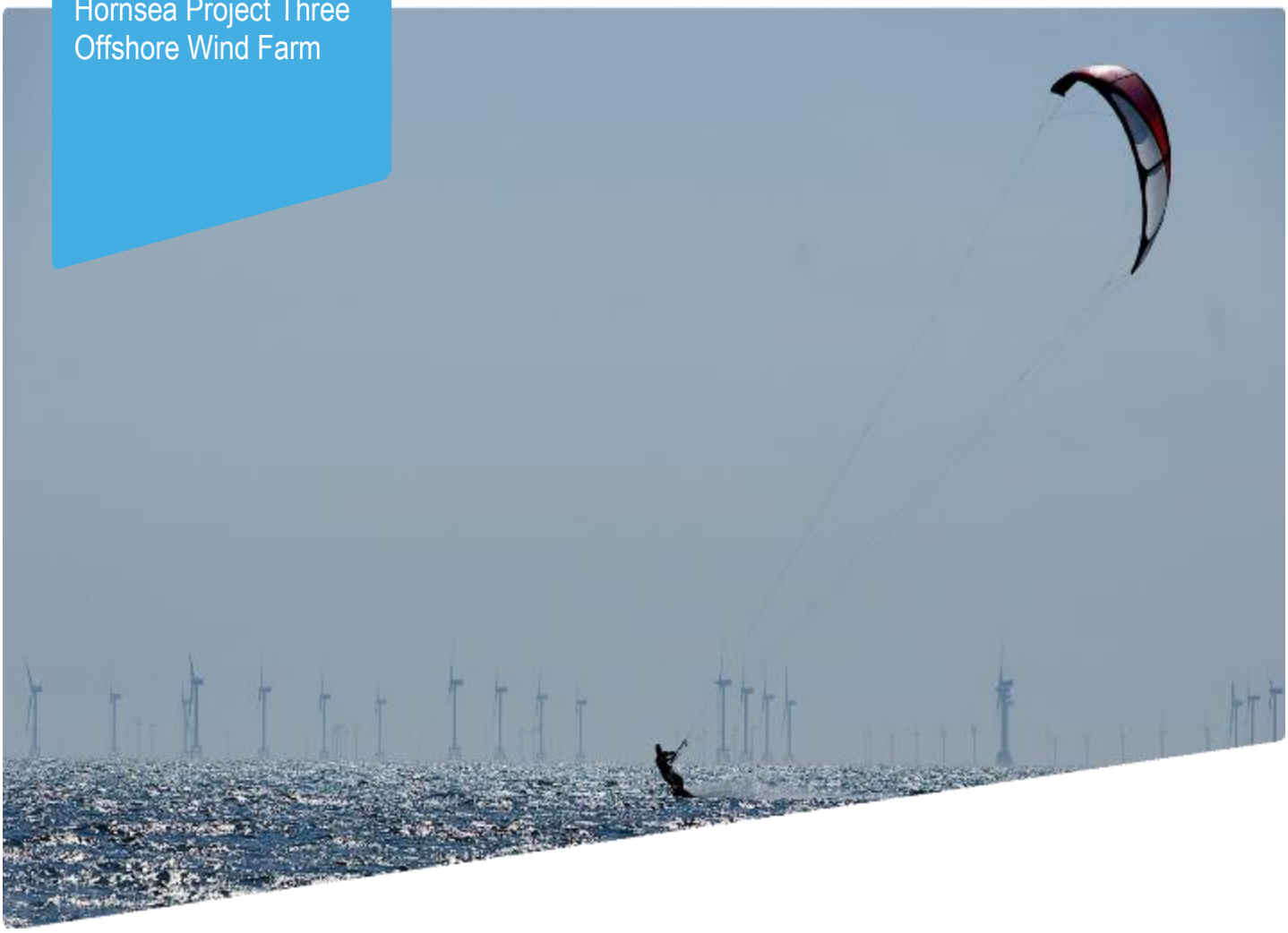
Hornsea Project Three
Offshore Wind Farm



Hornsea Project Three

Offshore Wind Farm

Position Statements for Natural England and the Applicant on matters relating to Benthic Ecology and Marine Processes

Date: 26 March 2019

Hornsea 3
Offshore Wind Farm

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Front cover picture: Kite surfer near a UK offshore wind farm © Ørsted Hornsea Project Three (UK) Ltd., 2019.

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1. Introduction

1.1 This document represents the respective Position Statements for Natural England (NE) and the Applicant on matters relating to Benthic Ecology and Marine Processes. Following discussions between the Applicant and NE, the parties have determined that this document should serve as a replacement for the Statement of Common Ground for Benthic Ecology and Marine Processes requested by the ExA in Written question Q2.2.42 (PD-012). The parties have agreed that this document should be based on the NE Deadline 7 submissions with regard to the Cromer Shoal Chalk Beds MCZ, Markham's Triangle pMCZ, Wash and North Norfolk Coast (WNNC) Special Area of Conservation (SAC) and the North Norfolk Sandbanks and Saturn Reef (NNSSR) SAC (REP7-065, REP7-066, REP7-070 and REP7-075, respectively). As such, the tables below present the NE advice at Deadline 7 and the Applicant's position in response to this advice.

1.2 The Applicant would also note that it has included in its Deadline 9 response, a number of proposals which would aid SNCBs in the achievement of conservation objectives for the SACs coinciding with the Hornsea Three offshore cable corridor. These are fully detailed in Appendix 22 to the Applicant's response to Deadline 9.

1.3 The Applicant also notes that NE in their Deadline 7 response have proposed that a Site Integrity Plan (REP7-076) should be submitted. The Applicant is currently exploring the option of developing a Site Integrity Plan for the WNNC and NNSSR SAC.

