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Planning Inspectorate
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(By email only)

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MMO Reference: DCO/2018/00014
Identification Number: 20029896

10 August 2022

Dear Jo Dowling,

Planning Act 2008 - Application by Ørsted Hornsea Project Four (UK) Limited (“Ltd”) for an Order Granting Development Consent for Hornsea Project Four Offshore Wind Farm

Deadline 7 Submission

On 4 November 2021, 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 Orsted Hornsea Project Four (UK) Ltd (the “Applicant”) for a development consent order (the “Application”).

The Application seeks authorisation to construct, operate and maintain Hornsea Project Four offshore wind farm, comprising of up to 180 offshore wind turbines together with associated offshore and onshore infrastructure and all associated development (the “Project”).

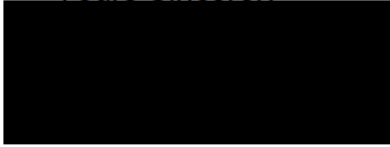
The MMO submits the following as part of our Deadline 7 submission:

- 1. Comments on any submissions received at Deadline 6**
- 2. Any further information requested by the ExA under Rule 17 of the Examination Procedure Rules**
- 3. Comments on the ExA’s preferred draft DCO, proposed schedule of changes, or commentary on the draft DCO (if issued)**
- 4. Final SoCGs and Statement of Commonality of SoCGs, also listing matters not agreed (in circumstances where a SoCG could not be finalised)**



This written representation is submitted without prejudice to any future representation the MMO may make about the 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



Gregg Smith
Marine Licencing Case Officer



Contents

1.	Comments on any submissions received at Deadline 6.....	4
2.	Outline Marine Mammal Mitigation Protocol Revision:2 [REP6-012]	4
3.	Dredging and Disposal Site Characterisation Revision:2 [REP6-004]	5
4.	Herring Spawning and Piling restriction	11
5.	Sediment Contaminants Analysis	11
6.	Any further information requested by the ExA under Rule 17 of the Examination Procedure Rules.....	13
7.	Comments on the ExA's preferred draft DCO, proposed schedule of changes, or commentary on the draft DCO (if issued)	13
8.	Final SoCGs and Statement of Commonality of SoCGs, also listing matters not agreed (in circumstances where a SoCG could not be finalised)	14
	References	35



1. Comments on any submissions received at Deadline 6

- 1.1. The MMO would like to reiterate our concerns regarding the Examination timetable first outlined in our Deadline 5a submission [REP5a-027]. The time between the Deadline 6 submissions becoming available on the website and Deadline 7 has been insufficient for the MMO, with regards to some documents, to review and consult where necessary in order to prepare a robust response.
- 1.2. In addition to this, the Deadline 8 submission being midday on the 17 August 2022 means that the MMO will need to review the Deadline 7 submissions, including responses to our comments at Deadline 6, and prepare positions on any outstanding issues with as little as two and a half working days (assuming the publishing of the DL7 submissions on the evening of 12 August as seen for previous Deadlines).

2. Outline Marine Mammal Mitigation Protocol Revision:2 [REP6-012]

- 2.1. The MMO has reviewed the outline Marine Mammal Mitigation Protocol (MMMP) revision 2 [REP6-012], along with our scientific advisors at Centre for Environment, Fisheries, and aquaculture Science (CEFAS) and wish to make the following comments:
- 2.2. Table 1 of the Outline MMMP states that *“there will only be a maximum installation of 2 piled foundations within a 24-hour period. It is possible for installation of the two piled foundations to occur concurrently i.e., within a 24-hour period at up to two locations within the HVAC search area or up to two locations within the array. The two piled foundation locations may also be piled simultaneously”*. This statement is confusing as ‘concurrently’ and ‘simultaneously’ have the same meaning. Presumably, the Applicant means that consecutive piling is likely (i.e. up to two piles installed in a 24-hour period, one after the other) but simultaneous piling may also occur (two piles installed in different locations at the same time within either the HVAC area or within the array). The MMO advises that the Applicant clarifies this.
- 2.3. Paragraph 2.1.1.3 confirms that *“there will be a maximum of four piling vessels on site at the same time (two vessels for Wind Turbine Generators foundation installation and two vessels for Offshore Substation and High Voltage Alternating Current (HVAC) booster station foundation installation) with a maximum of two piling operations at any one time. There will, however, be no concurrent piling operations between the Hornsea Four array area and the HVAC booster stations located in the offshore Export Cable Corridor (ECC)”*. The MMO welcomes this addition.
- 2.4. As this document is only an outline MMMP, the specific mitigation measure (or suite of measures) that will be implemented during the construction of Hornsea Project Four will be determined, in consultation with the relevant Statutory Nature Conservation Bodies (SNCBs), following confirmation of final hammer energies and foundation types, collection of additional survey data (noise or geophysical data) and/or acquisition of noise monitoring data, and/or information on



maturation of emerging technologies. This additional data and information will allow the noise modelling to be updated to feed into the final MMMP and discussions on the appropriate mitigation measure(s) (see paragraph 4.1.1.2 of the outline MMMP).

- 2.5. The MMO welcomes that the final MMMP will include mitigation of cumulative permanent threshold shift (PTS) as well as instantaneous PTS (see revised paragraph 4.2.1.3 of the outline MMMP). Updated noise modelling is anticipated to be undertaken once the final project details are known. We agree that noise modelling should be informed using the best available, peer-reviewed scientific guidance at the time. We also agree with the comments within the MMMP that *“there are limitations to the assumptions used in the modelling of SELcum PTS”*, we agree that although these assumptions are not all necessarily conservative, it should be acknowledged that there are uncertainties.
- 2.6. Overall, the MMO believe that the outline MMMP has been appropriately updated/revised accordingly to make clear that the final MMMP will consider mitigation for both instantaneous and cumulative PTS (i.e. *“The final MMMP will include mitigation of cumulative PTS impact ranges that will be modelled based on the latest research and methods available at the time of the final MMMP post-consent”* (paragraph 4.2.1.3 of the outline MMMP)).

3. Dredging and Disposal Site Characterisation Revision:2 [REP6-004]

- 3.1. The MMO has reviewed the updated information contained within the Dredging and Disposal Site Characterisation Revision:2 [REP6-004] report alongside our advisors at CEFAS and wish to make the following comments:

Dredge and disposal:

- 3.2. The MMO has no further comments on the volumes present within Chapter 3: “Predicted source of Spoil and Estimated quantities for disposal” of the report.
- 3.3. The MMO notes that within Chapter 4 of the report, for the alternative options for disposal it concludes that disposal at an existing marine disposal sites does not represent the most efficient or environmentally robust approach to disposal of material from Hornsea Project Four array area and the offshore ECC; Chapter 3 the Applicant already proposed two disposal sites. This is a minor point.
- 3.4. Table 1 details the consultation responses throughout the application. With reference to an earlier MMO comment stating that no disposal site could overlap with any existing open disposal site, the Applicant has outlined a response as follows: *“The Applicant can confirm that there is no overlap of these proposed sites with any other open disposal sites. The proposed Hornsea Four offshore ECC disposal site does overlap with the Dogger Bank A & B export cable corridor but disposal for Dogger Bank A & B is only permitted within the Dogger Bank A & B array area (of which there is no overlap with the Hornsea Four proposed disposal sites).”* As previously outlined in our other Deadline submissions, the MMO can confirm that there is no overlap between the proposed Hornsea Project Four disposal sites and any existing open disposal



sites, and that the Applicant has already made the required amendments to include the disposal area. This matter is considered closed.

- 3.5. In Chapter 6.2 of the report, the MMO notes that the Applicant has not provided a map of where samples were taken in the document but does refer to some of them by name in paragraphs 6.2.2.2 and 6.2.3.1-3. We recommend the Applicant provides a map of where samples have been taken. The MMO did notice that there were some footnote links provided after commenting on specific samples and would like the Applicant to verify if these links of the footnote do show a map of where all the samples were taken. If this is not the case, our initial request for the provision of a map remains.
- 3.6. Within Chapter 7 only one change has been made regarding the sensitivity of a receptor from low to medium. The MMO confirms that we have no comments on this change.

