

Date: 19 July 2022
Our ref: Case: 13622
Your ref: EN010098



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BY EMAIL ONLY

Dear Sir/Madam,

Hornsea Four Offshore Wind Farm

In lieu of attendance at the Hornsea Project Four Issue Specific Hearings (ISH) week commencing 18th July 2022, Natural England provide updates in Appendices 1-3 of this letter in relation to the published agendas for ISH 10, 11 and 12. We hope this will help facilitate the ISH by identifying those issues which Natural England considers have been resolved or are progressing towards resolution, and those issues with outstanding concerns – and therefore are those that the ISH could usefully focus on. Our full comments and updated Risk and Issues Log will be provided at Deadline 6.

For any queries relating to the content of this letter please contact me using the details provided below.

Yours faithfully,

Emma Brown
Yorkshire and North Lincolnshire Area Team

[Redacted signature block]

Appendix 1: ISH10 on Marine processes and ecology (excluding ornithology)

Please note, the RAG statuses provided relate specifically to the advice provided under “Natural England Comments” and are not an over-arching position applicable to other issues that may be discussed under the respective agenda headings.

Agenda item	Natural England Comments	RAG
<p>2.2 The Marine Processes Supplementary Report [REP4-043], Regulator reviews [REP5-114] & Clarification Note on Marine Processes Mitigation and Monitoring [REP5a-017], with particular reference to:</p> <ul style="list-style-type: none"> - Smithic Bank (to include report and review findings, rock protection, Dogger Bank A&B cable crossing and monitoring); - Flamborough Front, (to include report and review findings and monitoring proposals); - Implications for the benthic ecology baseline and assessment 	<p>Smithic Bank Rock protection – National England have provided thoughts on this further down at agenda item 7.1. We would also like to see the commitment to no bedform clearance across Smithic Bank secured in the DCO/dML.</p>	
	<p>Dogger bank A&B Cable crossing Natural England notes the response to our deadline 5 advice. Based on the proposed cable crossing location and the MDS for the rock berm height (3m) we would be unable to rule out the potential for significant impacts to Smithic Bank. However, should the berm height be set at 1.8m we would have confidence that the risk of impact was reduced to a more acceptable level. We note that the 3m option for the MDS is to allow for protection from anchor strike. Given the location of the cable crossing we would question if this level of precaution is necessary and whether a 1.8m berm would offer sufficient protection.</p> <p>We also advise that appropriate monitoring of the area between the Holderness Coast and 1km seawards of the Cable Crossing is secured in the DCO/dML, and that additional mitigation/remediation can be triggered through an appropriate mechanism if the impacts are greater than anticipated.</p>	
	<p>Smithic Bank Monitoring Natural England welcome the proposal to monitor the cable corridor from the Dogger Bank cable crossing across Smithic Bank to the coastline REP5a-017 (G5.33). However, we advise high-resolution swath bathymetry, total seabed coverage surveys, of the Order Limits Area between the Holderness Coastline and Smithic Bank, between Smithic Bank and the Dogger Bank A&B Cable Crossing, and to 1km seawards of the Cable Crossing are all required. This is to confirm the conclusions of the ES that: (a) cable installation will have no detrimental impact on the sandbank (in terms of accelerated sandbank lowering or migration); and (b) any impacts from multiple cable remedial and maintenance activities over the lifetime of</p>	

		<p>the project will not lead to morphological change of the sandbank.</p> <p>The first step in this monitoring plan should be a pre-construction survey, in order to establish a robust and accurate baseline. This should then be 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 (as presented in G4.9 Supplementary Report). These will enable qualification and quantification of any volumetric and spatial extent changes to the sandbank.</p>	
		<p>Flamborough Front</p> <p>Natural England welcome the commitment to further reduce the MDS for the number of GBS structures, however our position remains that GBS should not be used within this site.</p> <p>Although the potential for significant impacts/AEoI would remain with the alternative foundation types, we would have much greater confidence that additional measures could be incorporated to reduce the risk.</p> <p>A key concern is the underestimation of the spatial extent of wake/plume interactions due to monopile/pin pile foundations. Evidence from other OWFs in the North Sea has shown the potential for wakes to extend > 1km and for wake-to-wake merging to occur (see Foster, 2018). We have not been able to confirm array layout as the Applicant has not yet provided full details of their design. Therefore, we advise that the Applicant should carry out a further assessment of wake and plume lengths based on their final layout plan and that this should be submitted alongside the layout plan for discharge. The layout plan should then be subject to a full assessment by the MMO in consultation with the appropriate SNCB and Cefas.</p> <p>Adequate post construction monitoring is vital to the validation of predictions and conclusions made at the time of application and within this refined assessment.</p>	
		<p>Flamborough Front Monitoring</p> <p>In order to understand the potential impacts of the Hornsea Four development, alone and in-combination, on the seasonally stratified sea will require a robust monitoring</p>	