Summary of Natural England's Advice on Cromer Shoal Chalk Bed MCZ (REP7-070) and Applicant's Position.

Comment No.	Heading	Natural England Advice	Applicant's Position
1.1	Site Status	Cromer Shoal Chalk Beds MCZ is a designated tranche 2 MCZ	Agreed
1.2	Feature Condition	Whilst the site has a conservation advice package, there has been no condition assessment undertaken for the site. Evidence is being collected in 2019/20 to inform the condition assessment currently planned for 2020/21. However, it is noted that the conservation advice package and advice on operations has identified that the cable installation for Sheringham Shoal and Dudgeon OWFs will have impacted the site. There is however, no empirical data to inform the scale and significance of the impacts on the favourable condition of the site.	The MCZ Assessment (APP-104) undertaken was based on the draft Supplementary Advice on Conservation Objectives provided to the Applicant during the pre-application phase. NE undertook a consultation on this draft advice prior to the Examination Phase, (March to June 2018), with the Applicant providing comments on this at REP2-021. This advice has now been finalised by Natural England. The Applicant would note that Sheringham Shoal cables were installed in 2010/2011 prior to designation in January 2016. Dudgeon cables were installed in 2016 (i.e. since designation).
2.1	Baseline Characterisation	The applicant has undertaken their own survey work, which has provided a good level of coverage across the site. Therefore we consider that there is sufficient information to characterise the broadscale habitats within the site (i.e. the site features) in order to facilitate a WCS assessment of the potential impacts on the site. This can then be refined when further pre-construction monitoring becomes available.	The Applicant welcomes and agrees with the comment from Natural England that the baseline characterisation is sufficient. For context the Applicant would add that of the 10 protected features listed for the MCZ, only one site feature (Subtidal Sand) coincides with the Hornsea Three offshore cable corridor.
3.1	Assessment of Impacts and significance	The current assessment assumes that a WCS would involve trenching through the MCZ. However, Natural England considers that whilst the impacts from HDD may be smaller in area, they may also be significant depending on the recoverability of the features. (i.e. Both impacts have the potential to impact different features in different ways). This will be dependent on the scale of the impact	**Maximum design scenario** The Applicant's MCZ assessment considered that the "open cut" trenching scenario for cable installation at the landfall, represented the maximum design scenario with regard to the overall footprint within the MCZ. However, recognising that there is a degree of subjectivity to the interpretation of the maximum design scenario, the HDD scenario was also assessed (please see paragraphs

Comment No.	Heading	Natural England Advice	Applicant's Position
		and not just extent and permanency of the associated activities including cable and scour protection. Assessment of a potential operation in any protected area focuses on understanding how the conservation objectives are affected. In practice this mainly relates to understanding how the potential operations affect the designated features. For Cromer Shoal, all features have a general management approach to 'maintain' favourable condition. As such, a critical piece of information needed for assessment is the amount of operations expected to occur in each feature. The Applicant has presented figures of the area of each feature within the MCZ which they consider will be impacted by the operations, however there is still some uncertainty about the depth of the layer of sand at the exit pit locations and the potential for other features to be present and/or impacted from the disposal activities; especially in relation to the cofferdams Just because it is small scale impact doesn't mean it is not insignificant. But currently the evidence in relation to this and the amount of cable protection required in the site which would potentially result in a permanent change in habitat is uncertain. The disposal locations have also not been assessed. Issues raised in relation to the RIES are also pertinent for the MCZ in relation to colonisation of cable protection, decommission of cable protection, sand wave levelling and understanding the significance of the impacts in terms of temporary/permanency and recoverability of the site. With a predicted 191200 m2 temporary impact to the MCZ. However, this is not fully linked the	5.1.2.8 to 5.1.5.16 of Volume 5, Annex 2.3: MCZ Assessment), to ensure all impact pathways and consequent effects on attributes of the relevant MCZ features were fully assessed within the MCZ Assessment. The Applicant agrees that HDD and trenching have the potential to impact protected features in different ways. However, regardless of whether trenching or HDD is deemed to be the WCS, neither is assessed to represent a significant risk of hindering the achievement of the conservation objectives of the Cromer Shoal Chalk Beds MCZ. These conclusions are presented at paragraph 5.1.2.1 to paragraph 5.1.2.25 of Volume 5, Annex 2.3: Marine Conservation Zone Assessment (APP-104). In summary, this concluded that effects associated with HDD operations on physical and ecological attributes within the MCZ would be short term, temporary and reversible. **Effects on conservation objectives** With reference to understanding how the conservation objectives are affected, the Applicant agrees with NE that this involves understanding how the potential operations affect the designated features. The MCZ Assessment provides (in Table 5.2 of Volume 5, Annex 2.3: MCZ Assessment) a full breakdown of the activities occurring within the MCZ (i.e. from both "open cut" and HDD operations at the landfall), noting that only one feature, Subtidal Sand, coincides with the Hornsea Three offshore cable corridor (as set out in Baseline Characterisation above). As such, all activities within the MCZ would solely occur within this feature. The designated features of the Cromer Shoal Chalk Beds are surface features only, with subsurface geology (e.g. subsurface chalk), not

