



THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES

2010

**Natural England review of REP1-068 - G1.46 Clarification Note on Marine Processes
Supplementary Work Scope of Works Revision: 01**

For:

The construction and operation of Hornsea Project Four Offshore Wind Farm, located approximately 69 km from the East Riding of Yorkshire in the Southern North Sea, covering an area of approximately 468 km².

Planning Inspectorate Reference EN010098

29th March 2022

Natural England welcomes the Hornsea Four Clarification Note on Marine Processes Supplementary Work Scope of Works document, regarding supplementary works associated with Marine Geology, Oceanography and Physical Processes receptors: Smithic Bank, Holderness Coast, and the Flamborough Front.

We welcome the additional scope of work proposed by the Applicant to address our concerns regarding the data used for the Hornsea Four Environment Statement (ES) and, in turn, the baseline understanding of the receptors listed above, and the potential impacts of the proposed development on those receptors. Natural England would advise bringing the technical panel back together to review and agree the outcomes of this supplementary works.

We have reviewed the information provided within this Additional Scope of Works and below are our detailed comments.

Detailed comments

Section	Comment	Suggestions
2. Appreciation of the Issues Raised	We are broadly in agreement with the summary of the different issues and concerns raised, however, there is no specific consideration of the cumulative impact to Smithic Bank and the Holderness Coast of the Hornsea Four/Dogger Bank A&B Export Cable crossing, just seaward of Smithic Bank.	We would wish to see consideration given to the potential impacts of the Hornsea Four/Dogger Bank A&B Export Cable Crossing, on the form and function of the Smithic Bank and, in turn, the Holderness Coast.
3. Receptors	We are in agreement with the list of receptors to be further considered.	
4.1 Data Review – Smithic Bank	<p>For Smithic Bank, the bathymetric datasets proposed to inform understanding of the sandbank morphology form and evolution date from 1979, 2011 and 2016 (if available). These three years of data (assuming that the 2016 data are available), will provide only three 'snapshots' of sandbank morphology over firstly, a 32-year period and, secondly, a 5-year period. These three (possibly only two) datasets would not provide sufficient data to allow extrapolation of long-term trends in morphological change, or sandbank evolution. Furthermore, even if the 2016 dataset is available for this study, then those data will be 6 years old. In other words, no contemporary data is included in this assessment. Yet, it is vital to gather a sufficient quantity of accurate data that describes not only the longer-term historical change, but also the contemporary conditions.</p> <p>The relatively recent geophysical survey conducted for Hornsea Four in 2019 could be included in this assessment to inform understanding of the form and nature of Smithic Bank morphology.</p>	<p>Include contemporary data/evidence in order to form a robust understanding of the existing baseline. This should include additional Swath Bathymetry and geotechnical surveys from just offshore of the Dogger Bank A+B cable crossing area, across Smithic Bank, and onshore to the Holderness Coastline.</p> <p>Consider including the 2019 geophysical survey data within this Data Review (e.g. Bibby HydroMap, 2019b)</p>
4.1 Data Review – Holderness Coast	For the Holderness Coast, we are content with the proposed datasets.	
4.1 Data Review – Flamborough Front	<p>For the Flamborough Front, it is important to consider the potential impact of increased mixing downstream of the OWF, destratification, and upwelling effects on primary production (both for Hornsea Four alone and in-combination with Hornsea Two & One).</p> <p>We cannot recommend any datasets; however, we can provide some</p>	We can refer the Applicant to the following publications: Carpenter et al. (2016), Floeter et al. (2017), and Slavik et al (2019) – see references listed below.

	relevant references to scientific publications.	
4.2 Historical Trend Analysis (HTA)	We are content with the proposed HTA approach to understanding morphological change at the Holderness Coast. However, if the 2016 data are not available for the HTA of Smithic Bank, then only two datasets would be available: 1979 and 2011. Whilst these may provide useful historical 'snapshots' of Smithic Bank morphology, two datasets (collected 32 years apart) are not sufficient to form a time series of morphological evolution, or to enable extrapolation of long-term trends. Furthermore, recent bathymetric data is required to inform a baseline understanding of the sandbank morphology. Therefore, we would wish to see more recent bathymetric and geotechnical data for Smithic Bank and the Hornsea Four/Dogger Bank A&B Export Cable Crossing just seawards of the bank.	Include recent bathymetric, geotechnical and geophysical survey data.
4.3 Expert Geomorphological Assessment (EGA)	We are content with the proposed EGA approach to assess the future evolution of Smithic Bank and the Holderness Coast; however, this assessment needs to extend from the Holderness Coast, across Smithic Bank, and the Hornsea Four/Dogger Bank A&B Export Cable Crossing area seawards of the bank. The assessment also needs to consider sediment transport processes and long-term erosion/deposition due to the cable crossing area. Moreover, the potential impact of the cable installation activities and cable protection on the form and function of Smithic Bank also need to be considered here.	Include the Hornsea Four/Dogger Bank A&B Cable Crossing in the assessment. Consider sediment transport processes and long-term erosion/deposition due to this cable crossing. Consider the potential impact of the cable installation activities/cable protection on the form and function of Smithic Bank.

References

- Carpenter, J. R., Merckelbach, L., Callies, U., Clark, S., Gaslikova, L. and Baschek, B. (2016). Potential impacts of offshore wind farms on North Sea Stratification. *PLoS ONE* 11, No.8, e0160830.
- Floeter, J., van Beusekom, J. E., Auch, D., Callies, U., Carpenter, J., Dudeck, T., Eberle, S., Eckhardt, A., Gloe, D., Hanselmann, K. and others. Pelagic effects of offshore wind farm foundations in the stratified North Sea. *Progress in Oceanography*, **156**, 154-173.
- Slavik, K., Lemmen, C., Zhang, W., Kerimoglu, O., Klingbell, K. and Wirtz, K. W. (2019). The large-scale impact of offshore wind farm structures on pelagic primary productivity in the southern North Sea. *Hydrobiologia*, **845**, 35-53.