		<p>strategy for the lifetime of the project.</p> <p>The initial step to monitoring proposed in G5.33, aims to assess changes to stratification at three locations within the array This is useful in terms of understanding small-scale physical processes, but it would be difficult to identify three locations that are representative of the whole array based on this plan. Therefore, we advise that the first step should be to use high-resolution satellite imagery to examine wakes, sediment plumes, and chlorophyll concentrations across the array and the wider zone of impact beyond the array. We recommend this monitoring should cover a temporal period to include the build-up of seasonal stratification through to breakdown of seasonal stratification. Secondly, the array-scale monitoring should be used to identify representative locations for the near-field monitoring of changes to stratification. Further consideration is also needed of the sub-surface/mid water chlorophyll concentrations. Over the long-term, there is a need to carefully consider monitoring changes to stratification, currents, suspended sediment concentrations, pH, turbulence, and chlorophyll.</p>	
2.5	Natural England update on adequacy of scope of marine process receptors.	<p>Natural England still maintain our position that we don't believe all of the receptors have been properly assessed (full details can be found in our previous responses).</p> <p>However, in the case of The Hills and Outer Silver Pit we don't believe this will make a material difference to the conclusion of the ES based on the additional clarification provided by the Applicant and their experts.</p>	
3.1	Updated regulator views on the proposed seasonal piling restriction to mitigate underwater noise and vibration effects on herring spawning	Natural England do not support the current piling restriction period for the reasons previously outlined. We recognise that the MMO as advised by Cefas are also looking for the piling restriction period to be extended; we defer to Cefas' expertise in determining a more suitable period.	
5.1	Extent, assessment and monitoring of the proposed temporary access ramp.	<p>The Applicant has confirmed that intertidal intrusion of the ramp will be minimum (between MHW and MHWS) and we note that ERYC does not have any concerns relating to this ramp being in place for 3 years.</p> <p>Natural England defers to the expertise of ERYCs coastal engineers expertise on this matter and will close this issue out in our log accordingly.</p>	
5.2	Backfilling of the Horizontal Directional Drilling exit pits in the landfall area	The Applicant has provided reassurance that details requested by Natural England in relation to the restoration of profile of the excavated HDD exit pits will be provided with the Cable Specification and Installation Plan which is conditioned in the DML	

		<p>(condition 13).</p> <p>The current version of the outlined Cable specification and installation plan does not mention HDD exit pits. Natural England need to see this document updated to include our advice on restoring the seabed profile following excavation of exit pits before we would consider this matter resolved.</p>	
6.1	<p>Sampling, characterisation and analysis of sediments (to include the MMO's response to the Applicant's replies [REP5a-014] to the MMO's Deadline 5 questions [REP5-107]).</p>	<p>Natural England's only remaining concern relating to sediments is in relation to those where the contamination level is between Cefas Action Level 1 & 2.</p> <p>Cefas have provided us with the following advice, which the ExA may wish to consider: <i>'Results that fall between current UK AL1 and AL2 require further assessment for which we apply a weight of evidence approach. This includes looking at things such as regional differences), using the result in the context of the area to be dredged (are the results considered within range/similar to previous results found in the area), results of any monitoring from disposal sites and other non-chemical contamination considerations such as physical size distribution, final end use of the material, level of risk based on volume etc.'</i></p>	
6.3	<p>Regulator responses to the Applicant's Clarification Note on Drill Arisings and Deposited Sediments [REP5-083].</p>	<p>In relation to drilling mounds, Natural England would like to seek clarification on how the figure of 0.027km² has calculated to confirm this is a true reflection of the worst-case scenario.</p> <p>Natural England agree that the scale presented is not significant in a benthic context provided the assumptions made within the assessment hold true. However, we would have concerns if the drilling mounds were as high as the MDS (10m), particularly if they did not winnow away as quickly as anticipated.</p> <p>Natural England therefore request the applicant confirms the number/location height of mounds post construction and that should any mounds stand at a height greater than 3m (i.e. the maximum height of the scour protection), we would expect further monitoring to determine if the material is winnowing away as expected, with the option for intervention to remove some of the material if it persists. If this can be appropriately secured within the DCO/DML or relevant certified document, Natural England would consider this issue resolved (subject to the clarification highlighted above).</p>	
7.1	<p>Updated positions relating to rock protection on and around Smithic Bank</p>	<p>We seek a commitment to have no cable protection inshore of the 20m depth contour in order to avoid impacts to sediment transport, and we would wish to see this secured in the dML/DCO in order to fully rule out the potential for significant impacts/adverse</p>	