Comment No.	Heading	Natural England Advice	Applicant's Position
		conservation objectives of the site and the vulnerability of the features.	protected (see paragraph 4.2.1.12 of Volume 5, Annex 2.3: MCZ Assessment in relation to the definition of Subtidal Chalk feature). The effects of disposal of excavated material are assessed and are included within the habitat loss assumptions within the MCZ Assessment, which considers the sensitivity (including vulnerability and recoverability) of the MCZ feature affected. **Disposal locations** Specific locations for disposal of excavated material will be agreed with the MMO and SNCBs via the Cable Specification and Installation Plan (and the Sandwave Clearance Plan within this). However, for the purposes of the MCZ Assessment it was assumed that excavated sediment will be placed within the DCO boundary and within the boundary of the MCZ, as advised by Natural England. As the part of the MCZ which coincides with the DCO boundary is characterised by Subtidal Sand, this would be the only feature directly affected by disposal. Indirect effects (e.g. from suspended sediments and subsequent deposition) were also considered within the MCZ Assessment and found not to represent a risk to the conservation objectives of the MCZ (see paragraph 5.1.2.40 of Volume 5, Annex 2.3: Marine Conservation Zone Assessment). **Assessment conclusions** The implications of temporary habitat loss/disturbance and long term habitat loss from the deployment of cable protection on the conservation objectives of the MCZ are considered within Volume 5, Annex 2.3: Marine Conservation Zone Assessment. In summary, the Applicant's position is that Hornsea Three will not represent a

Comment No.	Heading	Natural England Advice	Applicant's Position
			significant risk that would hinder achievement of the conservation objectives of the MCZ due to: • The very limited amount of infrastructure that will be placed within this site (i.e. in a worst case scenario only 1 km of the offshore cable corridor coincides with the MCZ), potentially affecting only a very small extent of only one (of ten) protected features; • Long term effects would only arise if cable protection is deployed and even considering the maximum design scenario (noting cable protection is a last resort, with burial under natural sediments always the preferred option) this would apply to discrete sections of cable and will only affect a very small proportion of a broadscale habitat feature; • All other effects (excluding long term habitat loss from cable protection) would be temporary and reversible, with robust, empirical evidence presented to support this conclusion (see APP-104; REP1-140). The Applicant will work with the MMO and SNCBs via the Cable Protection Plan to minimise the use of cable protection within designated sites, wherever possible. For context, the Applicant would also note that as set out in (REP2-021) there is precedent for cable and pipeline protection measures within MCZs (either present at the time of designation, or consented since designation), which have not been considered to represent a risk to the conservation objectives of the MCZ.

Comment No.	Heading	Natural England Advice	Applicant's Position
4.1	Measures of Equivalent Environmental Benefit	As highlighted above, Natural England currently unable to provide definitive advice on the significance of the impact on the features of the designated site. There is currently no formal guidance in relation to Measures of Equivalent Environmental Benefit (MEEB) and there and there have been no other cases that have reached this stage. Therefore, should the SoS conclude that MEEB are required, this case would be precedent setting. In the absence of guidance/experience to draw upon, we would recommend that discussions relating to MEEB include input from the SNCBs, Regulatory Agencies (i.e. MMO and BEIS) and Defra.	The Applicant's position is that Hornsea Three would not represent a significant risk of hindering the achievement of the conservation objectives of the Cromer Shoal Chalk Beds MCZ. As such, a Stage 2 MCZ Assessment is not considered to be necessary, including consideration of MEEB. See the Applicant's response to ExA Q2.2.46 as submitted at Deadline 4 (REP4-012) for further discussion of MEEB. Notwithstanding this, as discussed at Issue Specific Hearing 7, the Applicant has prepared wording for a "without prejudice" condition relating to MEEB which could be included as a condition in the DCO, should the Secretary of State be minded to conclude that MEEB is required. This wording has been sent to the MMO for comment and will be submitted before the close of the Examination.
5.1	Summary	Natural England questions the conclusions of the MCZ assessment for the Cromer Shoal Chalk beds and believes there is sufficient uncertainty in relation to the impacts to the features and coastal processes, and recoverability of the features, to have limited confidence in the Stage 1 conclusion that there will be no significant risk of HOW03, hindering the achievement of the conservation objectives for the Cromer Shoal MCZ.	It is noted that NE does not reach an alternative conclusion to the Applicant or advise that there would be a significant risk such that Stage 2 assessment is necessary. Rather, its position is one where it does not have full confidence. The Applicant's position is that there is sufficient evidence and information presented within the MCZ Assessment (and documents submitted during Examination, e.g. REP1-140; REP1-138) to enable the Secretary of State to be satisfied that Hornsea Three will not represent a significant risk that would hinder the achievement of the conservation objectives of the Cromer Shoal Chalk Beds MCZ. The Applicant would also note that, to date, Natural England has not provided empirical evidence to counter the Applicant's position that the Subtidal Sand feature of the Cromer

Comment No.	Heading	Natural England Advice	Applicant's Position
			Shoal Chalk Beds MCZ (and the communities associated with it) will recover following cable installation.

Summary of Natural England's Advice on Markham's Triangle pMCZ (REP7-073) and Applicant's Position.

Comment No.	Heading	Natural England Advice	Applicant's Position
1.1	Site Status	Markham's Triangle was included in the third tranche of MCZ consultation and is now a proposed MCZ or 'pMCZ' which means that it is a material consideration. Defra's Tranche 3 consultation was held over Summer 2018. The outcome of this consultation and the decision regarding the designation of this site is yet to be announced. At the moment there is no indication of a likely timeframe for this announcement. NE/ JNCC note that the Tranche 3 consultation was announced after the Applicant had submitted the Application, and therefore we welcome that the site was assessed.	The Applicant notes that Markham's Triangle pMCZ has been proposed for designation within the third tranche of MCZs and notes that the likely timeframe for an announcement on whether or not it will be formally designated is uncertain. Nevertheless, this site has been included within the MCZ Assessment on a precautionary basis.
1.2	Feature Condition	As the site is yet to be designated, there is no conservation advice package available. The Conservation Objectives of the site are yet to be determined, but it should be noted that the consultation document indicated a General Management Approach of 'Restore' for all features. This should be taken into account when considering the significance of impacts on the site. Extents of the features within the site are as follows: Coarse Sediment 145.56km_2, Sand 26.35 km_2, mud 1.49km_2, Mixed sediment 27.54km_2	The Applicant notes that there is no conservation advice package available for this pMCZ and has used the Cromer Shoal Chalk Beds MCZ conservation advice package as a proxy as advised by Natural England during the pre-application phase. The extents of the features as presented by Natural England are in line with those used to calculate the proportions of broadscale habitat features affected in Table 1.1 of REP3-023.

