THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

Dogger Bank South Offshore Wind Farm

**Appendix B5 to the Natural England Deadline 5 Submission**
**Natural England's comments and updated advice on Marine Physical Environment**

For:

The construction and operation of the Dogger Bank South (East and West) Offshore Wind Farm located approximately 100-122km off the Northeast Coast in the Southern North Sea.

Planning Inspectorate Reference EN010125

23rd May 2025

**Appendix B5 – Natural England's Advice on Marine Physical Environment at Deadline 5**

In formulating these comments, the following documents submitted by the Applicant have been considered in relation to the impacts of Dogger Bank South (East and West) Offshore Wind Farm (DBS) on Marine Physical Environment:

- [REP4-051] 8.20 Cable Statement (Revision 4) (Tracked)
- [REP4-053] 8.23 In Principle Monitoring Plan (Revision 3) (Tracked)
- [REP4-092] 14.7 Review of the Flamborough Front
- [REP2-018] Marine Physical Processes Modelling Technical Report (Revision 3)

Our detailed comments on documents submitted by the Applicant in relation to Marine Physical Environment as listed above are provided in Tables 1 - 3 below.

**Overview**

1. **Flamborough Front**

Natural England welcomes the additional information and monitoring plans provided by the Applicant on impacts to the Flamborough Front. Whilst the EIA assessment has been updated, we maintain that a more precautionary approach is appropriate given the current evidence gaps, potentially long-term and wide-scale nature of the impact, and high ecological value of the Flamborough Front. We have signposted the Applicant to a newly available dataset which used the Dogger Bank South area as a case study, which could increase understanding and inform baseline characterisation to update the impact assessment. We have also provided some minor comments on the monitoring plans.

2. **Sandwave clearance**

Natural England accepts the Applicant's assessment that sediment deposition from sandwave clearance is predicted to be localised and the seabed recoverable within a year with respect to Suspended Sediment Concentrations (SSC). However, this is dependent on appropriate mitigation being secured and only relates to seabed and not recovery on Annex I sandbank features. We have listed previously discussed mitigation measures to minimise impacts and confirm modelling predictions for sandwave levelling associated with sandbank systems

below, and their current status. We advise that outstanding measures are appropriately secured.

- *Depositing like sediment on like sediment*
    - The Applicant has now committed to this in the Cable Statement for both within and outside of Dogger Bank SAC. We advise this is included in the Commitment Register. See Table 3 for further comments.

- *A fall/down pipe is used (should a trailing suction hopper dredger be used) to minimise sediment dispersal*
    - This has not been committed to. We note that for Five Estuaries and Outer Dowsing (and other offshore consented OWFs) there is a commitment to use a downpipe to ensure that sediment can be deposited in a target location adjacent to but upstream of the sandbank (both Annex I and Feature of Conservation Importance FCI) and within similar sediment type. This is to ensure the greatest likelihood of feature recovery including both structure and function, Therefore, there is an expectation that this is deliverable for all projects.

- *An outline sandwave levelling, deposition and recovery plan should be provided as either a standalone document or as part of the Cable Statement /Outline Cable Burial Risk Assessment (see Table 2 for further detail)*
    - The Cable Statement [REP4-051] states that “Further detail relating to sand wave levelling, deposition and sandbank recovery will be provided in the final Cable Statement(s)”. We consider this should be updated to explicitly include provision of a plan should sandwave levelling be needed.

- *Pre- and post-construction monitoring should be used to assess geomorphological recovery after cable installation (with management interventions identified).*
    - Please see Appendix J of our Deadline 3 submission [REP3-056] for further comments.

**Table 1 - Natural England's Advice On: [REP4-092] 14.7 Review of the Flamborough Front**

| NE Ref | Section | Key Concern and/or Update | Natural England's Advice to Resolve Issue |
|---|---|---|---|
| 1 | General comment | Natural England welcomes the literature review carried out by the Applicants regarding recent studies on potential offshore windfarm impacts on stratification. | N/A |
| 2 | 3.3 | The Applicant highlights a number of recent research projects (e.g. ECOWind and eSWEETS3) which aim to fill the evidence gap on stratification and associated ecosystem responses. However, it is not stated whether the Applicants have approached any of the ongoing/new research projects to explore collaboration or knowledge sharing opportunities. | Natural England encourages collaboration at the earliest opportunity with relevant academic/research groups to help increase understanding of the potential impacts on the Flamborough Front due to the proposed developments. We also advise the Applicant to consider the data (available on the Marine Data Exchange) provided by the Crown Estate's FRONTWARD (Fronts for marine Wildlife Assessment for Renewable Developments) Project. This includes new spatial and temporal information on the locations and persistence of ocean fronts, both for sea surface temperature and surface colour (chlorophyll-a). These new datasets may help increase understanding, inform baseline characterisation, and update the impact assessment. |
| 3 | Section 4 | Natural England welcomes the Applicants' reassessment of the significance of potential changes to water circulation (Flamborough Front) due to the presence of Dogger Bank South infrastructure (turbines and offshore platforms). However, we note that the assessment conclusion of minor adverse significance of effect remains not significant in EIA terms. This was based on the | Natural England advises a more precautionary approach to the impact assessment particularly given the potential for higher marine biodiversity at the Flamborough Front. Furthermore, we advise the Applicant to consider the new information and observations presented by the FRONTWARD Project on thermal front location, strength and persistence and correlation between fronts and primary |