Benthic comments:

- 3.7. Table 1 of the report details where and how each of the MMO and SNCB comments have been addressed within the resubmission. The MMO confirms that these comments for the MMO have been fully addressed.
- 3.8. In response to the MMO comment regarding alternate uses of spoil material, the Applicant has reviewed potential options and concluded that spoil generation will be minimised to that which is necessary for safe engineering purposes. The report has been updated throughout to reflect the changes in the material volume.
- 3.9. The Applicant has proposed to undertake pre- and post- construction monitoring along the cable route. Specifically, bathymetric survey(s) and sediment sample collection (and subsequent particle size distribution analysis) will be carried out to assess the impact of dredge disposal within the ECC, and to determine if the drill arisings increase the percentage contribution of large granular material. The MMO further reiterates the request for a minimum of 10% of the total amount of turbines proposed for construction should be monitored for benthic impacts.
- 3.10. In situ disposal of dredged material is considered the most viable option by the Applicant and the MMO broadly agree with the assessment of no significant impact on the benthic receptors. This is based on benthic receptors at the scale of the Hornsea Project Four Offshore Wind Farm array and ECC as a result of disposal of material associated with the installation of the Hornsea Project Four infrastructure within the proposed disposal areas.

Coastal Processes

- 3.11. The MMO notes that the report has been updated based on earlier discussions on the potential disposal sites for Hornsea Project Four constructional activities. Several concerns have been raised about disposal sites on Smithic Bank. However, we are now assured by numerical modelling studies that any disposals



in or on the bank will remain in the bank system and thus not impact on the form and function of the bank.

- 3.12. The MMO advises that pre-construction monitoring is used to identify different particle size regimes along and within the disposal area. This would then allow dredged sediment to be deposited on similar sediments (wherever possible).
- 3.13. Table 2 of the report shows the spoil volumes for various activities reach a total of approximately 5.5 million m³ and 7.1 million m³ for piled and non-piled options respectively. The MMO advises that clarity is sought as to whether these volumes are to be disposed of in an even manner, or will a series of cells be needed to manage the thickness?
- 3.14. Regarding section 7.1.2.4 of the report, the MMO notes the potential for Chalk plumes to be generated. As known, chalk plumes can travel considerable distance due to their low settling velocity. Chalk arising should be deposited as close to the seabed as possible to minimise this. We request that if surface plumes are observed, photographs should be taken and reported to the MMO.

Fisheries

- 3.15. The MMO have concerns regarding significant impacts occurring to the Banks herring population arising from construction activities and the proposed disposal of sediments along the ECC. We have outlined the reasons and rationale that underpin our concerns below. Please note that a number of these comments are reiterated from our comments on the initial Environmental Statement. Whilst these comments were made in relation to the proposed construction elements of the cable route, they are also applicable to the disposal activities.
- 3.16. The inshore section of the ECC crosses through the Banks herring spawning ground. Seabed preparation work associated with the ECC installation activities such as sandwave clearance, pre-lay grapnel run, jetting and trenching are likely to result in disturbances to herring spawning grounds by way of direct damage to the gravel beds on which herring lay their eggs, and through temporary localised increases in suspended sediment concentrations (SSC) and smothering of eggs and newly hatched larvae during their development.
- 3.17. Herring require a specific substrate on which to spawn, consisting of gravel and similar habitats where there is a low proportion of fine sediment and well-oxygenated water. Herring eggs and larvae can be put at risk if the spawning beds are smothered (e.g. from dredging activity). If there is a large proportion of fine material (<63 micron) in the sample, then it is unlikely to allow sufficient water circulation and it will not be suitable as a herring spawning ground (Rogers 2000). Accordingly, it is important to manage herring spawning areas by ensuring that the physical properties of the substrate remain the same, and by preventing disturbance to seabed substrates during the period in which eggs are laid, during egg development and during the period of development of newly hatched larvae where the larvae remain close to the seabed.



- 3.18. Herring sensitivity for the effects of direct damage and disturbance and temporary localised increases in SSC and smothering is assessed as ‘high’ in the ES, which is appropriate. However, the magnitude of impact has been assessed as ‘minor’ (adverse) for both of these impacts, due to the *“relatively small overlap from the works on this spawning ground, the lack of overlap with the core highest density spawning areas to the north of Flamborough Head, and the localised and short-term nature of the impact”*. However, the heat maps of International Herring Larvae Surveys (IHLS) data presented in the Fish and Shellfish Ecology Technical Report (Figures 24 – 26) contradict this statement as they demonstrate the inter-annual variation in the location of herring spawning activity and show that high larval densities occurred in the ECC in the years 2011-2012, 2019-2020 and especially in 2020-2021 (see Annex 3). Furthermore, at this stage, the duration of seabed preparation and cable installation works is unknown but according to Figure 4.4 ‘Indicative construction programme for Hornsea Four’ in the Project Description chapter of the report, cable installation is expected to take approximately 2 years, though it is unclear if this period covers both seabed preparation and cable installation. This would result in the potential disturbance to herring spawning habitat over two consecutive spawning years so cannot be considered as a short-term impact.
- 3.19. The potential requirement for mitigation for increases in SSC and smothering during the herring spawning season was raised by the MMO for the PEIR and given our concerns relating to the effects of direct damage and disturbance to herring spawning habitat around the inshore section of the ECC, combined with increases of SSCs and smothering affecting spawning herring and their eggs and larvae, we recommended that a seasonal restriction is applied to ECC works during the Banks herring spawning season. We maintain this position as we believe that there is potential for the duration of the seasonal restriction to be refined temporally, if based on an appropriate ‘peak’ spawning period, as well as spatially (e.g. by kilometre point distance along the ECC route), as is the case for Dogger Bank A and B (Creyke Beck) ECC, which has restrictions applied to construction works in the ECC owing to a similar inshore route that transects the Banks herring spawning ground.
- 3.20. To the best of our knowledge, the ES did not specifically assess the use of the ECC and array as disposal sites for their construction activities. Nonetheless, we note that alternative options for the reuse, recycling or disposal of the material at other locations have been presented but have been deemed as not viable or not efficient.
- 3.21. The impacts to fisheries and fish ecology associated with disposal of material from seabed preparation, sandwave clearance, pile drilling and cable trenching have been identified as follows:
- Temporary localised increases in SSC and smothering.
 - Direct and indirect seabed disturbances leading to the release of sediment contaminants.
 - Direct damage (e.g. crushing) and disturbance to mobile demersal and pelagic fish and shellfish species arising from construction activities.



- 3.22. Whilst the impacts identified above are broadly appropriate, the following additional impacts and effects on fish and their eggs and larvae are relevant when considering potential effects of sediment disposal at herring spawning grounds:
- Changes to composition of seabed habitat.
 - Smothering of benthic spawning habitat and benthic eggs and larvae by settlement of sediment.
 - Reduced oxygen levels in water due to release of sediments containing high organic matter.
 - Damage to gills as a result of erosion of the mucus coating and abrasion of tissue (Redding and Schreck, 1982). The extent of damage depends on size and shape of particles, suspended sediment concentration, water velocity and gill dimensions (Appleby and Scarratt, 1989).
 - Disruption of gaseous exchange by fine particles which bind with the gill epithelium and clog gill rakers and filaments.
 - Resuspension of sediments resulting from dredging can smother organisms and hinder growth, feeding and survival rates (Gilmour 1999).
- 3.23. For the reasons outlined above, it is important to manage herring spawning grounds by ensuring that the physical properties of the substrate remain the same. We note that ICES latest advice (2022) also supports this:
- i) Low recruitment for the stock in recent years. The stock level has been decreasing in recent years because of ongoing low recruitment.*
 - ii) No activities should be allowed that have negative impact on spawning habitats. Activities that might have a negative impact on the spawning habitat of herring should not occur unless the effects of these activities have been assessed and shown not to be detrimental (ICES, 2003; 2015).*
- 3.24. The Applicant states in 5.2.3.4 of the report that “Data from Coull et al. (1998) suggests that the Hornsea Four ECC lies near herring spawning grounds. Data from the IHLS supports this, showing that the main area for herring spawning is located to the north of Flamborough Head and the ECC”. The MMO reiterates that the ECC crosses through the Banks herring spawning ground. IHLS data show that the highest larval densities occur to the north of Flamborough Head, rather than the specific locations of spawning, egg laying and egg and larval development. Therefore, whilst it can be seen as a reference point in relation to the intensity of spawning activity, it should not be delineated from spawning activity across the wider Flamborough Head spawning area. Please refer to our previous comments above which highlights the inter-annual variation in the location of herring spawning activity and shows that high larval densities occurred in the ECC in a number of years. Figure 3 of the report (within Paragraph 5) also demonstrates that the sediments in the nearshore section of the ECC are comprised of sandy gravel and gravelly sand, both of which are suitable substrate for herring spawning.
- 3.25. Concerning impacts to fishes arising from disposal of sediments in the array



area, the MMO generally agrees that the disposal of material is likely to result in minor impacts. The report acknowledges that the Hornsea Project Four array overlaps with high intensity sandeel habitat, and it is recognised that sandeel spawn in the same areas that they inhabit. Sandeel undertake a hibernation and spawning period during winter months (November – February inclusive) so there is likely to be disturbance to their hibernation and spawning period if construction and disposal activities occur during these months. However, noting that sandeel are considered to have some tolerance to elevated SSCs and noting that pre- and post-construction monitoring of sandeel habitat has already been proposed by the Applicant (and supported by the MMO) we do not have major concerns regarding the disposal of sediments within the array area.

