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Non-Material Change Application to East Anglia Three Offshore Windfarm Order 2017

Planning Inspectorate reference: EN010056

Dear Shanna,

Thank you for providing the MMO's response to the Non-Material Change Application to East Anglia Three Offshore Windfarm Order 2017 (dated 20th September 2020 – MMO reference: DCO/2013/00014).

We have considered the points raised and provide a response to each comment in the table below.

Yours sincerely

David Boyd



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MMO Comment	EATL Response
<p>The number of turbines has been reduced from 172 to 121, however the MMO notes that the amount of scour has not reduced accordingly. This suggests that the amount of scour used at each turbine location could increase. This would increase the footprint of impact at each turbine location and may have implications for changes in coastal processes and subsequent changes in benthic communities. However, the changes indicated in Table 3.1 of the NCM Report (rev 1) suggests that scour protection will be less than originally assessed. The scour protection required should therefore be adjusted accordingly in line with the reduction in the number of turbines.</p>	<p>EATL note the MMO’s concerns but would note that the scour protection allowances are controlled within the DCO/DML(s) and therefore the total amount of scour protection installed cannot exceed this allowance. These volumes have been duly assessed within the EIA and the consent granted on the basis of the assessed envelope.</p> <p>EATL are of the view that there are appropriate control mechanisms incorporated into the DCO/DML to ensure that the consented envelope is not exceeded, and that also provide the MMO with an opportunity to review and approve all aspects of the proposed build out scenarios, prior to commencement of construction.</p> <p>In particular, the licensed activities must not commence until a Scour Protection Management and Cable Protection Plan has been submitted to, and approved in writing by, the MMO. Details will be provided in due course, via submission of this plan, on the need, type, sources, quantity and installation methods for scour protection. In relation to the MMO’s comment regarding WTG foundation scour protection, this plan will provide details on the volumes/areas for each part of the infrastructure type (including WTG foundations) with reference to the envelope that has been assessed in the ES. Importantly, the detail in the plan will provide the information required for EATL to confirm that the proposed scour protection volumes/areas are within the consented and assessed envelope. In addition, via the formal approval process required in the relevant DML condition, the MMO will have the opportunity to question the detail provided if there are any concerns regarding the scour protection amounts being proposed.</p> <p>In addition, it is important to emphasise that the NMC application does not constitute a new development application and only those parameters that require amendment are subject to the NMC application.</p>

MMO Comment	EATL Response
<p>The number of OSS are being reduced from six to one, but the number of legs increased from four to six. Whilst this is a significant reduction, there has not been an associated reduction in the amount of scour protection required. This should also be reduced accordingly as increasing the amount of scour protection for one OSS could significantly change the coastal processes and subsequently the benthic ecology within this smaller area.</p>	<p>As per the response above, EATL's position is that there are appropriate control mechanisms to ensure that the consented envelope is not exceeded.</p>
<p>The number of pin piles per leg will increase from one to four. Taking into consideration that the number of legs per OSS is increasing from four to six, this equates to 24 pin piles which is equivalent to the original assessment for six OSS but restricted to a smaller area due to the reduction in the number of OSS. It is not clear from the reports whether the pin piling will result in any spoil and if so where this will be deposited.</p>	<p>EATL confirm that the volume of disposal associated with installation of the WTG's (and their foundations) will not exceed the value controlled within the DCO. EATL also note that as per the relevant Marine Licence conditions, the licensed activities must not commence until a Construction Method Statement has been submitted to and approved in writing by the MMO. The Construction Method Statement must include details of foundation installation methodology, including drilling methods and disposal of drill arisings and material extracted during seabed preparation for foundation works.</p> <p>In addition, EATL can confirm any material will be disposed of within the disposal site HU212, as controlled, and secured, within the DMLs.</p>
<p>The MMO has concerns regarding the potential re-distribution of scour protection (presuming the maximum area of scour remains the same) as this may change physical processes, which could ultimately change the benthic communities. It is not clear if this has been considered and whether a modification to the</p>	<p>As per the responses above, EATL's position is that there are already appropriate control mechanisms within the DMLs, through discharge of the relevant plans, for the MMO to ensure that the consented envelope is not exceeded.</p>

