufficiently addressed. The MMO understands that the Applicant wishes to ensure there is a specific time scale by which a decision is made, and that the decision does not continue without resolution. However, if discharge was not granted, the undertaker would have to provide updated documentation which would restart the process and potentially cause unnecessary delay.
Additional Conditions					
Ref	MMO Relevant Representation (RR-042)	Applicant Response (PD1-071)	MMO Deadline 1 Response (REP1-056)	Applicant Deadline 2 Response (REP2-053)	MMO Response
RR-042.022	Paragraph Number: 3.8.1 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 and 11.	Condition 13(1)(h) of the DMLs in Schedules 10 and 11 requires an offshore operations and maintenance plan (OOMP), in accordance with the outline OOMP, to be submitted to the MMO prior to commencement and it provides for the review and resubmission every three years during the operational phase. This is therefore a forward	The MMO notes the Applicant's comments regarding Schedule 10 and 11, Condition 13(1)(h) of the DMLs which requires an Offshore Operations and Maintenance Plan (OOMP), in accordance with the outline OOMP, to be submitted to the MMO prior to commencement and resubmission every three years during the operational phase.	The Applicant does not consider it necessary or appropriate to include a dML condition for the provision of an annual maintenance report to the MMO every three years. As set out in the Outline Offshore Operations and Maintenance Plan (APP-275), the Applicant will notify the MMO where maintenance will take place, as such the MMO	As previously stated, the request is to know the maintenance activities throughout the lifetime of the operation including understanding any impacts. The MMO reiterates that the OOMP is a forward looking document. By inclusion of the conditions suggested, the MMO

	“23.—(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. (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— (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; (b) reconfirm the applicability of the methodologies and frequencies of the licensable activities permitted by this licence for the remaining duration of this licence.”	looking document advising the MMO of the maintenance activities that are anticipated. Prior to undertaking maintenance activities under the DMLs, the undertaker will be required to issue notices to mariners in accordance with condition 7(9) and to provide copies of the notices to the MMO. The MMO will therefore be notified of maintenance activities throughout the operations and maintenance period under the existing DML conditions and therefore the condition proposed by the MMO is considered to be unnecessary.	As the Applicant states, this is a forward- looking document. The MMO’s request was to have an annual maintenance report submitted every three years (and a summary in year five) to provide a record of the licenced activities during the preceding years. The MMO maintains that it is imperative that this is submitted in order to reconfirm the applicability of the methodologies and frequencies of the licensable activities permitted by the licence and provides valuable information on whether further marine licences are required throughout the lifetime of the Project.	will be aware of all maintenance activities that have been undertaken under each dML. This provision is secured by the relevant condition each deemed marine licence (excluding Schedule 16 as no reasonably foreseeable maintenance activities will take place) and provides for a review and resubmission of the Offshore Operations and maintenance Plan every three years. This condition is secured in: DCO Schedule 10, Part 2, condition 13(h) DCO Schedule 11, Part 2, condition 13(h) DCO Schedule 12, Part 2, condition 11(f) DCO Schedule 13, Part 2, condition 11(f) DCO Schedule 14, Part 2, condition 11(f) DCO Schedule 15, Part 2, condition 11(f) The Applicant therefore considers that the MMO will have sufficient records of all relevant maintenance activities undertaken under each dML and that the condition proposed by the MMO is unnecessary. NPS EN-1, paragraph 4.1.16 provides that, in relation to requirements, requirements should only be included where	maintains that it is imperative that this is submitted in order to reconfirm the applicability of the methodologies and frequencies of the licensable activities permitted by the licence.

				they are necessary, relevant, enforceable, precise and reasonable. The Applicant considers that this policy also applies to marine licence conditions. The Applicant does not consider such a condition to be either necessary or reasonable.	
RR-042.023	Paragraph Number: 3.8.2 Stages of Construction To ensure the MMO has the full timetable for construction the MMO requests this condition is added to both Schedule 10 and 11. "24.—(1) The licenced activities must not be commenced until a written scheme setting out the stages of construction of the authorised development seaward of MHWS has been submitted to and approved by the MMO in writing. (2) The stages of construction referred to in sub–paragraph (1) will not permit the authorised development to be constructed in more than one overall phase. (3) The scheme must be implemented as approved. (4) The written scheme referred to in sub-paragraph (1) must be submitted to the MMO in writing six months prior to the planned commencement of the licenced activities."	Condition 13(1)(b) of the DMLs in Schedules 10 and 11 requires the submission of a construction programme to the MMO for approval prior to commencement of licensed activities. The Applicant therefore does not consider it necessary to include the condition suggested by the MMO in the DMLs as it would result in unnecessary duplication. Whilst it is acknowledged that a similar requirement (Requirement 8) is included in the DCO in respect of the onshore works, the purpose of this is to clearly define the onshore construction stages so that requirements can be discharged in respect of specific stages. This is not relevant to the offshore works.	The MMO notes Schedules 10 and 11, Condition 13(1)(b) of which details the submission of a Construction Programme to the MMO. We have made a further comment regarding this is point 1.20.2 below.	Please refer to the Applicant's response to 1.20.2 below.	The MMO notes Schedules 10 and 11, Condition 13(1)(b) of which details the submission of a Construction Programme to the MMO.

RR-042.024	Paragraph Number: 3.8.3 Adaptive Management MMO requests that the following conditions be added to the Pre-construction monitoring and surveys condition (condition 19 of Schedules 10 and 11) to allow the applicant to provide potential solutions when reviewing the results of monitoring, to be discussed with the MMO and SNCBs. "(5). In the event that the reports provided to the MMO under sub-paragraph (3) identify a need for additional monitoring, the requirement for any additional monitoring will be agreed with the MMO in writing and implemented as agreed." "(6). In the event that monitoring reports provided to the MMO under sub-paragraph (3), identifies impacts which are beyond those predicted within the Environmental Statement/Habitat Regulations Assessment, adaptive management/mitigation may be required. An Adaptive Management/Mitigation Plan to reduce effects to within what was predicted within the Environmental Statement/Habitat Regulations Assessment, unless otherwise agreed in writing by the MMO, must be submitted alongside	The Applicant notes that condition 19 of Schedules 10 and 11 of the draft DCO (AS1-024) relates to postconstruction monitoring, rather than pre-construction monitoring as is envisaged by the MMO's comments. The Applicant notes that PINS Advice Note 15 confirms that, at paragraphs 15.2 and 29.2, whilst the law and policy relating to planning conditions does not necessarily apply to deemed marine licence conditions, it is considered that similar principles should apply when drafting these. The law and policy relating to planning conditions require that conditions should be precise, enforceable, necessary, relevant to the development, relevant to planning and reasonable in all other respects. The Applicant's view is that these standards are not met by the proposed wording. The Applicant considers that the additional parts of the condition are imprecise and unnecessary as: the effect of the condition could be to require further monitoring and adaptive management of impacts which do not give rise to likely significant effects on the environment under EIA or	The MMO notes the Applicant's comments, however, the MMO considers the proposed wording to be precise, enforceable, necessary, relevant to the development and reasonable and this has recently been included in the Sheringham and Dudgeon Extension Order 2024. The MMO notes the Applicant's comments that a specific environmental effect to give rise to a concern has not yet been identified, leading the Applicant to consider the proposed condition wording to be unjustified, however sometimes impacts are unforeseen and further clarity is required in what is necessary from parties should impacts exceed what was assessed at this stage. It is understood that Natural England will be providing further comment on the Project Environmental Monitoring Plan (PEMP) at Deadline 1. If Natural England are to state that monitoring doesn't fully link to outstanding risks and issues and the need to test effectiveness of mitigation measures, then the MMO advises that the adaptive management condition is considered.	The Applicant refers to its detailed response to the MMO's comments at RR-042.024. The Applicant reiterates that the additional limbs are unnecessary given the MMO's power to vary a deemed marine licence under section 72 of the Marine and Coastal Access Act 2009 in such circumstances. In addition, the Offshore In-Principle Monitoring Plan (APP-276) states, at section 2.1 that an adaptive approach to monitoring is a key principle of the monitoring proposed by the Applicant. In relation to benthic impacts specifically, Table 3.2 states "Where significant impacts are observed, an adaptive management process may need to be implemented to ensure that so far as possible, the effects are brought back within the range of those predicted." Condition 13(c), Part 2, Schedules 10 and 11 of the dDCO requires the preparation of a monitoring plan, which accords with the in principle monitoring plan, to be submitted and approved in writing by the MMO. Condition 14(5) requires the licensed activities to be carried out in accordance with the approved plans, unless	The MMO is referring to post-construction monitoring and the use of the word 'pre' in our RR-042 is a typo. The MMO maintains its position that the inclusion of adaptive management, all parties are clear in what Is required if impacts exceed what was predicted in the environmental statement. The MMO considers that by the Applicant relying on the MMO to enforce our powers to vary the licence, this is an unnecessary step in any remedial action.

	the monitoring reports submitted under sub-paragraph (3), including timelines and associated monitoring to test effectiveness. This plan must be agreed with the MMO in consultation with the relevant SNCB's to reduce effects to a suitable level for this project. Any such agreed or approved adaptive management/mitigation should be implemented and monitored in full. In the event that this adaptive management/mitigation requires a separate consent, the Applicant shall apply for such consent." The conditions ensure that all parties are clear what is required if the monitoring shows higher impacts than predicted during the assessment stage.	an AEoI under the Habitats Regulations. An environmental effect is not significant and a project does not result in an AEoI simply because an effect is unanticipated. The purpose of the EIA Regulations is to ensure that, at the point a decision is taken in relation to a project, the decision-maker does so in full knowledge of the likely significant effects on the environment, insofar as can be assessed at that point in time. The EIA Regulations require the ES to set out a: "description of the measures envisaged to avoid, prevent, reduce, or if possible offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements" (emphasis added). The EIA Regulations do not require the ultimate consent to protect against all unanticipated environmental effects. The MMO has not identified any specific environmental effects, which give rise to concern and therefore justify the imposition of additional monitoring and adaptive management requirements. Under section 72 of the Marine and Coastal Access Act 2009, the MMO	The MMO would highlight that if any monitoring shows an impact higher than predicted within the Environmental statement (ES) the MMO may require additional monitoring or mitigation at the post consent stage. The MMO will review the monitoring requirements, NE's comments and provide further updates in due course.	otherwise agreed in writing by the MMO. The Applicant believes that the MMO intends to refer to post-construction monitoring in this comment as the Project cannot have had an impact before works commence.	

		has the power to vary marine licences because of a change of circumstances relating to the environment or human health, because of increased scientific knowledge relating to either of those matters, in the interests of safety of navigation or for any other reason that appears to the MMO to be relevant. The imposition of the proposed condition is unnecessary, given the absence of an identified concern and the existence of the MMO's general powers under section 72 of the Marine and Coastal Access Act 2009.			
Conditions to Remove					
Ref	MMO Relevant Representation (RR-042)	Applicant Response (PD1-071)	MMO Deadline 1 Response (REP1-056)	Applicant Deadline 2 Response (REP2-053)	MMO Response
RR-042.025	Paragraph Number: 3.9.1 Force Majeure The MMO does not consider provisions on Force Majeure to be necessary as Section 86 MCAA 2009 provides a defence for action taken in an emergency in breach of any licence conditions. The defence under Section 86 of MCAA has two limbs, and in the event that the undertaker fails to notify the appropriate licensing authority, in this case the MMO, within a reasonable time of their actions (Section 86(2) "matters") the defence cannot be relied upon	The condition imposes a requirement to report any deposits made in an emergency within 48 hours which can be enforced alongside section 86. Similar provision is included in numerous Orders for offshore wind farms including East Anglia One North and Two, Hornsea Four and Sheringham and Dudgeon Extension projects. It is not considered appropriate for the Order, which will be a statutory instrument, to state that this is in addition to the terms of section 86 of the Marine and Coastal Access Act 2009.	The MMO position in RR-042 point 3.9.1 has not changed. The Applicant maintains their position that the provision can be enforced alongside Section 86 of the Marine and Coastal Access Act (2009) as it is just a notification. The MMO is reviewing this response and will respond in due course.	The comment is noted by the Applicant.	The MMO are currently reviewing and will provide comments at Deadline 4.

	in the event of any enforcement action.				

7. Annex 2

Table 1 detailing MMO and the Applicant's comments regarding general comments relating to the ES, raised within MMO's Relevant Representation (RR-042)

Environmental Statement					
General Comments					
Ref	MMO Relevant Representation (RR-042)	Applicant Response (PD1-071)	MMO Deadline 1 Response (REP1-056)	Applicant Deadline 2 Response (REP2-053)	MMO Response
RR-042.026	Paragraph Number: 4.1.1 MMO has focused its review on the following chapters of Volume 1 Outer Dowsing Offshore Windfarm Environmental Statement (ES) March 2024 Revision: 1.0, by Outer Dowsing Offshore Wind. However, MMO has also reviewed the accompanying figures in Volume 2, and relevant appendices in Volume 3 where required: 6.1.1 Chapter 1 Introduction 6.1.3 Chapter 3 Project Description 6.1.7 Chapter 7 Marine Physical Processes 6.1.8 Chapter 8 Marine Water and Sediment Quality 6.1.9 Chapter 9 Benthic and Intertidal Ecology 6.1.10 Chapter 10 Fish and Shellfish Ecology 6.1.11 Chapter 11 Marine Mammals.	The comment is noted by the Applicant.			The MMO welcomes that this is noted by the Applicant.
RR-042.027	Paragraph Number: 4.1.2 An up-to-date schedule including specific timings and dates for each of the proposed works must be provided to the MMO. MMO	Noted. The submission of a Construction Programme to the MMO for approval prior to commencement of licensed activities is required under condition 13(1)(b) of Schedules			The MMO acknowledges the Applicant's response to RR-042.027 in relation to the

	must be further informed of any updates, or changes to the schedule, prior to the commencement of the works, this is to ensure an effective inspection can occur.	10 and 11 in relation to the Generation Assets and Transmission Assets, respectively.			submission of a Construction Programme to the MMO for approval prior to the commencement of licensed activities which is required under condition 13(1)(b) of Schedules 10 and 11.

8. Annex 3

Table 1 detailing MMO and the Applicant's comments regarding Coastal processes raised within MMO's Relevant Representation (RR-042)

Coastal Processes					
Ref	MMO Relevant Representation (RR-042)	Applicant Response (PD1-071)	MMO Deadline 1 Response (REP1-056)	Applicant Deadline 2 Response (REP2-053)	MMO Response
RR-042.028	Paragraph Number: 4.2.1 The MMO had previously raised concerns that impacts on coastal processes and geomorphology above the Mean High Water Spring (MHWS) were scoped out. The MMO believes that this should be scoped in under Impacts 3, 4 and 8 (construction and in operations maintenance and decommissioning). The MMO notes that coastal processes and geomorphology above MHWS within the suggested impacts (3,4 and 8) above has been included. Therefore, this concern has been resolved.	The Applicant welcomes the MMO's agreement in relation to the inclusion of certain receptors above MHWS, as appropriate.			The MMO considers that this comment is sufficiently addressed.
RR-042.029	Paragraph Number: 4.2.2 The MMO previously raised that impacts of using scour protection (relating to a greater footprint of hard substrate being introduced, which may lead to habitat change/loss) should be compared to the impacts of simply designing foundations which can accommodate scour development. Additionally, the MMO noted that 'there is limited	Secondary scour has been considered within ES Chapter 7 Marine Physical Processes (APP-062), with evidence provided from Hornsea One OWF in the absence of empirical assessment methodologies. The Applicant compared the Project to Hornsea One as several similarities on factors influencing scour formation were observed: 1) in the Array Area, both projects show the same tidal	MMO 4.2.2 and 4.2.3: With regard to the Applicant's responses to MMO points 4.2.2 and 4.2.3, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	For scour protection, a variety of options are listed, such as, rock/gravel placement, concrete mattresses, flow energy dissipation devices, protective aprons or coverings, ecological based solutions and bagged solutions. The MMO would like to highlight that ecological based solutions for scour

	numerical basis for the prediction of secondary scour' has been noted. The MMO suggested further evidence should be collected from field data/monitoring evidence from other wind farms if available, acknowledging that empirical assessment methodologies are less established for edge/secondary scour than they are for primary scour where no scour protection is applied. It is not clear whether secondary scour footprint is factored into project footprint estimates. Further information was requested be provided to support this.	range (variation from 1.7 m to more than 4 m) and tidal excursion (northwest to southeast); 2) the average significant wave height is similar (1.3 m for the Project and 1.5 m for Hornsea One within the Array Area); 3) surficial seabed sediments are similar in the Array Areas of both projects (sand and gravelly sand); 4) Bathymetry is in the same order (10 to 30 m for the Project and 20 m on average at Hornsea One). Consequently, the Applicant believes that the comparison between the Project and Hornsea One is relevant and valid for assessing the scour formation/ impact. The Applicant also notes that the predicted extent of secondary scour would occur within the footprint for seabed preparation works around foundations, which represents the greatest area for habitat disturbance.			protection options should be prioritised and all options should be set out in the Outline Scour and Cable Protection Management Plan.
RR-042.030	Paragraph Number: 4.2.3 Section 7.12.2.2 in Volume 1: Chapter 7: Marine Physical Processes document (ref: PP1-ODOW-DEV-CS-REP-0115) discusses the impacts of seabed scouring, with some estimations for the magnitude of the scour equilibrium volumes. There is a	The Applicant welcomes the agreement from the MMO as to the conclusion of the assessment of the effect from seabed scour is not significant in EIA terms (minor adverse). The Applicant has acknowledged the uncertainties around the assessment of secondary scour within the assessment.	MMO 4.2.2 and 4.2.3: With regard to the Applicant's responses to MMO points 4.2.2 and 4.2.3, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	The MMO considers that this comment is sufficiently addressed.

	good general discussion regarding scour. The MMO notes that there have still not been any predictions made for secondary scour due to limited numerical basis for prediction and remains unclear as to whether secondary scour volumes are included in the project footprint. The MMO considers this to be a weakness. The suggested impact for scour is minor adverse, which we do believe is appropriate. However, we note that this is an area that could be improved yet we recognise it to be a cross-sector issue.				
RR-042.031	Paragraph Number: 4.2.4 The only impacts scoped out of the ES (Section 7.7.1.2) in regard to the physical processes is the hydrodynamic impacts from installation vessels such as jack-up rigs, cable laying vessels etc during the construction phase. The MMO has no concerns regarding this topic not being included within the ES.	The Applicant welcomes the MMO's agreement in relation to the impacts scoped out.			The MMO considers that this comment is sufficiently addressed.
RR-042.032	Paragraph Number: 4.2.5 in Section 7.2 Paragraph 10. Section 7.3.2 of Volume 3: Appendix 7.2 Physical Processes document, goes into further detail of the data sources used and lists them all, including project-specific surveys including geophysical for the marine physical processes. There are a wide range of sources	The Applicant welcomes the MMO's agreement in relation to the data sources used.			The MMO considers that this comment is sufficiently addressed.