Summary:

- 3.26. The MMO has concerns regarding significant impacts occurring to the Banks herring population arising from construction activities and the proposed disposal of sediments along the export cable corridor (ECC). Based on the indicative construction programme for Hornsea Project Four in the ES Project Description, cable installation is expected to take approximately 2 years, which would result in the potential disturbance to the Banks herring spawning habitat over two consecutive spawning years and so cannot be considered as a short-term impact. Based on our concerns relating to the effects of direct damage and disturbance to herring spawning habitat around the inshore section of the ECC, combined with increases of SSCs and smothering affecting spawning herring and their eggs and larvae, we maintain the recommendation that a seasonal restriction is applied to ECC works during the Banks herring spawning season. However, we further recommend that the seasonal restriction is also clearly applied to the proposed disposal activities along the nearshore section of the ECC.
- 3.27. The MMO recommend that no disposal (or construction) activities are permitted during the Banks herring spawning season (1st August and 31st October inclusive) along the nearshore section of the ECC. Reason: to protect the composition of the herring spawning substrate, and to prevent elevated SSCs and subsequent settlement of sediment from affecting the health and development of spawning herring and their eggs and larvae.
- 3.28. The MMO continues to engage with the Applicant regarding a refinement over the seasonal restriction and believe that the restriction should be applied spatially in those areas which cross the herring spawning ground (e.g. by kilometre point distance along the ECC route), as is the case for Dogger Bank A and B (Creyke Beck) ECC, which has restrictions applied to construction works in the ECC owing to a similar inshore route that transects the Banks herring spawning ground. The MMO is currently reviewing the Applicant's updated G1.10 Clarification Note on Peak Herring Spawning Period and Seasonal Piling Restriction due to be submitted at Deadline 7 and will provide a final decision on whether this satisfies the MMO's outstanding concerns before or at Deadline 8.

Shellfisheries



- 3.29. The MMO note that the shellfish species identified in the region include brown crab (*Cancer pagurus*), (*Nephrops norvegicus*), European lobster (*Homarus gammarus*), velvet swimming crab (*Necora puber*), common whelk (*Buccinum undatum*), brown and pink shrimp (*Crangon crangon* and *Pandulus montagui*) and king scallop (*Pecten maximus*). European common squid (*Alloteuthis subulata*) were identified as the most common cephalopod in the region, and velvet swimming crab were recorded in the greatest abundance in potting surveys carried out in the nearshore section of the ECC. The MMO consider the use of potting surveys is the correct method to identify shellfish species such as brown crab, European lobster, and velvet swimming crab.
- 3.30. Whilst we agree with the Applicant's approach to use MMO fisheries data to identify shellfish fisheries. We advise that the Applicant may want to consider including 2020-2022 data, although landings and values should be carefully interpreted as the last three years may have been impacted by Covid-19. A table presenting the average value and landings by species for the key fisheries would be beneficial.

4. Herring Spawning and Piling restriction

- 4.1. The MMO notes that the Applicant has proposed amending the timing restriction from '01 September to 16 October' to '21 August to 23 October'. The MMO is currently reviewing the proposal with our advisors at CEFAS however due to the limited time available we will be unable to provide a response until Deadline 8.

5. Sediment Contaminants Analysis

- 5.1. Following our comments at Deadline 6 [REP6-050] regarding the Particle Size Analysis (PSA), and that the contractor was not a laboratory validated by the MMO to conduct this analysis. The MMO and Cefas have agreed to review the PSA information and supply comments on the full suite of sample analysis on the provision that a condition is included within the Deemed Marine Licences (DML) that either the samples will be re-analysed by a validated laboratory or that the Applicant provides evidence that Thomson Ecology has been validated for the MMO's approval.
- 5.2. Through previous consultations, and in the documents presented for review, three different laboratories have been named as having conducted the PSA, namely: Bibby Hydromap Solutions / Benthic Solutions Ltd, SOCOTEC, and Thomson Ecology. Typically, when a non-validated laboratory is contracted for analysis, we would advise that the analysis is re-conducted by a validated laboratory. However, as outlined in 5.1 we would have no objections to this concern being resolved post-consent, rather than pre-consent, so long as a respective condition is worded such that no works relevant to sediment disturbance would start until said condition is discharged in consultation with the MMO. Whether the matter is resolved pre- or post-consent is more so a matter of administrative process rather than relevant to evidence-based risk, in our opinion.



- 5.3. Our comments relate only to the concentrations reported in the two MMO Results Templates presented for review which were provided by the Applicant following Deadline 6. Comments around sampling effort have already been made in previous submissions and we will not repeat them here.
- 5.4. Concerning the Array Area (document listed in point 5), the metals data show exceedances of the Action Level 1 (AL1) for arsenic only. These are present within four of the 21 samples and constitute minor exceedances relative to the gap between AL1 and AL2. The MMO confirms that the metals results overall do not lead us to recommend the preclusion of any licensable activities.
- 5.5. The organotins data are shown to be “<LOD”. This does not relay any numerical information as the limit of detection (LOD) for organotins is not provided. We consider this to be a technicality which can be resolved through the Applicant filling in the LOD cells at the bottom of the respective table for organotins data within the ‘MMO Results Table’. This is under the caveat that the LOD is within an appropriate range (e.g. 0.002 or 0.005), but as the contracting laboratory – SOCOTEC – is validated by the MMO for organotins, the we do not think it likely that this would be an issue. Organotin levels being below the LOD for offshore sediments is not surprising and does not lead us to recommend the preclusion of any licensable activities.
- 5.6. The polycyclic aromatic hydrocarbons (PAHs) data are shown to be “<1”. We presume this to be the LOD but cannot verify this due to the LOD cells not being filled in, as with the organotins data. It is surprising to see that all PAH congeners are below the LOD in every sample, because PAHs can be present in the marine environment due to natural occurrences, as with trace metals, and to diffuse pollution (e.g. atmospheric deposition, combustion). As such, we would have expected some levels to be above the LOD. Nonetheless, it is indeed possible that all PAH levels could be below the LOD. We also note that the levels of dibenz[a,h]anthracene (“DBENZA”) are listed as “<1” as with all other PAHs. This raises some level of uncertainty because DBENZA has a lower relative toxicity than other PAHs (denoted by its AL1 being 0.01 mg/kg compared to all others being 0.1 mg/kg) and often can have a lower LOD value accordingly.
- 5.7. The Applicant may wish to verify the PAH results against the original certificates of analysis from SOCOTEC for additional certainty. We do not view this as a major concern as it is technically possible for PAH levels to all be below the LOD, it is just unlikely. As with our recommendation for the PSA issue in point 5.2 of this submission, we are content for this to be resolved post-consent. If the data is correct, then we are not inclined to recommend the preclusion of any licensable activities.
- 5.8. Concerning the ECC Area, the metals data show exceedances of the AL1 for arsenic in seven samples and nickel in one sample. As with the array area samples, these exceedances are closer to the AL1 than AL2, and so do not lead us to recommend the preclusion of licensable activities.



