



THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES
2010

East Anglia TWO Offshore Wind Farm

Appendix F1b to the Natural England Deadline 1 Submission

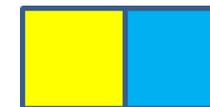
**Comments to the Applicant Comments on Natural England's Relevant and Written
Representations [AS-036] All Other Matters**

For:

The construction and operation of East Anglia Two Offshore Windfarm, a 900MW windfarm which could consist of up to 75 turbines, generators and associated infrastructure, located 37km from Lowestoft and 32km from Southwold.

Planning Inspectorate Reference: EN010078

2nd November 2020

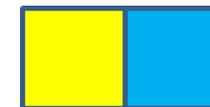


Appendix F1b Natural England's Comments on the Applicant's Review of Natural England's Relevant and Written Representations [AS-036] for All Other Matters

This document is applicable to both the East Anglia ONE North (EA1N) and East Anglia TWO (EA2) applications, and therefore is endorsed with the yellow and blue icon used to identify materially identical documentation in accordance with the Examining Authority's (ExA) procedural decisions on document management of 23rd December 2019. Whilst for completeness of the record this document has been submitted to both Examinations, if it is read for one project submission there is no need to read it again for the other project.

Table 1. Site Selection and Assessment of Alternatives

Point	Natural England's Relevant and Written Representations	Applicant's Comments	Natural England's Response to Applicant's Comments	Risk
1.2.1	Although the decision to cross the Sandlings SPA at the narrowest section is welcomed, it should be noted the decision to HDD or trench through this section has yet to be determined. There is still the potential for impacts and disturbance to occur to species using the SPA despite this narrowest route.	<p>The Applicant's preference is for an open-cut trenching technique to cross the Sandlings SPA. As noted in section 22.6.1.1.2 of Chapter 22 Onshore Ecology the onshore cable route will cross the Sandlings SPA at its narrowest point, towards the north of the SPA and the Applicant has committed to a reduced onshore cable route working width of 16.1m (reduced from 32m) within the SPA to minimise habitat loss.</p> <p>It is noted that a substantial portion of the open trench crossing is through a horse paddock.</p> <p>The Applicant will update the OLEMS with an outline of the timing of habitat creation areas (i.e. the 3ha of compensatory turtle dove feeding</p>	Please see Deadline 1 Appendix C3 on the draft SPA crossing method statement. Natural England suggests that this issue is discussed under Onshore Ornithology issues.	

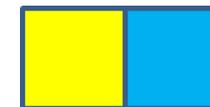


Point	Natural England's Relevant and Written Representations	Applicant's Comments	Natural England's Response to Applicant's Comments	Risk
		<p>habitat and nightingale nesting habitat).</p> <p>The Applicant will submit an EMP for approval by the LPA in consultation with NE. In accordance with requirement 21 of the DCO this will include a SPA crossing method statement. Additionally, as agreed at a SoCG meeting with NE on the 19th of February 2020 the Applicant will produce an outline SPA Crossing Method Statement to be submitted during the examination that will provide further details on the methodology to be adopted for an open trench crossing, and for a trenchless technique (such as HDD).</p>		
1.2.2	<p>Natural England queries if the removal of a section of woodland been fully considered within the ES? Signposting to this would be useful. Has the applicant considered alternatives to not removing the woodland? Will the woodland be replaced?</p>	<p>Section 22.5.2 of Chapter 22 Onshore Ecology (PINS Reference APP-070) covers the baseline for all woodland types within the study area, impacts upon woodland (including removals) are covered in section 22.6.1.4 with the areas affected shown in Table 22.18 of the chapter.</p> <p>Mitigation for impacts upon woodland is covered in Table 22.4 of the chapter and sections 5.1, 6.2 and 6.3 of the OLEMS APP-584).</p>	<p>Natural England notes the Applicant's signposting to the relevant sections and documents and is satisfied that the issue has been considered.</p>	



Point	Natural England's Relevant and Written Representations	Applicant's Comments	Natural England's Response to Applicant's Comments	Risk
		<p>During the early stages of site selection, options were considered which would avoid removal of woodland at Aldeburgh Road, however these options were not taken forward, as discussed in section 4.9.1.2.4 of Chapter 4 Site Selection and Assessment of Alternatives. The initial site selection study area (which originally extended from the coast to Aldeburgh Road) was extended westward by considering removal of woodland and potentially crossing Aldeburgh Road, as recommended by the Site Selection ETG feedback in July 2017.</p>		
1.2.3	<p>Although Natural England recognises the options of crossing the SPA, trenching or HDD, the Applicant needs to make it clear what the impacts will be if the EA2 and EA1N cable routes are put in sequentially rather than at the same time (see point 4 below). This applies to other scenarios such as Aldeburgh road woodland.</p>	<p>The two construction scenarios are compared in full in Appendix 23.2 (APP-509), Scenario 2 (sequential) is deemed to be the worst case and this is carried into the assessment in Chapter 23 Onshore Ornithology (APP-071) (see section 23.7). Table 23.20 summarises the potential impacts of sequential construction.</p>	<p>Natural England notes the applicant's signposting to the relevant sections and documents. The worst case scenario of sequential construction of the onshore cabling remains a concern for Natural England for both nature conservation and landscape matters</p>	