	used and within reasonable timeframes. The MMO considers them to be appropriate.				
RR-042.033	Paragraph Number: 4.2.6 Table 7.4 outlines the embedded mitigation in relation to marine physical processes. MMO agrees with the measures in the table, which include standard procedures such as the creation of Cable Installation Plans and Scour Protection Management Plans.	The Applicant welcomes the MMO's agreement in relation to the embedded mitigation measures.			The MMO considers that this comment is sufficiently addressed.
RR-042.034	Paragraph Number: 4.2.7 Section 7.13 outlines the Cumulative Impact Assessment and Section 7.14 discusses the Interrelationships which discusses the potential impacts on the benthic communities and fish species. The MMO considers there to be an adequate description of the potential cumulative and inter-related impacts.	The Applicant welcomes the MMO's agreement in relation to the potential cumulative and inter-related effects.			The MMO considers that this comment is sufficiently addressed.
RR-042.035	Paragraph Number: 4.2.8 The MMO notes some of the colour schemes and bathymetric scales are difficult to read. For example, Figure 7.6 – the colour scale on the figure is small with only 0 and 32 labelled for depth with no other depths highlighted. This isn't particularly useful for the reader and could be improved. Figure 7.7 – colour scheme used for the Benthic Samples Folk class is hard to distinguish the	The Applicant thanks the MMO for the suggestion for revisions to the scales presented for some figures which the Applicant will take into consideration for future figure creation. However at this stage the Applicant does not intend to revise these figures as this would not alter the conclusions of the assessment, nor have any comments been identified by the stakeholder regarding the assessment which are linked to these figures.	MMO 4.2.8: The MMO welcomes the Applicant's consideration of our comments relating to figure scales and colour schemes in future. The MMO notes that the Applicant does not intend to revise these figures.	The comment is noted by the Applicant.	The MMO welcomes that the Applicant has noted this comments for future figure creation.

	classes. The MMO suggested that this is also improved.				
RR-042.036	Paragraph Number: 4.2.9 The MMO notes that Impact 8 is not included in the decommissioning stage of Table 7.3 (Maximum Design Scenario). MMO queries whether this is an oversight or intentionally left out. Whilst the cables are meant to be left in situ, the MMO query if there is any risk of exposure by retreating shorelines/local erosion that may need to be considered.	The Applicant thanks the MMO for highlighting the omission of Impact 8 from Table 7.3. Impact 8 has been considered within Section 7.12.3.3 of ES Chapter 7 Marine Physical Processes (APP-062), with the potential effect identified as not significant in EIA terms. Appropriate set back distances, taking into account the risk of coastal erosion, have been selected during the landfall design process. The Applicant does not consider that it is necessary to update the document as the change would not result in any change to the conclusions of the ES.	MMO 4.2.9 to 4.2.11: With regards to the Applicant's responses to MMO points 4.2.9 to 4.2.11, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	The MMO acknowledges the Applicant's response. We may have further comments on this point at Deadline 4.
RR-042.037	Paragraph Number: 4.2.10 In Table 7.5, where potential impacts/changes are classified to pathways and receptors; Impact 4 is only identified as a pathway. The MMO considers it should be pathway/receptor, as Impact 4 includes the geomorphology above MHWS, which includes shoreline features such as beach dunes.	The Applicant notes the comment from the MMO however does not consider that it is necessary to update the document as the change would not result in any change to the conclusions of the ES as the receptor "geomorphology above MHWS" has been fully assessed within Impact 4.	MMO 4.2.9 to 4.2.11: With regards to the Applicant's responses to MMO points 4.2.9 to 4.2.11, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	The MMO acknowledges the Applicant's response. We may have further comments on this point at Deadline 4.
RR-042.038	Paragraph Number: 4.2.11 The MMO notes that the Physical Processes Technical Baseline (Document number 6.3.7.1) was recently updated to include the	The comment is noted by the Applicant.	MMO 4.2.9 to 4.2.11: With regards to the Applicant's responses to MMO points 4.2.9 to 4.2.11, the MMO is consulting with our technical advisors and will provide	The comment is noted by the Applicant.	The MMO is still currently reviewing Annex B and may have further comments at Deadline 4.

	correct Annex B. The MMO has not had time to review this updated version and may provide further comments on this document.		comments on these sections at Deadline 2.		

9. Annex 4

Table 1 detailing MMO and the Applicant's comments regarding Dredge, Disposal and Chemical Use raised within MMO's Relevant Representation (RR-042)

Dredge, Disposal and Chemical Use					
Ref	MMO Relevant Representation (RR-042)	Applicant Response (PD1-071)	MMO Deadline 1 Response (REP1-056)	Applicant Deadline 2 Response (REP2-053)	MMO Response
RR-042.039	Paragraph Number: 4.3.1 MMO raised previous comments concerning the Preliminary Environmental Information Report (PEIR) with regard to whether a change in the number of gravity bases, would require an increase in the need for scour protection (rock dumping) due to the change in foundations. MMO notes that full descriptions of scour by foundation type are provided in Chapter 3 and in the approach in the outline scour management plan (document 8.2.1). There is also a consideration of the need for disposal sites as part of the updated assessment presented in the ES and a disposal site characterisation report has been provided alongside the DCO application. This provides clarification sought by MMO's previous comments on the PEIR.	The comment is noted by the Applicant.			The MMO is satisfied that the Applicant has noted these comments.
RR-042.040	Paragraph Number: 4.3.2	The comment is noted by the Applicant.			The MMO acknowledges that the Applicant has noted this comment.

	Although the number of samples taken are less than is recommended by OSPAR guidelines (14-06e), and which would be expected for sediment dredges of this size, considering the sandy/coarse physical composition of the project area the effort seems appropriate over both the array and the Export Cable Corridor (ECC). Full descriptions of the physical and chemical analysis of the material undertaken are provided (summarised in Chapter 9 Appendix 9.2) which is sufficient to characterise the dredge material.				
RR-042.041	Paragraph Number: 4.3.3 MMO notes that in the Water Framework Directive (WFD) Assessment, it states that the environmental quality standards directive list (Environment Agency (EA) 2016) should be considered when undertaking an assessment (Chapter 8.03 point 14) and that point 73 states, “There is no intention to knowingly release any chemicals listed in the EQSD into the environment, during the construction, operation and maintenance, or decommissioning phase of the Project.” To be able to be compliant with this, the properties of all the chemicals (products) and their component substances used for the construction operation maintenance and decommissioning of the offshore windfarm should be	The Applicant notes this comment and will ensure that all chemicals are listed within the CRA produced post-consent.	MMO 4.3.3 and 4.3.4: The MMO welcomes the Applicant’s assurance regarding all chemicals which have the potential to enter the marine environment to be listed within the Chemical Risk Assessment (CRA) produced post-consent.	The Applicant welcomes the MMO’s agreement on the CRA.	The Applicant has noted our comments and has stated that that all chemicals proposed for use will be listed within the Chemical Risk Assessment (CRA) produced post-consent. The MMO considers that this is appropriate.

	known to, and approved by the regulator on structures within 1nm (jurisdiction of WFD). For example potentially jacking grease, chemicals used on rollers for cable pulling, may contain chemicals on the EA list. MMO recommends these types of chemical are added to the chemical risk assessment (CRA).				
RR-042.042	Paragraph Number: 4.3.4 Chapter 7 Point 93, describes the potential requirement for drilling. The chemicals that might be used for these works are not discussed within the ES (drill muds as well as paints, coatings, dye, tracer, cement etc.). OSPAR guidance on the environmental considerations for the development of offshore windfarms (2008-3) point 57 states that, “All chemicals, paints, coverings etc used in the construction should be approved for use in the marine environment and their ecotoxicological properties known”. MMO considers that this includes drilling fluids including, tracers, cement, grout etc. The ES should outline how the Project intends to provide this information to the regulator. Similarly, the applicant describes the type of drilling fluid for the Horizontal directional drilling (HDD), however detailed information regarding these types of	The Applicant notes this comment and will ensure that all chemicals and substances which have the potential to enter the marine environment are listed within the CRA (which will be contained within the PEMP) produced post-consent.	MMO 4.3.3 and 4.3.4: The MMO welcomes the Applicant’s assurance regarding all chemicals which have the potential to enter the marine environment to be listed within the Chemical Risk Assessment (CRA) produced post-consent.	The Applicant welcomes the MMO’s agreement on the CRA.	The Applicant has noted our comments and has stated that that all chemicals proposed for use will be listed within the Chemical Risk Assessment (CRA) produced post-consent. The MMO considers that this is appropriate.

	chemicals should be provided in the CRA, including the impact and likelihood/contingency for blow out. Currently all that is stated is that management measures to minimise the likelihood of unplanned release of drilling fluid is outlined in the Code of Construction Practice (CoCP). MMO notes that table 8.14 confirms the commitment to provide a Project Environment Management Plan (PEMP) that will include a Marine Pollution Contingency Plan (MPCP) that will provide protocols to cover accidental spills and potential contaminant release, and provide key emergency contact details, and therefore should include the chemical risk for substances used on the OWF with potential for entry into the marine environment (e.g. cleaning fluids, rigwash, cement or biocides used within gravity base structures etc.).				
RR-042.043	Paragraph Number: 4.3.5 In Chapter 8 Water and sediment quality, table 8.2, it identifies the need to consult with the MMO regarding contamination and benthic survey sample and analysis requirements and that “project specific sediment sampling has been discussed with the MMO reference, with further detail provided in Volume 1, Chapter 9”. The MMO validated laboratories have been used to undertake	The comment is noted by the Applicant.			The MMO welcomes that the Applicant has noted this comment.

	appropriate analysis to be able to characterise the proposed dredge material sufficiently, and estimates of worst case scenarios for dredge volume for various phases of the construction and operation have been provided (Chapter 9 Appendix 9.2).				
RR-042.044	Paragraph Number: 4.3.6 For dredge and disposal, sources such as the UK Marine Monitoring and Assessment Strategy (UKMMAS, 2010) and OSPAR assessments (OSPAR, 2022) are identified. The full suite of baseline datasets used to inform the Marine Water and Sediment Quality (MW&SQ) aspects of the ES, including project specific surveys, are presented in Section 8.4 of this ES chapter (Table 8.2). For the array, 30 sediment samples were analysed and included Particle Size Analysis (PSA), total organic content, trace metals, organotins, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs) and organochlorine pesticides (OCPs) such as dichlorodiphenyltrichloroethane (DDT) and dieldrin, and 28 samples for the ECC. The MMO considers this to be appropriate.	The comment is noted by the Applicant.			The MMO welcomes that the Applicant has noted this comment.
RR-042.045	Paragraph Number: 4.3.7 The applicant identifies embedded mitigation to physical process, namely with regard to dredge and disposal and chemical risks are	The comment is noted by the Applicant.			The MMO welcomes that the Applicant has noted this comment.

	those for Landfall using Horizontal Directional Drilling and the fact that for the foundations and offshore cables etc., the dredged material from construction will be deposited within an area of similar sediment characteristics in close proximity to the dredge location to retain sediment within the sediment transport system, which seems appropriate.				
RR-042.046	Paragraph Number: 4.3.8 The MMO notes that the assessment of impact as a result of contaminant release for scour and increase in suspended sediment concentration for cumulative assessments has been scoped out. The MMO is content with this conclusion.	The comment is noted by the Applicant.			The MMO welcomes that the Applicant has noted this comment.
RR-042.047	Paragraph Number: 4.3.9 There is a comprehensive list of nearby projects under construction/consideration. There is an adequate description of the potential cumulative and inter-related impacts and effects on the physical and biological environment in relation to impacts of dredge and disposal.	The comment is noted by the Applicant.			The MMO is satisfied that the Applicant has noted these comments.
RR-042.048	Paragraph Number: 4.3.10 Volume 1: Chapter 3: Project Description, section 6.11.5.5 second paragraph and Section 7.1 first paragraph has an error 'reference source not found'. MMO recommends that this is rectified.	This comment is noted by the Applicant. The Applicant also notes that this change would not alter the conclusions of the ES and therefore does not consider that it is necessary to update the submitted ES chapter.	MMO 4.3.10 to MMO 4.3.18: With regards to the Applicant's responses to MMO points 4.3.10 to MMO 4.3.18, the MMO is with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The Applicant has noted our comments and has stated that the issues raised do not change the conclusions of the Environmental Statement (ES) which the MMO agrees with, however any document that will be

					certified should be correct to ensure anyone who reviews this document at a later date has full understanding of what is written. This should be either updated in the chapter or be part of the Errata document on the ES documents.
RR-042.049	Paragraph Number: 4.3.11 Additionally, Chapter 8 point 58 refers to metals analysis in Table 8.10, this should read Table 8.9 (as Table 8.10 identifies PAH contaminant levels (µg/kg) as analysed from the Project-specific array survey, against Canadian guidelines). Chapter 8, point 59 States "59. The full suite of metals analysed at each of the 28 stations within the ECC are provided in Table 8.11". However, the heading for table 8.11 is "Table 8.11: PAH contaminant levels (µg/kg) as analysed from the Project-specific ECC survey, against Canadian guidelines". MMO recommends that these are rectified.	This comment is noted by the Applicant. The Applicant also notes that this change would not alter the conclusions of the ES and therefore does not consider that it is necessary to update the submitted ES chapter.	MMO 4.3.10 to MMO 4.3.18: With regards to the Applicant's responses to MMO points 4.3.10 to MMO 4.3.18, the MMO is with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The Applicant has noted our comments and has stated that the issues raised do not change the conclusions of the Environmental Statement (ES) which the MMO agrees with, however any document that will be certified should be correct to ensure anyone who reviews this document at a later date has full understanding of what is written. This should be either updated in the chapter or be part of the Errata document on the ES documents.
RR-042.050	Paragraph Number: 4.3.12 Volume 1: Chapter 8: Marine Water and Sediment Quality, Point 61, states that "The full suite of contaminants analysed at each of the 30 stations within the array area are provided in Table 8.12." However, this data is in the Table labelled 8.10. Similarly point 66	This comment is noted by the Applicant. The Applicant also notes that this change would not alter the conclusions of the ES and therefore does not consider that it is necessary to update the submitted ES chapter.	MMO 4.3.10 to MMO 4.3.18: With regards to the Applicant's responses to MMO points 4.3.10 to MMO 4.3.18, the MMO is with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The MMO is satisfied that the Applicant has noted these comments.

	states that PAH for 28 stations within the ECC are in Table 8.13, this data is in Table labelled 8.11. Table 8.12 contains PAH data for the ECC not the Array -"Table 8.12: PAH contaminant levels as analysed from the Project specific ECC survey, against USEPA guidelines".				
RR-042.051	Paragraph Number: 4.3.13 Section 3.3 heading in the Offshore In-Principle Monitoring Plan (8.03), has a typo where 'benthic' is spelt incorrectly.	This comment is noted by the Applicant.	MMO 4.3.10 to MMO 4.3.18: With regards to the Applicant's responses to MMO points 4.3.10 to MMO 4.3.18, the MMO is with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The MMO is satisfied that the Applicant has noted these comments.
RR-042.052	Paragraph Number: 4.3.14 The MMO notes the comprehensive discussions on the contaminants present and description of analysis and comparisons of results, which is welcomed. However, a minor point regarding concerns for levels of Arsenic exceeding Action level 2 (AL2) "One station in the survey area, ECC_51, had very high concentrations of arsenic, exceeding all thresholds detailed in Table 23, including Cefas action level 1 of 20mg.kg-1 and Cefas action level 2 (AL2) of 50 mg.kg" (Volume 3: Chapter 9: Appendix 9.2 page 82). The Project should note that the current published AL2 for Arsenic is 100 milligrams per kilogram (mg/kg) dry weight.	The Applicant welcomes the clarification provided on the Cefas Action Levels.	MMO 4.3.10 to MMO 4.3.18: With regards to the Applicant's responses to MMO points 4.3.10 to MMO 4.3.18, the MMO is with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The MMO is satisfied that the Applicant has noted these comments.