- 5.9. The organotins data for the ECC exhibit the same issues that we have with those for the array area, in that data are shown to be “<LOD”, but no LOD is defined. As such, our conclusions for the ECC organotins data are the same as for the array.
- 5.10. The PAH data for the ECC show a more typical characterisation of what would be expected for PAH levels in offshore marine sediments, i.e., some congeners being below the LOD, but most being above the LOD at low levels (relative to AL1). The levels reported do not lead us to recommend the preclusion of licensable activities.
- 5.11. Both results templates are insufficiently completed to enable annual reporting under OSPAR. Whilst this is an issue which can delay or impede annual reporting, it is not, essential to be resolved prior to the determination of a licence. Details of the insufficient completion of the template comprise:
- Application number is not filled out in the “Application Info” tab.
 - Dredge area tonnages are not filled out in the “Application Info” tab (this should be filled out even if there is only one dredge area for each template).
 - Dredge area column is not filled out in the “Trace metals”, “Organotins” and “PAHs” tabs.
 - Total solids (%) data are not entered in any tab.
- 5.12. The data for trace metals, organotins and PAHs mostly indicate levels to be acceptable for licensable activities in the array and ECC areas. However, there are some points with the PAH data in the array area which we believe could benefit from the provision of the original certificates of analysis. We also note the outstanding issue of the contracting laboratory/ies for PSA, which is/are not validated by the MMO, which we confirm we are content to have resolved through post-consent stipulations, rather than precluding or delaying any licence determination. This would be acceptable under the important caveat that works relevant to dredge and disposal do not take place until said stipulations are discharged.

6. Any further information requested by the ExA under Rule 17 of the Examination Procedure Rules

- 6.1. The MMO notes that no information was requested from the MMO by the ExA under Rule 17 of the Examination Procedure Rules.

7. Comments on the ExA’s preferred draft DCO, proposed schedule of changes, or commentary on the draft DCO (if issued)

- 7.1. The MMO has reviewed the comments on the ExA’s preferred draft DCO and have no comments to make.



8. Final SoCGs and Statement of Commonality of SoCGs, also listing matters not agreed (in circumstances where a SoCG could not be finalised)

- 8.1. The MMO has worked with the Applicant to finalise the SoCG where possible. We note there are a number of matters which require Deadline 7 submissions, or adequate timescales to review, and these will be outlined in the final SoCG to be signed and submitted for Deadline 8.
- 8.2. The MMO has outlined the following matters where SoCG could not be agreed in the tables below:

Table 1: Development Consent Order (DCO)/ Deemed Marine Licences (DML)

<p>Interpretations</p> <ul style="list-style-type: none"> • DCO Part 1, Article 2: “maintain” • DML Schedule 11, Part 1, Article 1 	<p><u>MMO comments:</u> We note the Applicant has not made changes in line with the MMO requests (detailed within REP5-107) to the following Articles, but outline they can we closed due to the following reasons:</p> <ul style="list-style-type: none"> • DCO Part 1, Article 2: “maintain”. The MMO maintains that further information should be included within this interpretation, however, ultimately leave it to the Examining Authority as to whether changes necessary. As such we consider this matter closed. • DML Schedule 11, Part 1, Article 1. The MMO notes the typographical error in footnote “c”, there should be no spaces between “c.” and “23”. This should be corrected, but is a minor point, as it is a matter of formatting, once done, this matter is resolved. 	<p><u>MMO DL7 Final position:</u> The MMO clarifies we consider these are minor points of disagreement and that these positions are final and closed for the Examining Authorities (ExA’s) discretion.</p>
<p>Benefit of the Order (DCO: Article 5, Part 2, Principal Powers)</p>	<p><u>MMO comments:</u> The MMO’s position on this Article remains the same since our Deadline 2 Submission [REP2-077] and maintained throughout Examination.</p> <p>The MMO has concerns regarding the transfer of the DMLs based on the current drafting and requests that all references to the MMO and DMLs should be removed from Article 5 of the DCO.</p>	<p><u>MMO DL7 Final position:</u> The MMO maintains our position (detailed in both submissions at Deadline 2 [REP2-077] and 5 [REP5-107].</p> <p>The disagreement with the Applicant on</p>



	<p>This is because the intention under the Planning Act Section 149A is only to amend the method by which a marine licence is obtained, it does not, of itself, make a DML part and parcel of the Order. As currently drafted, the DMLs become part of the DCO by having Article 5 apply to the DMLs, allowing the transfer of the whole or part of the benefit of the provisions of the DMLs.</p> <p>The MMO does not consider that there is a need to have the Order make provision for transferring of the DMLs in Article 5 as there is already a mechanism for transferring the DMLs under the Marine and Coastal Access Act 2009 (MCAA). In the MMO's view Article 5 should be reserved to the transfer of the Order and should not refer to the DMLs. The DMLs should be considered separately and dealt with under MCAA, as would happen for any other marine licence.</p> <p>The MMO also requests that in Schedule 11 and 12, Part 1, Article 7 and Schedule 11 and 12, Part 2, Article 13(8) are removed, in line with the position to remove all reference to the MMO and the DMLs from DCO Article 5.</p>	<p>this matter is understood to be final and left to the ExA's discretion.</p>
<p>Details of licensed marine activities (DMLs Schedule 11 and 12, Part 1, Article 2)</p>	<p><u>MMO comments:</u> Regarding DMLs Schedule 11 and 12, Part 1, Article 2 (a), the MMO maintains the position that this condition should be updated to include reference to the disposal sites and also to separate the volumes per disposal activity, and that boulder clearance needs to be included within the description. This would provide the most appropriate clarity. The MMO reiterates our suggestion the wording outlined within 4.4.10 of REP5-107.</p> <p>The MMO further clarifies that regarding our comments within 4.4.11 (REP5-107), regarding DMLs Schedule 11 and 12, Part 1, Article 2 the figure suggested by</p>	<p><u>MMO DL7 Final position:</u> The MMO clarifies we consider these are minor points of disagreement and that these positions are final and closed for the ExA's discretion.</p>

	<p>the MMO of 399,776 cubic metres is incorrect.</p> <p>However, the MMO maintains the advice that drill arisings should be included within this section and include a section “(h) the disposal of drill arisings in connection with any foundation drilling up to a total of XX cubic metres”, with correct volumes supplied by the Applicant.</p>	
DMLs Schedule 11 and 12, Part 2, Article 4 (6)	<p><u>MMO comments:</u> The MMO requests a timeframe for the submission of the operations and maintenance plan is increased to six months prior to the planned works commencing.</p>	<p><u>MMO DL7 Final position:</u> The disagreement with the Applicant on this matter is understood to be final and left to the ExA's discretion.</p>
DMLs Schedule 11 and 12, Part 2: Article 5(1)	<p><u>MMO comments:</u> The MMO maintains our comments from (REP5-107) and notes that the phrase “<i>under its control</i>” should be deleted as it restricts the provision to only those vessels under the direct control of the undertaker and not agents or contractors.</p>	<p><u>MMO DL7 Final position:</u> The disagreement with the Applicant on this matter is understood to be final and left to the ExA's discretion.</p>
Notifications and inspections (DMLs Schedule 11 and 12, Part 2, Article 7(7))	<p><u>MMO comments:</u> The MMO requests that this should be updated to “<i>at least fourteen days prior</i>” instead of five days. This is the MMO's requested updated wording for this standard condition to allow for improved inspection management.</p>	<p><u>MMO DL7 Final position:</u> The disagreement with the Applicant on this matter is understood to be final and left to the ExA's discretion.</p>
Sampling Analysis (DMLs Schedule 11 and 12, Part 2, Article 11(4))	<p><u>MMO comments:</u> The MMO has now reviewed the Sample Analysis results in the MMO template supplied by the Applicant, and provides of comments on the sample analysis in section 5 of this submission.</p> <p>Regarding the monitoring for the dredge and disposal activities. The MMO stipulates that (rather than a standalone DML condition) it would be content for the sediment from within the proposed dredge area be sampled and analysed every 5 years in line with OSPAR</p>	<p><u>MMO DL7 Final position:</u> Should the amendments be made to the results table, a condition to secure the submission of validated PSA laboratory samples added to the DMLs, and the inclusion of sample requirements be added to the outline monitoring</p>