Table 2. Project Description



Point	Natural England's Relevant and Written Representations	Applicant's Comments	Natural England's Response to Applicant's Comments	Risk
1.2.4	<p>It is not clear whether the cable corridor area described is intended for both EA1N and EA2, i.e. will all cable installation for both projects take place within the same 32m wide corridor or will there be 2x 32m cable corridors, one for EA1N and one for EA2?</p> <p>If the cable routes for both EA1N and EA2 are installed within the same 32m wide corridor, will this occur sequentially or at the same time?</p>	<p>The onshore cable route for the Projects is located within the Order Limits. The onshore cable route is independent for each Project and so there is flexibility around where each Project cable can be installed within the Order Limits. Chapter 6 Project Description (APP-054) illustrates the onshore cable route (i.e. construction area) for each project (see Plate 6.18) which will be 32m for each project. The onshore cable corridor is identical for both Projects and the onshore cable route for each project must be located within this onshore cable corridor.</p> <p>The onshore cable route is reduced at certain points (e.g. at a number of Important Hedgerow crossings, where the onshore cable route reduces to 16.1m) and is increased at other points (e.g. to accommodate a trenchless crossing of the SPA,). Appendix 6.4 (APP-453) describes the options for constructing both Projects, either concurrently or sequentially.</p>	<p>Natural England notes that the cable route will be 32.2 m wide for each project, and that both of these cable routes would be located within the wider cable corridor. We recognise that the cable route for each project would be reduced to 16.1m width at certain points and is increased at other points.</p> <p>Natural England notes the applicant's signposting to the relevant documents regarding concurrent or sequential construction. However, this remains an outstanding concern.</p>	

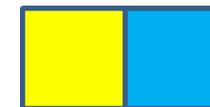
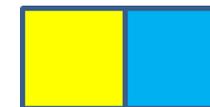
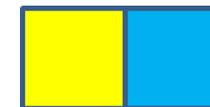


Table 3. Marine Geology, Oceanography and Physical Processes

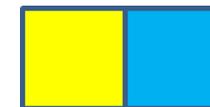
Point	Natural England's Relevant and Written Representations	Applicant's Comments	Natural England's Response to Applicant's Comments	Risk
2.2.1	<p>Natural England advises that evidence needs to be presented to support statements that the maximum volumes of sediment released from sea bed preparation is five times greater than is likely to be released by scour? This currently seems quite arbitrary to base the assessment of scour during the operational phase on.</p> <p>Does this only apply to near-surface sediments as indicated by table 7.3?</p>	<p>The worst-case maximum volumes of sediment released from seabed preparation during construction is calculated at 25,875m³ for each wind turbine foundation and based on an assumed worst-case of the 300m wind turbine with a 60m gravity base basal diameter.</p> <p>Section 7.6.2.4, paragraphs 273 and 274 of Chapter 7 Marine Geology, Oceanography and Physical Processes (APP-055) refer to previous studies in which the worst-case operational scour volume per turbine is 5,000m³. As the Project has similar foundation types and sizes (and physical environment) to the previous studies this figure of 5,000m³ is considered appropriate for the likely scour volume for the Project. 5,000m³ is approximately one fifth of 25,875m³.</p> <p>This figure only applies to near-surface sediments as it is those which will be</p>	<p>Natural England is satisfied with the applicant's comments.</p>	



Point	Natural England's Relevant and Written Representations	Applicant's Comments	Natural England's Response to Applicant's Comments	Risk
		released by scour.		
2.2.2	<p>Natural England welcomes the commitment by the Applicant to ensure sediment arising from any sand wave clearance would be deposited in locations which avoid sensitive features and enable sandwave recovery. These sensitive features are most likely to be <i>Sabellaria spinulosa</i> reef and by depositing the sediment within the vicinity of where it was dredged means the sediment will be retained within the sandbank system. Much of the cable corridor sits within the Outer Thames Estuary SPA and there is the potential for disturbance to this species during any proposed works. Likewise, these subtidal sandbanks are key feeding areas for designated features such as red-throated diver. Therefore, for works including disposal within the sandbank areas there will need to be an assessment of the impacts against the conservation objectives for the site.</p>	<p>A separate clarification note regarding cross-receptor impacts on the Outer Thames Estuary SPA has been prepared and is provided in Appendix 5 of this document.</p>	<p>Natural England remains concerned that impacts to the Outer Thames Estuary SPA from sandwave levelling and cable protection have not been screened into the Habitats Regulation Assessment. Please note that as there is an impact pathway due to changes to supporting habitat, we believe that there is likely significant effect.</p> <p>Please see Appendix F2b of this document for our detailed response to the applicant's Appendix 5 Outer Thames Estuary Cabling Note.</p>	



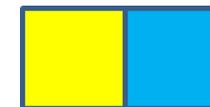
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2.2.3	Assuming some of the cable protection will be laid within the SPA boundary, has the Applicant considered the loss of supporting SPA habitat for the designated features? This will need to be considered across several thematic areas including offshore ornithology, sediment transportation and benthic			
2.2.4	Natural England welcomes bullet point 2, to allow local scour around the piles to minimise the scour protection footprint. This will minimise the habitat loss due to additional scour protection.	Noted.	No further comment.	
2.2.5	It is clear from this section (7.5.1.2 para 106-111) that both project sites exhibit large areas of sandwaves and megaripples. This suggests to Natural England that a significant amount of sandwave clearance may be needed. If so, then it is essential that the applicant sufficiently considers the impact of disturbance and prey availability upon the interest features of the Outer	A separate clarification note regarding cross-receptor impacts on the Outer Thames Estuary SPA has been prepared and is provided in Appendix 5 of this document. With respect to <i>Sabellaria spinulosa</i> , results from the side scan sonar survey carried out in 2018 (Appendix 9.3 Benthic Factual Data Report (APP-460)) show that there is no evidence of <i>Sabellaria</i> reef in the offshore cable corridor. However, it is noted that side	Ongoing. Please see Appendix F2b of this document for our detailed response to the applicant's Appendix 5 Outer Thames Estuary Cabling Note. See Point 3.2.5 in Table 4 Benthic Ecology regarding disposal location.	