Comment No.	Heading	Natural England Advice	Applicant's Position
2.1	Baseline Characterisation	The applicant has undertaken their own survey work, which has provided a good level of coverage across the site. NE/JNCC have highlighted that the Applicant has taken a non-standard approach to their assessment procedure and in particular the allocation of biotopes and that this makes it difficult to make comparisons across datasets and to draw conclusions with the highest level of certainty at the biotope level. However, we note that the applicant's conclusions align with additional surveys - (Defra Cefas & JNCC), and therefore consider that there is sufficient information to characterise the broadscale habitats within the site (i.e. the site features) in order to facilitate a WCS assessment of the potential impacts on the site. This can then be refined when further pre-construction monitoring becomes available.	The Applicant welcomes and agrees with the comment from Natural England that the baseline characterisation is sufficient.
2.2		Subtidal Mud: NE/JNCC note that subtidal mud was not identified within the development area, therefore we are happy for this to be removed from further consideration.	Agreed
	Assessment of Impacts	At deadline 3, the Applicant Submitted a pMCZ Lifetime Effects Assessment [REP3-023] within which they committed to reducing the proportion of the array within the pMCZ from 24% to 10.5%, and that this will be secured within the DCO/DML and therefore supersedes the positon set out in the ES. Natural England and JNCC welcome this reduction of infrastructure within the site.	Agree, this commitment to reduce the maximum design scenario has been secured within the DCO (Schedule 11, Part 2, condition 2(9) and Schedule 12, Part 2, condition 2(11) of the DCO; REP7-004).

3.1		Assessment of a potential operation in any protected area focuses on understanding how the conservation objectives are affected. In practice this mainly relates to understanding how the potential operations affect the designated features. For Markham's Triangle, all features have a general management approach to "restore" to favourable condition. As such, a critical piece of information needed for assessment is the amount of operations expected to occur in each feature. The Applicant has presented figures of the area of each feature within the MCZ which they consider will be impacted by the operations on both a temporary and permanent basis in Table 1.1 of REP3-023. However, it is not clear to NE how these figures were calculated, specifically with regard to how the potential overlap with each feature was considered. Therefore we do not feel able to comment on these conclusions. Within REP3-023, the Applicant has provided a detailed breakdown of the potential area of broadscale habitat impacted as a result of each project element at each phase (construction O&M and decommissioning). This information has then been used to inform assumptions around the likely areas of habitat permanently and temporarily affected at each stage. NE/JNCC's advice on impacts to the features of this site would align with our advice on other designated sites. Therefore there are some project elements that have been considered to be temporary, that we would consider to be persistent and/or permanent depending on the feature- for example cable protection.	**MCZ Assessment methodology** As set out in response to Q2.2.58 at Deadline 5 (REP5-008), the Applicant has adapted the MCZ Assessment methodology to take into account feedback from the MCZ Working Group throughout the pre-application phase. The Applicant has also provided a number of clarifications with respect to Markham's Triangle pMCZ, including the Applicant's Deadline 3 response a lifetime effects assessment for Markham's Triangle pMCZ (REP3-023) to aid NE and JNCC to have a fuller understanding of the impacts on the pMCZ. Following receipt of their Deadline 7 response, a breakdown of the infrastructure and associated footprints for the latest maximum design scenario, as set out in the DCO, was provided to NE with a view to resolving outstanding areas of concern expressed by NE and JNCC. **MCZ Assessment conclusions** Notwithstanding these clarifications, the Applicant's position is that Hornsea Three will not represent a significant risk to the achievement of conservation objectives for the site, i.e. restore to favourable condition, for the maximum design scenario assessed due to (and noting the mitigation measures outlined below): • The majority of impacts being temporary and reversible (i.e. primarily from construction), with robust evidence from the offshore wind industry and other analogous offshore industries showing that these will recover following cessation of construction activities; • In contrast to broadscale effects of demersal trawling, the areas affected by construction and operation and maintenance activities will affect a small proportion of the broadscale habitat features, with impacts affecting

			comparatively discrete areas, primarily in close proximity to turbine foundations; • While there will be longer lasting effects (i.e. due to foundations, scour and cable protection) the proportion of broadscale habitat features affected will be very small, even in the conservative maximum design scenario. **Mitigation** The Applicant would also highlight the range of mitigation measures which have been proposed to date during the pre-application phase and during the examination phase: Pre-application • Micrositing around reef habitats outside SACs, including the Hornsea Three array area and Markham's Triangle pMCZ; • Reduction in maximum design scenario from 25% of array infrastructure within Markham's Triangle pMCZ (in the DCO application) to 10.5% of array infrastructure (see REP2-004 and REP3-023) for details); • Commitment to use sensitive cable and scour protection: minimises the change in sediment/substrate (compared to concrete mattressing/grout bags) to allow some ecological function during project operation (REP1-138); and • Avoiding the use of concrete mattressing in designated sites. Examination phase • Decommissioning of rock protection. **MCZ Management measures** As outlined in the MCZ Assessment, restoration of the site to favourable condition will require management measures related to

Comment No.	Heading	Natural England Advice	Applicant's Position
			ongoing trawling impacts (i.e. bottom trawling and dredging). It is not currently clear what these measures may entail, but the presence of Hornsea Three will not hinder the implementation of such management measures. To provide context, the Applicant would also note that the West of Walney MCZ overlaps with multiple wind farms and oil and gas infrastructure and the management status of this MCZ is currently classified as "Progressing towards being well managed", with fisheries management measures being developed for the site by Defra, the MMO and IFCAs. The Applicant would also note that some reduction of fisheries activity would be expected due to the presence of offshore wind farm infrastructure within Markham's Triangle pMCZ. Further details of this are outlined below, but it should be noted that the area of seabed where commercial fishing intensity (i.e. bottom trawling and dredging) would be reduced, would be greater than that affected by long term habitat loss (see Measures of Equivalent Environmental Benefit, below).