	<p>guidelines, with the first sampling regime to take place in 2024, to ensure material remains suitable for disposal at sea and this should be included within the outline marine monitoring protocol. If all dredging and disposal activities have completed by this time, the sampling will not be necessary, however, it should be stipulated within the OMMP.</p>	<p>plan, the MMO can consider this matter closed and final.</p>
<p>Force majeure (DMLs Schedule 11 and 12, Part 2, Article 12)</p>	<p><u>MMO comments:</u> The MMO maintains the provision that this Article is not necessary as there is already provision in Section 86 MCAA – “Action taken in an emergency”.</p> <p>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 in the event of any enforcement action.</p> <p>In the event the Applicant maintains that the proposed provision does not duplicate Section 86 MCAA and instead introduces a reporting requirement which did not previously exist, we would advise that it should be made clear that this provision is in addition to Section 86 and its requirements.</p>	<p><u>MMO DL7 Final position:</u> The disagreement with the Applicant on this matter is understood to be final and left to the ExA's discretion.</p>
<p>Southern North Sea Special Area of Conservation Site Integrity Plan (DMLs Schedule 11 and 12, Part 2, Article 13(1)(j))</p>	<p><u>MMO comments:</u> The MMO has updated the standard condition in relation to designated sites for harbour porpoise. This is due to the outcome of the Review of Consents undertaken by the Secretary of State, the MMO advise that, like any new application, it will need to be in line with the Review of Consents condition. The MMO maintains that Article 13 (1)(j) should be removed and replaced with the new standalone condition outlined below.</p> <p>When the standalone condition is added, the Interpretations section will need to be</p>	<p><u>MMO DL7 Final position:</u> The disagreement with the Applicant on this matter is understood to be final and left to the ExA's discretion.</p>



updated to include: *““JNCC Guidance” means the statutory nature conservation body ‘Guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise SACs’ Joint Nature Conservation Committee Report No.654, May 2020 published in June 2020 as amended, updated or superseded from time to time”.*

The MMO propose the following wording for the new SIP condition: *“Southern North Sea Special Area of Conservation Site Integrity Plan 25- (1) No piling activities can take place until a Site Integrity Plan (SIP), which accords with the principles set out in the in principle XX Project Southern North Sea SAC Site Integrity Plan, has been submitted to, and approved in writing, by the MMO in consultation with the relevant statutory nature conservation body. (2) The SIP submitted for approval must contain a description of the conservation objectives for the Southern North Sea Special Area of Conservation (SNS SAC) as well as any relevant management measures and it must set out the key statutory nature conservation body advice on activities within the SNS SAC relating to piling as set out within the JNCC Guidance and how this has been considered in the context of the authorised scheme. (3) The SIP must be submitted to the MMO no later than six months prior to the commencement of the piling activities. (4) In approving the SIP the MMO must be satisfied that the authorised scheme at the pre-construction stage, in-combination with other plans and projects, is in line with the JNCC Guidance. (5) The approved SIP may be amended with the prior written approval of the MMO, in consultation with the relevant statutory nature conservation body, where the MMO remains satisfied that the Project, in-combination with other plans or projects at the preconstruction*



	<p><i>stage, is in line with the JNCC Guidance.”</i></p> <p>This is to ensure it is in line with the MMO’s latest measures to enable efficient management of Site Integrity Plans.</p>	
<p>Timescales for submission (DMLs Schedule 11 and 12, Part 2, Condition 14)</p>	<p><u>MMO comments:</u></p> <p>The MMO maintains our position that all four month timescales should be extended to six months for all plans. Specifically the following plans in addition to those already increased by the Applicant:</p> <ul style="list-style-type: none"> • the “outline operations and maintenance plan” (in Part 2, Article 4 of both Schedule 11 and 12); • the “outline southern north sea special area of conservation site integrity plan” (which should also have our own condition (4.4.29 of this submission); • the “outline marine mammal mitigation protocol”. <p>It is common that documents submitted under these type of conditions require multiple rounds of consultation to address stakeholder concerns. This process alone can be time consuming and the proposed four month submission time would not account for any additional time that the Applicant may require to update documents throughout the process. The MMO further notes that some documents require additional assessment processes. The MMO appreciates that the Applicant could be working within tight time schedules post-consent, and as such, we advise that a more suitable timescale is provided to reduce risks that could lead to project delays.</p>	<p><u>MMO DL7 Final position:</u></p> <p>The disagreement with the Applicant on this matter is understood to be final and left to the ExA’s discretion.</p>
<p>Determination dates (DMLs Schedule 11 and 12, Part 2, Article 14(3)).</p>	<p><u>MMO comments:</u></p> <p>The MMO strongly maintains the following positions regarding timescales and determination dates.</p> <p>It is inappropriate to apply a strict</p>	<p><u>MMO DL7 Final position:</u></p> <p>The disagreement with the Applicant on this matter is understood to be final</p>



	<p>timeframe for approvals 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 under MCAA. Marine licences issued by the MMO do not contain determination dates under which the MMO must make a determination.</p> <p>Furthermore, such tight restrictions mean that if the evidence obtained does not provide the MMO with the confidence that risks have been dealt with robustly may result in a refusal of the application for discharge. The Applicant would then have to restart the process and provide updated documentation in this instance, significantly delaying the process.</p> <p>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.</p> <p>The MMO further notes that a decision on the application for a Development Consent Order for The Sizewell C Project was taken on 20 July 2022 and that this decision favoured the MMO's position on the removal of determination dates from the conditions of the DML's.</p>	<p>and left to the ExA's discretion.</p>
<p>Stages of construction (DML Schedule 11, Part 2, Condition 23 and DML Schedule 12, Part 2, Condition 25)</p>	<p><u>MMO comments:</u> The MMO notes that a four month time scale has been included. The MMO requests this be increased to a six month timescale.</p>	<p><u>MO DL7 Final position:</u> The disagreement with the Applicant on this matter is understood to be final and left to the ExA's discretion.</p>
<p>Piling restriction (DMLs Schedule 12, Part 2, Condition 23)</p>	<p><u>MMO comments:</u> The MMO's present position is that the restriction should be "<i>between 1st August and 31st October each year</i>".</p>	<p><u>MMO DL7 position:</u> The MMO is currently reviewing the Applicant's updated G1.10 Clarification</p>



		<p>Note on Peak Herring Spawning Period and Seasonal Piling Restriction due to be submitted at Deadline 7 and will provide a final decision on whether this satisfies the MMO's outstanding concerns before or at Deadline 8.</p>
<p>Materiality of amendments (DMLs Schedule 11 and 12, Part 1, Article 9)</p>	<p><u>MMO comments:</u> The MMO's position is that the activities authorised under the DCO and DML should be limited to those that are assessed within the EIA, and so the statements "<i>unlikely to give rise to any materially new or materially greater environmental effects</i>" and "<i>materially new or materially greater environmental effects</i>" should be updated. The MMO further notes that the wording does not provide for the MMO to approve any amendments or variations. We request that it is clearly stipulated how this will take place.</p> <p>We note the Applicants comments in [REP1-038] "<i>The Environmental Statement captures the results of the EIA, meaning that this paragraph limits the activities permitted by the DCO and DMLs to those assessed by the EIA. Any change to approved details which leads to a change in the likely significant effects assessed in the Environmental Statement would be considered material and would no longer be authorised by the DMLs</i>". This provides us with comfort; however, the use of the wording "immaterial changes" continues to leave this unclear within the DCO and DMLs. The MMO notes that the Applicant could add this clarification within a definition for "immaterial changes" within Article 1 of the DMLs and this could help resolve this matter.</p>	<p><u>MMO DL7 Final position:</u> The MMO clarifies we consider this is a minor point of disagreement and that this position is final and closed for the ExA's discretion.</p>



Table 2: Marine Processes

<p>ES Baseline</p>	<p><u>MMO comments:</u> The MMO believes that further information should be provided to provide enough evidence on the baseline. Whilst this gives a good overall evidence base, there are a number of areas where the evidence base is either patchy or non-existent. These include the cable route around Smithic bank and the coastline. The MMO would expect to see additional Swath Bathymetry and geotechnical surveys from just offshore of the cable crossing with Dogger Bank A+B area and the Holderness coastline.</p>	<p><u>MMO DL7 Final position:</u> The disagreement with the Applicant on this matter is understood to be final and left to the ExA's discretion.</p>
<p>Impact assessment methodologies used for the EIA</p>	<p><u>MMO comments:</u> Adverse effects, in terms of coastal processes, are identified and then linked via a pathway to a sensitive receptor (the SPR (Source-Pathway-Receptor) methodology). Therefore, whilst there maybe adverse impacts locally around (say) a structure, if no receptor is nearby, no adverse impact is assumed and thus is discounted. In this project many of the impactors are offshore are thus discounted. However, the MMO still has major concerns about the cumulative impact of cables crossing Smithic Bank.</p>	<p><u>MMO DL7 Final position:</u> The MMO clarifies we consider this is a non-material point of disagreement and that this position is final and closed for the ExA's discretion.</p>
<p>The conclusions of the assessment of alone impacts</p> <p>The conclusions of the assessment of cumulative impacts</p>	<p><u>MMO comments:</u> Except for the Smithic Holderness export cable area with Dogger Bank A+B export cables there is not an adequate description of the potential cumulative and inter-related impacts and effects on the physical and biological environment.</p>	<p><u>MMO DL7 Final position:</u> The disagreement with the Applicant on this matter is understood to be final and left to the ExA's discretion.</p>
<p>Cumulative impact of cables crossing</p>	<p><u>MMO Comments:</u> Our comments from [REP6-050] remain. <i>"We propose that this "lozenge" shaped area be the basis of the pre-conditioned swath bathymetry monitoring survey, subsequently when the actual laid routes of Dogger Bank A&B as well as Hornsea</i></p>	<p><u>MMO DL7 Final position:</u> The disagreement with the Applicant on this matter is understood to be final and left to the ExA's</p>