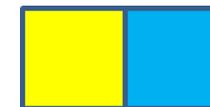
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	<p>Thames Estuary SPA, plus the potential loss of <i>Sabellaria spinulosa</i> reef such as <i>Sabellaria spinulosa</i> which should be avoided by micro-siting where possible.</p>	<p>scan sonar data would need to be ground-truthed with drop-down video in order to accurately determine the presence or absence of <i>Sabellaria</i> reef. As stated in section 9.3.3.1.4 of Chapter 9 Benthic Ecology, a detailed pre-construction geophysical survey will identify any areas of <i>Sabellaria</i> reef which are required to be avoided, as agreed with the MMO and secured through the Offshore In-principle Monitoring Plan (APP-590), submitted with the application material and Design Plan which will be submitted post-consent.</p> <p>Regarding disturbance to <i>Sabellaria</i> reef from sand wave levelling, sediment arisings from sand wave clearance in the offshore cable corridor would be deposited back within the offshore cable corridor at locations which avoid any <i>Sabellaria</i> reefs (if their presence is determined from pre-construction surveys) (as described in section 9.3.3.2.3 of Chapter 9 Benthic Ecology). Agreement is being sought for a single disposal site encompassing the offshore cable corridor</p>		



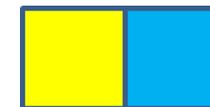
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		<p>which avoids overlap with existing disposal sites (Site Characterisation Report (Offshore Cable Corridor) (APP-593)). However, the Applicant will consult with the MMO and their advisors post-consent on the results of the preconstruction surveys and any sensitive features that may require avoidance during sediment disposal activity. No sand wave levelling / pre-sweeping or disposal is anticipated in the near shore section of the offshore cable corridor, subject to findings of the detailed pre-construction geophysical survey.</p>		
2.2.6	<p>Paragraph 130 indicates that a relatively large area of the export cable corridor is predominantly silt. Has this change in sediment been fed into the impact assessment to determine the impact of trenching cables within this area? A greater percentage of silt within the sediment will result in a more persistent suspended sediment concentration following disturbance.</p>	<p>As described in section 7.5.6 of Chapter 7 Marine Geology, Oceanography and Physical Processes, grab samples collected within the offshore export cable corridor revealed the majority of sediments to be slightly gravelly sand (using the Folk scale). The central section of the offshore cable corridor has the highest percentage of fines in samples collected with sediment mainly falling within the sandy mud classification on the Folk scale. Areas of the export cable</p>	<p>Natural England welcomes the confirmation that sediments with a greater silt component have been incorporated into the assessment to determine the impact of cable installation and notes the applicant's expectation that the majority of cables will be installed using a ploughing method.</p>	



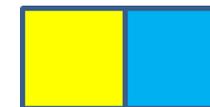
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		<p>corridor where silt is a greater sediment component are highly localised to the inshore area where trenchless (such as HDD) techniques will be used (see Figure 9.3a (APP-177)) however this has been incorporated into the assessment and the resulting conclusions in section 7.6.1.5 regarding export cable installation and settlement rates (full dispersion of any plumes after 180 hours following cessation of installation activities).</p> <p>Jetting is considered the worst-case export cable installation technique since it results in the largest volume of suspended sediment being released from the sea bed and into the water column however based on experience from East Anglia ONE it is anticipated that the majority of cables would be installed using a ploughing method which is the cable installation method that gives rise to the lowest increases in suspended sediment concentrations.</p>		
2.2.7	Is there any site specific evidence from the EA One construction of the actual	There were no requirements for suspended sediment concentration monitoring during	Noted.	



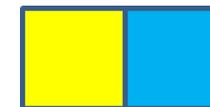
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	sediment concentrations that were experienced during foundation installation?	construction of East Anglia ONE. The modelling and assessments for East Anglia ONE (and subsequently the Projects as per section 7.6.1 of Chapter 7 Marine Geology, Oceanography and Physical Processes) were informed by monitoring evidence from Nysted (Denmark) and Thornton Bank (Belgium) which used gravity base foundations (considered to be the worst-case). Thornton Bank has similar environmental conditions to the Project in terms of hydrodynamic and sedimentary environment. This is based on information in section 6.4.2.4.1 of Chapter 7 Marine Geology, Oceanography and Physical Processes (APP-055) for East Anglia ONE.		
2.2.8	Natural England clearly sees the benefits in assessing the worst case scenario for the impacts associated with the windfarm. However, for a greater perspective it would be interesting to understand the level of drilling that is likely to occur especially in these	With regard to the drilling of foundations, feedback from the East Anglia ONE team was that there was no requirement for East Anglia ONE, however it should be noted that ground conditions may differ at the windfarm site and therefore drilling for foundations may be required subject to the findings of the pre-	Noted.	



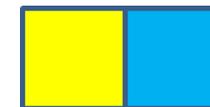
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	substrates. Can any predictions be drawn from EA One and the levels of drilling that occurred there?	construction site investigations.		
2.2.9	Paragraph 180 states "the resulting mound would be a measurable protrusion above the existing sea bed (likely to be tens of centimetres to a few metres high)" This is a large range in the size of the potential mound that could be formed. It is not clear from the resulting text why this variation would exist. We assume it would be due to the varying sediment particle size from the drill arising, the sheer force of the foundations being installed or general sea bed preparation, however confirmation regarding this would be welcome. In addition the persistence of any mound/s would also need to be considered. If this is hard substrata then it would need to be potentially added to the in-combination assessment of any cable/scour protection; especially in relation to potential impacts to the conservation objectives for the Outer	<p>Section 7.6.1.2 of Chapter 7 Marine Geology, Oceanography and Physical Processes (APP-055) refers to resulting localised mounds from suspended sediment from near-surface sediments as likely being tens of centimetres to a few metres high. This variation is likely across the windfarm site as the heights of mounds will depend on the prevailing physical conditions and underlying geology at each location. For sediment forming a passive plume, expert-based assessment suggests the thickness of these deposits across the wider area would be in the order of millimetres.</p> <p>With regards to persistence, any potential sediment mounds are expected to become re-mobilised and therefore would rapidly become incorporated into the mobile sea bed sediment layer, thereby reducing any potential effect (section 7.6.1.2.1 of Chapter 7 Marine Geology, Oceanography and</p>	As with LID and Lincs OWFs Natural England is concerned about any residual mounds and their ability to winnow away especially where sensitive habitats are present and/or within designated sites. Therefore if pre- construction surveys of the array area show that mounds are likely to be persistent then we advise that they are located away from NERC habitats and preferably in areas of similar sediment type.	