4.1	Significance	The applicant has calculated that the level of temporary habitat loss would equate to 2% of the overall site, with a permanent habitat loss of 0.12% of the entire site [N.B NE/JNCC suggests that these figures would require an adjustment to take account of our advice on impacts]. Whilst this relates to a fairly sizable area in km2, NE/JNCC accept that this is relatively small in the context of the entire site. However, the level of impact and impacts of significance need to be understood at a feature level before any conclusions regarding the significance can be drawn. The Subtidal Coarse Sediment feature dominates the site, and therefore impacts on the scale described in REP2-023 may prove to be relatively small in the context of the feature. However, sand and mixed sediment are present in much smaller amounts within the site and therefore impacts on these features may be significant.	The Applicant does not consider that its position is inconsistent with the advice of NE and JNCC. As outlined in response to Q2.2.58 at Deadline 5 (REP5-008), the Applicant has undertaken the MCZ Assessment based on the Rochdale Envelope approach, with the assessment undertaken on a precautionary maximum design scenario for all impacts identified. This has been carried through to the feature level as set out in REP3-023, which identifies the maximum habitat loss (temporary and permanent) for each feature individual, as well as for the pMCZ as a whole. The Applicant agrees with NE and JNCC that even this worst case scenario represents a small area in the context of the entire site. In reaching conclusions regarding the significance, the Applicant has considered the impacts at feature level. It appears that there is some agreement on the effects on the Subtidal Coarse Sediment feature, although NE indicate that in their opinion effects on Subtidal Sand and Subtidal Mixed Sediment may be significant. The Applicant agrees that the Subtidal Sand and Subtidal Mixed Sediment features are less extensive than Subtidal Coarse Sediments within the pMCZ, but equally the maximum footprints within these features are considerably smaller, reflecting that considerably less infrastructure will be placed in these habitats. Having regard to NE and JNCC's comments, the Applicant is confident in its position, that the MCZ Assessment has been undertaken in a manner that allows the level of impacts and the consequences of attributes and targets of the relevant features of the pMCZ to be understood and conclusions to be drawn. The Applicant maintains that Hornsea Three will not represent a significant risk to conservation objectives of the Markham's Triangle pMCZ.

Comment No.	Heading	Natural England Advice	Applicant's Position
5.1	Measures of Equivalent Environmental Benefit	As highlighted above, Natural England currently unable to provide definitive advice on the significance of the impact on the features of the designated site. There is currently no formal guidance in relation to Measures of Equivalent Environmental Benefit (MEEB) and there and there have been no other cases that have reached this stage. Therefore, should the SoS conclude that MEEB are required, this case would be precedent setting. In the absence of guidance/experience to draw upon, we would recommend that discussions relating to MEEB include input from the SNCBs, Regulatory Agencies (i.e. MMO and BEIS) and Defra.	It is noted that Natural England does not advise that there is a significant risk for any protected features such that Stage 2 assessment is necessary, rather it is unable, in its view, to discount the possibility in respect of the Subtidal Sand and Subtidal Mixed Sediment features. The Applicant's position is that the Secretary of State can be satisfied on the evidence provided that Hornsea Three would not represent a significant risk of hindering the achievement of the conservation objectives of the Markham's Triangle pMCZ, particularly when considering the additional mitigation proposed during the course of the examination (outlined above). As such, a Stage 2 MCZ Assessment is not considered to be necessary, including consideration of MEEB. See Q2.2.46 as submitted at Deadline 4 (REP4-012) for further discussion of MEEB.

			<u>Reduction in fishing activity</u> The Applicant understands that the reason for the conservation objective of 'recover to favourable condition' proposed for Markham's Triangle pMCZ, is due to current levels of commercial fishing (i.e. bottom trawling and dredging) taking place within the site. While fishing activity is expected to continue within the Hornsea Three array area during the operation and maintenance phase, it is acknowledged in Volume 2, Chapter 6: Commercial Fisheries of the Environmental Statement (APP-066; see paragraph 6.11.2.3) that, due to the presence of infrastructure (i.e. turbine and substation foundations) and associated safety zones (i.e. 500 m for manned platforms) and safe operating distances (i.e. 50 m around turbines), commercial fishing will be considerably reduced within these parts of the array. The maximum design scenario for Markham's Triangle pMCZ (as set out in the Schedule 11, Part 2, condition 2(9) and Schedule 12, Part 2, condition 2(11) of the DCO) assumes up to 32 turbine foundations, one accommodation platform and one electrical substation. Based on these maximum parameters, an estimate of the area within which fishing would be reduced within Markham's Triangle pMCZ can be calculated as follows (see Table 6.9, page 38 of Volume 2, Chapter 6: Commercial Fisheries of the Environmental Statement for further detail on assumptions): <u>Turbines</u> • 32 gravity base turbine foundations, each with a radius of 26.5 m – this is the area within which fishing will be excluded within the footprint of the foundations themselves;

