



East Anglia ONE North Offshore Windfarm

Appendix 8.1 Marine Water and Sediment Quality Consultation Responses

Environmental Statement Volume 3

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Glossary of Acronyms

DCO	Development Consent Order
EEA	European Economic Area
ETG	Expert Topic Group
EU	European Union
HDD	Horizontal Directional Drilling
LAT	Lowest Astronomical Tide
OWF	Offshore Windfarm
MMO	Marine Management Organisation
MPCP	Marine Pollution Contingency Plan
PEIR	Preliminary Environmental Information Report
PEMP	Project Environmental Management Plan
PEL	Probable Effect Levels
PSA	Particle Size Analysis
SPR	ScottishPower Renewables
ZEA	Zonal Environmental Appraisal

Glossary of Terminology

Applicant	East Anglia ONE North Limited.
Construction, operation and maintenance platform	A fixed offshore structure required for construction, operation, and maintenance personnel and activities.
East Anglia ONE North project	The proposed project consisting of up to 67 wind turbines, up to four offshore electrical platforms, up to one construction, operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
East Anglia ONE North windfarm site	The offshore area within which wind turbines and offshore platforms will be located.
Evidence Plan Process	A voluntary consultation process with specialist stakeholders to agree the approach to the EIA and the information required to support HRA.
Horizontal directional drilling (HDD)	A method of cable installation where the cable is drilled beneath a feature without the need for trenching.
Inter-array cables	Offshore cables which link the wind turbines to each other and the offshore electrical platforms, these cables will include fibre optic cables.
Landfall	The area (from Mean Low Water Springs) where the offshore export cables would make contact with land and connect to the onshore cables.
Meteorological mast	An offshore structure which contains metrological instruments used for wind data acquisition.
Offshore cable corridor	This is the area which will contain the offshore export cables between offshore electrical platforms and landfall.
Offshore development area	The East Anglia ONE North windfarm site and offshore cable corridor (up to Mean High Water Springs).
Offshore electrical platform	A fixed structure located within the windfarm area, containing electrical equipment to aggregate the power from the wind turbines and convert it into a more suitable form for export to shore.
Offshore export cables	The cables which would bring electricity from the offshore electrical platforms to the landfall. These cables will include fibre optic cables.
Offshore platform	A collective term for the construction, operation and maintenance platform and the offshore electrical platforms.
Platform link cable	Electrical cable which links one or more offshore platforms. These cables will include fibre optic cables.
Safety zones	A marine area declared for the purposes of safety around a renewable energy installation or works / construction area under the Energy Act 2004.
Scour protection	Protective materials to avoid sediment being eroded away from the base of the foundations as a result of the flow of water.

8.1 Marine Water and Sediment Quality Consultation Responses

8.1.1 Introduction

1. This appendix covers those statutory consultation responses that have been received as a response to the Scoping Report (ScottishPower Renewables (SPR) 2017), the Preliminary Environmental Information Report (PEIR) (SPR 2019) and Expert Topic Group (ETG) Meetings.
2. Responses from stakeholders and regard given by the Applicant have been captured in **Table A8.1.1**.
3. As Section 42 consultation for the proposed East Anglia ONE North project was conducted in parallel with the proposed East Anglia TWO project, where appropriate, stakeholder comments which were specific to East Anglia TWO, but may be of relevance East Anglia ONE North, have also been included in the consultation responses for East Anglia ONE North.

Table A8.1.1 Consultation Responses Related to Chapter 8 Marine Water and Sediment Quality