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	Thames SPA.	<p>Physical Processes (APP-055).</p> <p>In all cases the sediment within the mound would be similar to that on the existing sea bed. This would mean that there would be no discernible change in sea bed sediment type. Therefore, additional in-combination assessment with cable and scour protection is not considered necessary.</p>		
2.2.10	Although the overall sediment release volumes would be low and confined to near the sea bed; it is not clear if there has been an assessment of the impacts at varying depths? This may apply more to the export cable installation further inshore.	<p>The assessments provided with respect to changes in suspended sediment concentrations and changes in sea bed level have taken into account differences in potential impacts at varying depths.</p> <p>The assessment for offshore export cable installation has been considered separately from those for the inter-array and platform link cables because parts of the offshore cable corridor are in shallower water and closer to the identified morphological receptor groups.</p>	Noted.	
2.2.11	As highlighted above, a relatively large	As described above, grab samples collected	Natural England welcomes the	



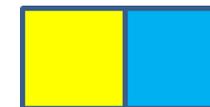
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	<p>area of the export cable corridor is predominantly silt. There seems to be no assessment of how this would affect the dispersion and settlement rate, particularly in nearshore shallow waters and any designated sites. Further information would be welcome.</p>	<p>within the offshore export cable corridor revealed the majority of sediments to be slightly gravelly sand. The central section of the offshore cable corridor has the highest percentage of fines in samples collected with sediment mainly falling within the sandy mud classification on the Folk scale (section 7.5.6 of Chapter 7 Marine Geology, Oceanography and Physical Processes (APP-055)). Areas of the export cable corridor where silt is a greater sediment component are highly localised to the inshore area where trenchless techniques will be used (see Figure 9.3a) however this has been incorporated into the assessment and the resulting conclusions in section 7.6.1.5 regarding export cable installation and impacts on designated sites (which concluded minor adverse to negligible significance on Suffolk Natura 2000 site).</p>	<p>confirmation that sediments with a greater silt component have been incorporated into the assessment to determine the impact of cable installation and notes that trenchless techniques will be used in the inshore area where sediments have a greater silt component.</p>	
2.2.12	<p>Natural England queries if there is an opportunity to microsite jack up vessels legs if habitats of conservation interest are found in the area during pre-construction surveys?</p>	<p>Through the Design Plan (Condition 17 of the generation DML and Condition 13 of the transmission DML), the Applicant will set out how the Project has been designed and micro-sited around reefs and sensitive</p>	<p>This is welcomed and but would wish this document to be approved in consultation with NE. NE note the Applicant intends to provide</p>	



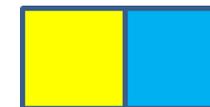
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		habitats which will be submitted to the MMO for approval.	an outline <i>Sabellaria spinulosa</i> management plan at Deadline 1 - NE will respond at Deadline 2	
2.2.13	Although the worst case scour volume of 50,000 m ³ is considerably less than the worst case volume of sediment released following sea bed preparation activities, this impact could be considered longer term as scour is likely to continue during the lifetime of the wind farm. It is not clear how this been considered and assessed by the applicant?	It is understood that the figure cited by NE is a typographic error and should be 5,000m ³ . As described in section 7.6.2.4 of Chapter 7 Marine Geology, Oceanography and Physical Processes (APP-055), the worst-case scour volume of 5,000m ³ has been assessed under a 1 in 50-year return period event (exceeding the lifetime of the Project) and under typical conditions, the volume of scour (in the worst case of no scour protection) will be much less than the worst-case assessed value of 5,000m ³ . After each scour-inducing event (in the worst-case scenario of no scour protection being provided), the suspended sediment concentrations would rapidly settle within a few hundred metres of each foundation structure.	Natural England confirms that 50,000m ³ was used in error, this should be 5,000m ³ and welcomes the clarification by the applicant.	
2.2.14	Table 7.31 concludes that the magnitude of effect on sea bed morphology due to the presence of	As described in section 7.6.2.5 of Chapter 7 Marine Geology, Oceanography and Physical Processes (APP-055) the sea bed	Natural England notes the clarification provided and has no further comment.	



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	<p>foundations is high in the near field. Further expansion within this section on what this means for the receptors concerning this chapter would be useful. We understand the effect will be raised in other chapters, but it is hard to understand what this magnitude means for this particular topic.</p>	<p>morphology would be directly impacted by the footprint of each foundation structure on the sea bed within the windfarm sites. This would constitute a 'loss' in natural sea bed area during the operational life of the Project. This direct footprint could be further increased due to the presence of foundation structures and associated scour protection (which is the worst case when considered against scour hole formation). With the installation of scour protection, the sea bed would be further occupied by material (e.g. concrete mattresses) that is 'alien' to the baseline environment and which as a worst case would result in a maximum footprint of 1,719,856m², associated with GBS foundations.</p> <p>While the near-field magnitude of effect from this would be high, these effects are confined to within the footprint of scour protection (should it be provided) and would not cover the whole of the windfarm sites. The identified receptor groups⁵⁴ for this assessment are located remotely from the windfarm site and therefore, there is no</p>		