	<i>Project Four are determined then an export cable corridor (ECC) survey plan can be considered (the Scotland England Green Link 2 may also be nearer construction if approved). Only once all these routes are finalised can the ECC survey plan be agreed. It is noted that consideration of holistic swath bathymetry monitoring plan between the three developers may produce scientific more robust data and also save resources.”</i>	discretion.
Commitments outlined in the outline marine monitoring plan- Monitoring Smithic Bank	<u>MMO comments:</u> As put forward at Deadline 6 [REP6-050], regarding Smithic Bank monitoring the MMO advise a high-resolution pre-construction survey is undertaken followed by a post-cable installation survey every 6 months for 2 years (including two winters periods and one summer) and further surveys every 5-years for the duration of the project. Comparison reports should be produced, incorporating a comparison with existing bathymetric survey data.	<u>MMO DL7 position:</u> The MMO is reviewing the Applicant’s updated F2.7: Outline Marine Monitoring Plan due to be submitted at Deadline 7 and will provide a final position on whether this satisfies the MMO’s outstanding concerns at Deadline 8.
Commitments outlined in the outline marine monitoring plan- Maximum rock protection in Smithic Bank	<u>MMO comments:</u> As put forward at Deadline 6 [REP6-050], the MMO consider that tighter control measures should be implemented to ensure that the least amount of rock protection is deployed within Smithic Bank, in line with the proposed maximum 5% of cables getting rock protection in the Smithic Bank area. We believe the Applicant should be conditioned to submit the detailed pre-construction surveys and the cable burial risk assessment for the Smithic Bank area showing the % of cables that will be buried, and what the method of construction will be. This would then be reviewed and approved by the MMO.	<u>MMO DL7 position:</u> The MMO is reviewing the Applicant’s updated F2.7: Outline Marine Monitoring Plan due to be submitted at Deadline 7 and will provide a final position on whether this satisfies the MMO’s outstanding concerns at Deadline 8.
Commitments outlined in the outline marine monitoring plan-	<u>MMO comments:</u> Regarding the Flamborough Front, the MMO confirms that we believe the Applicant is making progression regarding satellite monitoring, we confirm that the level of detail, and resolution of	<u>MMO DL7 position:</u> The MMO is reviewing the Applicant’s updated F2.7: Outline Marine Monitoring Plan due to be



<p>Flamborough Front monitoring</p>	<p>the satellite monitoring proposed is good. However, the MMO believes that this monitoring needs to expand to an array scale in the first instance, and not wait to see if monitoring of 3 distinct locations triggers the need for a wider scale monitoring. We believe this monitoring should look at productivity, by looking at chlorophyll, and sediment plumes which will help illustrate and monitor turbine wake interactions. Regarding the timing of monitoring the MMO believe we would need to see the stratification and as such, covering periods of spring, summer and autumn. The MMO proposes a first set of monitoring is undertaken to then help with the identification and the wider design of the monitoring to be suitably tailored.</p>	<p>submitted at Deadline 7 and will provide a final position on whether this satisfies the MMO's outstanding concerns at Deadline 8.</p>
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Table 3: Herring Spawning

<p>Temperatures used</p>	<p><u>MMO Comments:</u> The MMO still does not support the Applicant's proposal to use a value of 12°C to determine the durations for egg development and yolk absorption, as it is not conservative. A conservative approach should take the minimum values, which in this instance range from 8.56°C – 9.15°C. This range accounts for six out of twenty-four (25%) of these temperatures.</p> <p>Since Russell (1976) only provides egg development periods for temperature ranges of 7 - 8°C (14 - 18 days) and 10 - 11°C (10 - 12 days) (Table 2 of this submission) but not for temperatures between 8 - 10°C, the MMO recommends that the Applicant uses an egg development period of 14 days for their calculations, based on using the lower temperature range of 7-8°C and the minimum development period for this range i.e., 14 days rather than 18 days.</p> <p>The MMO recommends that the full 20-day period is used in the Applicant's</p>	<p><u>MMO DL7 position:</u> The MMO is currently reviewing the Applicant's updated G1.10 Clarification Note on Peak Herring Spawning Period and Seasonal Piling Restriction due to be submitted at Deadline 7 and will provide a final decision on whether this satisfies the MMO's outstanding concerns before or at Deadline 8.</p>
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	<p>calculation, on the basis that temperatures observed in IHLS data shown in Table 1 of this submission have been below 10.3°C in more recent years, and because the calculation being proposed needs to take a conservative approach.</p>	
Behaviour responses	<p><u>MMO Comments:</u> We recognises that the Applicant has a view on the level of risk, however this is not supported, in our view, in the evidence. The MMO would be willing to consider the use of an alternative threshold for modelling behavioural responses in herring (or a similar clupeid fish), should the Applicant be able to provide one which is based on suitable, peer-reviewed literature. In the absence of a suitable alternative threshold, we again request that this threshold is modelled, and the mapped noise contour presented for review.</p> <p>We further outline that due to this, we maintain the position that it is not possible to determine the extent of the transboundary impact or determine whether there will be any spatial overlap of noise with spawning and nursery grounds of fish in the Netherlands or any other neighbouring countries.</p>	<p><u>MMO DL7 position:</u> The MMO is currently reviewing the Applicant's updated G1.10 Clarification Note on Peak Herring Spawning Period and Seasonal Piling Restriction due to be submitted at Deadline 7 and will provide a final decision on whether this satisfies the MMO's outstanding concerns before or at Deadline 8.</p>
Conclusions	<p><u>MMO Comments:</u> The MMO maintains that the proposed 'peak' spawning period of 1st September – 16th October is not appropriate for the reasons outlined above. We believe that the calculated 'peak' spawning period is neither precautionary nor conservative. Further revisions and amendments are needed including the requirement for behavioural response noise modelling and the use of appropriate minimum sea temperatures which influence the duration of egg and larval development, and larval growth rates, all of which are factors which will affect the calculation of a 'peak' spawning period. The MMO maintains the position that the restriction should be</p>	<p><u>MMO DL7 position:</u> The MMO is currently reviewing the Applicant's updated G1.10 Clarification Note on Peak Herring Spawning Period and Seasonal Piling Restriction due to be submitted at Deadline 7 and will provide a final decision on whether this satisfies the MMO's outstanding concerns before or at Deadline 8.</p>



	between 1st August and 31st October each year.	
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Table 4: Benthic Ecology (maintained from [REP6-050])