RR-042.053	Paragraph Number: 4.3.15 It is noted that 'ecological' scour protection may be used that would not exceed the footprint of the methods presented. Any scour protection method used should be notified to the MMO for review and approved prior to use.	Under condition 13(d)(iii) of Schedules 10 and 11of the dDCO, the Applicant must submit a Scour Protection and Cable Protection Management Plan (SPCPMP) to the MMO for approval prior to construction which must accord with the Outline SPCPMP (APP-295). The condition requires the SPCPMP to include details of the need, type, sources, quantity and installation methods for scour protection and cable protection and as set out in the Outline SPCPMP (APP-295), the SPCPMP will contain full details of the proposed protection materials, locations and volumes to be deployed.	MMO 4.3.10 to MMO 4.3.18: With regards to the Applicant's responses to MMO points 4.3.10 to MMO 4.3.18, the MMO is with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The MMO notes that the Applicant will provide the MMO with a Scour Protection and Cable Protection Management Plan for approval post-consent, the MMO are currently reviewing the outline plan and will provide more comments at Deadline 4.
RR-042.054	Paragraph Number: 4.3.16 The applicant may wish to note that Volume 1: Chapter 3: Project Description, Section 6.11.5.1 describes rock placement and size of rock. All rock used for scour protection should be inert and free from fines.	This comment is noted by the Applicant.	MMO 4.3.10 to MMO 4.3.18: With regards to the Applicant's responses to MMO points 4.3.10 to MMO 4.3.18, the MMO is with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The MMO is satisfied that the Applicant has noted these comments.
RR-042.055	Paragraph Number: 4.3.17 In Volume 1: Chapter 8: Marine Water and Sediment Quality, point 150 states that "Bentonite is a nontoxic, inert, natural clay material with a particle size less than 63µm. It is included in the List of Notified Chemicals approved for use and	This comment is noted by the Applicant. As required under condition 13(1)(e) of the DMLs within Schedules 10 and 11 of the dDCO, the Applicant will submit a PEMP (which must accord with the Outline PEMP (APP-277)) containing details of all the proposed chemicals	MMO 4.3.10 to MMO 4.3.18: With regards to the Applicant's responses to MMO points 4.3.10 to MMO 4.3.18, the MMO is with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The Applicant has noted our comments and has stated that all chemicals proposed for use will be detailed within the Project Environment Management Plan to be presented to the MMO for approval post-consent. The Applicant's

	discharge into the marine environment and is classified as a Group E substance under the Offshore Chemical Notification Scheme. Substances in Group E are defined as the group least likely to cause environmental harm and are “readily biodegradable and non-bioaccumulative”. This is further supported by bentonite being included on the OSPAR List of Substances Used and Discharged Offshore which are considered to Pose Little or No Risk to the Environment (PLONOR)”. This list of chemicals is not an ‘approved’ list to denote chemicals approved for use in offshore wind and the wording should be amended.	to be used for construction of the Project to the MMO for approval prior to works taking place.			response does not explicitly state that there will be no future references to the Offshore Chemical Notification Scheme (OCNS) which would be welcomed.
RR-042.056	Paragraph Number: 4.3.18 The list referenced in Chapter 8, point 26, is a list of chemicals that have had all their substance data (ingredient level) presented checked and verified as complete (includes all relevant persistence bioaccumulation and toxicity data per ingredient) and generic oil and gas platform parameters applied to rank them. It is therefore not appropriate to assume that this list can be used like-for-like within offshore wind applications. The operator can choose chemicals from the ranked list use, at which point they provide a site-specific risk assessment together with detailed justification for the use of	This comment is noted by the Applicant. As required under condition 13(1)(e) of the DMLs within Schedules 10 and 11, the Applicant will submit a PEMP (which must accord with the Outline PEMP (APP-277)) containing details of all the proposed chemicals to be used for construction of the Project to the MMO for approval prior to works taking place.	MMO 4.3.10 to MMO 4.3.18: With regards to the Applicant’s responses to MMO points 4.3.10 to MMO 4.3.18, the MMO is with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The Applicant has noted our comments and has stated that all chemicals proposed for use will be detailed within the Project Environment Management Plan to be presented to the MMO for approval post-consent. The Applicant’s response does not explicitly state that there will be no future references to the Offshore Chemical Notification Scheme (OCNS) which would be welcomed.

	each chemical (product) to the regulator (MMO) who then makes a determination whether to permit. Even chemicals that are on the PLONOR list have to be approved by the regulator prior to use. Therefore, all chemicals with a pathway to the marine environment used on the offshore windfarm (unless covered by other regulations e.g. MARPOL) including Bentonite quantities should be notified to MMO with their properties, including safety data sheets to the regulator for approval, prior to use in the marine environment. In addition, impacts of “blow out” should this occur and loss of drill string contingency should also be provided in the method statement. The PEMP will include a chemical risk assessment (CRA) “Where relevant, this will comprise a risk assessment for the use of these chemicals in the marine environment, including consideration of whether they are approved for use offshore (e.g. included on the PLONOR list).” As in the point above, the Cefas ranked list is not an ‘approved list” for use. All chemicals for use at any phase in the life of the windfarm should be notified to MMO if there is a pathway to the marine environment and not covered by other regulations (e.g. used on vessels in closed systems (with no top up) or covered under other regulations e.g. MARPOL).				

10. Annex 5

Table 1 detailing MMO and the Applicant's comments regarding Benthic Ecology raised within MMO's Relevant Representation (RR-042)

Benthic ecology					
Ref	MMO Relevant Representation (RR-042)	Applicant Response (PD1-071)	MMO Deadline 1 Response (REP1-056)	Applicant Deadline 2 Response (REP2-053)	MMO Response
RR-042.057	Paragraph Number: 4.4.1 The acoustic data did not reveal any unique signatures that could be attributed to Sabellaria spinulosa reef, although the ground truthing showed the presence of patchy reef in several places although it was low lying. MMO raised concern that future geophysical surveys would not detect potential Sabellaria spinulosa reef and asked for clarification on how any pre-construction surveys would identify reef to avoid by micro-siting. MMO welcomes that the Project has committed to pre-construction surveys as outlined within Outline Biogenic Reef Mitigation Plan March 2024 document (ref 8.22). However, this document does not provide any details on the methodology to be adopted. We would highly recommend the use of drop-down video at the previous areas where substantial low and medium reef was observed in still images as it is known to be difficult to distinguish reef from the	This comment is noted by the Applicant. The Applicant will agree the methodology for any pre-construction monitoring with the MMO and its advisors prior to surveys being undertaken as required under condition 13(1)(c)(i) of the DML within Schedule 11 of the dDCO.	MMO 4.4.1 to MMO 4.4.9: With regards to the Applicant's responses to MMO points 4.4.1 and 4.4.9, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The MMO notes the mitigation measures outline in the Schedule of Mitigation, Outline Cable Specification and Installation Plan, and Outline Biogenic Reef Mitigation Plan appear to be appropriate. However, the methodology for any pre-construction surveys must be agreed with the MMO and advisors prior to their ommencement to ensure suitable evidence is provided as per condition 13(1)(c)(i) of the DML within Schedule 11 of the DCO. It would be welcomed if it could be clear in the outline offshore in-principle monitoring plan that drop-down video at the previous areas where substantial low and medium reef was observed in still images as it is known to be difficult to distinguish reef from the surrounding

	surrounding coarse/mixed sediments (see Jenkins et al 2015, 2018).				coarse/mixed sediments (see Jenkins et al 2015, 2018).
RR-042.058	Paragraph Number: 4.4.2 Regarding the spread of invasive non-native species and the consideration of this impact in the cumulative effects assessment (CEA), The MMO notes that temporary increases in suspended sediment concentration (SSC) and sediment deposition during construction has only been considered under this assessment. We recognise that embedded measures have been considered within the PEMP, however this is restricted to vessel movements during construction and does not consider potential spread of Invasive Non-Native Species (INNS) during operation. MMO notes the acknowledgement of the lack of scientific knowledge regarding the spread of INNS and that the windfarm may act as stepping stones extending the impact beyond a local scale but has still assessed the magnitude as negligible. We therefore again advise reassessing this as above 'negligible' and advises scoping INNS into the cumulative effects assessment during operation.	The Applicant has reconsidered the risk of the spread of INNS as assessed within the ES Chapter 9 Benthic and Intertidal Ecology (APP-064) in the Environmental Report for the Offshore Restricted Build Area and Offshore Export Cable Corridor (document reference 15.9), with no change considered necessary with regard to the magnitude of "negligible" as determined in ES Chapter 9 Benthic and Intertidal Ecology (APP-064). The Applicant notes that a key consideration of the risk of the spread of INNS is the local sea area within which the Project will be situated, with offshore wind farm and other infrastructure present near to the Project (e.g. Triton Knoll OWF to the west, the Hornsea Zone OWFs to the north of the site, Dudgeon and Sheringham Shoal OWFs to the south and the numerous oil and gas platforms within this area). Further considered in reaching the magnitude conclusion was consideration of the presence of oil and gas assets within (the Malory platform and Galahad Tee) and immediately adjacent (Barque platform) to the array area, with the presence of these assets posing an existing risk of	MMO 4.4.1 to MMO 4.4.9: With regards to the Applicant's responses to MMO points 4.4.1 and 4.4.9, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The MMO remains unconvinced that the impact on the spread of INNS will be negligible based on the Applicant's assertion that the Project is to be positioned within a previously unused area of seabed. The MMO requires more detailed information regarding the number of other developments in the area that introduce artificial hard seabed, the proximity of their structures to the Project, and the surface area of hard habitat introduced by the Project in comparison to the other developments. This should be provided in map format.

		the spread of INNS, rather than were the Project to be positioned within a previously unused area of seabed. Therefore, the Applicant remains confident in the determination of a negligible magnitude for the risk of INNS from the Project alone and the consequent scoping out of this impact from the cumulative assessment and so does not consider that any update or reassessment is required.			
RR-042.059	Paragraph Number: 4.4.3 The MMO notes that there has been commitment to monitor INNS only if gravity base structures (GBS) are used. It is not clear why this is the only turbine base type that is being considered. All structure types can provide suitable colonisation substrate for INNS. MMO requests a response regarding this.	Whilst the Applicant acknowledges that all foundation types can provide suitable colonisation substrate for INNS, GBS are considered to pose the greatest risk as they provide the largest continuous surface area within the water column for settlement and colonisation by INNS, were this foundation type to be used. Furthermore, the commitment to monitor specifically this foundation type was linked to the lesser use of this type for OWFs and therefore was an acknowledgement of the reduced evidence base surrounding INNS colonisation risk.	MMO 4.4.1 to MMO 4.4.9: With regards to the Applicant's responses to MMO points 4.4.1 and 4.4.9, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The MMO notes that further information is needed to support the Applicant's conclusions regarding the potential spread of invasive non-native species (INNS) before it can be determined whether monitoring of INNS is required irrespective of the structure used.
RR-042.060	Paragraph Number: 4.4.4 Annex I stony reef was scoped out of the assessment at Section 42	The Applicant notes that the reefiness assessments were undertaken on the survey data collected prior to PEIR preparation and that the scoping	MMO 4.4.1 to MMO 4.4.9: With regards to the Applicant's responses to MMO points 4.4.1 and 4.4.9, the MMO is consulting with our technical	The comment is noted by the Applicant.	Please see MMO response to Paragraph 4.4.7 below.

	consultation. However, the MMO notes that reefiness assessments have been undertaken for this feature within the OWF and ECC.	out of stoney reef was based on the results of those survey data. As Appendix 6.3.9.1: Benthic Ecology Technical Report (Array) (Volume 3 Chapter 9 Appendix 1 Benthic Ecology Technical Report (Array) (APP-154) and Volume 3 Chapter 9 Appendix 2 Benthic Ecology Technical Report (ECC) (APP-155)) and Appendix 6.3.9.2: Benthic Ecology Technical Report (ECC) (APP-155) were not required to be updated between PEIR publication and DCO Application, the full survey results and the reefiness assessments undertaken within those documents remains. It would not be appropriate to update reports to exclude the analysis of stoney reef as it provides the evidence for the exclusion of that feature from the assessment.	advisors and will provide comments on these sections at Deadline 2		
RR-042.061	Paragraph Number: 4.4.5 The MMO recognises that there has been commitment to mitigation for Sabellaria spinulosa reef via micrositing, however, the mitigation plan does not contain sufficient detail to assess whether it is appropriate.	The Outline Biogenic Reef Mitigation Plan (APP-296) provides information on the survey effort and potential mitigation measures which could be used by the project if potential S. spinulosa reef is identified prior to construction. The final mitigation measures (if required) and the details of such measures (e.g. buffer zones around reef if any is identified) would be agreed with the MMO prior to the construction of the Project. As all Project-specific	MMO 4.4.1 to MMO 4.4.9: With regards to the Applicant's responses to MMO points 4.4.1 and 4.4.9, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	Please see MMO response to Paragraph 4.4.7 below.

		survey data collected to date (Volume 3 Chapter 9 Appendix 1 Benthic Ecology Technical Report (Array) (APP-154) and Volume 3 Chapter 9 Appendix 2 Benthic Ecology Technical Report (ECC) (APP-155)) and the subsequent independent reanalyses (document 15.16) have not identified any qualifying Annex I reef within the proposed Order Limits, it is not possible, nor would it be appropriate, to provide details of theoretical mitigation measures for a habitat which is not recorded to be present.			
RR-042.062	Paragraph Number: 4.4.6 The CEA should consider the spread of INNS during operation as per the comment in paragraph 4.4.2 above.	See response to paragraph 4.4.2 of RR-042 above.	MMO 4.4.1 to MMO 4.4.9: With regards to the Applicant's responses to MMO points 4.4.1 and 4.4.9, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The MMO remains unconvinced that the impact on the spread of INNS will be negligible based on the Applicant's assertion that the Project is to be positioned within a previously unused area of seabed. The MMO requires more detailed information regarding the number of other developments in the area that introduce artificial hard seabed, the proximity of their structures to the Project, and the surface area of hard habitat introduced by the Project in comparison to the other developments. This

					should be provided in map format.
RR-042.063	Paragraph Number: 4.4.7 The MMO agrees with Natural England in that the assessment seems to down weight the reefiness scores as they are averaged over the transect. Some of the transects show areas of continuous low/medium reef which should be considered as separate patches as per Jenkins et al, 2015, 2018. The technical report does not provide any information on the distance covered for these patches. In the absence of sufficient acoustic data, it should be assumed that any distance of 5 metres (m) or greater with continuous reef presence should be considered as Annex I reef and should not be averaged across the transect, especially considering the naturally patchy nature of Sabellaria spinulosa reef.	Averaging height and percentage cover scores recorded at every data point is the standard approach taken by BSL for assessment of potential S. spinulosa reef. This approach relies on it being possible to identify S. spinulosa aggregations signatures from the geophysical data (typically using SSS and MBES), which is something that BSL specialise in, with senior personnel having experience of doing this for >20 years. While delineation of S. spinulosa reef can be achieved in mobile sandy substrates, this is more difficult to achieve in mixed sediment habitats and often not possible to distinguish S. spinulosa aggregations from the surrounding ambient mixed sediment. As noted in Jenkins et al. (2018) “Delineating S. spinulosa reef extent was achievable for some areas within the study site, but not for all. The lack of a consistent, and replicable, acoustic signatures synonymous with reef presence across the study site made mapping reef extent at the site scale difficult.”, this was also the case for the current survey. The consideration of single data points showing	MMO 4.4.1 to MMO 4.4.9: With regards to the Applicant’s responses to MMO points 4.4.1 and 4.4.9, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The MMO acknowledges the difficulties highlighted by the Applicant in distinguishing Sabellaria spinulosa reef signatures from the surrounding sediment (coarse/mixed) in acoustic data when the reef has low-medium elevation and is patchy. The MMO does not question the review and interpretation of these data reported by the Applicant. The MMO would like to clarify that the comment related to the imagery data and do not suggest the Applicant should consider each single data point where Sabellaria aggregations were observed as reef, but rather that elevation and patchiness (% cover) should be averaged for contiguous ‘patches’ of reef. For example, in ECC_VID_66, there are several patches (3-5 observations at consecutive points along the transect) of low/medium reef interspersed with areas assigned as ‘not a reef’ or no Sabellaria (pages

		Low/Medium/High reef structure would not be appropriate as they do not cover sufficient area (25 m2) to be considered Annex I reef. Excluding these single reef structure data points, there were three transects where two or more adjacent data points showed Low/Medium/High reef structure. To assess what difference would be seen if each of the segments of Low/Medium reef structure were assessed as potential separate reefs. For this assessment, the same reefiness assessment method used in the technical report has been used here, so this is not repeated here. The difference is that this assessment calculates average (mean) reefiness levels and the corresponding reef 'structure' for each segment, which is then assessed against the estimated area of the patch. As noted previously, it is not possible to accurately assess the areas of the reef from the available geophysical data, so the patch has been assumed to be circular with the diameter of the circle taken, on a precautionary basis, to be the straight-line distance between adjacent nonreef data points either side of the potential reef segment. This 'circular' patch assessment method has been used by BSL for a number of S. spinulosa and stony reef assessment over the past			300-301 in Chapter 9 Benthic and Intertidal Ecology, Volume 3 Appendices, Appendix 9.2. Rev 1.0, March 2024. (Document reference: 6.3.9.2)). It appears that this approach has now been carried out in a reanalysis of the data, and that the patches did not exceed an average of 'Low Reef'. The Applicant should confirm whether this is the case. The Applicant should also provide the images of Sabellaria aggregations in cases where they were observed at consecutive points along a transect (i.e. the contiguous patches of reef) for review. The MMO welcomes the Applicant's approach to assessing the area of Sabellaria patches using the straight-line distance between non-reef data points either side of a potential reef segment. However, based on the information provided, it is unclear how many consecutive observations

		decade with no negative feedback from clients, regulators or SNCBs. The results of this analysis show that the patches across all three transects would achieve overall 'reefiness' levels (incorporating patchiness, elevation and area measures) of 'Not a Reef' or 'Low Reef', for which strong justification would be needed for these areas to be considered Annex I reef. One image within ECC_66 was found to contain 'High Reef', due to high patchiness and elevation scoring however, the average result for this patch was still 'Low Reef, with the overall conclusion for ECC_66 being that this site was "Not a Reef" in line with the guidance for determining 'reefiness'.			of Sabellaria aggregations would be required to be indicative of potential reef (i.e., ≥ 25 square metres (m^2) for 'Low' reef). To clarify this, the Applicant should provide information on the spacing of data points along the transect (i.e. the distance travelled between each 10 second screengrab image) and the area in m2implied if Sabellaria aggregations are observed at 1, 2, 3, etc consecutive points. If the distance between points is variable along a transect, then the minimum and maximum distance between adjacent points could be used instead. We note that if the distance between two non-reef data points either side of a single observation of a Sabellaria aggregation equates to an area of ≥ 25 m^2, then a single observation of a Sabellaria aggregation could indeed be indicative of potential 'Low' reef.

					A report on an independent analysis of the seafloor imagery by Envision, which used both video footage and stills and was supported by grab and sidescan sonar data, has been provided by the Applicant (Envision (2024) Outer Dowsing Offshore Wind – Offshore Export Cable Corridor Sabellaria Spinulosa Reanalysis and Report. Rev 1.0, September 2024. (PD1-095)). It appears that the approach here was also to take the average of elevation and patchiness (% cover) over entire transects, in which case the same issue above would apply. Some example images of Sabellaria are provided for each transect in the report, but it's unclear based on the information provided whether these images are representative. Whilst we recognise the difficulties in distinguishing Sabellaria reef signatures from the surrounding sediment when reefiness is 'Low',

					it is our understanding that 'Low' reef is nonetheless considered as Annex I reef by Natural England. The MMO defers to Natural England on this point but would be happy to discuss possible options for mitigating and monitoring impacts on 'Low' reef, if required.
RR-042.064	Paragraph Number: 4.4.8 There is a discrepancy between Figure 54 on P188 of Volume 3: Appendices: Chapter 9 Benthic and Intertidal Ecology (ref: PP1-ODOW-DEV-CS-REP-0165) when compared to the text on P187. The text states that the Sabellaria spinulosa aggregations were not reef-forming at station OWF_76, but Figure 54 shows station OWF_76 to be classified as 'medium reef'. This should be checked.	The areas of medium and low reef mentioned by Natural England have been further investigated. In ECC_66, medium reef was not consistent for 150 m, the closest 2 stills assessed for S. spinulosa were 5 m apart (5 m – 110.5 m between 'medium reef' stills) and the same was evident for low reef stills. It should be noted that medium reef and low reef points are overlaid on top of the no reef/not a reef data points in Figure 54 to highlight their presence and avoid higher reefiness data points being obscured by no reef/not a reef, which explains the discrepancy between the Figure 54 and text on P187.	MMO 4.4.1 to MMO 4.4.9: With regards to the Applicant's responses to MMO points 4.4.1 and 4.4.9, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The MMO acknowledges the Applicant's response.
RR-042.065	Paragraph Number: 4.4.9 On page 90 of Appendix 9.2 Benthic Ecology ECC Area Results	The Applicant confirms that the reference on page 90 of Volume 3 Chapter 9 Appendix 1 Benthic Ecology Technical Report (Array) (APP-155) to station	MMO 4.4.1 to MMO 4.4.9: With regards to the Applicant's responses to MMO points 4.4.1 and 4.4.9, the MMO is consulting with our technical	The comment is noted by the Applicant.	The MMO acknowledges the Applicant's response.