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		<p>impact associated with the proposed project on the identified receptor groups for this Chapter.</p>		
2.2.15	<p>The Applicant identifies this impact (changes to the sea bed morphology due to the presence of foundation structures) as not having the potential for cumulative impacts, as the foundation structures affects a discrete area of seabed. However, in-combination with other windfarms and their associated foundation footprints could these discrete areas be combined to create a large overall impact?</p>	<p>The footprint effect is discrete to each turbine foundation location. The overall foundation area (1.5km² and 1.3km² for East Anglia TWO and East Anglia ONE North respectively) is low with respect to the total windfarm area (218.4km² and 208km² for East Anglia TWO and East Anglia ONE North respectively). When other wind farms are considered in-combination, the total sea bed area under consideration increases, so proportionally the effect still remains small. Therefore, no interactions with the other windfarms considered in Table 7.37 of Chapter 7 Marine Geology, Oceanography and Physical Processes are predicted.</p>	<p>Natural England notes the clarification provided and has no further comment.</p>	
2.2.16	<p>Natural England queries what is this accepted threshold of 5% and less for cumulative effect on baseline wave regime based upon? What are the predicted impacts of a greater than 2% increase upon the sensitive receptors</p>	<p>The figure of 5% is the agreed nominal threshold of significance for changes to the baseline wave climate. This was agreed with MMO, Cefas and NE following an Expert Topic Group meeting on the 18/10/2017. Under some wave approach directions, the</p>	<p>Natural England notes the clarification provided and has no further comment.</p>	



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	for marine geology, oceanography and physical processes?	<p>zone of cumulative effect can impinge upon some of the identified sensitive receptors as presented in Figure 7.8 (APP-110) of the ES. The effects under all approach directions are seen to extend over the greatest area under the lower (1 in 1 year) return period event for the reason associated with the higher (1 in 50 year) return period events having longer wave periods, which are less affected by the foundation structures. This is described further in Appendix 7.2 Individual Project and Cumulative Wave Modelling (APP-455).</p> <p>However, the magnitude of change in baseline significant wave heights across these zones of extended influence is <1% where it reaches the location of the identified receptors (section 4.1.4.2). This magnitude of change is therefore insignificant with regards to potential impacts.</p>		

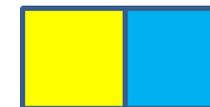
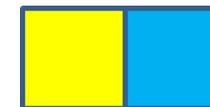
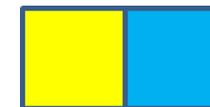


Table 4. Benthic Ecology

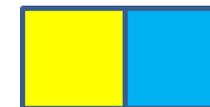
Point	Natural England's Relevant and Written Representations	Applicant's Comments	Natural England's Response to Applicant's Comments	Risk
3.2.1	Natural England wishes to highlight that the worst case scenario for benthic ecology should be related to the foundation type and not the blade tip height. We believe that this has been covered in the chapter so raises as a point to note to the examiner.	The Applicant appreciates the opportunity to clarify this point. Paragraph 17 explains that the worst case scenario for benthic ecology is based on either 60 or 67 wind turbines depending on the foundation types used. Maximum blade tip height references are provided to distinguish between the maximum number of each turbine type i.e. 67 x 250m blade tip height or 60 x 300m blade tip height wind turbines.	This was a point to the examiner so no further response from NE	High
3.2.2	Natural England highlights that the Rochdale envelope remains all-encompassing including the use of Gravity Based foundations that have not been used in English waters to date. Therefore, we would question why these have continued to be included in the Environmental Statement (ES). Especially as it unrealistically skews some of the assessments.	Assessing a wide ranging design envelope ensures flexibility in the consent which is required to account for potential technology advancements during the long lead-in times to project construction. Gravity-base foundations are currently in operation in the UK at the Blyth offshore windfarm demonstrator project and there is potential that this foundation type could become used more widely in the future.	This was a point to the examiner so no further response from NE	
3.2.3	Please be advised that there should be	Through the Design Plan, Condition 17 of the	Ongoing. How will a commitment in	Medium



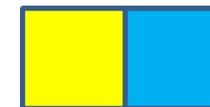
Point	Natural England's Relevant and Written Representations	Applicant's Comments	Natural England's Response to Applicant's Comments	Risk
	a commitment that is secured in one of the DCO/DML reference docs relating to the clearance of boulders should be away from habitat of conservation important.	generation DML and Condition 13 of the transmission DML, the Applicant will set out how the Project has been designed and micro-sited around reefs and sensitive habitats which will be submitted to the MMO for approval.	relation to boulder clearance be secured as part of the consenting process? We have advised for other OWFs currently in examination that outline plans should be provided.	
3.2.4	Natural England supports the undertaking of sandwave levelling if as stated it reduces the need for cable protection. However, we do recognise that sandwave levelling activities (including sediment disposal), is likely to have a significant effect (LSE) on the interest features of the Outer Thames Estuary SPA and will need to be considered against the conservation objectives for the site in an Appropriate Assessment.	A separate clarification note regarding cross-receptor impacts on the Outer Thames Estuary SPA has been prepared and is provided in Appendix 5 of this document.	Ongoing. Please see Appendix F2b of this document for our detailed response to the applicant's Appendix 5 Outer Thames Estuary Cabling Note. Natural England have provided the Applicant with GIS layers to form a supporting habitat map (08.10.20).	
3.2.5	We also welcome the commitment to avoid sensitive receptors when undertaking sandwave levelling works, but where possible sand should be disposed in similar particle sized areas.	Noted.	Ongoing. How will similar particle size for disposal be secured? We note that in Appendix 5 there is no mention of disposal location and in addition we have requested further information to be included in AS-	



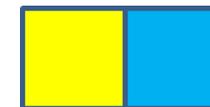
Point	Natural England's Relevant and Written Representations	Applicant's Comments	Natural England's Response to Applicant's Comments	Risk
			043 in our Deadline 1 Appendix F4	
3.2.6	It would be helpful if the Applicant could provide context from East Anglia ONE in relation to the amount and location of cable protection placed along the export cable.	The East Anglia ONE project installed cable protection along 2.11% of its first export cable and 2.12% along its second export cable. This was mainly in areas of hard ground or at cable crossings.	Whilst we welcome the information on EA ONE being included this could be expanded up and used as supporting evidence in Appendix 5 when considering the potential risk/likelihood of habitat changes from cable protection.	
3.2.7	Natural England notes that the placement of new cable protection over the life time of the project is not included in the assessment. Is this because a separate marine licence will be applied for at the time?	As per the Applicant's response to Point 2 of DCO, DMLs and Related Certified Documentation below, this matter is under consideration by the Applicant. Through the SoCG process, the Applicant has requested sight of the joint paper by the MMO and NE which the MMO state will offer guidance on the expected marine licensing requirements for such activities. Following review of this guidance, the Applicant will prepare a response on this matter.	Ongoing. Awaiting further response from the applicant.	
3.2.8	Please be advised that the assessment of cable protection is not consistent with Natural England recent draft advice position paper as provided for Boreas examination. Please see Appendix F2.	This advice paper was submitted post-DCO application submission and therefore the Applicant considers that an updated assessment of cable protection is outwith the scope of the application and disproportionate	Ongoing. Whilst we recognise that the impacts in terms of EIA are considered to be minor adverse, NEs comment is in relation to authorising the placement of protection over the lifetime of the project.	