			• The operating distance around each turbine (i.e. from the edge of the foundation) within which fishing intensity would be reduced is assumed to be 50m; • The total radius of potential fishing exclusion/reduction for each of the 76 foundations is therefore 76.5 m (i.e. 26.5 + 50 m); • The area, per foundation, within which fishing would be excluded/reduced equates to approximately 18,385 m2 (588,320 m2 for 32 foundations). <u>Accommodation platforms</u> • 1 accommodation platform, with a foundation radius of 30 m, plus 500 m safety zone distance (total radius of potential fisheries exclusion for each accommodation platform of 530 m); • The area per platform, within which fishing would be excluded/reduced equates to approximately 882,000 m2. <u>HVAC/HVDC substation</u> • 1 substation, with a foundation radius of up to 90 m, plus an operating distance of 50 m (total radius of potential fisheries exclusion for each substation of 140 m); • The area per platform, within which fishing would be excluded/reduced equates to approximately 61,500 m2. <u>Total fisheries reduction/exclusion</u> Based on the maximum design scenario for Markham's Triangle pMCZ of 32 turbines, one accommodation platform and one electrical substation, the total area where commercial trawling/dredging intensity would be excluded/reduced during the operation and maintenance phase equates to approximately 1,531,820 m2.

Comment No.	Heading	Natural England Advice	Applicant's Position
			Long term habitat loss within the pMCZ associated with foundations and associated scour protection within Markham's Triangle pMCZ equates to approximately 201,500 m2. Excluding this area of habitat loss from the total above provides an indication of the area of seabed within which there would be expected to be a benefit to benthic communities associated with reduction of fishing pressure. This area equates to up to approximately 1,330,320 m2 of habitat. This is much greater than the total predicted long-term habitat loss in Markham's Triangle pMCZ (i.e. approximately 300,660 m2; see REP3-023), which suggests that there would be potential for some benefit to benthic communities during the operational phase for Hornsea Three. It should be noted that the scenario outlined above is for the maximum design scenario for infrastructure to be placed within Markham's Triangle pMCZ. If fewer foundation structures are placed within the pMCZ, the area where fishing activity would be reduced would similarly be reduced, although in all cases, this area would be greater than the total area of seabed affected by long term habitat loss.
6.1	Summary	Natural England hopes to have further discussions with the applicant to try to address some of the issues highlighted above prior to the close of the examination.	As set out under section 3.1: MCZ Assessment methodology above, the Applicant has provided a breakdown of the infrastructure and associated footprints as requested by Natural England in order to resolve some of the outstanding areas of disagreement, and although the Applicant is confident in its position as set out above, it welcomes any further discussion with Natural England which may allay any residual concern.

Summary of Natural England's Advice on The Wash and North Norfolk Coast SAC (REP7-067) and Applicant's Position.

Comment No.		Natural England Advice	Applicant's Position
	Features of concern	Large Shallow Inlet and Bay, Sandbanks, Reef.	The Applicant agrees it is necessary to consider the Large Shallow Inlet and Bay feature and its position, having considered the evidence, is that there is no interaction between Hornsea Three and the Large Shallow Inlets and Bays Annex I feature of this SAC (see Table 2.1 and Figure 2.1 of REP7-006), and therefore no possibility of any adverse effect on integrity. It is noted that regardless of any residual disagreement on LSE screening, NE acknowledge in their Rule 17 response (REP7-064) that an argument could be put forward to demonstrate why there is unlikely to be an adverse effect on integrity. The Applicant agrees that for Annex I sandbanks and Annex I reefs a likely significant effect could not be excluded and therefore warrants further consideration within the Appropriate Assessment.
1.1	Feature condition	A recent condition assessment on 25th January 2019 has identified the listed features relevant to this application and some of their sub features are now in unfavourable condition as a result of fisheries and OWF cable installation. The mechanism that is currently in place to ensure recovery is currently the identification and implementation of fisheries byelaw areas and natural processes for OWFs.	The Applicant provided comments on the recent condition assessment for the WNNC SAC in REP6-019, with the main conclusion that the updated condition assessment did not alter the conclusion reached that Hornsea Three would not give rise to an adverse effect on integrity of the features of the SAC. The Applicant agrees with Natural England that the mechanism for recovery of features affected by offshore wind farm cables will be via natural processes. This is entirely consistent with the Applicant's comments in REP6-019 which noted that Race Bank cables were installed only 2 years ago, and full recovery of communities would be expected over a slightly longer timeframe (e.g. up to 5 years).