	Report. (Document Number: 6.3.9.2), there is referral to an ECC station (ECC_02), however there is no ECC_02 listed in Table 25 on pages 94/95. The MMO suggests that this be checked and corrected.	“ECC_02” refers to the station labelled “FA_02” in Table 25 and also Figure 24 of the same document.	advisors and will provide comments on these sections at Deadline 2		

11. Annex 6

Table 1 detailing MMO and the Applicant's comments regarding Fish Ecology raised within MMO's Relevant Representation (RR-042)

Chapter 10 Fish and Shellfish Ecology					
Fish ecology					
Ref	MMO Relevant Representation (RR-042)	Applicant Response (PD1-071)	MMO Deadline 1 Response (REP1-056)	Applicant Deadline 2 Response (REP2-053)	MMO Response
RR-042.066	Paragraph Number: 4.5.1 One of the concerns the MMO raised at PEIR stage was in relation to disturbance to herring at their spawning grounds from piling noise, and we had requested the inclusion of some further underwater noise (UWN) modelling, we have provided further comments on this issue in points 4.5.2 – 4.5.4.	The Applicant has provided responses to the issues raised in MMO paragraphs 4.5.2 to 4.5.4 of RR-042 below.	MMO 4.5.1 to MMO 4.5.4: With regards to the Applicant's responses to MMO points 4.5.1 to MMO 4.5.4, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	Please see the further MMO responses to paragraphs 4.5.2 to 4.5.4 below.
RR-042.067	Paragraph Number: 4.5.2 The MMO previously recommended the presentation of additional noise modelling for the received levels of single strike sound exposure levels (SELss) at the Banks herring spawning grounds based on the 135 decibel (dB) SELss startle response (as per Hawkins et al. (2014)). In the ES, the utility of the 135dB	The Applicant notes this comment.	MMO 4.5.1 to MMO 4.5.4: With regards to the Applicant's responses to MMO points 4.5.1 to MMO 4.5.4, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	Please see the MMO's further response to Paragraph 4.5.3 below.

	threshold has been challenged and it has been suggested that it is overly precautious, and that, as stated by Popper et al. (2014), it is not appropriate to determine the potential for behavioural effects quantitively due to the range of behavioural responses. Notwithstanding these comments, the potential behavioural impact ranges for 135dB as 5dB increments from the piling source in Figure 10.40 of the Volume 2: Chapter 10: Fish and Shellfish Ecology Figures, document (ref: PP1-ODOW-DEV-CS-FIG-0010) were presented. MMO welcomes this inclusion as per our request.				
RR-042.068	Paragraph Number: 4.5.3 Although the 135dB modelling has been presented in the ES, it does not to include the 135dB impact range for behavioural effects in their impact assessment for herring and has provided a discussion in Section 10.6.1 in Volume 1: Chapter 10: Fish and Shellfish Ecology document (ref: PP1-ODOW-DEV-CSREP-0118) to support their decision. The discussion provided includes some valid points concerning the limitations of the study by Hawkins et al. (2014), such as	The Applicant is confident that a suitably precautionary assessment has been undertaken to establish the potential impacts from underwater noise on herring. The Applicant confirms that, as noted by the MMO, SELss noise contours have been presented in Figures 10.39 and 10.40 of Volume 2, Chapter 10: Fish and Shellfish Ecology Figures Part 2 of 2 (APP-098) in 5dB increments from the piling source up to 135dB SELss. The presentation of these contours is further supported by a literature review in paragraph 213 et seq. of ES Chapter 10: Fish and Shellfish Ecology of the ES (APP-065) to	MMO 4.5.1 to MMO 4.5.4: With regards to the Applicant's responses to MMO points 4.5.1 to MMO 4.5.4, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	The MMO maintains its position on the 135 decibels (dB) Single Strike Sound Exposure Level (SELss) threshold from Hawkins et al., (2014) which is the best current scientific evidence from which a quantitative threshold can be derived for the purposed of modelling behavioural responses in herring. This threshold has been widely used in Underwater Noise (UWN) modelling to inform the impact assessment for herring for many OWF and construction

	the study being carried out in a quiet coastal sea loch where fish were not accustomed to heavy disturbance, and that the fish in the study (sprat) were not involved in any particular activity, i.e. spawning. MMO recognise that there are limitations with the study, and it is accurate that the Hawkins et al. (2014) 135dB SELss threshold was determined based on sprat schooling in the water column rather than sprat (or herring) engaged in spawning, 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 hearing), so are considered a suitable proxy species in terms of their hearing sensitivity. Given that there is an absence of suitable peerreviewed empirical evidence of behavioural responses in clupeid fishes to support an alternative threshold for impulsive noise, MMO considers the 135dB threshold from Hawkins et al. (2014) is the best current scientific evidence from which a quantitative threshold can be derived for the purposed of modelling behavioural responses in herring.	present the range of potential behavioural responses of fish to underwater noise stimuli and the factors and life events (e.g., sex, age, season, individual condition) that may influence them. The Applicant however would like to highlight that they do not support the use of the 135dB SELss contour, as presented in Hawkins et al. (2014), to establish behavioural impact ranges for clupeids and other noise-sensitive fish species. Specifically, the Applicant points out that the 135dB SELss threshold is based on a study undertaken within a quiet sea loch, and it is therefore not considered appropriate to use this threshold within a much noisier area such as the central North Sea (which is subject to high levels of anthropogenic activity and consequently noise), as the fish within this area will be acclimated to the noise and would be expected to have a correspondingly lower sensitivity to noise levels. The Applicant considers that it is important to note that the authors of Hawkins et al. (2014) specifically conclude “However, these data cannot yet be used to define the sound exposure criteria”. Notwithstanding, the paper notes a range of response to the same sound level in the studied species			developments, and in the absence of an alternative quantitative threshold, it is considered the best available. The Applicant is aware of our current position on the use of a 135 dB threshold, which is recommended consistently for projects of a similar nature, and in reviewing the Applicant’s response, our position remains unchanged and the MMO requests that this threshold is applied and updated information relation to this is supplied.

	Notwithstanding this, we would be willing to consider the use of an alternative quantitative threshold for modelling behavioural responses in herring (or a similar clupeid fish), should one be able to be provided, which is based on an appropriate species, suitable situation, and peer-reviewed literature.	(sprat Sprattus sprattus) from no reaction to a possible flee reaction. Hawkins et al. (2014) posit that this reflects the behaviour of the fish at the time of exposure, as well as the presence or absence of predators. As such, the Applicant considers that the use of the threshold recommended by the MMO is not scientifically robust and the qualitative assessment of the risk of behavioural disturbance as presented by the Applicant better enables a consideration of the potential for significant impacts at a population level of the species considered. This is particularly the case for herring where the concern for this species focuses on the potential impacts on spawning activity, which cannot be sufficiently evaluated with the consideration of a single threshold value. Finally, the Applicant recognises the lack of any established quantitative threshold for disturbance effects to fish from underwater noise. Based on the available literature, the thresholds as presented within Popper et al. (2014), whilst acknowledged as limited by the studies which informed the review, are currently recommended as the most appropriate criteria to use for assessing the impacts of			

		underwater noise effect to fish (Popper and Hawkins, 2019). Popper et al. (2014) advises the use of a qualitative risk assessment for behavioural effects, based on the hearing sensitivity of the species of concern, which is the approach the Applicant has followed within ES Chapter 10: Fish and Shellfish of the ES (APP-065). The Applicant notes that Hawkins was a co-author on Popper et al. (2014).			
RR-042.069	Paragraph Number: 4.5.4 The MMO welcomes the reference to the study by Skaret et al. (2005) which found herring to have a significantly reduced reaction to external stimulus when involved in spawning activity than when swimming/schooling. The MMO notes the suggestion that in light of this study, it is likely that any behavioural impacts to fish (herring) would be significantly reduced when spawning, with consequently limited impact on spawning potential. However, it must be recognised that the study by Skaret et al. (2005) investigated vessel avoidance responses in herring exposed to continuous noise exposures, which is entirely	The Applicant reiterates that they do not support the application of the 135dB SELss contour to establish behavioural impact ranges for fish species, including species that are considered hearing specialists (e.g. herring) for the reasons set out above. With regard to the Skaret et al. (2005) results being from a continuous noise source, this is acknowledged; however, the Applicant does not consider that this invalidates the conclusions made in reference to that paper as set out in ES Chapter 10: Fish and Shellfish Ecology (APP-065), particularly as the importance of the motivational status of fish in determining their response to sounds is well established (as reviewed in Hawkins et al., 2014). In addition, recent studies on the range dependent nature of piling	MMO 4.5.1 to MMO 4.5.4: With regards to the Applicant's responses to MMO points 4.5.1 to MMO 4.5.4, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	In respect of the Applicant's comments on the change in the impulsiveness of piling noise over distance (becoming less impulsive), it is recognised that impulsive sound will likely lose its impulsive nature as the sound propagates and whilst there have been a few studies which speculate about the distance over which this occurs, there has been nothing concrete published or agreed to date. Thus, our recommendation is that until further criteria or guidance on this issue is published in peer-reviewed literature, the most relevant and recent noise exposure criteria should still be applied.

	different to the impulsive noise exposure generated by the proposed piling works. More importantly, whilst herring may display a biological drive to spawn regardless of the impulsive piling noise exposures, 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 avoid the disturbance, potentially resulting in reduced spawning success and limited recruitment of herring larvae into the Banks 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, 2018). For the reasons given above, we maintain that the 135dB threshold (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 and that the resulting impact range should be given due consideration in terms of whether the range of effect is	sounds show a marked change in the impulsiveness of piling noise with distance from the piling location, with piling sounds becoming more similar to non-impulse (continuous) sounds as the sounds propagate through the environment (e.g., Hastie et al., 20199 ; ORJIP, 202410). Available data indicate that the greatest change in the acoustic properties of sounds generated during piling occur within the first 5 to 10km from the pile location, which suggests that predicted impact ranges for TTS and behavioural reactions in fish, which for stationary receptors typically extend far beyond this range are not necessarily representative of the true risk of these effects (which would be much smaller were this change to non-impulsive noise considered in modelling outputs). In this respect, the Applicant would like to highlight that the 135dB response threshold from Hawkins et al. (2014) is based on measurements of behavioural reactions very close to the emitted sound. Given the decrease of impulsiveness of piling sounds away from the source, there is therefore potential that the risk of behavioural reactions may be overestimated at the large ranges predicted for this noise level from the modelling, as current models are not able to account for			

	likely to overlap the various herring spawning grounds near Flamborough head, or hinder the north-south migration of Banks herring in the Central North Sea.	changes in the impulsive nature of sound. Whilst the Applicant acknowledges the importance of not affecting the migration of herring to the spawning grounds, the herring that spawn on the Banks grounds migrate to the grounds from a general northerly direction. The migration of this species to its spawning grounds were considered within the assessment presented in ES Chapter 10: Fish and Shellfish of the ES (APP-065) and for the reasons set out above, the Applicant maintains that the conclusion of a minor adverse effect for all effects to herring which is not significant in EIA terms remains valid.			
RR-042.070	Paragraph Number: 4.5.5 The MMO has no concerns regarding the scoping in/out of impacts or receptors. The fish species present in and around the project's study area have been correctly identified, as have the spawning and nursery grounds found within the vicinity of the project. The potential impacts to fish receptors and commercial fisheries have been appropriately scoped in/out of the ES. The list of impacts	The Applicant welcomes the comment. The Applicant has no further comments on this matter.			The MMO acknowledges that the Applicant has welcomed this comment.

	identified in the ES can be found in Annex 2				
RR-042.071	Paragraph Number: 4.5.6 As agreed at the PEIR stage, impacts arising from accidental pollution during the construction, operation and maintenance (O&M), and decommissioning phases have been scoped out of further assessment on the basis that a Project Environmental Management and Monitoring Plan (PEMMP) will be implemented to mitigate pollution events. Impacts from direct disturbance during the O&M phase have now been scoped in, which is appropriate. Impacts arising from changes in fishing pressure due to displacement have been scoped out of further assessment for fish ecology, but scoped into the assessment for commercial fisheries, which MMO supports. Transboundary impacts have been scoped into the assessment in respect of Annex II migratory fish species listed as features of European sites in other European Economic Area (EEA) States.	The Applicant welcomes the comment. The Applicant has no further comments on this matter.			The MMO acknowledges that the Applicant has welcomed this comment.

RR-042.072	Paragraph Number: 4.5.7 The MMO notes that some benthic compensation within an area of seabed for the creation and re-creation of biogenic reef habitat, located within the Biogenic Reef Restoration Area reviewed in document Volume 1: Chapter 3: Project Description, document (ref: PP1-ODOW-DEV-CS-PDE-0001), has been proposed. Further comments on the potential impacts and suitability of creation / re-creation of biogenic reef habitat and the benefits to benthic ecology are found in the Benthic Ecology and Shellfish Ecology sections.	The Applicant notes this comment. The Applicant has provided responses to the MMO's further comments below.			The MMO acknowledges that the Applicant has welcomed this comment.
RR-042.073	Paragraph Number: 4.5.8 The MMO considers that overall, the assessment is proportionate for the nature and scale of the project. However, we do have some comments and recommendations that need to be addressed on the appropriateness of the assessment (see points 4.5.1, 4.5.2, 4.5.3, 4.5.4 above, and 4.5.10 below).	The Applicant welcomes the comment. Please see responses to specific points raised at paragraphs 4.5.1 to 4.5.4 above and paragraph 4.5.10.			The MMO acknowledges that the Applicant has welcomed this comment.

RR-042.074	Paragraph Number: 4.5.9 On the whole, the evidence sources and data that have been used to inform the assessment are all appropriate, and there are no signification gaps in evidence to give cause for concern.	The Applicant welcomes the MMO's confirmation that the Applicant has appropriately characterised the baseline environment.			The MMO acknowledges that the Applicant has welcomed this comment.
RR-042.075	Paragraph Number: 4.5.10 The 'heat' maps in Figures 10.14 – 10.17 in the Volume 1: Chapter 10: Fish and Shellfish Ecology document (ref: PP1-ODOW-DEV-CS-REP-0118) that show abundance of herring larvae across the study area, have used International Herring Larvae Surveys (IHLS) data from 2009/2010 - 2020/2021. The ES was finalised in March 2024, so there are 2 years of more recent IHLS data that could have been used to inform the assessment. MMO appreciates that the modelling is likely to have been completed prior to the ES submission and prior to all the internal checks, thus this is a minor comment to note. However, for a project of this size and nature, MMO would typically expect the most recent 10 years of IHLS data, up to year 2022/2023, to have	The Applicant has produced revised figures showing IHLS 'heat' maps for the most recent 10 years of IHLS data, up to the year 2023/2024. These figures are included in Document 15.9A, which has been submitted to the ExA alongside these responses to the Relevant Representations. The Applicant notes that the methodology for the interpolation of the IHLS data has been updated following advice from the MMO to the consultants supporting the Applicant, and therefore the appearance of larval hot spots has changed slightly compared to Figures 10.14 to 10.17 within Volume 2, Chapter 10: Fish and Shellfish Ecology Figures Part 1 of 2 of the ES (APP-097). The Applicant confirms that the updated methodology does not change the identification of the areas of relative importance for herring spawning and considers that the conclusions presented in the ES remain valid. The Applicant notes that the purpose of the	MMO 4.5.10: The MMO welcomes the applicant's submission of revised figures showing IHLS heat maps for the most recent 10 years as requested by the MMO (RR-042). the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	The MMO thanks the Applicant for providing revised figures showing International Herring Larvae Survey (IHLS) 'heat' maps for the most recent 10 years of IHLS data, up to the year 2023/2024.

	been used, and recommend this is done in future.	heatmapping process (as first proposed within Boyle & New, 2018) is simply to inform the spatial extent of current spawning activity in herring. The revised methodology for the production of the heatmaps (as required due to a change in how the data are recorded for IHLS outputs), simply results in a slightly differing appearance of the maps, without changing the apparent importance of each area.			
RR-042.076	Paragraph Number: 4.5.11 The baseline characterisation utilises a broad combination of datasets and provides temporal analysis and validation of regional monitoring datasets, for example Fisheries Sensitivity Maps (Coull et al., 1998 & Ellis et al., 2012), IHLS data, MMO landings data and International Bottom Trawl Surveys (IBTS) data, to name but a few. Further data and evidence has been acquired through site-specific benthic ecology surveys undertaken across the array area and offshore ECC. These surveys include sediment grabs, epibenthic trawls and Environmental DNA (eDNA) data. The data and evidence sources used to inform the assessment are consistent	The Applicant welcomes the comment. The Applicant has no further comments on this matter.			The MMO acknowledges that the Applicant has welcomed this comment.

	with those used for other OWF Environmental Impact Assessments (EIAs).				
RR-042.077	Paragraph Number: 4.5.12 A series of 'best practice' embedded measures that aim to mitigate potential impacts of the proposed works to fish receptors has been proposed in (documents reviewed; Volume 1: Chapter 10: Fish and Shellfish Ecology, document (ref: PP1-ODOW-DEVCS-REP-0118)). These include an MPCP, marine invasive and non-native species prevention measures, the development of a decommissioning program to ensure impacts from decommissioning are minimised, the use of soft-start techniques on commencement of piling, the implementation of a PEMP and the burial of cables wherever possible. MMO supports the inclusion of these embedded mitigation measures.	The Applicant welcomes agreement from the MMO regarding the embedded mitigation measures.			The MMO acknowledges that the Applicant has welcomed this comment.
RR-042.078	Paragraph Number: 4.5.13 Concerning the effects of electro-magnetic fields (EMF) on electro-sensitive fish receptors such as elasmobranchs, eels and lampreys, the MMO notes that	The comments are noted by the Applicant. The Applicant also notes that the current NPS EN3 (DESNZ, 2023) does not include the requirement for a specific minimum burial depth. Notwithstanding this, the Applicant has committed to a	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The MMO notes the Applicant's response and may provide further comment at Deadline 4.