		<p>effects.</p> <p>Should the ExA/SoS take an alternative view and consider that a 5% requirement can remain, it remains the case that a more detailed assessment would be required to understand the potential impacts of rock placement on Smithic Bank, both alone and cumulatively/in combination. As the detail of the likely scale and location of the rock placement will not be understood until post consent survey work has been undertaken to inform a cable burial risk assessment, we would advise that the DCO/dML should require that a plan is produced prior to construction that quantifies a more precise requirement (i.e. location and extent) within and around Smithic Bank and then revisits the findings of the Environmental Statement and subsequent updates. This plan would then need to be subject to Assessment/HRA prior to discharge by the MMO. If electing to pursue this option, the ExA/SoS may wish to seek assurance from the Applicant that suitable alternatives/mitigation/remediation would be available should significant impacts be determined at this stage.</p>	
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Appendix 2: ISH11 on Marine Ornithology

Please note, the RAG statuses provided relate specifically to the advice provided under “Natural England Comments” and are not an over-arching position applicable to other issues that may be discussed under the respective agenda headings.

Agenda item		Natural England Comments	RAG
2	MRSea and baseline ornithological data characterisation	Natural England agrees that the baseline data using the agreed updated approach and modelling (detailed in REP5a-010 and REP5a-024) is fit for purpose. The Applicant has supplied design-based data for all relevant species and has revised their modelling in line with SNCB advice.	
		<p>We note the following caveat:</p> <ul style="list-style-type: none"> We have noted an inconsistency in the density data for kittiwake and gannet presented in the Revised Ornithology baseline [REP5a-010] and the data apparently used for Collision Risk Modelling (CRM) in the Ornithology EIA and HRA Annex (tracked)[REP51-012]. We have requested clarification on this matter from the Applicant as we will not be able to provide integrity judgements without certainty that the correct data has been used. We have also requested they provide sCRM log files for NE's reference. 	
2.1	Summary of v2 outputs and comparison with v1	As v2 of the baseline has been agreed and demonstrated to be a significant improvement against v1, we do not consider it appropriate and/or necessary to compare the outputs of the two.	
3	Ornithological Assessment Sensitivity Report [REP5-065]	Natural England cannot currently comment in full on REP5-065 as we are still looking at outstanding issues that we would be grateful if the Applicant could address as soon as possible. These relate to the discrepancy in density data between the baseline and CRM modelling noted above and confirmation/clarification of any changes to PVA analyses for kittiwake resulting from the PVA modelling issue raised in our Deadline 5a submission [REP5a-029]. Our aim is to respond to REP5-065 at Deadline 6, subject to these matters being addressed.	
3.4	Displacement	Natural England note that the Applicant continues to support the use of the core breeding season definition whilst Natural England maintains our position that use of the migration-free breeding season could lead to collision and displacement impacts being underestimated. We note that ultimately, the difference is only likely to affect gannet displacement numbers and is unlikely to make a material difference to our	