MMO Comment	EATL Response
<p>scour protection area should be changed to reflect the reduction in both WTG's and OSS's.</p>	
<p>The MMO notes that the figure (100,800 m²) associated with the NMC amendment with respect to the total area of scour for the offshore electrical stations presented in the DCO NMC report (rev 1), does not match that presented in the East Anglia Three Offshore Wind Farm Order 2017 - NMC amendment July 2020. For both Schedules 12 and 13, part 2, condition 6, it currently states that 'the total amount of scour protection for the electrical stations forming part of the authorized scheme must not exceed 50,400 m².' The MMO recommend that this is reviewed and clarified.</p>	<p>The 2017 Order was varied in June 2019, along with the associated DMLs. The varied DMLs allow for 100,800 m² of scour for the OFSS to be used under Phase 1 or 2 (i.e. 50,400 m² per DML). As the NMC process cannot vary a DML (and must be dealt with by a separate application to the MMO) the track change version of the 2017 Order included as part of the July 2020 NMC application reflects the DMLs as drafted at the time the Order was made in 2017 (i.e. without the June 2019 amendments). However, the June 2020 application to the MMO to vary the DMLs, contains a track change version of the DMLs which do show the changes against the DMLs as varied following the June 2019 application.</p>
<p>The proposed spacing between WTGs is unchanged, suggesting that no material change in impact on regional hydrodynamics (waves and currents) is expected - the changes will result in a reduction in overall sea surface area affected. However, Table 3.1 within NMC Report (rev 1) indicates that the worst-case scenario assessed in the Environmental Statement (ES) was 100 x WTG on 12m foundations, while also suggesting that the NMC will involve 121 x WTG on 12m foundations which would exceed the assessed worst-case scenario. Table 2.1 does not indicate this increase in foundation size and the MMO recommend that clarification is sought on this matter.</p>	<p>EATL note the queries raised by the MMO and clarification is provided below on the worst-case scenario for blockage effects (on both the tidal and wave regimes). This below detail confirms that no additional effects or increase in the significance of the previously assessed effects are anticipated as a result of the non-material change.</p> <p>In respect of blockage effects, it is important to highlight that there is now a considerable evidence base across the offshore windfarm industry derived from numerous Environmental Statements that are available in the public domain (confirmed by a review of modelling studies from around 30 wind farms in the UK and European waters presented by Seagreen (2012)) which indicates that the greatest potential effect is associated with conical gravity base structures. This is because these structures occupy a significant proportion of the water column as a solid mass (as opposed to an open lattice of slender columns and cross-members, found in jackets or tripods, or a single slender column like a</p>

MMO Comment	EATL Response
	<p>monopile). They do, therefore, have a greater potential to affect wave propagation and near-surface tidal currents in a manner that other foundation types do not.</p> <p>A lower number of larger foundations may not necessarily translate to the realistic worst-case if a greater number of moderately sized structures placed closer together (smaller separation) accumulates to a larger net effect for the whole array. However, the same separation distance (i.e. minimum spacing) is applicable for both foundation types (see The ES (Volume 1 Chapter 7 Marine Geology Oceanography and Physical Processes) concluded that changes to the tidal regime would have returned to background levels well within the excursion of one tidal ellipse, and this threshold has been used to produce the maximum 'zone of potential influence' on the tidal regime. The identified receptors were remote from the 'zone of potential influence' on the tidal regime as such it was concluded that there would be no impact from East Anglia THREE by the project alone.</p> <p>The spatial extent of measurable changes ($\geq \pm 5\%$ of the baseline conditions) under such an event was mapped and superimposed over the East Anglia THREE site. The ES concluded that identified receptors were remote from the 'zone of potential influence' on the wave regime as such it was concluded that there would be no impact from East Anglia THREE by the project alone.</p> <p>No cumulative effects on the tidal or wave regimes were anticipated from the construction of East Anglia THREE with other developments in the ES.). This is the same minimum spacing as originally assessed in the ES, and so the cross-sectional area¹ of the different foundations has been used to derive the realistic worst case scenario for consideration in the non-material change application. As presented in The ES (Volume 1 Chapter 7 Marine Geology Oceanography and Physical Processes) concluded that changes to the tidal regime</p>

¹ A cross sectional area is the area of the sliced portion of a 3-dimensional object.