	the intended average cable burial depth for array, interconnector and export cables will be between 0 - 3m. In line the with the National Policy Statement EN3 (Department of Energy & Climate Change, 2011)) the MMO recommends that where possible, cables are buried to a minimum depth of 1.5m (subject to local geology or seabed obstructions) as this will further increase the distance between electro-sensitive fish receptors and EMF, as well as reduce the risk of snagging and damage to cables by other marine vessels e.g. anchors, bottom-towed gear. The MMO also notes that a cable burial risk assessment has been undertaken in respect of the sections of export cables which cross through Annex 1 sandbanks. The MMO defers to Natural England as the SNCB for further comments on impacts to the features of the SAC.	target burial depth of 1m below the seabed. The Applicant confirms that cable burial will be the preferred option for cable protection, as set out in Section 6.11.5, paragraph 98 of ES Chapter 3: Project Description (APP-058). As detailed in Section 6.11.5, paragraph 99 of ES Chapter 3: Project Description (APP-058), the cable burial depth will be determined by a cable burial risk assessment as part of the final project design process. Where it is not possible to bury a particular section of cable to the desired burial depth, installation of cable protection will be considered as described in Section 6.11.5 of ES Chapter 3: Project Description (APP-058). A Cable Specification and Installation Plan (CSIP) will be developed prior to construction, informed by the cable burial risk assessment, which will specify the cable installation techniques and necessary minimum burial depths. An Outline CSIP has been submitted with the DCO application (APP-278), and the final CSIP will be submitted to the MMO post-consent for approval in accordance with the conditions of the dMLs. The proposed burial of the subsea cables and the application of additional cable protection if needed, will provide a			

		separation between buried cables and the seabed surface, and therefore effects from EMF will be reduced.			
Herring					
RR-042.079	Paragraph Number: 4.5.14 The impacts to herring from UWN from piling have been assessed as 'minor' adverse which is not significant in EIA terms, so any specific mitigation measures for the species have not been proposed. MMO does not support the conclusion for a number of reasons which MMO will expand on in the following points.	The Applicant maintains the position that piling at the Project will not result in significant population level effects to Banks herring. Please see responses to paragraphs 4.5.15 to 4.5.23 below and the positions presented above.	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The MMO maintains its position regarding the comments on the sensitivity and magnitude of impact for herring as a receptor. However, in light of the revised modelling and figures presented following the introduction of the Offshore Restricted Build Area (ORBA), the MMO has revised our original recommendation for a piling restriction (RR-042), to reflect the reduced range of impacts from piling. Please see the MMO's further response to paragraph 4.5.22 below.
RR-042.080	Paragraph Number: 4.5.15 In categorising the sensitivity of receptors, it is stated that herring are considered to be of high vulnerability, with low recoverability and of regional importance, and therefore have a 'medium' sensitivity rating. This is based upon the criteria provided in Table 10.10 (Volume 1: Chapter 10: Fish and Shellfish Ecology	The Applicant considers the assessment of potential noise impacts to herring and their spawning grounds presented in ES Chapter 10: Fish and Shellfish Ecology (APP-065) is appropriate and adequate. As detailed in paragraphs 76 to 81 and summarised in Table 10.10 within ES, Chapter 10: Fish and Shellfish of the ES (APP065), the determination of a receptor's sensitivity to an impact has been based on the receptor's	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	Please see the MMO's further response to paragraph 4.5.22 below.

	(APP-65), document (ref: PP1-ODOW-DEV-CS-REP-0118) – see Annex 3) which states that for a receptor to be of 'high' sensitivity it must also be internationally or nationally important. MMO also notes that hearing sensitivity group 3 has been categorised (Cod, sprat and whiting), group 2 fish species (salmonids) and group 1 fish species (flat fish and sandeels etc.) as all having a receptor sensitivity of 'low'. MMO's opinion is it is not appropriate to list all of these above-mentioned species, which have variable sensitivities to the impacts of underwater noise, as having the same sensitivity rating within the 4 stage receptor sensitivity criterion. The MMO agrees that herring are more sensitive to underwater noise impacts than fish in other hearing sensitivity groups, as well as fish within their own hearing sensitivity group (Cod etc.). However, the MMO does not agree with the criteria set out in Table 10.10 (see Annex 3) regarding the subjective categorisation of herring as a 'medium' sensitivity species. This is based on 3 main reasons: 1) Herring are of national importance, both ecologically by playing a critical role in the north sea	vulnerability and recoverability together with its assigned value. Specifically, the 'medium' sensitivity definitions include nationally important species that have a high vulnerability and medium to low ability for recovery. Therefore, the Applicant considers that the sensitivity assessment for herring as 'medium' is appropriate. The Applicant also considers that an importance of regional is appropriate for herring when considering the Banks stock, which inhabits the Central North Sea. However, as noted above, even were herring to be considered as nationally important, then the sensitivity determination would not change, and the conclusions drawn within APP-065 would remain unchanged. With regards to the vulnerability assessment, the Applicant would draw attention to paragraphs 134 to 136 and paragraph 148 of ES Chapter 10: Fish and Shellfish Ecology (APP-065), in which herring have been assessed as being highly vulnerable to UWN from piling, based on their good hearing ability, their high susceptibility to pressure-related injuries, and their reliance on specific benthic locations for spawning. The assigned 'high'			

	food-web as a prey item for many Annex II species, rare and vulnerable species and species of conservation importance, as well as being commercially important for UK fisheries; 2) the timing of the impact (i.e. piling) overlapping with critical life stages (spawning etc.); 3) herring are highly sensitive in two ways, both physiologically with regard to them possessing a swim bladder involved in hearing (Popper et al., 2014) and ecologically with their reliance on a specific benthic location during their spawning and egg-yolk larvae life cycle stages. If piling works overlapped both spatially and temporally with herring spawning it could result in limited or no capacity to avoid, adapt to, accommodate or recover from this impact. Therefore, it is MMO's opinion that herring, who are sensitive both physiological and ecologically, should be categorised as a 'high' sensitivity receptor.	vulnerability for herring represents the highest possible vulnerability score and considers that both survival and reproduction rates of herring could be affected during piling through a combination of mortal and recoverable injuries, TTS and behavioural changes to spawning herring. The Applicant considers that the reference by the MMO to an overlap with herring spawning grounds is not an appropriate consideration within a sensitivity assessment, with that aspect of the significance of effect being more appropriately a consideration within the determination of the magnitude of effect. Specifically, a small overlap with an identified spawning ground could be considered to be of higher impact magnitude than a larger overlap with a less important habitat, but this does not affect the sensitivity of the receptor, which is dictated by its biology. Regarding the ability of herring to recover from noise-induced effects, the Applicant notes that piling itself will not change the characteristics of potential suitable spawning substrates and any potential lethal effects would be restricted to areas close the piling locations and would only affect a very small proportion of the Banks spawning population in			

		areas outside the main spawning beds off Flamborough Head. Sub-lethal effects such as TTS and behavioural changes are likely to affect a larger proportion of the population, but these effects are anticipated to be temporary and reversible. In addition, given the intermittent nature of piling, herring may be able to spawn between individual piling events, even when previously disturbed. The Applicant also refers to the discussion presented above in the response to paragraph 4.5.4 of RR-042 regarding the motivation of fish being a key consideration in determination of the likely reaction to external stimulus (e.g. noise). It is therefore the Applicant's view that herring have the potential to recover from noise effects. The Applicant acknowledges that recovery may take several years given the potential for localised lethal effects and a decrease in the reproductive output; therefore, the recoverability of herring to the impact has been assessed as 'low', as detailed in paragraph 136 within ES Chapter 10: Fish and Shellfish Ecology (APP-065).			
RR-042.081	Paragraph Number: 4.5.16 It is also important to remember that where a receptor is sensitive to an impact e.g., underwater noise	The Applicant is confident that the sensitivity assessment outcome reported within ES Chapter 10: Fish and Shellfish Ecology of the ES (APP-065) is appropriate. As stated in response to point 4.5.15 above, the potential for UWN to	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is consulting with our technical advisors and will provide	The comment is noted by the Applicant.	The MMO thanks the Applicant for presenting the modelled noise contours for the effects of mortality and potential mortal injury (219 dB cumulative sound

	or disturbance to habitat, such sensitivity is irrespective of the location. What matters is whether the receptor in question is at risk from the impact at that particular location and, if so, what the level / magnitude of risk is likely to be if there was (hypothetically) a spatial overlap. Taking herring as the receptor and noise disturbance in their spawning habitat as the impact; we know that herring rely on specific locations of gravel substrates on which to lay their eggs, therefore gravid females and the developing eggs and larvae attached to the gravel will have very limited to no capacity to avoid disturbance to their spawning habitat. As the impact has the potential to occur at the critical life stage of spawning, the sensitivity of the receptor is considered 'high'.	affect spawning herring has been assessed as part of the vulnerability assessment presented in paragraphs 134 to 136 and paragraph 148 of ES Chapter 10: Fish and Shellfish Ecology (APP-065). This assessment acknowledges both the demersal spawning nature of herring and the high susceptibility of herring to underwater noise. The vulnerability of herring to UWN from piling has therefore been assessed as 'high', which represents the highest possible vulnerability score. For the sensitivity assessment, several factors have been considered, namely a receptor's vulnerability to an impact, its recovery potential and its ecological and/or commercial importance, as described in Table 10.10 in ES Chapter 10: Fish and Shellfish Ecology of the ES (APP-065). The Applicant maintains that no change is required to the sensitivity determination for herring and therefore the conclusions of the ES remain unchanged.	comments on these sections at Deadline 2		exposure level (SELcum)), recoverable injury (216 dB SELcum) and temporary threshold shift (TTS) (186 dB SELcum) for sandeel habitat from simultaneous piling of jacket (pin-pile) foundations and monopile foundations in Figures 3.9 and 3.10 respectively (Offshore Restricted Build Area and Revision to the Offshore Export Cable Corridor Appendix A Figures, Part 1 of 2 – PD1-082). As stated in (RR-042, Section 4.5.28) disturbance to sandeel caused by piling noise and combined with the physical disturbance of their habitat (e.g. sandwave clearance) during the construction of Outer Dowsing OWF will result in adverse impacts to sandeels in the area, particularly during their winter hibernation period and spawning period. As previously stated, the project is located within a much wider area of sandeel habitat, so we do not believe that further mitigation to prevent significant impacts to sandeels at a population scale is necessary. The

					MMO notes the Applicant's comment that indirect impacts on protected marine mammal and bird species due to impacts on prey availability (i.e. sandeel) have been assessed in the ES in chapter 11: Marine Mammals, 12: Offshore and Intertidal Ornithology, and in the Report to Inform Appropriate Assessment (RIAA) and defers to the relevant Statutory Nature Conservation Body (SNCB) for further comments on this.
RR-042.082	Paragraph Number: 4.5.17 Based on the points discussed in 4.5.15 – 4.5.16, and using the matrix in Table 10.11 found in Volume 1: Chapter 10: Fish and Shellfish Ecology, document(ref: PP1-ODOW-DEV-CS-REP-0118), see Annex 4, to determine effect significance, when the receptor sensitivity for herring is re-categorised as 'high', with a 'low' magnitude of impact (as considered by the ES), it would result in a significance of effect of 'moderate' which is significant in EIA terms.	The Applicant reiterates that they do not consider it appropriate to re-categorise the sensitivity of herring to UWN generated during piling from 'medium' to 'high' for the reasons presented in points 4.5.15 and 4.5.16 above.	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	Please see the MMO's further response to paragraph 4.5.22 below.

RR-042.083	Paragraph Number: 4.5.18 In addition, MMO does not agree with the assessment of a 'low' magnitude of impact for the reasons outlined in points 4.5.19 – 4.5.22 below.	The Applicant maintains their position that piling at the Project will not result in significant population level effects to the Banks spawning component and that the magnitude of potential impacts to herring during piling is 'low'. Please see detailed responses to sections 4.5.19 to 4.5.22 below and points 4.5.3 and 4.5.4 above.	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	Please see the MMO's further response to paragraph 4.5.22 below.
RR-042.084	Paragraph Number: 4.5.19 In Figures 10.39 and 10.40 in document Volume 2: Chapter 10: Fish and Shellfish Ecology (APP-065) Figures, (ref: PP1-ODOW-DEV-CS-FIG-0010), see Annex 5, it is presented that the modelled noise contours for pin-piling and monopiling (respectively), including the 135dB SELss threshold alongside the 'heat' maps of herring larval abundance and the historic herring spawning grounds from Coull et al. (1998). Both figures show a significant overlap between the 135dB SELss noise contour and large areas of larval densities ranging 0 to 6,000 herring larvae per metres squared (m2), as well as overlaps with the historic spawning grounds. MMO has already highlighted in point 4.5.3, the reasons why we maintain that using the	The Applicant has provided updated heatmaps including the most recent years as part of Document 15.9A, which has been submitted to the ExA alongside these responses to the Relevant Representations. The Applicant reiterates that they do not support the application of the 135dB SELss contour to establish behavioural impact ranges for fish species, including species that are considered hearing specialists (e.g. herring), for the reasons as set out in response to point 4.5.3 above.	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	Please see the MMO's further response to paragraph 4.5.22 below.

	135dB SELss threshold is appropriate for determining the likelihood of behavioural impacts causing disturbance to gravid and spawning herring.				
RR-042.085	Paragraph Number: 4.5.20 Further modelling presented in the Figures 10.35, 10.36, 10.39 and 10.40 in Volume 2: Chapter 10: Fish and Shellfish Ecology Figures, document (ref: PP1-ODOW-DEVCS-FIG-0010) demonstrates that noise disturbance from pin-piling and mono-piling of the Artificial Nesting Structures (ANS) and in the array, will cause mortality and potential mortal injury, recoverable injury and temporary threshold shift (TTS) in herring at the spawning grounds (and other fish species).	The comment is noted by the Applicant. The predicted impacts from the construction of the ANS have been fully assessed within ES Chapter 10: Fish and Shellfish Ecology of the ES (APP-065).	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	Please see the MMO's further response to paragraph 4.5.22 below.
RR-042.086	Paragraph Number: 4.5.21 The MMO notes the highlighted larval densities of herring around the array site (ranging 0 to 6,000 larvae per m2) are much lower than those that occur off Flamborough Head, which is considered to be the current focus of Banks spawning activity, as demonstrated by the IHLS data. Whilst the	The Applicant has provided updated heatmaps including the most recent years as part of Document 15.9, which has been submitted to the ExA alongside these responses to the Relevant Representations. The Applicant notes that the ICES IHLS data sheets for the years 2020 and 2021 do not contain information about the volume of seawater filtered during sampling. It is therefore not possible to calculate larval densities and show	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	Please see the MMO's further response to paragraph 4.5.22 below.

	MMO agrees that the larval densities are much lower compared with areas around Flamborough Head, it is still important to consider the importance of the southern extent of the spawning ground around Outer Dowsing to the overall contribution to the Banks herring spawning population, as this location been shown to be of periodical importance to the Banks herring spawning population. MMO notes the presented IHLS larval density plots for individual years in Figures 10.15, 10.16 and 10.17 in the Volume 2: Chapter 10: Fish and Shellfish Ecology Figures, document (ref: PP1-ODOW-DEV-CS-FIG-0010). Increased larval densities were recorded in the IHLS data for years 2011-2012, 2016-2017 and 2019-2020 which visually demonstrates the ongoing importance of the southern portion of the Banks spawning ground in certain years (see Annex 6). MMO notes the latest 2 years' IHLS data (2021/2022 and 2022/2023) have not been presented, so it is not known if herring relied more heavily on this southern portion of the Banks spawning ground during this period.	heatmaps for the years 2020/2021 and 2021/2022 using the revised methodology (as detailed in response to point 4.5.10 above), and as such these years have been excluded, but the data for years 2022/2023 and 2023/2024 as the most recent data available are provided.			

RR-042.087	Paragraph Number: 4.5.22 In summary, the UWN modelling presented shows that the effects of UWN from piling is likely to cause behavioural impacts across a wide area of the southern portion of the Banks spawning ground, albeit where larval densities are lower, the UWN modelling also demonstrates that spawning herring will be affected by piling through impacts including mortality and potential mortal injury, recoverable injury and TTS. The IHLS data also demonstrate that the location of around Outer Dowsing OWF plays a more important role as a spawning habitat in certain years.	The Applicant refers to the responses set out in 4.5.3, 4.5.4 and 4.5.15 to 4.5.23.	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The MMO highlights the main outstanding issue regarding our request on pilling during the Banks herring spawning season. The MMO's position on the requirement of a pilling seasonal restriction condition remains. However, it is not necessary to implement a project-wide restriction, as the modelling demonstrates that in some areas where piling will occur the impacts of noise will not extend into 'active' herring spawning habitat. Hence, we have recommended a spatial element could be applied to the temporal piling restriction. Figures 3.1 – 3.6 of PD1-082 (Environmental Report for the ORBA and Revision to the ECC supporting Figures) indicate that impacts of mortality and potential mortal injury, recoverable injury, TTS and behavioural responses are expected to occur in areas of herring spawning ground during piling activities which means that there is a risk of impact to spawning herring and their

					eggs and larvae if piling were to be carried out during their spawning season. The MMO has previously recommended that the following licence condition to protect spawning Banks herring and their eggs and larvae during their spawning season was included in the DML for Outer Dowsing OWF: No piling of any type shall be permitted between 1 September and 16 October each year. However, having reviewed the UWN modelling in Figures 3.1- 3.6, it is recognised that the impacts to herring and their eggs and larvae will only occur from certain locations where piling is carried out. For example, there is little to no overlap of the noise contours from piling at the ORCP and SE ANS sites with 'active' spawning areas (based on IHLS data) and hence, piling at these locations does not require any temporal mitigation during the herring spawning season.

					Whereas noise contours from piling at the North ANS location and the NW and SW pile locations in the Array show an extensive overlap with the 'active' spawning area (based on IHLS data), so for these areas, temporal mitigation during the herring spawning season is still recommended. Given that the overlap of noise contours from piling in the array with the area of 'active' spawning ground is driven by piling in the western portion of the array, the MMO considers that the recommended temporal mitigation can be applied spatially, so that piling within the eastern portion of the array can be carried out at any time. This is likely to require some additional modelling to determine an east/west 'boundary' within the array which can be applied to the DML condition and attached as work plans. This is likely to require further discussion between the Applicant and the MMO and we will work with the Applicant to move

					this forward as much as possible. The MMO notes it would be in the best interest of the Applicant to engage in this process and provide additional information for the ExA and Secretary of State (SoS) to consider as part of the determination process. For the North ANS as a standalone site, the MMO requests the following condition to protect spawning Banks herring and their eggs and larvae during their spawning season: No piling of any type shall be permitted between 1 September and 16 October inclusive. Please note that the duration of the requested piling condition is shorter than that typically recommended for the Banks herring spawning season (August to October inclusive). The requested condition is proportionate to the licence condition for Triton Knoll (TK) OWF (DCO/2013/00004), located ~10km west of

					Outer Dowsing OWF, and reflects the timing of when herring spawning typically occurs in this southerly part of the Banks spawning ground, relative to those areas of spawning ground further north, e.g. Flamborough Head. This refined spawning period was identified through interrogation of IHLS data during the consenting stage for TK OWF, and through the understanding that herring migrate through the North Sea from north moving south during their spawning season (Cushing and Bridger 1966, and Burd, 1978). The MMO has previously requested that the Applicant considers the use of additional noise abatement systems for piling, such as bubble curtains (see Würsig et al. (1999)), or other alternative measures, as these may reduce the range of impact from piling, and could potentially allow for greater flexibility with regards to the spatial element of the temporal piling restriction.