Comment No.		Natural England Advice	Applicant's Position
2.1	Survey Data – Project specific incl. Survey effort	NE considered that the post application submission survey effort was sufficient to provide a basic consent characterisation of the development area, and that this level of information with support desk based evidence remains suitable at an EIA scale. Please see Annex D1 [REP1 – 210] and Annex D7 [REP – 217] However, Natural England highlights that the levels of information/evidence/data required to understand the potential scale of the impacts of a proposal on designated site features often go beyond those that would be required to characterise the development area. Especially where an Adverse Effect on Integrity can't be ruled out and/or consideration is required in relation to the suitability of any proposed mitigation measures to minimise the impacts to an acceptable level. This is particularly true for this site where the survey data doesn't allow for the extent of the features to be determine due to the lack of Geophysical data and also limited near shore survey data. Often, the tools and techniques required to undertake a development activity, such as cable installation, can vary significantly depending on the ground conditions, and consequently the impacts arising from the installation can also vary. In some cases, the requirements in a particular location may be easily determined from a fairly basic level of site characterisation. For example, where exposed bedrock is identified it may be relatively easy to confirm the techniques required for installation and to consider the impacts on that feature. However, in a sediment habitat, the techniques required may depend not only on the surface substrate/biotope, but also on the underlying geology, and therefore further investigative work may be required in order to establish the likely installation method before the impacts could be	The Applicant considers that the level of information is sufficient for the purposes of EIA and HRA. The characterisation of the WNNC SAC comprised a detailed characterisation of both the Annex I habitats (including sub-features of the Annex I sandbank feature) and associated faunal communities and the ground conditions for cable installation, and the Applicant's is confident that this is robust and allows for a conclusion to be made beyond reasonable scientific doubt, of no adverse effect on integrity from Hornsea Three. **Benthic ecology baseline** The Applicant has produced a baseline characterisation for benthic ecology within the WNNC SAC based on site specific sampling and desktop data sources, as discussed during pre-application consultation with the Marine Processes, Benthic Ecology and Fish Ecology Expert Working Group (EWG) as part of the Evidence Plan process (which has a specific focus on Habitats Regulations Assessment; see APP-035). The Applicant considers that this characterisation is appropriate for the purposes of the RIAA, with Annex I sub-features (and associated biotopes) identified using appropriate guidelines for marine habitat classification in UK waters and following methodologies used on previous offshore wind farm projects. Validation of the characterisation of the WNNC SAC was provided during the Examination phase (REP1-140) in response to Natural England's concerns relating to data coverage within the WNNC SAC. Any residual risks (e.g. due to potential Annex I biogenic reefs which may form prior to construction) will be controlled by

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		considered and/or mitigated. We note that no geotechnical survey data for the near shore area of the Wash and North Norfolk Coast SAC was not included in the Potential Trenching Assessment [REP5 – 010] document. Therefore this adds decreased certainty. It would have been beneficial if a more complete PEIr had been provided during the pre-application phase and during this phase sufficient time was allowed for issues and potential evidence gaps to be addressed. However, the lack of additional evidence to reduce the uncertainty in relation to scale of the impacts and possible mitigation measures is unlikely to resolved within the examination phase and remains an outstanding concern. The significance of which means we are unable to advise that an adverse effect on integrity can be ruled out.	commitments to microsite around these features, with the locations and extents of these informed by pre-construction surveys (discussed further below). **Ground conditions baseline** The ground conditions have also been fully characterised, with the tools and techniques included within the project description for Hornsea Three demonstrated to be appropriate for the ground conditions within the WNNC SAC (see REP6-026). The assessment within the RIAA considered a maximum design scenario, following the Rochdale Envelope approach, ensuring that all the tools considered within the project description were within the envelope assessed. For cable installation impacts, a disturbance corridor of 30 m width was assumed for sandwave clearance, 25 m for boulder clearance in the offshore cable corridor and 15 m for cable installation. All installation tools are within these maximum design scenarios assessed. The Applicant would also clarify that geotechnical survey data were collected within the WNNC SAC (see Table 4.1 and Figure 4.1 of REP6-026).
2.2	Survey Data – SNCB site management	As part of management of designated sites, the SNCBs will periodically commission designated site surveys. However, due to the size of the marine sites it is unlikely that the whole site will be surveyed at any one time. These surveys are broad scale mapping surveys to inform site management measures and therefore are not of sufficient resolution and/or scale to be used to determine impacts to designated features from sustainable development. As noted at ISH 2 EIFCA has data for the near shore area adjacent to the proposed cable corridor which has identified possible cobble	As set out in REP7-007, the Applicant has discussed with the Eastern IFCA the findings of their recent survey in the eastern part of the WNNC SAC. Based on the Eastern IFCA's initial review of their data, an area of rocky reef was recorded at the edge of the Hornsea Three DCO boundary which coincides with the area of Circalittoral Rock and Infralittoral Rock identified in the Hornsea Three characterisation (see Figure 4.29 of Volume 5, Annex 2.1: Benthic Ecology Technical Report). These Annex I reef habitats (located in the western temporary working area) will be avoided

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		reef which is a more stable habitat that the Applicant has set out in it RIAA. This area is under consideration for a revised fisheries byelaw area.	during cable installation and any associated activities (e.g. sediment disposal and anchor placement). Monitoring of cabling impacts pre and post construction will be used to confirm the effects on Annex I features of the WNNC SAC are no greater than predicted for the maximum design envelope assessed. **Proposals to aid conservation objectives** In addition, the Applicant is willing to commit to a number of proposals which would aid SNCBs in the achievement of conservation objectives for the SACs coinciding with the Hornsea Three offshore cable corridor. This includes a collaborative project with the Eastern IFCA to investigate the effectiveness of their proposed fishery closure within the WNNC SAC to protect sub-features of the Annex I sandbanks feature, which will also improve the knowledge of condition of the SAC along the North Norfolk Coast. As a responsible developer, Ørsted has a track record of contributing towards strategic ecological research and monitoring programmes related to offshore wind development. The proposals put forward for Hornsea Three (Appendix 22 to the Applicant's response to Deadline 9) are therefore proposed in the spirit of cooperation with SNCBs, with a view to aiding in the achievement of the conservation objectives of the SACs.
2.3	Survey Data – Desked based Study	It is prudent to use all available data sets to support project specific data and/or fil any evidence gaps. However, as set out In Annex DI and Annex D7 [REP- 201 and REP217] it is not appropriate to rely on point surveys 10s KM from the cable corridor and outwith the designated site. Therefore there remains considerable uncertainty	The Applicant agrees that all available datasets should be, and have been, used to inform the characterisation. The desk based study used to inform the RIAA used a range of data sources from near (i.e. <5 km; see Figure 3.3 of Volume 5, Annex 2.1: Benthic Ecology Technical Report; APP-102) and within the offshore cable