MMO Comment	EATL Response												
	<p>would have returned to background levels well within the excursion of one tidal ellipse, and this threshold has been used to produce the maximum ‘zone of potential influence’ on the tidal regime. The identified receptors were remote from the ‘zone of potential influence’ on the tidal regime as such it was concluded that there would be no impact from East Anglia THREE by the project alone.</p> <p>The spatial extent of measurable changes ($\geq \pm 5\%$ of the baseline conditions) under such an event was mapped and superimposed over the East Anglia THREE site. The ES concluded that identified receptors were remote from the ‘zone of potential influence’ on the wave regime as such it was concluded that there would be no impact from East Anglia THREE by the project alone.</p> <p>No cumulative effects on the tidal or wave regimes were anticipated from the construction of East Anglia THREE with other developments in the ES., the cross sectional area of the monopiles is approximately 5% of gravity bases.</p> <p><i>Therefore, under the non-material change the worst case for East Anglia THREE for the generation of blockage effects (both for the tidal and wave regimes) would remain unchanged from the original assessment undertaken in the ES. This worst case is controlled via Requirement 3(9) in the DCO (‘the total number of gravity base foundations must not exceed 100’)</i></p> <p><i>Table 1 – Comparison of cross-sectional area for different foundation types</i></p> <table border="1" data-bbox="994 1118 2080 1313"> <thead> <tr> <th data-bbox="994 1118 1460 1209">Turbine Type</th> <th data-bbox="1460 1118 1655 1209">Monopiles</th> <th data-bbox="1655 1118 1843 1209">Gravity bases</th> <th data-bbox="1843 1118 2080 1209">Gravity bases</th> </tr> </thead> <tbody> <tr> <td data-bbox="994 1209 1460 1262">Maximum number of WTGs</td> <td data-bbox="1460 1209 1655 1262">121</td> <td data-bbox="1655 1209 1843 1262">100</td> <td data-bbox="1843 1209 2080 1262">172</td> </tr> <tr> <td data-bbox="994 1262 1460 1313">Foundation diameter (m)</td> <td data-bbox="1460 1262 1655 1313">12</td> <td data-bbox="1655 1262 1843 1313">60</td> <td data-bbox="1843 1262 2080 1313">40</td> </tr> </tbody> </table>	Turbine Type	Monopiles	Gravity bases	Gravity bases	Maximum number of WTGs	121	100	172	Foundation diameter (m)	12	60	40
Turbine Type	Monopiles	Gravity bases	Gravity bases										
Maximum number of WTGs	121	100	172										
Foundation diameter (m)	12	60	40										

MMO Comment		EATL Response				
		Cross-sectional area per foundation (m2)	113	2,827	1,257	
		Cross-sectional area for all foundations (m2)	13,685	282,743	216,142	
		Normalised cross-sectional area	0.05	1	0.76	
		Minimum spacing	In row spacing (m)	675	675	675
			Inter--row spacing (m)	900	900	900
<p>The ES (Volume 1 Chapter 7 Marine Geology Oceanography and Physical Processes) concluded that changes to the tidal regime would have returned to background levels well within the excursion of one tidal ellipse, and this threshold has been used to produce the maximum 'zone of potential influence' on the tidal regime. The identified receptors were remote from the 'zone of potential influence' on the tidal regime as such it was concluded that there would be no impact from East Anglia THREE by the project alone.</p> <p>The spatial extent of measurable changes ($\geq \pm 5\%$ of the baseline conditions) under such an event was mapped and superimposed over the East Anglia THREE site. The ES concluded that identified receptors were remote from the 'zone of potential influence' on the wave regime as such it was concluded that there would be no impact from East Anglia THREE by the project alone.</p> <p>No cumulative effects on the tidal or wave regimes were anticipated from the construction of East Anglia THREE with other developments in the ES.</p>						