					If this was provided by the Applicant or within a plan the MMO could update the condition wording to remove the restriction post consent if the correct evidence was provided. The MMO is open to further discussions on this point.
RR-042.088	Paragraph Number: 4.5.23 For the reasons outlined in points 4.5.19 – 4.5.22, the MMO believes that is it appropriate and necessary to re-categorise the magnitude of impact from 'low' to 'medium', resulting in a significance of effect of 'major'. To conclude this point, it is in MMO's opinion that the presented current categorisation of herring sensitivity does not appropriately reflect their vulnerability to the underwater noise impacts associated with the proposed works.	The Applicant considers the magnitude assessment of potential noise impacts to herring and their spawning grounds presented in ES Chapter 10: Fish and Shellfish of the ES (APP-065) to be appropriate and adequate. The Applicant acknowledges that there is a partial overlap of the lethal and recoverable injury noise contours with the southern extent of the Banks spawning ground around Outer Dowsing. However, as shown by annual IHLS data presented in Volume 2, Chapter 10: Fish and Shellfish Ecology Part 1 of 2 (APP-097) and in document 15.9, the main spawning of Banks herring consistently occurs north of the Project, off Flamborough Head. It is also recognised that there is annual variability in the areas used for spawning, with the southern portion of the Banks spawning ground being relatively more important for spawning in some years. However, even in years of higher spawning activity, the relative importance of the	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	Please see the MMO's further response to paragraph 4.5.22 above.

		areas surrounding Outer Dowsing for herring spawning remains low when compared to both the spawning intensity observed off Flamborough Head and the extent of areas over which peak spawning takes place. In addition, there is no overlap between the areas of highest larval abundances off Flamborough Head and piling noise at a level that will induce TTS (186dB cumulative Sound Exposure Level (SELcum)). It is therefore the Applicant's view that the proportion of Banks spawning herring stock that would be impacted by piling is minimal when compared to the areas of peak herring spawning off Flamborough Head and that this level of impact will not lead to material changes to the Banks spawning stock. On this basis, the Applicant does not consider it appropriate to re-categorise the magnitude of impact from 'low' to 'medium'.			
RR-042.089	Paragraph Number: 4.5.24 Points 4.5.14 – 4.5.23 have outlined our position and concerns regarding the presented assessment for impacts of UWN on herring. For these reasons, we believe that there is potential for	The Applicant maintains their position that piling at the Project will not result in significant population level effects to Banks herring. Therefore, no additional mitigation measures in the form of seasonal piling restrictions are deemed necessary.	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	Please see the MMO's further response to paragraph 4.5.22 above.

	significant impacts to occur to Banks herring at a population level, if suitable mitigation is not employed. The MMO therefore recommends that the following licence condition is included in the deemed marine licence (DML): • No piling of any type shall be permitted between 01 September and 16 October each year. Reason: To protect spawning Banks herring and their eggs and larvae during their spawning season.				
RR-042.090	Paragraph Number: 4.5.25 It is worth noting that the duration of the recommended piling condition is shorter than that typically recommended for the Banks herring spawning season (August to October inclusive). The recommended condition is proportionate to the licence condition for Triton Knoll OWF (DCO/2013/00004), located ~10km west of Outer Dowsing OWF, and reflects the timing of when herring spawning typically occurs in this southerly part of the Banks spawning ground, relative to those areas of spawning ground further north, e.g. Flamborough Head. This refined spawning period was identified through interrogation	The Applicant notes the MMO's comment but maintains that no seasonal restriction is necessary in this instance.	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	Please see the MMO's further response to paragraph 4.5.22 above.

	of IHLS data during the consenting stage for Triton Knoll OWF, and through the understanding that herring migrate through the North Sea from north moving south during their spawning season (Cushing and Bridger 1966, and Burd, 1978).				
Sandeel					
RR-042.091	Paragraph Number: 4.5.26 The MMO notes the recognition of the increased sensitivity of sandeels to offshore construction and disposal activities and that a species-specific assessment has been undertaken, which is appropriate. For the UWN impact assessment, sandeel have been categorised as Group 1 (fish without swim bladder) and are assessed as a stationary receptor, which is appropriate. For the impacts of mortality and potential mortal injury, from sequential pin-piling in the array area, an impact range of up to 1.5km is predicted. However, under the scenario of pin piles for jacket foundations being installed simultaneously at both the North East (NE) and South West (SW)piling locations, a larger impact range is predicted, with a maximum area of 9km2 . For	The Applicant welcomes the comment. Please see response to point 4.5.27 below.	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The MMO thanks the Applicant for presenting the modelled noise contours for the effects of mortality and potential mortal injury (219 dB cumulative sound exposure level (SELcum)), recoverable injury (216 dB SELcum) and temporary threshold shift (TTS) (186 dB SELcum) for sandeel habitat from simultaneous piling of jacket (pin-pile) foundations and monopile foundations in Figures 3.9 and 3.10 respectively (Offshore Restricted Build Area and Revision to the Offshore Export Cable Corridor Appendix A Figures, Part 1 of 2 – PD1-082). As stated in (RR-042, Section 4.5.28) disturbance to sandeel caused by piling noise and combined with the physical disturbance of their habitat (e.g. sandwave clearance)

	simultaneous piling of two monopile foundations at the NE and S W piling locations, the range of effect for potential for mortality and potential mortal injury in sandeels equates to a maximum area of up to 6.4km2 . Figures 10.25, 10.26, 10.29, 10.30, 10.34, 10.37 and 10.38 in Volume 2: Chapter 10: Fish and Shellfish Ecology Figures, document (ref: PP1-ODOW-DEV-CS-FIG-0010) present the modelled noise contours for pin-piling and monopiling within the Array and ANS search areas including sequential and simultaneous piling scenarios. With the exception of Figure 10.34, the Figures largely show the overlaps between the effects of mortality and potential mortal injury and TTS in sandeels with sandeel habitat in the Outer Dowsing study area.				during the construction of Outer Dowsing OWF will result in adverse impacts to sandeels in the area, particularly during their winter hibernation period and spawning period. As previously stated, the project is located within a much wider area of sandeel habitat, so we do not believe that further mitigation to prevent significant impacts to sandeels at a population scale is necessary. The MMO notes the Applicant's comment that indirect impacts on protected marine mammal and bird species due to impacts on prey availability (i.e. sandeel) have been assessed in the ES in chapter 11: Marine Mammals, 12: Offshore and Intertidal Ornithology, and in the Report to Inform Appropriate Assessment (RIAA) and defers to the relevant Statutory Nature Conservation Body (SNCB) for further comments on this.
RR-042.092	Paragraph Number: 4.5.27	Revised underwater noise modelling associated with the Environmental Report for the Offshore Restricted Build Area	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is	The comment is noted by the Applicant.	Please see MMO further response to paragraph 4.5.26 above.

	Please note that Figures 10.29, 10.30, 10.31 and 10.32 do not present the spawning grounds for sandeel or any other species that are spawning in the area, so are of little value in their current form. The figures with the relevant spawning grounds and/or habitats included should be re-presented.	and Offshore Export Cable Corridor (document 15.9) has been undertaken and the equivalent figures have been updated as advised by the MMO.	consulting with our technical advisors and will provide comments on these sections at Deadline 2		
RR-042.093	Paragraph Number: 4.5.28 On the whole, the UWN modelling indicates that there will be injurious effects to sandeels across much of the array area where habitat is suitable. This is likely to be of greatest concern during their winter hibernation period and spawning period (November to February inclusive). In addition, disturbance to sandeel habitat across the Outer Dowsing area will result in further disturbance to the species, again this will be of greatest concern during their winter hibernation period and spawning period. Whilst MMO agrees with the presented statement that sandeel habitat is widely distributed across the central North Sea, it is reasonable to assume that impacts of UWN and habitat disturbance to sandeel will occur at a local scale. MMO	The Applicant welcomes the MMO's confirmation that no further mitigation is required to prevent significant impacts to sandeels at a population scale. The Applicant also acknowledges MMO's concerns about the implications of impacts to fish populations for protected species that may rely on fish as prey. The Applicant highlights that indirect impacts on protected marine mammal and bird species due to impacts on prey availability have been assessed in Volume 1, Chapter 11: Marine Mammals (APP-066) and ES Chapter 12: Offshore and Intertidal Ornithology (APP-067), respectively, as well as within the RIAA (AS1-095).	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	Please see MMO further response to paragraph 4.5.26 above.

	does not believe this warrants any further mitigation to prevent significant impacts to sandeels at a population scale. However, as highlighted in our previous comment, there are a number of protected areas which overlap or are in close proximity to the Outer Dowsing study area which include Annex II species that may rely on sandeels as part of their diet whilst foraging in the area and therefore, may experience reduced foraging success and/or incur greater energy expenditure travelling to new feeding grounds as a result of localised impacts to fish populations during the construction of the wind farm, especially those receptors with relatively small and/or coastal restricted foraging areas. The MMO defers to the relevant SNCB on whether localised reductions in sandeel will cause significant effects to any of the annex II species, however, the MMO notes that the impacts of prey availability has been assessed in Chapter 12, Intertidal and Offshore Ornithology.				
RR-042.094	Paragraph Number: 4.5.29 The approach to the assessment of cumulative and inter-related impacts outlined	The Applicant welcomes the comment. The Applicant has no further comments on this matter.	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is consulting with our technical advisors and will provide	The comment is noted by the Applicant.	The MMO acknowledges that the Applicant has welcomed this comment.

	in the Offshore Cumulative Effects Assessment in Volume 1: Chapter 10: Fish and Shellfish Ecology (APP-065), document (ref: PP1-ODOW-DEV-CS-REP-0118) follows a standard approach of identifying the impacts which have potential to cause an effect. The study area for the range of effect is 12km around the array area and 15km around the ECC (for sedimentary impacts, based on physical processes). For underwater noise the range of effect is 100km due to the larger range of effect from noise generating activities such as piling. All other offshore operations (OWFs, subsea cables and aggregate areas) within the study area in the planning, consented, construction and operational activities have been identified.		comments on these sections at Deadline 2		
RR-042.095	Paragraph Number: 4.5.30 The cumulative behavioural effects to fish from underwater noise between different OWFs and the proposed works to fish have been assessed. However, from our understanding, the underwater noise impact ranges for behavioural responses in fish have been based on the conclusions of the ES of those	The Applicant acknowledges MMO's concerns but maintains their position that the use of the 135dB SELss threshold for behavioural responses in herring (and other clupeids) during piling is not appropriate.	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The MMO maintains its position on the 135 decibels (dB) Single Strike Sound Exposure Level (SELss) threshold from Hawkins et al., (2014) which is the best current scientific evidence from which a quantitative threshold can be derived for the purposed of modelling behavioural responses in herring. This threshold has been widely

	windfarms, which may quantify behavioural responses in a different way, therefore appropriate comparisons cannot be made. For example, the ES states that the Hornsea Project Three OWFs (Ørsted, 2018) assessment assumed a maximum of 319 monopiles across the site and predicted behavioural effects up to 10.8km from the piling locations. However, the Hornsea Project Three OWF ES did not include modelling of the 135dB threshold for behavioural effects in herring, therefore discussing the potential overlapping cumulative effects with the proposed works is not appropriate; especially when the Applicant's behavioural effects assessment for fish has not been modelled using the 135dB threshold either (Hawkins et al., 2014). Secondly, MMO recommends that the cumulative impact range contours are presented, for all the projects discussed in the cumulative impact assessment, as a figure to help better visualise any potential cumulative impacts between OWF projects.				used in Underwater Noise (UWN) modelling to inform the impact assessment for herring for many OWF and construction developments, and in the absence of an alternative quantitative threshold, it is considered the best available. The Applicant is aware of our current position on the use of a 135 dB threshold, which is recommended consistently for projects of a similar nature, and in reviewing the Applicant's response, our position remains unchanged and the MMO requests that this threshold is applied and updated information relation to this is supplied. The MMO would highlight to the Applicant that in many Examinations the Examining Authority (ExA) request information on a without prejudice basis. The MMO would advise the Applicant provides the information requested at the earliest opportunity and not leave this to the latter Deadlines of examination to ensure there is enough time to

					review and provide comments to the ExA
RR-042.096	Paragraph Number: 4.5.31 The MMO reiterates a comment made at PEIR stage, concerning cumulative impacts of UWN from piling; We are becoming increasingly concerned about the increase in hammer energies being used to install monopiles at OWFs. Monopile hammer energies have typically been in the region of 4,000 – 5,000 kilojoules (kJ), but we are seeing an increasing number of OWF licence applications proposing the use of 6,000 – 7,000kJ. These higher hammer energies are likely to result in noise impacting a larger area. Whilst receptor-specific mitigation is recommended by MMO when the evidence suggests that significant impacts to a particular species of fish are likely to occur, we do have general concerns regarding impacts to all fish (and other marine fauna in general) from unmitigated noise disturbance during piling at sea, especially given the recent surge in OWF development in the North Sea. For example, the MMO notes in Table 10.19 in Volume 1,	The Applicant maintains that no further mitigation is required as no significant effects have been predicted for fish and shellfish receptors ES Chapter 10: Fish and Shellfish Ecology (APP-065), both for the project alone and cumulatively.	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	Please see the MMO's further response to paragraph 4.5.22 above.

	Chapter 10: Fish and Shellfish Ecology, document (ref: PP1-ODOW-DEV-CS-REP-0118) that there may be temporal overlaps in the construction phases of Norfolk Boreas, Sheringham Shoal Extension, Dudgeon Extension, Hornsea Three and Hornsea Four OWFs, all of which require piling as part of their construction activities. It is therefore the MMO's opinion that additional noise abatement measures should be implemented for piling at this development as standard. With this in mind, the Project should consider the use of additional noise abatement measures for piling, such as bubble curtains (see Würsig et al. (1999)), or other alternative measures.				
RR-042.097	Paragraph Number: 4.5.32 The worst-case scenario for simultaneous piling of two monopile foundations at the SW and NE piling locations in the array area has been modelled. MMO requests an explanation as to why this scenario has been chosen as the 'worst-case'? In our opinion, modelling simultaneous piling from the SW and NE locations is indeed the worst- case	The Applicant welcomes the agreement from the MMO as to the SW and NE locations representing the worst-case scenario for the spatial impact from piling. The worst-case location for piling effects to herring spawning grounds is the NW location, which has also been modelled. All the modelling locations used to inform the ES were agreed through the ETG, and those used for ES match those used at PEIR, which the MMO were content with.	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2	The comment is noted by the Applicant.	The MMO notes the Applicant's response and may provide further comments at Deadline 4.

	scenario in terms of geographical spread, but not necessarily for fish receptors, specifically herring. The most vulnerable herring spawning grounds in relation to the project array are located northwest of the site. Therefore, in our opinion for a worst-case simultaneous piling scenario, the NE and NW locations should also be modelled as these locations are the most critical in terms of impacts to herring at their spawning grounds and consequently are where greatest overlap in noise disturbance will occur. The MMO asks for a more detailed explanation on why these locations (SW and NE) were chosen for their worst-case scenario for simultaneous piling for fish receptors, herring specifically. The MMO additionally requests the presentation of the modelled results for simultaneous piling of two monopiles from the NE and NW locations.	Notwithstanding, the Applicant considers that remodelling of the NE and NW locations, specifically for herring, is not required, as it is possible to predict what the combined overlap would be from these two modelling locations based on the individual modelling locations, with the Applicant having given due consideration to this within the interpretation of the modelling outputs and the determination of the magnitude of effect to herring. Furthermore, the Applicant notes the MMO's preferred methodology to assess underwater noise disturbance, which is based on "single strike" thresholds. These do not combine or increase with exposure from multiple locations and thus the effective worst-case location for single strike disturbance is an overlay that leads to the greatest geographical area, which is NE and SW. In reference to the disturbance at herring spawning grounds, the 'reach' of the zone of disturbance would be no greater than the two individual (and separately modelled) NE and NW locations.			
RR-042.098	Paragraph Number: 4.5.33 In paragraph 247 of the ES Volume 1, Chapter 10: Fish and Shellfish Ecology,	The Applicant acknowledges the incorrect reference to Figure 10.38. The migration circuit of herring in the North Sea is presented in Figure 10.1 within Volume 3, Appendix 10.1: Fish	MMO 4.5.13 to MMO 4.5.33: With regards to the Applicant's responses to MMO points 4.5.13 to MMO 4.5.33, the MMO is consulting with our technical advisors and will provide	The comment is noted by the Applicant.	The MMO welcomes the signposting by the Applicant.

	document (ref: PP1-ODOW-DEV-CS-REP-0118) it states that the migration circuit for herring in the North Sea has been mapped alongside the herring larval hotspots, and noise contours from piling in the array area, the ORCPs and ANSs in Volume 2, Figure 10.38. Please note that Figure 10.38 of the Volume 2 Figures chapter presents UWN modelling relating to sandeel. The MMO considers that the figure for herring should be presented as described, or signposting provided to the correct volume/chapter it can be found in.	and Shellfish Ecology Technical Baseline (APP-159).	comments on these sections at Deadline 2		

12. Annex 7

Table 1 detailing MMO and the Applicant's comments regarding Shellfish Ecology raised within MMO's Relevant Representation (RR-042)