Consultee	Date/ Document	Comment	Response / where addressed in the ES
<p>The following comments were received prior to consultation on the PEIR and were in response to the Scoping Report or direct consultation with stakeholders. These comments were taken into account in the production of the PEIR.</p>			
Marine Management Organisation (MMO), Natural England and Cefas	12/04/2017 ETG Meeting 1	Agreed that there is sufficient data currently available from the East Anglia Zone Environmental Appraisal (ZEA) to inform the East Anglia One North windfarm site and discreet areas of the offshore cable corridor and therefore further data collection need only focus on areas of the offshore cable corridor where there are data gaps.	Following changes to the offshore cable corridor route, it was decided to conduct a more rigorous sampling strategy in the offshore cable corridor. See Appendix 9.2 .
Natural England	08/12/2017 Scoping Response	Impacts during construction do not mention the potential need for sandwave levelling for cable installation. Based on experience from other offshore energy projects, Natural England questions whether the impacts can be regarded as 'relatively small' and urges the developer to assess the worst case scenario with reasonable precaution.	The realistic worst case scenario with regard to sand wave levelling is outlined in impacts 2 and 3 in Table 8.1 of this chapter and an assessment of the potential for impacts on water quality due to increased suspended sediment concentrations (SSCs) is provided in sections 8.6.1.3 and 8.6.1.4 of this chapter.
MMO	08/12/2017 Scoping Response	The MMO agrees that it is important that benthic sampling be undertaken to cover all areas not previously covered by the ZEA survey. Of particular importance are any areas where the sediment appears to be muddy, as muddy sediment types are most likely to retain contaminants which are likely to be mobilised when disturbed.	The potential impact of the remobilisation of contaminated sediments on water quality is assessed in section 8.6.1.6 and 8.6.2.2 of this chapter.
The Planning Inspectorate	20/12/2017 Scoping Response	The inspectorate does not agree that cumulative effects on water and sediment quality can be scoped out for any phases as insufficient justification has been given during the scoping period.	Section 8.7 of this chapter sets out the cumulative impacts.
The Planning Inspectorate	20/12/2017 Scoping Response	The Inspectorate does not agree transboundary impact assessments can be scoped out as insufficient justification has been provided at this time. Increases in suspended sediments and	Section 8.8 of this chapter sets out the transboundary impacts. However, it should be noted that

Consultee	Date/ Document	Comment	Response / where addressed in the ES
		changes to water quality could potentially affect mobile species, including EU protected species which may be in the area and could be features of other European Economic Area (EEA) States designations.	impacts on mobile species such as fish and marine mammals have been considered in the relevant chapters and are not covered here.
The Planning Inspectorate	20/12/2017 Scoping Response	It is understood that baseline data obtained for the East Anglia ONE and THREE windfarm sites will inform the assessments for the Proposed Development. The PEI should clearly explain how this information relates to the location of the Proposed Development and is sufficiently robust to inform the assessment.	Section 8.5 of this chapter sets out the existing environment. The Planning Inspectorates comment has been considered and how each area is linked is set out clearly.
Natural England	19/01/2018 Response to updated benthic sampling strategy scope	In agreement that data gaps arose following amendment of the offshore cable corridor and that the proposed sampling strategy adequately covers the new proposed offshore cable corridor routes.	See Appendix 9.2
MMO	04/04/2018	SPR has not specified the proposed depth of dredging across the survey area. The proposed method of sampling (grab samples) would be suitable for a dredge depth not exceeding 1 metre, however additional sampling at depth may be required if the dredge depth is anticipated to be greater than 1 metre.	Contaminant analysis in the wider area does not suggest high levels of contaminants in deeper sediments (section 8.6 of this chapter). These would also not be expected considering the deeper layers are likely to have been exposed to very low levels of anthropogenic influence.

Consultee	Date/ Document	Comment	Response / where addressed in the ES
The following comments were made in response to the PEIR and were taken into account in the production of this ES.			
MMO	22/03/2019	It is noted that a Disposal Site Characterisation document will be provided with the application. The MMO would suggest that this document could be provided to the MMO for review prior to the application. This would allow identification of any issues regarding disposal locations and volumes before the examination process and thus reduce consenting risks to the application.	Noted. The Site Characterisation Report (Windfarm Site) (document reference 8.15) and the Site Characterisation Report (Offshore Cable Corridor (document reference 8.16) will be provided to MMO for approval as secured under the requirements of the draft Development Consent Order (DCO).
MMO	22/03/2019	The MMO has noted that in section 2.3 of appendix 9.2 that the sea bed sediment samples were collected with a Hamon grab, after failure with a Day grab. The use of a Hamon grab disturbs the sediment significantly during collection and is not considered appropriate for collection of contaminant samples. It is therefore recommended that further samples be taken with appropriate grab sampling techniques in areas of fine sediment and analysis be carried out for all determinands using an MMO certified laboratory. As the project involves disposal of sediments appropriate sampling and chemical analysis are essential for the MMO to agree to designation of a disposal site and that the sediments are appropriate to be disposed offshore.	<p>The Day grab was planned to be the primary sampler, however, after a failed sample at the first station (B04) due to presence of coarse material, the decision was made to change to the Hamon grab. Hamon grab was maintained for the rest of the sampling campaign in order to maintain sampling consistency and comparison of results.</p> <p>Hamon grab has been successfully used in the past as part of the sampling strategy for East Anglia ONE to verify Cefas monitoring data. The results of the sampling for East Anglia TWO are consistent with other projects in the region and all samples are well within Cefas action Level 2. Risks are therefore minimal.</p>