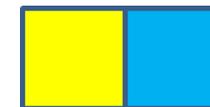
Point	Natural England's Relevant and Written Representations	Applicant's Comments	Natural England's Response to Applicant's Comments	Risk
	<p>Ideally drill arisings should be deposited in areas of scour protection against to turbines and/or similar habitats.</p>	<p>since the relevant assessments with regards to benthic ecology (see <i>sections 9.6.1.1.2 and 9.6.2.1.2 of Chapter 9 Benthic Ecology (APP-057)</i> concluded impacts of no greater than minor adverse significance.</p> <p>It is noted that Appendix F2 states that cable protection installed during the operation period requires a new licence. As per the Applicant's response to Point 2 of DCO, DMLs and Related Certified Documentation below, this matter is under consideration by the Applicant. Through the SoCG process, the Applicant has requested sight of the joint paper by the MMO and NE which the MMO state will offer guidance on the expected marine licensing requirements for such activities. Following review of this guidance, the Applicant will prepare a response on this matter.</p> <p>Drill arisings will be deposited in areas of scour protection against turbines.</p>	<p>The application still needs to be in line with advice from the SNCBs and the Regulators. There also needs to be a clear understanding of the potential HRA impacts and any parameters for Operation and Maintenance use of protection agreed up; which will then be taken forward and assessed against post consent. Please note that reference/assessment in the ES doesn't equate to permission in this instance.</p>	
3.2.9	<p>Please be advised that mitigation in the form of micro-siting is not normally secured as part of the In Principle Monitoring Plan. Further consideration</p>	<p>Through the Design Plan, Condition 17 of the generation DML and Condition 13 of the transmission DML, the Applicant will set out how the Project has been designed and</p>	<p>Ongoing. Please could the principles that will be applied within the design plan Condition 17 (generation) and 13 (transmission) for how areas to be micro</p>	



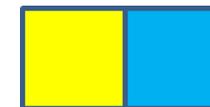
Point	Natural England's Relevant and Written Representations	Applicant's Comments	Natural England's Response to Applicant's Comments	Risk
	should be given to how best to do this.	micro-sited around reefs and sensitive habitats which will be submitted to the MMO for approval.	<p>sited will be identified be provided. This could be in the form of an outline plan. Please note that this outline plan should also consider how conflicts benthic sensitives and archaeological finds will be managed in relation to micro siting options. The aforementioned condition should also be signed off by the MMO in consultation with NE.</p> <p>NE note the Applicant intends to provide an outline <i>Sabellaria spinulosa</i> management plan at Deadline 1 - NE will respond at Deadline 2</p>	
3.2.10	Please be advised that the 50m buffer around <i>Sabellaria spinulosa</i> reef outside of designated sites is consistent with the advice provided to the aggregates industry. However, we note that for East Anglia ONE that micro siting wasn't feasible at all locations. Please note that under NERC Act 2006 Section 40 there is a duty to avoid impacts to priority habitats such as	Noted.	No further comments. However, NE note the Applicant intends to provide an outline <i>Sabellaria spinulosa</i> management plan at Deadline 1 - NE will respond at Deadline 2 and will ensure this is covered.	



Point	Natural England's Relevant and Written Representations	Applicant's Comments	Natural England's Response to Applicant's Comments	Risk
	Sabellaria spinulosa.			
3.2.11	Natural England notes that no benthic ecology monitoring is proposed. However, this differs from what is outlined the In-Principal Monitoring Plan (Page 10, Table 2 within Section 1.6.4). Natural England agrees with the IPMP and advises that potential impacts to <i>Sabellaria spinulosa</i> reef areas will be required.	Noted, for clarification, the reference to no benthic monitoring is with regard to general benthic monitoring. However, as described in section 9.3.3.2.1 of Chapter 9 Benthic Ecology (APP-057), pre-construction surveys will be undertaken to identify <i>Sabellaria</i> reef upon which consultation on micro-siting with the MMO and its advisors would be undertaken. The requirement for these pre-construction surveys is secured within DML conditions 20 of the generation DML and 16 of the transmission DML in the In-Principle Monitoring Plan (APP-590).	No further comment as for examining authority	
3.2.12	Please be advised that all reef is reef no matter the quality and is therefore protected as such.	See the response to Point 3.2.3.	Ongoing. Ref to 3.2.3 response is not helpful in this instance. As all reef is protected can we take it that the Applicant agrees with NE and will be addressed accordingly through the Design Plan?	
3.2.13	Natural England welcomes the proposal to use horizontal directional drilling (HDD) under the beach to avoid impact to vegetated shingle, however, we query what would happen in relation to	The Applicant will produce an Outline Landfall Construction Method Statement (to be submitted as early as possible during the examination period) that will provide further details on the trenchless technique to be	Ongoing. Please see Natural England's comments on Outline Landfall Construction Method Statement, provided at Deadline 1 Appendix C3	