Shellfish ecology					
Ref	MMO Relevant Representation (RR-042)	Applicant Response (PD1-071)	MMO Deadline 1 Response (REP1-056)	Applicant Deadline 2 Response (REP2-053)	MMO Response
RR-042.099	Paragraph Number: 4.6.1 The MMO notes the use of several data sources for shellfish and shellfisheries. These are a combination of desk sources and additional opportunistic surveys. However, the listed data sources do not cover the array or cable corridor, and several are over 10 years old, which could be considered outdated. Furthermore, as acknowledged by ODOW, the surveys conducted are not shellfish targeted surveys and are therefore only indicative of presence and absence of shellfish species. It is acknowledged that the report states "the MMO agreed that the baseline datasets identified in the Scoping Report (Outer Dowsing Offshore Wind, 2022) were appropriate for characterisation and the MMO confirmed no need for site-specific surveys." However, the	The Applicant highlights that, as detailed in Table 10.2 of Volume 3, Appendix 10.1: Fish and Shellfish Ecology Technical Baseline (APP-159), the baseline description of shellfish receptors within the Project fish and shellfish study area draws on a wide range of recent and historic data, including site-specific survey data, regional datasets, and monitoring studies undertaken for a number of existing and proposed OWFs in the southern North Sea region. Site-specific benthic ecology baseline data, including from benthic grabs, Drop Down Video and epibenthic trawls, were collected within the AfL array area and offshore ECC in April and July 2022 respectively (Volume 3 Chapter 9 Appendix 1 Benthic Ecology Technical Report (Array) (APP-154) and Volume 3 Chapter 9 Appendix 2 Benthic Ecology Technical Report (ECC) (APP-155)), with the results relevant to shellfish receptors presented in Section 10.3.2 of Volume 3, Appendix 10.1: Fish	MMO 4.6.1 to MMO 4.6.8: With regards to the Applicant's responses to MMO points 4.6.1 to MMO 4.6.8, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	The MMO appreciates the comments addressed by the Applicant (Page 169, RR-042.099 of PD1-071). The Applicant has resolved the comment raised that the baseline data relating to shellfish species is outdated and does not cover the array or cable corridor. The Applicant directed us to the evidence provided for the presence of commercially important shellfish species within the array and surrounding areas (Volume 3, Appendix 10.1: Fish and Shellfish Ecology Technical Baseline, GoBe, 2024, V.1.0) from MMO landings data between 2018 to 2021, species identified include brown crab, common whelk, common cockle, scallop, European lobster and

	MMO would expect more recent data to inform the baseline environment for shellfish receptors and shellfisheries.	and Shellfish Ecology Technical Baseline (APP-159). The Applicant also highlights that information on the current status of commercially important shellfish stocks within the Project fish and shellfish study area is presented in Section 10.5 of Volume 3, Appendix 10.1: Fish and Shellfish Ecology Technical Baseline (APP-159). The Applicant is therefore confident that the data used to characterise the baseline environment for shellfish receptors and shellfisheries are robust and sufficient for the purposes of EIA.			brown shrimp. The MMO considers this to be sufficient as supporting information to address the comments.
RR-042.100	Paragraph Number: 4.6.2 The MMO acknowledges that the specific benthic ecology surveys including Particle Size Analysis of sediment samples, epibenthic trawls and eDNA have since been conducted. As acknowledged within the ES, the site-specific surveys vary in their effectiveness in capturing shellfish. The MMO notes the use of several data sources, including existing surveys from other developments and desk-based literature. In our opinion, although some data sources are relevant, these are not recent (some over 10 years old). Furthermore, although site-specific surveys have been conducted, no shellfish targeted	The Applicant reiterates that they are confident that the data used to characterise the baseline environment for shellfish receptors and shellfisheries are robust and sufficient for the purposes of EIA, for the reasons presented in point 4.6.1 above.	MMO 4.6.1 to MMO 4.6.8: With regards to the Applicant's responses to MMO points 4.6.1 to MMO 4.6.8, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	Please see MMO's further response to Paragraph 4.6.1 above.

	surveys have been undertaken to inform the baseline for shellfish receptors.				
RR-042.101	Paragraph Number: 4.6.3 The MMO defers to Eastern Inshore Fisheries & Conservation Authority (EIFCA) for comments on potential impacts of the development on cockle and whelk features in The Wash.	This is noted by the Applicant.	MMO 4.6.1 to MMO 4.6.8: With regards to the Applicant's responses to MMO points 4.6.1 to MMO 4.6.8, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	The MMO welcomes that the Applicant has noted this comment.
RR-042.102	Paragraph Number: 4.6.4 It is noted that the impacts that have been considered in the Cumulative Impact Assessment are, during the construction phase, cumulative mortality, injury and behavioural changes resulting from underwater noise; and Cumulative increase in Suspended Sediment Concentration and sediment deposition.	The Applicant welcomes the comment. The Applicant has no further comments on this matter.	MMO 4.6.1 to MMO 4.6.8: With regards to the Applicant's responses to MMO points 4.6.1 to MMO 4.6.8, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	The MMO acknowledges that the Applicant has welcomed this comment.
RR-042.103	Paragraph Number: 4.6.5 For the UK potting fishery, the "implementation of evidence-based mitigation in line with Fishing Liaison with Offshore Wind and Wet Renewables guidelines, following procedures to be set out within the outline Fisheries Liaison and Coexistence Plan" has been proposed. The MMO agrees	The Applicant welcomes agreement from the MMO regarding the proposed mitigation measures for the UK potting fishery.	MMO 4.6.1 to MMO 4.6.8: With regards to the Applicant's responses to MMO points 4.6.1 to MMO 4.6.8, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	The MMO acknowledges that the Applicant has welcomed this comment. The mitigation measures proposed, in relation to shellfish receptors include "implementation of evidence-based mitigation in line with Fishing Liaison with Offshore Wind and Wet

	with the mitigation measure proposed.				Renewables guidelines, following procedures to be set out within the outline Fisheries Liaison and Coexistence Plan" for the UK potting fishery. Additional mitigation measures are the burial of subsea cables as the preferred option, a Project Environmental Management Plan (PEMP) which will include a Marine Pollution Contingency Plan (MPCP) and minimising the risk of introduction or spread of marine invasive non-native species. The MMO agrees with all mitigation measures proposed.
RR-042.104	Paragraph Number: 4.6.6 A comprehensive list of nearby projects under construction/consideration has been provided. The MMO considers that there is an adequate description of the potential cumulative and inter-related impacts and effects on the physical and biological environment for shellfish and shellfisheries.	The Applicant welcomes agreement from the MMO regarding the description of the potential cumulative and inter-related impacts and effects on the physical and biological environment for shellfish and shellfisheries.	MMO 4.6.1 to MMO 4.6.8: With regards to the Applicant's responses to MMO points 4.6.1 to MMO 4.6.8, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	The MMO acknowledges that the Applicant has welcomed this comment.
RR-042.105	Paragraph Number: 4.6.7	The Applicant acknowledges the incorrect species names which	MMO 4.6.1 to MMO 4.6.8: With regards to the Applicant's	The comment is noted by the Applicant.	The MMO reiterates that it is recommended that

	There are some scientific names which are incorrect. For example, In the document Appendix 10:1 Fish and Shellfish Ecology Technical Baseline (APP-159), p23 “European lobster Homarus 23ubulate”, the scientific name should be Homarus gammarus. On p24 of the same document “European common squid Alloteuthis 24ubulate”. The European common squid scientific name is Alloteuthis subulata. MMO requests that these are amended.	were a typographic error during document finalisation. The Applicant notes that the common names used sufficiently identify the species of concern and so no update is required.	responses to MMO points 4.6.1 to MMO 4.6.8, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.		the Applicant addresses typographical errors within their application and provides the correct Latin species names. The Applicant has acknowledged this comment (Page 169, RR-042.105 of PD1-071) and responded that they consider the common names to be sufficient in identifying the species name, without requiring the alteration of the Latin name. The MMO considers that it is best practice to provide the correct Latin species names but notes this is for the ExA to request.
RR-042.106	Paragraph Number: 4.6.8 The MMO advises that scientific names of the shellfish species should be presented in brackets next to the common name. This has been done in some cases but not all. This is a minor comment, for the applicant to consider.	The Applicant notes this comment but does not consider that this requires amendment.	MMO 4.6.1 to MMO 4.6.8: With regards to the Applicant’s responses to MMO points 4.6.1 to MMO 4.6.8, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	The MMO considers that it is best practice to provide the correct Latin species names but notes this is for the ExA to request.

13. Annex 8

Table 1 detailing MMO and the Applicant's comments regarding Underwater Noise raised within MMO's Relevant Representation (RR-042)

Underwater Noise					
Ref	MMO Relevant Representation (RR-042)	Applicant Response (PD1-071)	MMO Deadline 1 Response (REP1-056)	Applicant Deadline 2 Response (REP2-053)	MMO Response
RR-042.107	Paragraph Number: 4.7.1 The MMO considers that the relevant impacts have largely been scoped in. The impacts of relevance to underwater noise that have been considered include the following: Construction: • Impact 1: Unexploded Ordinance (UXO) Clearance – Permanent Threshold Shift (PTS); • Impact 2: UXO Clearance – Disturbance; • Impact 3: Pile driving – PTS; • Impact 4: Pile Driving –TTS; • Impact 5: Pile driving – Disturbance; • Impact 6: PTS from other construction activities; • Impact 7: TTS from other construction activities; • Impact 8: Disturbance from other construction activities; • Impact 10: Vessel disturbance; Operation:	The Applicant welcomes this comment.	MMO 4.7.1 to MMO 4.7.5: With regards to the Applicant's responses to MMO points 4.7.1 to MMO 4.7.5, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	The MMO acknowledges that the Applicant has welcomed this comment.

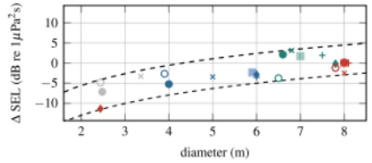
	• Impact 14: Operational noise; • Impact 16: Vessel disturbance				
RR-042.108	Paragraph Number: 4.7.2 It was raised during the PEIR consultation that MMO would expect the impact of UXO Clearance and TTS to be listed as a specific impact in Volume 1: Chapter 11: Marine Mammals, document (ref: PP1-ODOWDEV-CS-REP-0119), alongside PTS and disturbance (see section 11.5.1.1, for example). It is still unclear why this impact isn't specifically listed with the other impacts. Nevertheless, predicted TTS ranges for fish and marine mammals have been provided in the underwater noise assessment (currently Appendix 11.2, document reference 6.3.11.2), which is appropriate.	The Applicant confirms that, as set out In ES Chapter 11 Marine Mammals (APP-066): TTS is used as a proxy for disturbance in the UXO assessment (impact 2); TTS for pile driving is presented as impact 4; and The range and number of animals predicted to be impacted are presented in full for both.	MMO 4.7.1 to MMO 4.7.5: With regards to the Applicant's responses to MMO points 4.7.1 to MMO 4.7.5, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	The MMO does not support the use of TTS as a proxy for disturbance. The assessment of UXO clearance should appropriately consider the potential risk of PTS, TTS and disturbance.
RR-042.109	Paragraph Number: 4.7.3 The MMO notes that a detailed UXO survey will be completed prior to construction. The type, size and number of possible detonations and duration of UXO clearance operations is not known at this stage. It is noted that the Project is not seeking to license the disposal of UXO in this application, but it is included in the impact assessment.	This comment is noted by the Applicant.	MMO 4.7.1 to MMO 4.7.5: With regards to the Applicant's responses to MMO points 4.7.1 to MMO 4.7.5, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	The MMO acknowledges that the Applicant has noted this comment.
RR-042.110	Paragraph Number: 4.7.4	This comment is welcomed by the Applicant.	MMO 4.7.1 to MMO 4.7.5: With regards to the Applicant's responses to MMO points	The comment is noted by the Applicant.	The MMO acknowledges that the Applicant has welcomed this comment.

	The MMO considers that the approach to identify and assess the potential impacts is largely appropriate. Detailed underwater noise modelling is provided in Volume 3: Appendix 11.2 Underwater Noise Assessment, document (ref: PP1-ODOW-DEV-CSREP-0170). This appendix presents the predicted impact ranges for PTS and TTS (for marine mammals), and mortality, recoverable injury and TTS for fish species. Volume 1: Chapter 11 Marine Mammals, document (ref: PP1-ODOW-DEV-CS-REP-0119) provides further details and consideration of the effects of underwater noise including disturbance. For assessing disturbance from pile driving, a species-specific dose response approach has been adopted, which is appropriate. Noise contours at 5dB intervals were generated by noise modelling and were overlain on species density surfaces to predict the number of animals potentially disturbed.		4.7.1 to MMO 4.7.5, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.		
RR-042.111	Paragraph Number: 4.7.5 The Outline mitigation plans for piling and Unexploded Ordnance Clearance (UXO) have been submitted. An In Principle Southern North Sea (SNS) SAC Site Integrity Plan (SIP) has also been submitted. Overall, at this stage, Please see below for specific comments.	This comment is noted by the Applicant.	MMO 4.7.1 to MMO 4.7.5: With regards to the Applicant's responses to MMO points 4.7.1 to MMO 4.7.5, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	The MMO acknowledges that the Applicant has noted this comment.

Appendix 11.2 Underwater Noise Assessment (Document reference: 6.3.11.2)					
RR-042.112	Paragraph Number: 4.7.6 The map in Figure 1-1 (on page 1) is lacking any coordinates and has little geographical context. The bathymetry layer is not very informative either (no legend or contours and using a single colour). This is also the case for all the other maps presented in the report. We don't expect that bathymetry should be shown in great detail on the maps that otherwise focus on presenting modelling impacts (e.g., TTS and PTS contours). However, it would be useful if the bathymetry was shown (together with coordinates / more geographical context) perhaps on the first map, since they all appear to show the same domain.	The Applicant notes the comments, although the context of the site location is expected to be clear and no additional clarification of the location of the site was thought necessary. Coordinates and specific bathymetry values are provided in Table 3-1, next to Figure 3-3, and it is felt that for image presentation this level of detail would clutter the figures. However in the Offshore Restricted Build Area and Revision to the Offshore Export Cable Corridor Appendix C Underwater Noise Modelling Report (document reference 15.9C), a bathymetry colour scale has been added to the two relevant figures.			The MMO appreciates that the co-ordinates and specific bathymetry values of the modelling locations are provided within a table in the report. However, it would be helpful if more context could be added for future reports to better understand the bathymetry and locations across the modelled domain. The MMO believes that this is a reasonable request, especially as we only requested this additional information to be included on the first map of the report (rather than requesting that all figures are amended). The co-ordinates should also be provided in the figure, particularly since the maps currently lack a shoreline or land, and we are of the opinion that adding coordinates to any axis enhances any figure, rather than cluttering it. The MMO notes the following comment: "…*in the Offshore Restricted Build Area and Revision to the Offshore Export Cable Corridor Appendix C Underwater Noise Modelling Report*

					(document reference 15.9C), a bathymetry colour scale has been added to the two relevant figures". Please note that we cannot see any bathymetry colour scale on these figures.
RR-042.113	Paragraph Number: 4.7.7 A number of scenarios (covering monopile and jacket pin-pile foundations) have been modelled including three locations within the array area, two locations for the Offshore Reactive Compensation Platform (ORCP) and two locations for the Artificial Nesting Structures (ANS). Additional modelling has also been carried out to investigate the potential impacts of two piling installations occurring simultaneously at separated foundation locations. Using the monopile and jacket pile foundation piling scenarios, separately, modelling has been carried out for simultaneous piling at the SW and NE locations. We understand that the SW and NE locations have been chosen as this represents the maximum geographical spread of locations. Indeed, the maximum separation between piles will likely lead to the greatest risk of disturbance. However, other (additional) scenarios may also need to be considered, such as	The Applicant notes the concerns and would draw attention to the MMO's preferred methodology to assess underwater noise disturbance for fish, which is based on "single strike" thresholds. These do not combine or increase with exposure from multiple locations and thus the effective worst case location for single strike disturbance is an overlay that leads to the greatest geographical area, which is NE and SW. In reference to (for example) the disturbance at herring spawning grounds, the 'reach' of the zone of disturbance would be no greater than the two individual (and separately modelled) NE and NW locations.			The MMO agrees that in the case of instantaneous effects, the noise disturbance contours (based on the "single strike" sound exposure level thresholds) do not combine or increase with exposure from multiple locations. Thus, in this regard, the effective worst-case location is indeed an overlay that leads to the greatest geographical area (NE and SW) (e.g. maximum separation between piles will likely lead to the greatest risk of disturbance). Thus, for simultaneous piling, overlaying noise contours from separate piling events to assess effects is acceptable. The MMO agrees with the Applicant on that point. However, this comment was not solely concerning simultaneous piling. The salient point we were

	locations which are in closer proximity to important habitats (i.e., spawning or nursery grounds). Please also refer to comment 4.5.32.				raising was that there may be WTGs situated closer to important habitats than those locations modelled in the assessment. Thus, if this is the case then we may expect a greater overlap of noise with these habitats.
RR-042.114	Paragraph Number: 4.7.8 Table 4-2 (in section 4.1) shows a summary of the maximum predicted unweighted peak sound pressure level (SPLpeak) and the SELss noise levels at a range of 750 m from the source. This section (section 4.1) is a new addition to the report. MMO appreciates the inclusion of this information. It is very informative (we would say more than the source levels (SLs), since the SLs only have meaning within the particular context of the propagation model – while the values at 750 m, should, in principle at least, correspond to true noise values that could be verifiable by field measurements).	The Applicant welcomes this comment. The Applicant agrees that the presentation of noise levels at 750m is more useful than the source levels.	MMO 4.7.8: The MMO welcomes the agreement that the presentation of noise levels at 750 metres is more useful than the source levels.	The Applicant welcomes the MMO's agreement on the presentation of noise levels.	The MMO acknowledges that the Applicant has welcomed this comment.
RR-042.115	Paragraph Number: 4.7.9 The values (focusing on the SELss) do not seem to be particularly very high, given the large pile diameters and hammer energies. The monopile foundation values (for a 14 m diameter pile and 6600 kJ	The Applicant notes the MMO's reasonable comments: on the face of it (and as per von Pein et al. 2022) the significant increase between the pile diameters under consideration (5m vs 14m) should lead to a big increase in their noise output. However,	MMO 4.7.9 to MMO 4.7.10: With regards to the Applicant's responses to MMO points 4.7.9 to MMO 4.7.10, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.	The comment is noted by the Applicant.	The MMO acknowledges the response from the Applicant. However, the MMO believes it is important to highlight recent and relevant findings from the peer-reviewed literature. The von Pein study used finite