| NE Ref | Section | Key Concern and/or Update | Natural England's Advice to Resolve Issue |
|---|---|---|---|
| | | Flamborough Front having low sensitivity (low tolerance, high recoverability, and medium value) coupled with a medium magnitude of impact. Given the current evidence gaps, potentially long-term and large-scale nature of the impact, coupled with the high value of the Flamborough Front as an area of higher biodiversity, we would advise adopting a more precautionary approach to the impact assessment. | production. These data may increase baseline understanding and inform the impact assessment. |
| 4 | Section 4.2 | We note that the cumulative effects assessment has also been reassessed, which is welcome. However, the outcome remains minor adverse. As we have advised above, given the current evidence gaps, potentially long-term and wide-scale nature of the impact, and high ecological value of the Flamborough Front, we advise a more precautionary approach to the impact assessment is appropriate. | Please see our advice above (ref 3). |
| 5 | Section 5.2 | We note the Applicants' commitment to monitoring to address specific evidence gaps regarding the scale and frequency of impacts, cumulative effects, and significance of changes in water circulation and primary productivity on ecosystems. | Natural England welcomes the Applicants' commitment to this monitoring and to helping increase understanding of the potential changes to the Flamborough Front due to the presence of the proposed developments. |
| 6 | Section 6 | The Applicants have stated that based on the ES conclusions, no mitigation is proposed. We advise that given the potential for large-scale, long-term anthropogenic impacts to stratification and primary production, thresholds for changes and mitigation | We advise that, considering the potential for large-scale hydrodynamic changes and effects on primary production, that consideration should be given to (a) thresholds of change and (b) potential mitigation measures. |

| NE Ref | Section | Key Concern and/or Update | Natural England's Advice to Resolve Issue |
|---|---|---|---|
| | | measures should be considered in advance of construction. For example, designing the array layout to minimise the risk posed by the proposed development alone, and cumulatively, on the stratified water column. | |

**Table 2 - Natural England's Advice On: [REP4-053] 8.23 In Principle Monitoring Plan (Revision 3) (Tracked)**

| NE Ref | Section | Key Concern and/or Update | Natural England's Advice to Resolve Issue |
|---|---|---|---|
| 1 | Table 1-2 | Natural England's previous comments [REP3-056] in relation to 'sandwave/bank characterisation' and 'sandwave/bank recovery rates' have not been addressed in this iteration of the IPMP. | We refer the Applicant to the advice provided in REP3-056. |
| 2 | Table 1-2 | Natural England welcomes the proposed Flamborough Front monitoring to establish the pre-construction baseline. However, depending on availability of satellite imagery, we advise that these pre-construction data should also include the period post-consent onwards to provide a longer timeseries and to inform the baseline characterisation.<br><br>We note that the Applicant proposes to review up to 5 years of historical satellite imagery, focussing on the summer period when the front is at its strongest. However, we would advise that this period should | Natural England advises that the pre-construction baseline should cover the post-consent period through to the start of construction and include the build-up and decline of SST and ocean colour fronts (i.e. from spring through autumn).<br><br>We agree with the Applicant that flexibility should be included in the monitoring plan to take account of new techniques and technology as they become available. Similarly, regular reviews of emerging evidence and data should be built into the monitoring plan to allow the Applicant and stakeholders to take stock of the current level of understanding of the risks. |

| NE Ref | Section | Key Concern and/or Update | Natural England's Advice to Resolve Issue |
|---|---|---|---|
| | | include the build-up and decline of the thermal and ocean colour fronts from spring through to autumn.<br><br>We also signpost the Applicants to the FRONTWARD project datasets. These include monthly and seasonal front data, front strength and persistence, and are based on 10 years of AVHRR sea surface temperature (SST) data, and 7 years of Sentinel-3A OLCI chlorophyll-a. These datasets should increase understanding of the baseline conditions at, and around, Dogger Bank and the DBS Array Areas.<br><br>We also note in the 'Details' column of Table 1-2, that it does not state where the monitoring plan would be submitted for review and agreement, six months prior to construction. This should be clarified.<br><br>It is also stated that the pre-construction survey technical report will include details on thresholds and trigger points for intervention. We advise that it would be useful to consider and agree thresholds of change and trigger points for interventions with relevant stakeholders in advance. | Conditions in relation to the provision of the pre-construction monitoring should be included in the DCO/dML |
| 3 | Table 1-2 | We welcome the Applicant's proposal to monitor far-field wake effects. However, we note that the post-construction monitoring does not include monitoring of changes to the Flamborough Front. This should be carried out from construction onwards, to provide a comparison against baseline conditions. | Assuming ongoing SST and chlorophyll data availability, we would advise that monthly, seasonal, and annual changes should be monitored through 1-5 years post-construction, with a review period at 5 years. |