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			It was agreed during the the Expert Topic Group (ETG) with MMO and Cefas on 21/06/19 that further sampling with a day grab is not required.
MMO	22/03/2019	Clarification is required regarding if the intention is to designate the export cable corridor as disposal site and accordingly make note of any over lapping existing sites. It should be noted that a disposal site will only be required if material is considered “waste” (brought to the surface). A disposal site is not normally required for plough dredging or jetting techniques.	<p>The worst case scenario is that material will be brought to the surface on board a dredger vessel and then released back into the water column as overflow from the vessel. The intention is therefore to designate both the export cable corridor and windfarm site as disposal sites.</p> <p>There is currently overlap with the East Anglia THREE cable corridor which is an existing designated disposal site (HU212). Discussion is also provided for open site TH057 and closed sites TH026 and TH075. Please refer to section 8.5.1.3 of this chapter.</p> <p>Further information will be provided in the Site Characterisation Report (Windfarm Site) (document reference 8.15) and the Site Characterisation Report (Offshore Cable Corridor (document reference 8.16), which will be submitted under the requirements of the draft DCO.</p>

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MMO	22/03/2019	Clarification is requested regarding the details of the material processing laboratories used. Chapter 6 table 6.1 details comments from the MMO that contaminant analysis should be undertaken by a MMO dredge material testing certified laboratory, but the laboratories used have not been mentioned. Please clarify this issue and amend the document accordingly.	Section 8.4.2 of this chapter has been updated to specify that contaminant analysis was undertaken by an MMO accredited laboratory. Contaminant analysis was undertaken by SOCOTEC. Testing certificates are available upon request.
MMO	22/03/2019	It has been noted that Horizontal Directional Drilling (HDD) has been suggested as a possible construction method and in chapter 8, section 8.6.1.5 the water quality impacts have been acknowledged. However, the MMO requests clarification if any sediment (particle size) or contaminant samples have been taken in the proposed HDD sites. It is expected that in the full Environmental Statement sediment particle size analysis should be carried out in these areas, and if fine sediment is discovered there is the potential requirement for contaminant sampling.	Details of the particle size analysis (PSA) from sampling of the offshore cable corridor is presented in section 8.5.3.1 of this chapter. None of the samples closest to the HDD site (B01, B02, B16, B15 and B25) contain any fine sands or silts (Appendix 9.2). B01 and B15 are the closest to the HDD site and these are 1.13km and 0.6km away respectively. The particle sizes were classified using the Folk scale as either slightly gravelly sand or medium sand, suggesting that this area is of low risk for storing contaminated sediments.
MMO	22/03/2019	It is noted that SPR are considering the use of plastic fronds for cable protection. The MMO would recommend avoiding their use as far as possible, in order to prevent potential impacts on sediment and water quality associated with the degradation of the fronds (plastic) over time. If froned mattresses are proposed, the potential impacts on sediment and water quality should be included in future assessments and supported using existing data/evidence available	Supporting information on the use of plastic froned mattresses is provided in section 8.3.2.1 of this chapter. The specification to which the plastic material is produced ensures it does not degrade within marine