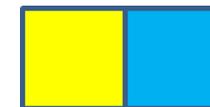
Point	Natural England's Relevant and Written Representations	Applicant's Comments	Natural England's Response to Applicant's Comments	Risk
	a bentonite outbreak?	adopted at the landfall and will include details on how the risk of bentonite break-out would be reduced and break out contingencies in the event of a bentonite breakout.		
3.2.14	Natural England notes that impacts to mapped sandbanks will be avoided. However, there remains an impact to 1,000,000m3 of sediment, which is not small. It would therefore be useful know footprint/spatial extent to the impacts. However, at this stage we can advise that there would be a LSE which would require further consideration as part of an Appropriate Assessment.	A separate clarification note regarding cross receptor impacts on the Outer Thames Estuary SPA has been prepared and is provided in Appendix 5 of this document.	Ongoing. Please see Appendix F2b of this document for our detailed response to the applicant's Appendix 5 Outer Thames Estuary Cabling Note. Natural England have provided the Applicant with GIS layers to form a supporting habitat map (08.10.20).	
3.2.15	Natural England notes that cable protection is proposed at the HDD exit point. Please be advised that there will need to be join up in relation to potential impacts to coastal processes and sediment transport.	The assessment of cable protection at the HDD exit point in relation to morphological and sediment transport pathways is provided in Chapter 7 Marine Geology, Oceanography and Physical Processes, section 7.6.2.7 (APP-055). This concluded no impact on the relevant receptors.	Ongoing. Please be advised that Appendix 5 identified potential issues with elevated protection in shallower water. Therefore more justification is required to demonstrate that this is not an issue. Please see NE deadline 1 Appendix F2b	
3.2.16	Natural England doesn't support the view that reef on artificial substrate is Annex I reef. Please see Appendix F3	Noted. For clarification, the Applicant has only stated that introduced hard substrate could be colonised by <i>Sabellaria</i> not that this	No further comments	



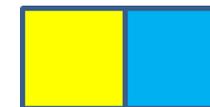
Point	Natural England's Relevant and Written Representations	Applicant's Comments	Natural England's Response to Applicant's Comments	Risk
	for our advice on the Boreas offshore windfarm application. But it is recognised that as the works are not within a designated site there is no legislation under pinning this advice.	newly colonised substrate would represent Annex I reef.		
3.2.17	Inclusion of assessment for potential interactions between impacts is welcomed.	Noted.	No further comments	

Table 5. Fish and Shellfish Ecology

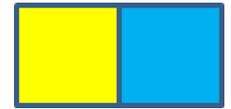
Point	Natural England's Relevant and Written Representations	Applicant's Comments	Natural England's Response to Applicant's Comments	Risk
4.21	Although larval abundances between 2007- 2017 have been relatively low as described by Figures 10.15 to 10.17, there is little mention of the nursery grounds in relation to Herring. Figure 10.14 indicates that the cable corridor in particular is a high intensity nursery ground. Natural England would welcome further consideration of how impacts to nursely grounds may effect prey availability for the interest features	An error in the data processing stage means that Figures 10.15, 10.16 and 10.17 (APP-143, APP-144, APP-145) have now been updated with IHLS data from all three larvae surveys carried out in specific periods and areas, following autumn and winter (September, December and January) spawning activity of herring from north to south. These amended figures are shown in the Fish and Shellfish Ecology Clarification Note Figures 1-3 (Appendix 3) of this	Natural England welcomes the inclusion of additional data for all three larvae surveys in Figures 1-3 of Appendix 3. The updated figures show that East Anglia TWO overlaps with the January herring larvae data, suggesting that herring spawning activity is occurring in this area. Furthermore, Figure 10.14 of the ES shows that the area of the export cables is considered a high intensity herring nursery	



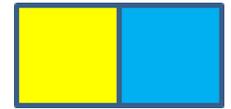
	of the marine protected areas.	document). The impact on habitat loss for herring has been considered with sandeel in section 10.6.1.1.1 of Chapter 10 Fish and Shellfish Ecology . The impact is determined as minor adverse significance. Regarding impacts to nursery grounds potentially affecting prey availability, a separate clarification note regarding cross receptor impacts on the Outer Thames Estuary SPA has been prepared and is provided in Appendix 5 of this document.	ground. Following review of Appendix 5, Natural England considers that impacts to prey availability for the interest features of the Outer Thames Estuary SPA still need to be considered through HRA. Please see our Deadline 1 Appendix F2b response	
4.2.1a	Natural England also advises that the impacts of climate change, particularly the redistribution of species as a result, is considered within the assessments against the variety of species considered. Much of the spawning, nursery and larval abundance data ranges from 1998 to 2017.	Noted. Anticipated trends in baseline conditions have been included within section 10.5.7 of Chapter 10 Fish and Shellfish Ecology (APP-058).	Natural England doesn't consider that this short paragraph accounts for considering climate change within the assessments.	
4.2.2	As raised in our Preliminary Environmental Information Report (PEIR) response, the reference used within this paragraph is very old, nearly 40 years. Is there any more recent evidence to show herring tolerance to elevated suspended sediment	In response to the NE PEIR comment in Appendix 10.1 (APP-462) it was confirmed that an extensive literature review has been conducted which has not found any new studies with regards to effects of Suspended Sediment Concentrations SSCs on herring eggs. Best practice guidance will be followed	Natural England notes the applicant's commitment to account for new research into herring tolerance to elevated suspended sediment concentrations at the time of construction. We note the additional information regarding short term	