	hammer energy) are only 1-1.5 dB above the corresponding jacket pile foundation values (5 m diameter pile and 3500 kJ hammer energy) at the same locations. The increase of hammer energy alone from 3500 kJ to 6600 kJ might plausibly explain these differences; however, the substantial increase in pile diameter (from 5 to 14 m) does not seem to have a very important role. This is somewhat at odds with the emerging evidence from literature, which suggests that the pile dimeter is a very important factor in the scaling of the piling noise (von Pein et al., 2022). In this context, we also note that the report acknowledges that the INSPIRE model is based on existing empirical data (which allegedly does not exist for the parameters relevant for the foundation at this windfarm) which need to be extrapolated, based on the existing trends, up to the scale of piling anticipated for the current application.	we consider that von Pein et al (2022) has overestimated the significance of the diameter as a determining parameter and its effect is much lower. Figure 7 in von Pein et al. shows the fit of the predicted noise levels to empirical data. Although the best fit does tend towards an asymptote, which we agree with, our analysis indicates a much shallower curve: indeed, the difference between noise data points shown at pile diameter 4m and 8m is the same, and beyond 6.5m indeed appears to be trending downwards. We consider that the pile energy input has the greatest effect on the noise output, although, of course, it is complicated. Section 3.1 of Chapter 11 Appendix 2 Underwater Noise Assessment (APP-161) discusses the confidence in the modelling against historic data and how current parameters have been extrapolated.  Fig 7 (top) from von Pein et al. 2022.			element models (FEM) to simulate the acoustic emissions from pile driving, and these models were then validated against real-world measurement data. Thus, it is important to note that the scaling laws presented in von Pein et al. (including the dependency on pile dimeter) are derived from theoretical considerations verified against results of a state-of-the-art finite element model for pile driving noise radiation (rather than based on empirical observations). These theoretical / numerical scaling laws are illustrated in Figure 2 in the paper, while Figure 7 serves only as an overall validation of the laws.
RR-042.116	Paragraph Number: 4.7.10 Section 4.5 Multiple location modelling (on page 49): The report states that “It is	The Applicant would like to clarify the multiple modelling location methodology. The	MMO 4.7.9 to MMO 4.7.10: With regards to the Applicant’s responses to MMO points	The comment is noted by the Applicant.	The MMO thanks the Applicant for this additional clarification, and we are

	assumed that a fleeing animal in the model starts at both piling locations". We are unsure what this means. The meaning of an impact zone (such as those enclosed by the TTS contours in Figure 4-1) is that of showing all starting positions of fleeing animals that eventually accumulate noise exposure above the particular threshold level of that respective impact. As such, the model needs to consider animals starting to flee from all points within the model domain in order to establish which starting points fall within the impact zone and which fall outside - not only starting at the two piling locations. This comment does not necessarily require any action as such; however, we wanted to highlight that this statement could be seen as confusing.	sound field set up around the two piles is calculated by the model, accounting for the simultaneous noise sources. In this combined sound field, the fleeing receptor starts from each pile location as this represents the highest overall potential noise level, much greater than (for example) the middle of the two piling locations. The impact ranges in the combined sound field are modelled, and this is then repeated at the second location (or third etc where relevant). The two impacted areas are then overlaid, and a combined area is calculated. Previous methodologies used a central or other locations, which resulted in odd figure-8 patterns where the receptor gained maximum exposures by fleeing directly from a relatively quiet area directly towards a piling location, which was implausible and generally led to smaller overall areas.	4.7.9 to MMO 4.7.10, the MMO is consulting with our technical advisors and will provide comments on these sections at Deadline 2.		content that this comment has been addressed.

14. Annex 9

Table 1 detailing MMO and the Applicant's comments regarding Other ES Chapters raised within MMO's Relevant Representation (RR-042)

Chapter 12 Offshore and Intertidal Ornithology					
Ref	MMO Relevant Representation (RR-042)	Applicant Response (PD1-071)	MMO Deadline 1 Response (REP1-056)	Applicant Deadline 2 Response (REP2-053)	MMO Response
RR-042.117	Paragraph Number: 4.8.1 The MMO defers to Natural England as SNCB and supports any comments raised in relation to the Ornithology. The MMO will continue to be part of the discussions relating to securing any mitigation and monitoring or other conditions required within the DMLs.	The Applicant notes this comment.			
Chapter 13 Marine and Intertidal Archaeology					
RR-042.118	Paragraph Number: 4.9.1 The MMO defers to the Historic England on matters of marine archaeology and supports any comments raised. The MMO will continue to be part of the discussions relating to securing any mitigation, monitoring or other conditions required within the DMLs.	The Applicant notes this comment.			
Chapter 14 Commercial Fisheries					
RR-042.119	Paragraph Number: 4.10.1	The Applicant notes this comment. The potential impacts of temporary exclusion			The MMO acknowledges that the Applicant has noted this comment.

	It is likely that there will be an impact to fishing operations and to other legitimate users of the sea, as temporary exclusion zones will be in force around the worksite for the duration of any proposed works. This could result in temporary restrictions of access to fishing grounds or navigation routes. MMO notes the inclusion of such safety zones within ES Volume 1: Chapter 14: Commercial Fisheries, document (ref: PP1-ODOW-DEV-CS-REP-0122) MMO defers to the National Federation of Fishermen's Organisations and Sussex Inshore Fisheries and Conservation Authorities, along with standalone representatives on matters of commercial fisheries. The MMO will continue to be part of the discussions relating to securing any mitigation, monitoring or other conditions required within the DMLs.	of fishing activity during construction are assessed in Chapter 14: Commercial Fisheries (APP-069), Section 14.7.1, with mitigation proposed where potentially significant impacts are identified. The Applicant has and will continue to engage with the NFFO, IFCA and local fishers			The MMO highlighted to the ExA and the Applicant within our Deadline 2 response (REP2-092) that the MMO has published a report called 'Spatial distribution of under 12m fishing activity and sensitivity to offshore wind development in the east marine plan areas (MMO1382).' The report outlines the findings of the evidence project with the aim to increase the spatial resolution and understanding of the under 12m fishing fleet's activity in the east marine plan areas and their sensitivity to Offshore Wind Farms. The MMO believes the Applicant should review the report and discuss how the Project can use the findings to supplement the best available evidence being put forward in this Examination.
Chapter 15 Shipping and Navigation					
RR-042.120	Paragraph Number: 4.11.1 THe MMO defers to the Maritime and Coastguard Agency and Trinity House on matters of shipping and navigation and supports any comments raised. The MMO will continue to be part of the	The Applicant notes this comment.			The MMO acknowledges that the Applicant has noted this comment.

	discussions relating to securing any mitigation, monitoring or other conditions required within the DMLs.				
Chapter 17 Seascape Landscape and Visual					
RR-042.121	Paragraph Number: 4.12.1 MMO defers to Natural England as the SNCB, along with Historic England and the Local Planning Authorities on matters of Seascape, Landscape and Visual Resources and supports any comments raised. The MMO will continue to be part of the discussions relating to securing any mitigation and monitoring or other conditions required within the DMLs	The Applicant notes this comment.			The MMO acknowledges that the Applicant has noted this comment.

15. Annex 10

Table 1 detailing MMO and the Applicant's comments regarding Other Application Documents raised within MMO's Relevant Representation (RR-042)

Other Application Documents					
In Principle Southern North Sea Special Area of Conservation Site Integrity Plan					
Ref	MMO Relevant Representation (RR-042)	Applicant Response (PD1-071)	MMO Deadline 1 Response (REP1-056)	Applicant Deadline 2 Response (REP2-053)	MMO Response
RR-042.122	Paragraph Number: 5.1.1 As advised during the PEIR consultation, the need to implement effective alternatives to unmitigated piling – i.e. measures to reduce noise at source (noise abatement) is especially pressing given the wider context of the current ramp up of offshore wind development at unprecedented scale in the North Sea. To ensure adequate preparations are made and potential delays avoided, it is therefore in the applicant's interest to plan for noise abatement measures at the earliest opportunity and to incorporate such measures into relevant mitigation plans.	The assessments within the relevant documents in the ES Chapter 10: Fish(Ecology (APP-065) and marine mammals (APP-066)) and the RIAA (AS1-095) have not identified any potential effects requiring additional mitigation in the form of Noise Abatement Systems (NAS) and as such the Applicant does not consider it necessary to commit to such mitigation at this stage. Notwithstanding, the Applicant has identified NAS as a potential measure within the Outline SIP (document reference 8.7) and Outline MMMP (document reference 8.6.1) which may be identified as required prior to the construction of the Project through the development of the final Site Integrity Plan and/or the final Marine Mammal Mitigation Protocol.			The need to reduce noise at source (noise abatement) is especially pressing given the wider context of the current ramp up of offshore wind development at unprecedented scale in the North Sea. The MMO maintains that reducing noise at source is the most effective measure to reduce the risk of potential impact. Thus, the MMO reiterates that it is in the Applicant's interest to plan for noise abatement measures at the earliest opportunity and to incorporate such measures into relevant mitigation plans.
RR-042.123	Paragraph Number: 5.1.2	The Applicant will discuss the need for additional mitigation at			The MMO acknowledges the Applicant's response.

	The MMO defers to Natural England and other SNCBs for further comment on SIPs. As per paragraph 23 of the SIP, the MMO does agree with the JNCC, Natural England & DAERA (2020) guidance in that it is important to allow sufficient time between assessment and construction to implement additional mitigation measures if necessary.	the post-consent stage should it be required.			
Outline Marine Mammal Mitigation Protocol (MMMP) for Piling Activities					
RR-042.124	Paragraph Number: 5.2.1 It is noted that page 12 states that the maximum number of piling events (for multi-leg pin piled jackets) in a single day is eight, assuming two piling rigs, each installing four piles. For the purposes of the underwater noise modelling to inform the MMMP, 6 piling events at a single location have been modelled to inform the maximum injury ranges. Indeed, the worst-case stated in the underwater noise modelling is 6 piles to be installed in a 24-hour period (and a total of 12 piles in 24 hours for the simultaneous piling) (4 hours per pin pile equating to a total of 24 hours).	The Applicant confirms this is an error within the Outline Marine Mammal Mitigation Protocol (MMMP) for Piling Activities (APP-279). The correct number of multi-leg pin piled jackets installed in a day is 12 when assuming simultaneous piling, 2 rigs with 6 pin piles. The Applicant has amended the error in the Outline Marine Mammal Mitigation Protocol (MMMP) for Piling Activities (document reference 8.6.1).			The MMO welcomes the response from the Applicant who confirms this is an error within the Outline Marine Mammal Mitigation Protocol (MMMP) for Piling Activities (APP-279). The correct number of multi-leg pin piled jackets installed in a day is 12 when assuming simultaneous piling, 2 rigs with 6 pin piles. The Applicant has amended the error in the Outline Marine Mammal Mitigation Protocol (MMMP) for Piling Activities (document reference 8.6.1). The MMO is satisfied that this comment has been addressed.

RR-042.125	Paragraph Number: 5.2.2 The specific mitigation measures that will be implemented during the construction of the Project will be determined, in consultation with relevant SNCBs, following the appointment of the installation contractors (and therefore, confirmation of final hammer energies and foundation types), collection of additional survey data (further geophysical and/or geotechnical data) and/or information on maturation of emerging technologies. This additional data and information will allow the noise modelling to be updated and feed into discussions on the appropriate mitigation measure(s) in the Final Piling MMMP (if required). The MMO considers this approach to be appropriate.	The Applicant welcomes this comment.			The MMO acknowledges that the Applicant has welcomed this comment.
RR-042.126	Paragraph Number: 5.2.3 The Outline MMMP identifies the standard mitigation measures that are commonly employed, including: pre-piling deployment of Acoustic Deterrent Devices (ADDs), Marine Mammal Observers (MMObs), Passive Acoustic Monitoring (PAM) system and a piling soft start procedure. Noise abatement is also considered (section 4.4). MMO notes that the specific	The Applicant will detail the specific protocol for handling planned and un-planned breaks in the final postconsent piling MMMP. The Applicant will seek advice from the SNCBs and the piling contractor on the appropriate measures for inclusion in the final post-consent piling MMMP.			The MMO acknowledges the Applicant's response.

	protocol for handling piling breaks would be determined in collaboration with the piling contractor and SNCBs and documented in the final piling MMMP.				
Outline Marine Mammal Mitigation Protocol for UXO					
RR-042.127	Paragraph Number: 5.3.1 As with the Outline MMMP for piling, this MMMP for UXO only provides a high-level outline of the information which would be contained within the UXO MMMP that will accompany a future Marine Licence application. The document identifies the standard mitigation measures that are commonly employed for UXO clearance, including: prepiling deployment of Acoustic Deterrent Devices (ADDs), Marine Mammal Observers (MMOb), Passive Acoustic Monitoring (PAM) system, low order techniques and noise abatement.	The final UXO clearance MMMP will be submitted as part of the separate Marine Licence Application for UXO clearance in the post-consent stage. The final UXO clearance MMMP will refer to the measures identified in the Outline MMMP for UXO clearance, however, would be subject to any updated or new guidance and advice from SNCBs at the time of drafting.			The MMO acknowledges the Applicant's response.
RR-042.128	Paragraph Number: 5.3.2 Of relevance, paragraph 27 states that "Technologies are available which attenuate the amount of noise emitted at the source (noise abatement). The use of bubble curtains during high-order UXO clearance activities is now standard best-practise for UXO clearance campaigns for offshore wind	This is noted by the Applicant. The final UXO clearance MMMP will be submitted as part of the separate Marine Licence Application for UXO clearance in the post-consent stage, which will follow the guidance and best-practice at the time of drafting.			As advised in point 5.3.2 of RR-042, the MMO recommends that bubble curtains are deployed for all high-order detonations, including those under 50 kilograms (kg). The MMO expects this to be clear in future iterations of the Marine Mammal Mitigation Protocol (MMMP) for

	projects, with all projects since East Anglia One being required to use bubble curtains (subject to certain environmental limitations) for UXO detonations with combined charge sizes of greater than 50 kilogram (kg) (TNTequivalent)". MMO considers that bubble curtains should be deployed for all high-order detonations, including those under 50 kg.				Unexploded Ordinance (UXO). The MMO would like to reiterate that the final mitigation plans for piling and UXO clearance will need to be agreed post-consent to consider appropriate mitigation for cumulative noisy activities occurring at the time of construction. The MMO expects this to be clear in future iterations of the MMMP for UXO.
Offshore In-Principal Monitoring Plan (IPMP)					
RR-042.129	Paragraph Number: 5.4.1 The IPMP has been produced to provide the basis for delivering the monitoring measures required by the conditions of the deemed Marine Licences (dMLs) contained within the draft Development Consent Order (DCO). The monitoring plan to be submitted to the MMO for approval post consent must accord with this IPMP. Final detailed plans for monitoring work will be produced post consent closer to the time that the actual work will be undertaken, in line with the conditions proposed within the dMLs.	This comment is noted by the Applicant.			The MMO acknowledges that the Applicant has noted this comment.

RR-042.130	Paragraph Number: 5.4.2 Paragraph 31 (section 3.5.2) appropriately identifies that if piled foundations are used in the final project design, underwater noise monitoring of the first four piles of each piled foundation type will be undertaken with the methods agreed with the MMO and relevant SNCBs in the pre-construction period. This is in keeping with the standard monitoring requirements for offshore wind farms. Monitoring of the first four piled foundations (during the construction phase) is required for validation purposes – to check whether the noise predictions in the ES are reasonable/appropriate.	This comment is noted by the Applicant.			The MMO acknowledges that the Applicant has noted this comment.
RR-042.131	Paragraph Number: 5.4.3 The MMO notes that monitoring (in the form of MMObs and PAM) will also be undertaken in order to manage to the risk of auditory injury to marine mammals from underwater noise.	This comment is noted by the Applicant.			The MMO acknowledges that the Applicant has noted this comment.
RR-042.132	Paragraph Number: 5.4.4 The MMO will continue discussions on monitoring throughout examination. MMO also encourages preengagement at the earliest stages once	This comment is noted by the Applicant.			The MMO acknowledges that the Applicant has noted this comment.

	consented to allow for any issues to be resolved.				
Outline Fisheries Liaison and Coexistence Plan					
RR-042.133	Paragraph Number: 5.5.1 The MMO welcomes and notes that an Offshore Fisheries Liaison Officer (OFLO) will be appointed, alongside a Company FLO and a Marine Coordinator for Outer Dowsing OWF.	This comment is welcomed by the Applicant.			The MMO acknowledges that the Applicant has welcomed this comment.
RR-042.134	Paragraph Number: 5.5.2 Advice should be sought via the FLO when the timetable of works is known so that the local industry can provide real-time advice.	The Applicant has provided an updated Outline FLCP (document reference 8.14) to include the updates recommended by the MMO.			The MMO acknowledges the Applicant's response.
RR-042.135	Paragraph Number: 5.5.3 The MMO would note that the MMO will not act as arbitrator in regard to compensation and will not be involved in discussions on the need for or amount compensation being issued. This needs to be made clear within the Outline Fisheries Liaison and Coexistence Plan.	The Applicant has provided an updated Outline FLCP (document reference 8.14) to include the updates recommended by the MMO.			The MMO acknowledges the Applicant's response and welcomes the amendment to the Outline FLCP.
Report to Inform Appropriate Assessment					
RR-042.136	Paragraph Number: 5.6.1 The MMO defers to and supports Natural England as SNCB regarding impacts to international	The Applicant notes the MMOs deference to Natural England in relation to HRA matters. The Applicant has responded to Natural England's comments separately.			The MMO acknowledges that the Applicant has noted this comment.

	designated sites and the HRA for the Project.				
RR-042.137	Paragraph Number: 5.6.2 The MMO will keep a watching brief on these documents and would remind the Applicant that any mitigation secured through these assessments will need to be included within the conditions on the DML.	The Applicant notes the comment regarding the inclusion of mitigation within the DMLs. The Applicant has clearly identified where relevant where mitigation measures are secured within the DMLs or within specific Outline Plans.			The MMO acknowledges that the Applicant has noted this comment.
Habitats Regulations Assessment Derogation Case					
RR-042.138	Paragraph Number: 5.7.1 The MMO defers to and supports Natural England as SNCB regarding the derogation case proposed.	The Applicant notes the MMOs deference to Natural England in relation to derogation case matters. The Applicant has responded to Natural England's comments separately.			The MMO acknowledges that the Applicant has noted this comment.
RR-042.139	Paragraph Number: 5.7.2 The MMO will keep a watching brief on these documents and would ask for any compensation requirements to be included within the DCO at this stage to ensure all parties have reviewed the wording, should the Secretary of State be minded to include compensation.	The Applicant notes the comment regarding the inclusion of compensation information within the DCO at this stage.			The MMO acknowledges that the Applicant has noted this comment.
Outline Offshore Operations and Maintenance Plan					
RR-042.140	The MMO would like to see details of Operation and Maintenance (O&M) activities from both within and outside the designated sites. This is to ensure details of cable protection	The Applicant would welcome clarification from the MMO regarding the details of what they wish to see in response to this query.			The MMO are currently reviewing and will provide comments at Deadline 4.

	required within designated sites are provided for further comment.				