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			<p>environments and has an extremely high tensile strength (i.e. it has to be cut, it does not break or tear under reasonable force (SPR 2019)).</p> <p>The use of fronded mattresses will be decided post-consent, as detailed in the Construction Method Statement which will be provided prior to construction for approval by the MMO under the requirements of the draft DCO.</p>
Natural England	22/03/2019	Although Galloper Offshore Windfarm (OWF) has now been fully constructed does their disposal site (TH057) pose any risk to the success of the cable installation in this area, particularly if large amounts of sediment have been deposited along the export cable route?	Up to 1,000,000m ³ of sediment is may be removed in the offshore cable corridor as a result of sand wave levelling. This is the worst-case scenario (section 8.3.2 of this chapter) and this has factored in potential sediment derived disposed during Galloper OWF construction. Cable crossings with both Galloper and Gabbard are will be required in any case, therefore sediment from Galloper disposal is not considered to pose a significant risk to the success of cable installation.
Natural England	22/03/2019	Three sample locations (C05, C07 and C16) exceed the more stringent Canadian Probable Effect Levels (PELs) for arsenic. Although SPR asserts that these elevated levels of arsenic are typical of the region, and do not exceed CEFAS Action Level 2, a concentration above PEL proposes “adverse effects may be expected in a wider range of organisms.” Does SPR consider there	It is acknowledged in section 8.4.3 of this chapter that the Canadian sediment quality guidelines are more stringent than Cefas Action Levels.

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		is an elevated risk in these areas from the adverse effects from arsenic?	The potential impact of the remobilisation of contaminated sediments on benthic receptors is assessed in section 9.6.1.3 of Chapter 9 Benthic Ecology . The potential impact was assessed as negligible. Therefore, it is not considered that there is an elevated risk.
Natural England	26/03/2019	8.6.1.1. Para. 105 bullet point 2 (EA2 and EA1N) Is there an opportunity to organise drilling so plumes do not interact at all?	No significant impacts are predicted; therefore this is not considered to be necessary. The assessment (section 7.6.1.1.1) in Chapter 7 Marine Geology, Oceanography and Physical Processes concluded no likely cumulative effect from plumes interacting due to plumes not persisting in the water column for a sufficiently long time. Modelling was undertaken conservatively with all sediment being dispersed, whereas in actual fact it is likely larger clasts will settle rapidly (section 8.6.1.2 of this chapter).
Natural England	26/03/2019	8.6.1.5. Para. 117 (EA2 and EA1N) - Has the potential release of bentonite into the intertidal area been considered during HDD?	The landfall is described in section 7.3.2.6 and 7.3.3 of Chapter 7 Marine Geology, Oceanography and Physical Processes , the HDD pop-out location will be in water depths greater than 5m with respect

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			<p>to Lowest Astronomical Tide (LAT) and to the south of the outcrop of Coralline Crag, away from the intertidal. Any risk of intertidal frack break outs occurring will be minimised by adopting industry best practice during installation.</p> <p>Appropriate spill plan procedures would be implemented in order to appropriately manage any unexpected discharge into the marine environment, these will be included in the Project Environmental Management Plan (PEMP) ('Marine Pollution Contingency Plan (MPCP)'), secured under the requirements of the draft DCO and to be agreed post-consent.</p> <p>The PEMP will include the requirement for personnel to undergo training to ensure that MPCP requirements are understood and communicated (see best practice and mitigation in section 8.3.3 of this chapter).</p>
Natural England	26/03/2019	Although Table 8.16 (now Table 8.17) highlights the interactions between the impacts there is not any conclusions on what the impacts interacting with each other will be?	<p>Table 8.16 is presented in section 8.10 of this chapter. The worst case impacts assessed within the chapter takes these interactions into account and therefore the conclusions from the impact</p>

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			assessments are considered conservative and robust.
Natural England	26/03/2019	Table 8.15 - It would be worthwhile including in the text how aggregate dredge areas been considered in the cumulative impacts assessment? Similarly, what about the interconnector cables due to make landfall within a similar area?	<p>There are currently no aggregate dredging areas within the offshore development area. The closest dredging area is Southwold East which lies 17.5km west of the windfarm site (see Figure 17.5 in Chapter 17 Infrastructure and Other Users). Consideration has therefore been given but this was not carried through to the cumulative impact assessment due to the distance from the site.</p> <p>Section 8.6.1.5 of this chapter assesses deterioration in water quality at the export cable landfall. Impacts are assessed as minor adverse. As shown in Figure 17.1, there are no other cables associated with other projects making landfall at the proposed East Anglia ONE North landfall site.</p>