		<p>conclusions relating to significance of impact/impact to site integrity.</p> <p>Regarding displacement, please also see our comments on 3.8. below.</p>	
3.6	Counterfactual of final population size	Natural England maintains that the counterfactual of population size should be provided to inform the assessment, as has been done in all recent OWF assessments.	
3.8	Auk displacement and approach to apportioning	<p>Natural England will comment in full on the Applicant’s response [REP5a-018] to our additional apportioning guidance [REP5-115] at Deadline 6, however we consider it important to clarify the following points at this time:</p> <ul style="list-style-type: none"> • The Applicant’s characterisation that our advice is a departure from the Joint SNCB guidance (2022) is inaccurate. The Joint SNCB advice is clear that seasonality in displacement assessments should be made on a case- and species-specific basis: <ul style="list-style-type: none"> - “SNCB advice section – seasonality and summing across seasons: <i>The ‘Matrix Approach’ should be applied to a minimum of two seasons (breeding and nonbreeding season) using mean seasonal peak abundance estimates for the OWF site (plus buffer). Where appropriate, additional matrix tables should be created for other discrete seasons (e.g. post breeding and migration periods for relevant species). However, decisions regarding how to treat seasonality in any displacement assessment should be made on a site and species-specific basis, in discussion with SNCBs.</i>” <p>Natural England therefore consider our additional advice to be wholly in line with the Joint SNCB guidance.</p> • Noting the above, Natural England were careful to specify in our additional advice that it was specific to Hornsea Project Four. We have provided this advice due to the very high numbers of auks recorded in the area during August and September (which are considerably higher than the peaks recorded at other project sites) and because of its close proximity to FFC SPA. Natural England have in no way implied that this approach to the assessment of displacement and apportioning should be applied to other plans or projects within the North Sea. Instead, we will continue to consider each plan/project on a case-by-case basis and use the SNCB generic advice unless there are good reasons (such as those highlighted for Hornsea Four) for departing from it. • We have been raising concerns about the significant number of auks recorded during August and September and have advised the Applicant and their 	

		consultants of the need for a bespoke approach since the pre-application stage, as well as an evidence review on auk dispersal patterns etc. to inform it. The advice we provided at Deadline 5 was to allow progress on this matter as the provision of that evidence was not forthcoming from the Applicant, though relevant material has been submitted at Deadline 5.	
4	Indirect effects of forage fish and ornithology	Natural England will provide comments at Deadline 6.	
5	Updated conclusions on project and cumulative EIA effects	Natural England is not able to comment in full on this at this time as we are still reviewing the updated assessments (provided at Deadlines 5 and 5a). However, we note that our position in recent Examinations for cumulative impacts has been that we are unable to rule out significant adverse impacts at an EIA scale on kittiwake, razorbill, guillemot, gannet and greater black-backed gull due to cumulative collision mortality and/or displacement impacts for all projects up to and including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, East Anglia One North and East Anglia Two. This conclusion is irrespective of whether Hornsea 4, or indeed Dudgeon Extension Project and Sheringham Shoal Extension Project ('DEP and SEP') and Rampion 2, are included in the cumulative totals or not. Any further impact to the existing totals from Hornsea 4 would reinforce Natural England's EIA conclusions regarding these species.	

Appendix 3: ISH12 on the Habitats Regulations Assessment

Please note, the RAG statuses provided relate specifically to the advice provided under “Natural England Comments” and are not an overarching position applicable to other issues that may be discussed under the respective agenda headings.

Agenda item		Natural England Comments	RAG
3	MRSea and baseline ornithological data characterisation	Natural England agrees that the baseline data using the agreed updated approach and modelling (detailed in REP5a-010 and REP5a-024) is fit for purpose. The Applicant has supplied design-based data for all relevant species and has revised their modelling in line with SNCB advice.	
		<p>We note the following caveat:</p> <ul style="list-style-type: none"> We have noted an inconsistency in the density data for kittiwake and gannet presented in the Revised Ornithology baseline [REP5a-010] and the data apparently used for Collision Risk Modelling (CRM) in the Ornithology EIA and HRA Annex (tracked)[REP51-012]. We have requested clarification on this matter from the Applicant as we will not be able to provide integrity judgements without certainty that the correct data has been used. We have also requested they provide sCRM log files for NE's reference. 	
4	Ornithological Assessment Sensitivity Report [REP5-065]	Natural England cannot currently comment in full on REP5-065 as we are still looking at outstanding issues that we would be grateful if the Applicant could address as soon as possible. These relate to the discrepancy in density data between the baseline and CRM modelling noted above and confirmation/clarification of any changes to PVA analyses for kittiwake resulting from the PVA modelling issue raised in our Deadline 5a submission [REP5a-029].] Our aim is to respond to REP5-065 at Deadline 6, subject to these matters being addressed.	
4.2	Displacement	Natural England note that the Applicant has undertaken assessments using the SNCB recommended seasonal definitions. However, the Applicant continues to support the use of the core breeding season definition whilst Natural England maintains our position that use of the migration-free breeding season could lead to collision and displacement impacts being underestimated. We note that ultimately, the difference is only likely to affect gannet displacement numbers and is unlikely to make a material difference to our conclusions relating to significance of impact/impact to site integrity.	