<p>R-020- 3.4.3</p>	<p><u>MMO comments:</u> The MMO notes the response provided by the Applicant states that all biotope classifications were analysed through a standardised approach using multivariate analysis. For the ECC, whilst this appears to be true for the two large faunal groups (see Figure 3 of REP6-050) which were assigned biotopes based on the dominant species present, it does not appear to be true for the three faunal groups within the same nMDS ordination comprising stations ECC_17 to ECC_21, which were all dominated by <i>Sabellaria spinulosa</i>.</p> <p>Neither this species nor other abundant species observed in grab samples at these stations were used in the biotope classification nor mentioned in the text as the dominant infaunal taxa at these stations. The fauna observed from the drop-down video were solely used to classify the biotope (A5.444 '<i>Flustra foliacea</i> and <i>Hydrallmania falcata</i> on tideswept circalittoral mixed sediment) for these stations (as mentioned in paragraph 5.5.4.8 of Volume A5, Annex 2.1). Paragraph 5.5.4.9 of ES Volume A5, Annex 2.1 also describes the characterising epifaunal species present at stations EEC_17 to ECC_23 but fails to mention the presence of <i>S. spinulosa</i> (and other abundant infaunal species) despite the dominance of this species in the infaunal samples.</p> <p>The EUNIS description for A5.444 states that "This biotope represents part of a transition between sand-scoured circalittoral rock where the epifauna is conspicuous enough to be considered as a biotope and a sediment biotope where</p>	<p><u>MMO DL7 Final position:</u> The MMO considers this is a minor point that was set out within our Deadline 6 submission [REP6-050].</p> <p>Should the Applicant not address this by their Deadline 8 submission then it is considered that this position is final and closed for the ExA's discretion.</p>
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	<p>an infaunal sample is required to characterise it and is possibly best considered an epibiotic overlay.” <i>S. spinulosa</i> and other dominant infauna at these stations must therefore be mentioned as additional characterising species if a suitable infaunal biotope is not found.</p> <p>Paragraph 5.5.4.9 of ES Volume A5, Annex 2.1 also erroneously states that <i>Flustra foliacea</i> and <i>Hydrallmania falcata</i> were present in the grab samples of EEC_17 to ECC_23. Neither species are listed in the Macrofauna abundance tables in Appendix D5 of ES Volume A5, Annex 2.1. The MMO requests that this misleading erroneous text is corrected in all reports that state this.</p>	
<p>R-020- 3.4.4</p>	<p><u>MMO comments:</u> The MMO is not requesting that the Applicant replicates the significant detail of the technical report, we are asking that the Applicant presents a complete description of the biotopes and characterising species. This has not been undertaken for ECC17-ECC_21 as noted above.</p>	<p><u>MMO DL7 Final position:</u> The MMO considers this is a minor point that was set out within our Deadline 6 submission [REP6-050].</p> <p>Should the Applicant not address this by their Deadline 8 submission then it is considered that this position is final and closed for the ExA’s discretion.</p>
<p>R-020- 3.4.5</p>	<p><u>MMO comments:</u> <i>Amphiura filiformis</i> is present in relatively high abundances (abundances in brackets) at stations ENV16 (66), ENV17(127), ENV19(177) and ENV21(81). In comparison, <i>Mysella (Kurtiella) bidentata</i> has a maximum abundance of five individuals at ENV16 and ENV19 and three individuals at ENV17. Only one record of <i>Thyasira flexuosa</i> is recorded in the entire Array dataset (ENV21), However, both ENV17</p>	<p><u>MMO DL7 Final position:</u> The MMO considers this is a minor point that was set out within our Deadline 6 submission [REP6-050].</p> <p>Should the Applicant not address this by their Deadline 8</p>

	<p>and ENV19 have been assigned to the biotope A5.443: SS.SMx.CMx.MysThyMx - <i>Mysella bidentata</i> and <i>Thyasira</i> spp. in circalittoral muddy mixed sediment. The MMO recognises that the biotope description states that <i>A. filiformis</i> may be found at high abundances at some sites, but overall the biotope is only loosely based on the fauna present. This needs to be highlighted in the ES Chapter (A2). The dominance of <i>A. filiformis</i> at the stations mentioned above also needs to be highlighted in the ES chapter. We also note that the biotope A5.351, '<i>Amphiura filiformis</i>, <i>Mysella bidentata</i> and <i>Abra nitida</i> in circalittoral sandy mud' has been considered in the ES chapter (A2) under the predictive mapping section, however according to paragraph 2.11.1.12 it was not assigned to any of the stations within the Hornsea Four Order Limits. This biotope was assessed as having medium sensitivity to disturbance. The MMO therefore recommends stating that the fauna and sediments observed at these stations are representative of both A5.351 and A5.443.</p> <p>Whilst the evidence suggests that the stations where <i>Sabellaria spinulosa</i> dominates do not represent reef habitat, the numbers of individuals per m² are indicative of reef potential. The MMO therefore recommends mention of this dominant species observed in grabs in the ES chapter (A2) as the current biotope classification does not sufficiently cover the infaunal community.</p>	<p>submission then it is considered that this position is final and closed for the ExA's discretion.</p>
<p>R-020- 3.4.6</p>	<p><u>MMO comments:</u> The MMO notes that bar graphs have been provided in the ES technical report, but still believe that maps of dominant species should be included as per other offshore wind project ES's. However, if the ES text can be amended to mention the presence and assess the sensitivity of <i>S. spinulosa</i> at EEC_17-EEC_21 and <i>A. filiformis</i> at ENV 16-ENV21, that will</p>	<p><u>MMO DL7 Final position:</u> The MMO considers this is a minor point that was set out within our Deadline 6 submission [REP6-050]. Should the Applicant</p>



	appease the MMO concerns.	not address this by their Deadline 8 submission then it is considered that this position is final and closed for the ExA's discretion.
R-020- 3.4.7	<p><u>MMO comments:</u> Whilst the characterising species from multivariate analysis have been noted in the ES technical report, some of the dominant species e.g. <i>S. spinulosa</i> and <i>A. filiformis</i>, are not mentioned as additional characterising species of specific stations/biotopes in the ES chapter (A2). These species should be mentioned as they are dominant at certain stations but are not necessarily official characterising species of the biotopes assigned.</p>	<p><u>MMO DL7 Final position:</u> The MMO considers this is a minor point that was set out within our Deadline 6 submission [REP6-050].</p> <p>Should the Applicant not address this by their Deadline 8 submission then it is considered that this position is final and closed for the ExA's discretion.</p>
R-020- 3.4.9	<p><u>MMO comments:</u> The Valued Ecological Receptors (VER's) table should include reference to <i>S. spinulosa</i> and <i>A. filiformis</i> as these are dominant species but not currently satisfactorily considered.</p>	<p><u>MMO DL7 Final position:</u> The MMO considers this is a minor point that was set out within our Deadline 6 submission [REP6-050].</p> <p>Should the Applicant not address this by their Deadline 8 submission then it is considered that this position is final and closed for the ExA's discretion.</p>
R-020- 3.4.11	<p><u>MMO comments:</u> The MMO notes that the Applicant states that <i>A. filiformis</i> has been considered in Table 2.9 and agree with this. However, the text associated with biotope 'AfilMysAnit', states that this biotope was not observed within the Hornsea Four</p>	<p><u>MMO DL7 Final position:</u> The MMO considers this is a minor point that was set out within our Deadline 6 submission [REP6-</p>



	<p>Order Limits. Whilst the biotope was not assigned to any of the stations from within Hornsea Four, the species was present in high numbers and therefore should be recognised as present in the Order Limits and assessed accordingly.</p> <ul style="list-style-type: none"> • We further note the Applicants response regarding <i>S. spinulosa</i> not being considered as a VER in Table 2.9 as it is not a reef. However, although we agree that the evidence suggest the absence of Annex I <i>S. spinulosa</i> reef, the presence of the species in the Order Limits is important to note in the ES Chapter (A2). 	<p>050].</p> <p>Should the Applicant not address this by their Deadline 8 submission then it is considered that this position is final and closed for the ExA's discretion.</p>
R-020- 3.4.13	<p><u>MMO comments:</u></p> <p>The MMO notes the Applicants response. However, refers to our comments on the need to include <i>S. spinulosa</i> and <i>A. filiformis</i> as characteristic of certain stations in the ES chapter (A2) as the biotopes assigned to the stations within the Hornsea Four Order Limits do not reflect the presence of these species sufficiently.</p>	<p><u>MMO DL7 Final position:</u></p> <p>The MMO considers this is a minor point that was set out within our Deadline 6 submission [REP6-050].</p> <p>Should the Applicant not address this by their Deadline 8 submission then it is considered that this position is final and closed for the ExA's discretion.</p>
R-020- 3.4.17	<p><u>MMO comments:</u></p> <p>The MMO notes that <i>A. filiformis</i> is included in a biotope that has been assessed for impacts, although the biotope has not been assigned to any stations within the Hornsea Four Order Limits. We agree that the biotope SS.SBR.PoR.SspiMx may not completely represent the habitats observed at EEC_17 to EEC_21, however the biotope currently assigned to these stations (<i>Flustra foliacea</i> and <i>Hydrallmania falcata</i> on tideswept circalittoral mixed sediment) does not represent the infauna present. An appropriate infaunal biotope needs to be assigned to these stations that</p>	<p><u>MMO DL7 Final position:</u></p> <p>The MMO considers this is a minor point that was set out within our Deadline 6 submission [REP6-050].</p> <p>Should the Applicant not address this by their Deadline 8 submission then it is considered that this position is final and closed for the ExA's</p>