MMO Comment	EATL Response
<p>In the case that the monopile diameters are increased, the MMO would expect to see the impact on hydrodynamics of the larger monopiles detailed within this application. The increase in associated drag is likely to lead to a larger impact on waves and tidal currents than was originally assessed. In combination with changes to the scour protection area, these changes may lead to changes in physical processes which may differ to those originally assessed in respect of areal extent and magnitude. The application should demonstrate that the assessment of cumulative impacts (with the numerous other OWF developments in this area, including EA1 and the potential future EA1N and EA2) is not materially altered i.e., whether there is potential for more significant overlap of hydrodynamic impacts. The MMO suggests this is considered and the report updated.</p>	<p>Whilst EATL agree that monopiles with a larger diameter have the potential to have a greater blockage effect on the tidal and wave regimes, the clarification above confirms that the previously assessed gravity base scenario still has the greater potential for blockage than the larger monopiles detailed in the non-material change application. The worst case scenario assessed within the East Anglia THREE ES remains valid, notwithstanding the amendments sought through the non-material change. Therefore, no additional effects or increase in the significance of the previously assessed effects, either alone or cumulatively with East Anglia One; are anticipated as a result of the non-material change.</p> <p>Since consent for East Anglia THREE was granted in 2017, two additional projects have been brought forwards in the East Anglia zone, namely East Anglia One North (EA1N) and East Anglia TWO (EA2). The potential interaction between East Anglia THREE and these projects was not considered in the ES supporting the original East Anglia THREE application as information was not available about the EA1N and EA2 projects at the time of writing the original ES, which was published in November 2015. As the NMC now proposed remains within the parameters originally assessed for East Anglia THREE, it is not necessary or appropriate for cumulative effects arising from EA1N and EA2 to be considered as part of the NMC application. However, EA1N and EA2 will be required to assess the potential for cumulative effects with East Anglia THREE as part of their DCO application process and any potential cumulative impacts as a result of EA1N and EA2 therefore can be managed via the consenting process for EA1N and EA2.</p>

MMO Comment	EATL Response
<p>The MMO notes that in Table 3.1 of the NMC report, the ES presented assessment is of 172 x 10m monopiles and that the change to 121 x 12m monopiles leads to an increase in drill arisings. The NMC report notes that the area of affected sea bed remains only 0.08% of sea bed area, so in this sense there is no material change to the assessment of the ES. The volumetric increase in drill arisings is not quantified in the application. However, the report indicates that there will be no changes to the volumes of disposal – this appears slightly contradictory, so the quantities generated and disposed should be clarified in the application.</p>	<p>EATL note the queries raised by the MMO and clarification is provided below on the worst-case scenario associated with drill arisings. This below detail confirms that no additional effects or increase in the significance of the previously assessed effects are anticipated as a result of the non-material change.</p> <p>The maximum design scenario for seabed morphology, more specifically the effects of drill arising mounds, is based upon the installation of 172 monopiles with a 10 m diameter. The EIA assessed a total mound arising of 540,424 m³ (240,188 m²). Should EATL build 121 WTGs on the larger sized monopile (12m) then the total mound arising may equate to 547,404 m³ (243,331 m²) (based on the 12m diameter mound assumption of 4,524 m³ / 2011 m² stated in the ES). Under this scenario there would be an additional mound volume of 6,980 m³ (3,143 m²); this relates to a 1.2% volume and 1.3% area increase. This increase in volume (and the associated area footprint) are considered insignificant when compared to the percentages and values as presented in the EIA because:</p> <ul style="list-style-type: none"> • The EIA assessed a total of 0.08% seabed impact area across EA THREE; this percentage remains unchanged when factoring in the additional drill arising mounds from the installation of 121 WTGs on 12 m monopiles (e.g. the % change to the footprints referred to above are too small to result in an increase when considered across the EA THREE site as a whole) <p>In addition, EATL confirm that the volume of disposal associated with installation of the WTG's (and their foundations) will not exceed the value controlled within the DCO. EATL also note that as per the relevant Marine Licence conditions, the licensed activities must not commence until a Construction Method Statement has been submitted to and approved in writing by the MMO. The Construction Method Statement must include</p>

MMO Comment	EATL Response
	<p>details of foundation installation methodology, including drilling methods and disposal of drill arisings and material extracted during seabed preparation for foundation works.</p> <p>In addition, EATL can confirm any material will be disposed of within the disposal site HU212, as controlled, and secured, within the DMLs.</p>