		Regarding displacement, please also see our comments on 4.8. below.	
4.5	Counterfactual of final population size	Natural England maintains that the counterfactual of population size should be provided to inform the assessment, as has been done in all recent OWF assessments.	
4.8	Auk displacement and approach to apportioning	<p>Natural England will comment in full on the Applicant's response [REP5a-018] to our additional apportioning guidance [REP5-115] at Deadline 6, however we consider it important to clarify the following points at this time:</p> <ul style="list-style-type: none"> • The Applicant's characterisation that our advice is a departure from the Joint SNCB guidance (2022) is inaccurate. The Joint SNCB advice is clear that seasonality in displacement assessments should be made on a case- and species-specific basis: <ul style="list-style-type: none"> - "SNCB advice section – seasonality and summing across seasons: <i>The 'Matrix Approach' should be applied to a minimum of two seasons (breeding and nonbreeding season) using mean seasonal peak abundance estimates for the OWF site (plus buffer). Where appropriate, additional matrix tables should be created for other discrete seasons (e.g. post breeding and migration periods for relevant species). However, decisions regarding how to treat seasonality in any displacement assessment should be made on a site and species-specific basis, in discussion with SNCBs.</i>" <p>Natural England therefore consider our additional advice to be wholly in line with the Joint SNCB guidance.</p> • Noting the above, Natural England were careful to specify in our additional advice that it was specific to Hornsea Project Four. We have provided this advice due to the very high numbers of auks recorded in the area during August and September (which are considerably higher than the peaks recorded at other project sites) and because of its close proximity to FFC SPA. Natural England have in no way implied that this approach to the assessment of displacement and apportioning should be applied to other plans or projects within the North Sea. Instead, we will continue to consider each plan/project on a case-by-case basis and use the SNCB generic advice unless there are good reasons (such as those highlighted for Hornsea Four) for departing from it. • We have been raising concerns about the significant number of auks recorded during August and September and have advised the Applicant and their consultants of the need for a bespoke approach since the pre-application stage, 	

		as well as an evidence review on auk dispersal patterns etc. to inform it. The advice we provided at Deadline 5 was to allow progress on this matter as the provision of that evidence was not forthcoming from the Applicant, though relevant material has been submitted at Deadline 5.	
5	Indirect effects of forage fish and ornithology	Natural England will provide comments at Deadline 6.	
6	Matters relating to derogation and compensation	Natural England will provide comments on the Deadline 5 and 5a compensation submissions at Deadline 6. However, we wish to highlight in advance that the offshore nesting structure that has been identified (Wenlock platform) is within the North Norfolk Sandbanks and Saturn Reefs SAC, which is designated for features that are currently in unfavourable condition and have a restore conservation objective. We would welcome further assessment by the Applicant on the implications of the proposals for the site.	
7	Overall summary of current positions on project and in-combination HRA effects	<p>Natural England is unable to confirm positions on HRA effects for all species at this time as we are still reviewing the updated assessments (provided at Deadlines 5 and 5a). However, as noted in our advice to other Examinations, we already consider that an adverse effect on integrity (AEoI) of the kittiwake feature of FFC SPA in-combination with other plans and projects cannot be ruled out. Any further impact to the existing totals from Hornsea 4 would reinforce this conclusion regarding these species.</p> <p>Without clarification on whether the collision risk modelling has used the correct densities (see caveat to Point 3), we cannot have confidence in the predicted impacts presented in G5.25 Ornithology EIA and HRA Annex (tracked) and therefore cannot currently advise in relation to AEoI for gannet at FFC SPA.</p>	
8.3	Summary of positions on barrier effects	Natural England consider that given the Applicant has now included sitting and flying birds in the assessment of displacement, the potential for barrier effects is incorporated into the assessment for the required species.	