	represents the characteristic infaunal species e.g. <i>S. spinulosa</i> , and an impact assessment should be undertaken.	discretion.
R-020- 3.4.18	<p><u>MMO comments:</u> We note the Applicants comments regarding non-native invasive species (NIS), however, Hornsea Four does represent a potential vector and stepping-stone to other offshore infrastructure and the coast. Whilst we recognise the commitment of a marine biosecurity plan to prevent introduction of NIS during construction and maintenance, this will not prevent NIS from colonising Hornsea Four turbines during the operation lifetime. As such, we advise monitoring of NIS is undertaken.</p>	<p><u>MMO DL7 position:</u> The MMO considers this is a minor point that was set out within our Deadline 6 submission [REP6-050].</p> <p>The MMO understands that the Applicant intends to submit an updated A2.2 Benthic and Intertidal Ecology and A5.2.1 Benthic and Intertidal Ecology Technical Report at Deadline 7 which may address the monitoring of NIS. The MMO will review this and provide its final position at Deadline 8.</p>
R-020- 3.4.19	<p><u>MMO comments:</u> The MMO notes the Applicants response in confirming that it is anticipated that the gravel laid during seabed preparations will be retained and is not proposed to be removed. We recognise that the permanent nature of this infrastructure has been acknowledged in paragraph 2.11.2.5 of the ES chapter (A2), however paragraph 2.11.2.11 of the ES chapter (A2) still states that '...the introduction of the Hornsea Four infrastructure and will be long term, lasting for the duration of the development.' We request that the Applicant changes 'long term' to 'permanent' based on the information provided in the response to comments and ensure that this is consistent throughout the chapters.</p>	<p><u>MMO DL7 Final position:</u> The MMO considers this is a minor point that was set out within our Deadline 6 submission [REP6-050].</p> <p>Should the Applicant not address this by their Deadline 8 submission then it is considered that this position is final and closed for the ExA's discretion.</p>
R-020- 3.4.22	<p><u>MMO comments:</u> The MMO agrees with the Applicants</p>	<p><u>MMO DL7 Final position:</u></p>



	<p>response regarding the replication of significant detail across both the ES chapter and ES technical report as not being proportionate or appropriate. However, there is some information, as alluded outlined in our Deadline 6 comments, that has not been brought across from the ES technical report. This information (mentioned above) should be provided in the ES chapter (A2) for consistency and transparency.</p>	<p>The MMO considers this is a minor point that was set out within our Deadline 6 submission [REP6-050].</p> <p>Should the Applicant not address this by their Deadline 8 submission then it is considered that this position is final and closed for the ExA's discretion.</p>
<p>R-020- 3.4.29</p>	<p><u>MMO comments:</u> The MMO notes the Applicants response that the presence of this species is noted in the Benthic Technical Report (A5), however this information has not been translated to the ES Benthic Chapter (A2). Whilst the evidence provided (grab, DDV and acoustic) does not point towards the presence of reef, the presence of this species in high abundances should be mentioned in the main ES Benthic chapter (A2). We appreciate the inclusion of a pre-construction survey to identify any biogenic features for micro-siting and recommend EEC_17 to EEC_21 to be included in this survey.</p>	<p><u>MMO DL7 Final position:</u> The MMO considers this is a minor point that was set out within our Deadline 6 submission [REP6-050].</p> <p>Should the Applicant not address this by their Deadline 8 submission then it is considered that this position is final and closed for the ExA's discretion.</p>
<p>Commitments outlined in the outline marine monitoring plan-</p>	<p><u>MMO Comments:</u> The MMO requests that the following are added to the outline marine monitoring plan regarding benthic ecology matters:</p> <ul style="list-style-type: none"> • The monitoring of NIS is undertaken. <p>A minimum of 10% of the total amount of turbines proposed for construction to be monitored for benthic impacts.</p>	<p><u>MMO DL7 position:</u> The MMO is reviewing the Applicant's updated A2.2 Benthic and Intertidal Ecology and A5.2.1 Benthic and Intertidal Ecology Technical Report submitted at Deadline 7 and will provide a final decision on whether these updates have satisfied the MMO's concerns at Deadline 8.</p>



Table 5: Marine Mammals and Marine Mammal Mitigation Protocol

<p>Outline Marine Mammal Mitigation Protocol Revision:2 [REP6-012]</p>	<p><u>MMO comments:</u> The MMO are overall content with the MMMP.</p> <p>Please see the minor comments requested in section 2.2 of this submission (Deadline 7).</p>	<p><u>MMO DL7 Final position:</u> The MMO considers there is one remaining minor point on this matter (outlined in section 2.2 of this submission), should the Applicant not address this in their Deadline 8 submission then it is considered that this position is final and closed for the ExA's discretion.</p>
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Table 6: Outline Plans

<p>Outline Fisheries Coexistence and Liaison Plan [REP1-033]</p>	<p><u>MMO Comments:</u> The MMO strongly maintains its position that <i>“the MMO will not act as arbitrator and will not be involved in discussions on the need for, or amount of, compensation being issued”</i>. The MMO believes this should be made clear at this stage to ensure all parties are aware that the MMO will not be part of this process. We note the Applicant has outlined that they do not intend on updating this.</p>	<p><u>MMO DL7 Final position:</u> The disagreement with the Applicant on this matter is understood to be final and left to the ExA's discretion.</p>
<p>Outline marine monitoring plan</p>	<p><u>MMO Comments:</u></p> <ul style="list-style-type: none"> • The MMO believes that there should be monitoring of NIS as any management measures put in place would not prevent the colonisation of turbine foundations (and scour protection) by NIS and that this should be updated within the OMMP. • The MMO requests the inclusion of benthic monitoring around a selection of GBS foundations (10%). 	<p><u>MMO DL7 Final position:</u> The MMO is reviewing the Applicant's updated F2.7: Outline Marine Monitoring Plan submitted at Deadline 7 and will provide a final decision on whether this satisfies the MMO's outstanding concerns with a</p>



	<ul style="list-style-type: none"> As put forward at Deadline 6 [REP6-050], regarding Smithic Bank monitoring the MMO advise a high-resolution pre-construction survey is undertaken followed by a post-cable installation survey every 6 months for 2 years (including two winters periods and one summer) and further surveys every 5-years for the duration of the project. Comparison reports should be produced, incorporating a comparison with existing bathymetric survey data. Regarding the Flamborough Front, the MMO confirms that we believe the Applicant is making progression regarding satellite monitoring, we confirm that the level of detail, and resolution of the satellite monitoring proposed is good. However, the MMO believes that this monitoring needs to expand to an array scale in the first instance, and not wait to see if monitoring of 3 distinct locations triggers the need for a wider scale monitoring. We believe this monitoring should look at productivity, by looking at chlorophyll, and sediment plumes which will help illustrate and monitor turbine wake interactions. Regarding the timing of monitoring the MMO believe we would need to see the stratification and as such, covering periods of spring, summer and autumn. The MMO proposes a first set of monitoring is undertaken to then help with the identification and the wider design of the monitoring to be suitably tailored. 	<p>signed statement of common ground at Deadline 8.</p>
<p>Outline Offshore Operations and Maintenance Plan [REP2-043]</p>	<p><u>MMO comments:</u> We note the Applicant has updated the plan and have the following final comments to make:</p> <ul style="list-style-type: none"> Table 3: for “Foundation anode replacement”, we request that it references its limitations of the replacement to be in line with “like-for- 	<p><u>MMO DL7 Final position:</u> The disagreement with the Applicant on this matter is understood to be final and left to the ExA’s discretion.</p>

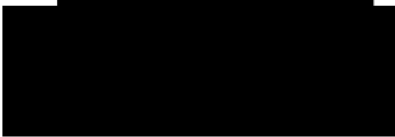


	<p>like or as within the project envelope".</p> <ul style="list-style-type: none"> Table 3: For "Array cable repairs", we request that for any replacement of all components, limitations are added to be in line with "like-for-like or as within the project envelope". 	
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Table 7: The Dredging and Disposal Site Characterisation Report

Conclusion	<p><u>MMO Comments:</u> In this submission. The MMO has reviewed the updated Dredging and Disposal Site Characterisation report submitted at Deadline 6 [REP6-004] and provided its comments in section 3 of this Deadline 7 submission.</p>	<p><u>MMO DL7 Final position:</u> Should the Applicant not address this by their Deadline 8 submission then it is considered that this position is final and closed for the ExA's discretion.</p>
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Yours Sincerely



Gregg Smith
Marine Licencing Case Officer



References

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