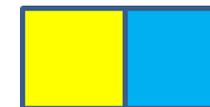
	<p>concentrations? Also what does Kiorboe et al. 1981 define as “short term” exposure?</p>	<p>at the time of construction which will account for any new research which may have been conducted in the interim. With regards to short term exposure, Kiorbie et al (1981)⁵⁵ exposed the eggs to silt (at day 2, 4 and 6 after fertilisation) kept in suspensions for 2 hours and then allowed to settle.</p>	<p>exposure. NE consider this matter is ongoing until the proposal is secured</p>	
4.2.3	<p>With regards to sand eels and their limited capacity to flee, Figure 10.14 highlights the site sits within the nursery and spawning grounds as defined by Coull et al. 1998 and low intensity nursery grounds as identified by Ellis et al. 2010. Is there any further site specific information to determine the likelihood of being in direct contact with sand eel habitat and linking this to the noise modelling impacts to have a greater understanding of the risk given to sand eels?</p>	<p>As described in section 10.2.4.3 in Appendix 10.2 (APP-463), Particle Size Analysis (PSA) data from benthic surveys undertaken across the former East Anglia Zone were analysed to provide an indication of the suitability of the offshore development area in terms of potential for provision of habitat for sandeel. This is shown in Figure 10.2.4 of Appendix 10.2. As expected, given the sandy nature of the sediment across the offshore development area, preferred and marginal sandeel habitat was identified, with unsuitable areas identified at discrete locations particularly along the offshore cable corridor. It should be noted, however, that the habitat classification on which this analysis is based (Marine Space, 2013)⁵⁶ relies on sediment composition rather than evidence of sandeel</p>	<p>Natural England notes the further detail provided by the applicant regarding sand eel habitat and sensitivity to noise impacts, however, we defer to Cefas for their expertise on this topic.</p>	



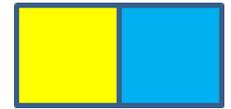
		<p>usage of the area.</p> <p>This is further supported by Jensen et al. (2011)57 and Figure 10.26 of the ES (APP-154) which shows that the main sandeel habitats do not overlap with the offshore development area. The presence of suitable sediment does not necessarily imply that sandeels are present or that a given area would ever be colonised by sandeels. Figure 10.41 (APP-169) and Figure 10.3.8 of Appendix 10.3 (APP-464) display the noise impact ranges against sandeel nursery and spawning groups for both the fleeing and stationary animal model respectively. As discussed in section 13.5.6.1 of Chapter 13 Commercial Fisheries (APP-059), analysis of VMS data for the sandeel fleet (Figure 13.37 (APP-218)) suggests that activity by sandeel industrial trawlers is mainly concentrated in areas such as the Dogger Bank (Central North Sea) and the Norwegian coast (Northern North Sea). Although not restricted to these areas activity is considerably lower in the Southern North Sea. In the offshore development area activity by these vessels occurs at negligible levels therefore it is very likely that there is a</p>		
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		<p>low presence of sandeels in the offshore development area.</p> <p>Section 10.6.1.4.1 of Chapter 10 Fish and Shellfish Ecology (APP-058) details that sandeels are a fish species with no swim bladder or other gas chamber. These species are less susceptible to barotrauma and only detect particle motion, not sound pressure.</p> <p>Section 10.6.1.4.5.1 assesses the potential for mortality and recoverable injury on sandeel from piling and section 10.6.1.4.5.2 assesses the behavioural impacts on sandeel from piling. Given sandeels' burrowing behaviour and substrate dependence, they may have limited capacity to flee the area compared to other fish species. They are therefore considered to be of medium sensitivity. Taking account of the spatial extent of the impact with the overall short duration of piling and its intermittent nature, together with the fact that any effect associated with Temporary Threshold Shift (TTS) and behavioural impacts would be temporary, the magnitude of effect for all species is considered to be low. This results in an impact of minor adverse significance for both mortality and recoverable injury and</p>		
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		<p>behavioural impacts on sandeel from piling.</p> <p>Section 2.4.2 of Appendix 3 discusses potential impacts on prey species such as sandeel and herring due to underwater noise.</p>		
4.2.4	<p>Is there a reason why the applicant cannot commit to burying their cable to a minimum depth of 1.5m?</p>	<p>Cable burial depth presented in the Preliminary Environmental Information report was a minimum of 0.5m. In response to concerns expressed by Natural England in the Section 42 consultation over this depth and a request to increase burial depth to 1.5m, the Applicant made a commitment to increase burial depth to a minimum of 1m where possible against the argument that this was in line with current best practice and the engineering limitation based on the department for Business Enterprise and Regulatory Reform review of cabling techniques and environmental effects applicable to the offshore windfarm industry (BERR 2008)⁵⁸. Final details regarding cable installation will be provided to the MMO for approval in the cable laying plan secured under Condition 17(1) of the Generation DML and 13(1) of the Transmission DML which will include a detailed cable laying plan for the Order Limits, incorporating a burial risk</p>	<p>Noted. This concern is ongoing for Natural England.</p>	



		assessment. This plan will be developed once detailed site investigation information has been collected post-consent.		
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Natural England's key to RAG status	Risk
<p>Purple Note for Examiners and/or competent authority. May relate to DCO/DML</p>	
<p>Red Natural England considers that unless these issues are resolved it will have to advise that (in relation to any one of them, and as appropriate) it is not possible to ascertain that the project will not affect the integrity of an SAC/SPA and/or comply fully with the Environmental Impact Assessment requirements and/or avoid significant adverse effect on landscape/seascape, unless the following are satisfactorily provided: <ul style="list-style-type: none"> new baseline data; significant design changes; and/or significant mitigation; Natural England feels that issues given Red status are so complex, or require the provision of so much outstanding information, that they are unlikely to be resolved during examination, and respectfully suggests that they be addressed beforehand.</p>	
<p>Amber Natural England considers that if these issues are not addressed or resolved by the end of examination then they would become a Red risk as set out above. Likely to relate to fundamental issues with assessment or methodology which could be rectified; preferably before examination.</p>	
<p>Yellow These are issues/comments where Natural England doesn't agree with the Applicant's position or approach. We would flag these at the PEI stage with the view that they would be addressed in the Application. But otherwise we are satisfied for <u>this particular project</u> that it will not make a material difference to our advice or the outcome of the decision-making process. However, it should be noted that this may not be the case for other projects. Therefore it should be noted by interested parties that just because these issues/comments are not raised as part of our Relevant Representations in this instance it should not be understood or inferred that in other cases or circumstances Natural England will take this approach. Furthermore, these may become issues should further evidence be presented.</p>	
<p>Green Natural England supports the Applicant's approach.</p>	