**Table 3 - Natural England's Advice On: [REP4-051] 8.20 Cable Statement (Revision 4) (Tracked)**

| NE Ref | Section | Key Concern and/or Update | Natural England's Advice to Resolve Issue |
|---|---|---|---|
| 1 | 1.4.5.4 | Natural England notes that the Applicant has committed to depositing like sediment on like sediment. While this is welcomed by Natural England, we would also advise consideration of the following mitigation measures to reduce environmental impacts:<br>• ensuring that all possible efforts are made to avoid areas of sandwaves/to minimise the need for sandwave levelling by micro-routing the cable<br>• where sandwaves need to be crossed, this be done at a high crossing angle to minimise dredge volumes<br>• cable installation should occur as soon as possible after levelling to reduce the need for additional preparation work and minimise disturbance timeframes<br>• ideally dredging should not occur to a depth where the surface sediment changes (e.g. underlying till layer).<br>• Disposition of dredge sediment should be adjacent to and slightly upstream of the sandbank to actively encourage recovery of structure and function | Natural England advises that best practice should be followed to assess and minimise environmental impacts associated with sandwave levelling, including consideration of the mitigation measures listed opposite.<br>We would also advise that pre-construction surveys, in areas where mobile bedforms are anticipated, should adopt a survey corridor wide enough to identify areas with deeper troughs that have the potential to affect the asset over its lifetime, unless these can be identified with confidence in existing data. This will increase understanding of the seabed mobility in the targeted area(s), reduce cable exposure risk, and inform decision making on cable protection requirements. This process should be informed by estimating sandwave migration rates and, thus, estimating the lowest observed trough that could migrate to a given point along the centreline (actual location of the cable) through the project lifetime. Sandwave levelling can then be carried out to this estimated vertical reference level and the cable buried to the recommended depth of lowering (DoL). |

| NE Ref | Section | Key Concern and/or Update | Natural England's Advice to Resolve Issue |
|---|---|---|---|
| | | • A downpipe/fall pip should be used to enable targeted disposition as set out above. | |
| 2 | 1.4.5.4, para 37 | It is stated in 1.4.5.4 and the Revision Change Log that "the Applicants consider that they can commit to depositing like sediment on like sediment both within and beyond the boundary of the Dogger Bank SAC". Natural England welcomes this, however it is unclear what extent beyond the SAC the new commitment covers. | We advise that clarification is provided on whether the commitment to depositing like sediment on like sediment outside of the Dogger Bank SAC applies to the full export cable corridor, and particularly the section of corridor adjacent to Holderness Offshore MCZ.<br>We also advise that this commitment is included in the Commitment Register. |
| 3 | Appendix B, Section 7 | As previously advised [REP3-051], several key cable burial risks have been identified along the export cable route including areas of sub-cropping or outcropping bedrock in the nearshore, high strength clays, shallow waters over Dogger Bank, and large mobile features. However, it is not clear where these key risk areas occur along the cable route options. The Applicant has stated [REP4-088] that Appendix F of the CBRA for proposed remedial protection and the key risks column would assist in this request, however, whilst the key risks info can be useful, more context would be provided if such figure were provided. | We advise that it would be useful if the Applicant could provide a map identifying the cable sections where these key risks exist, along with an overlay of sensitive receptors and designated areas of seabed. [R&I, B49] |
| 4 | Appendix B, Section 6.4 | The Applicant has clarified [REP4-088] that the offshore export cable route (ECR) dredge volumes in the Cable Statement [REP4-051] are indicative | We advise that clarity is needed on whether an error has been made in the WCS ECR dredge volume carried through to [AS-141], but also on whether either of these |

| NE Ref | Section | Key Concern and/or Update | Natural England's Advice to Resolve Issue |
|---|---|---|---|
| | | locations that may require dredging based on the most recent site-specific bathymetric (2022) data, whereas the WCS assessed in ES Chapter 8 Marine Physical Environment [APP-080] and the Offshore Works Change Request [AS-141] were based on a worst-case scenario whereby dredging would occur along the entire length of the export cable route (ECR). However, we are concerned that the Cable Statement presents a significantly reduced (i.e. refined) ECR dredge volume of 525,277m³ (ECRs B and C) compared to the WCS ECR maximum dredge volume presented (and therefore applied for) in [AS-141], which for DBS East in isolation is 33,121,800m³. We highlight that in [APP-080] this value was given as 3,384,000m³. | volumes represent realistic WCS based on the refined values presented in [REP4-051]. We highlight that the volume presented in the Cable Statement is ~ 1.6% of the volume quoted in [AS-141] or 16% of the volume quoted in [APP-080]. We understand that a degree of contingency is needed in all parameters, but we consider that further justification is needed for the volumes as applied for. |