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		in the interest features present; the under lying geology and the implications this may have on cable burial; the need for remediation works and what they may be; and the scale of any further impacts to the designated site features.	corridor, alongside site specific survey data, all of which showed consistency with respect to the sub-features present within the SAC and the equivalent broadscale habitat features of the adjacent Cromer Shoal Chalk Beds MCZ. These were subsequently validated by DDV surveys within the Hornsea Three offshore cable corridor (REP1-140).
3.1	Characterisation -Biotopes	Again Natural England highlights the importance of the use of a 'common currency' approach to facilitate in combination and cumulative assessments, not just for this project, but for future plans and projects that may need to take account of Hornsea 3 in their assessments.	The approach taken to the Hornsea Three in-combination assessments (e.g. REP3-024) has been to consider such effects at an Annex I feature (or sub-feature) level, rather than at the level of biotope. This is entirely consistent with the approach taken for cumulative/in-combination assessments for other offshore wind farms and other offshore industries, which also consider effects on a feature, rather than a biotope level. Biotope classifications, assigned from site specific surveys and desktop information, are typically used to provide an assessment of the sensitivity of the communities characterising the Annex I features/sub-features, with the assessment of magnitude of impacts (e.g. footprints within designated features) undertaken on at an Annex I feature level. This approach was adopted for Hornsea Three. This is considered to be the most practical method for undertaking in-combination assessments due to the acknowledged limitation that biotope allocation can be somewhat subjective and dependent on expert opinion of the scientist undertaking the analysis. As such, the 'common currency' used is the Annex I features and sub-features, following the conservation objectives of the relevant SAC.

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3.2	Characterisation - Site Features	Whilst the applicant has extrapolated from project specific data in the MCZ, we believe from the drop down video survey that it is not just Annex I sandbanks along the Hornsea Project three cable route. The more consolidated sediments and epifauna within the video stills could be representative of Reef features Annex D1 [REP – 210]	An Annex I reef assessment was undertaken for all locations during DDV sampling within the WNNC SAC. These assessments are presented in Table 2.3 of REP1-140 and show that none of the locations qualified as Annex I reef features. However, as set out above, all Annex I reefs would be avoided during cable installation, and as such, if these areas did represent Annex I reef, direct impacts on these would be avoided during construction. Additionally, it is important for context to note that previous surveys of this part of the North Norfolk coast have not recorded Annex I biogenic reefs. The Applicant would therefore maintain that the likelihood of development of Annex I reefs in this part of WNNC SAC prior to construction is low (see paragraph 5.4.5.1 to 5.4.5.6 of the RIAA).
4.1	Consideration of impacts to site features and significance - Site Preparation work (none sandwave levelling)	In the Applicants RIAA [APP - 051] Benthic impacts from the cable route prep. were not included such as grapnel run, UXO clearance, boulder clearance and sandwave clearance. Therefore further consideration should be given to the cumulative impacts to the site features.	The Applicant can confirm that these pre-construction activities were considered within the envelope assessed in the RIAA: Sandwave clearance: see Table 4.1, Table 5.6 of the RIAA; Boulder clearance: see Table 4.1 and paragraph 5.5.1.4 and 5.5.1.7 of the RIAA; Grapnel runs and UXO clearance: These were considered, although not specifically discussed in the impact assessment as effects associated with these activities will be within the corridors considered for temporary habitat loss (i.e. up to 30 m for sandwave clearance; see Applicant's response to Q1.2.27; REP1-122) and are therefore within the maximum design scenario assessed and no further consideration of cumulative impacts is necessary. The Applicant notes that UXO clearance activity is not being sought under this consent application, although while this activity is not being consented at this stage, the assessment has considered

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			UXO clearance as part of the assessment, albeit in a qualitative way as detail was not available. If required UXO clearance will be subject to a new Marine Licence application at the appropriate juncture. This matter has been discussed and agreed with the MMO.
4.2	Consideration of impacts to site features and significance - Sandwave levelling	Location of impact: Natural England advises that the proposed sandwave levelling within W&NNC SAC is levelling/changing of Annex I habitats i.e. mobile part of Annex I sandbanks and wholly within designated feature. Recovery: Sandwave clearance activities have only been proposed and undertaken relatively recently and consequently there is limited evidence on how well this approach works, whether cables remain buried thus avoiding the need for additional cable protection, and very limited evidence on how quickly dredged areas recover. The applicant has provided additional information in REP-020 outlining their experience at one of their other projects, Race Bank Offshore Windfarm. As set out in Natural England Deadline 1 Annex D3 response [REP – 215] This report provides some evidence to support the potential for recovery of affected features after sandwave levelling has occurred. However, at this stage there is not sufficient information available to determine if full recovery to pre impact condition can be achieved or to determine a potential timescale for recovery, and it is also unclear if the findings at Race Bank (nearshore project) would be relatable to all sandwave/sandbank features, including the much larger examples found further offshore.	**Location of impact** The Applicant agrees that sandwave clearance activities will be within the Annex I sandbank feature of the WNNC SAC and this is reflected in the assessment within the RIAA. **Recovery** While sandwave clearance activities have been included as a specific activity to secure consent for those activities up front within the more recent offshore wind farm DCO applications (to avoid post consent marine licence applications as occurred for Rounds 1 and 2 offshore wind farm projects), this method has been used, and continues to be used, in the oil and gas industry for pipeline installation in areas of mobile seabed. The assessment presented within the RIAA, and supporting assessments within Volume 2, Chapter 1: Marine Processes of the Environmental Statement (APP-061), is based on the best available evidence which includes a combination of sediment dynamics theory, geomorphological processes theory and empirical evidence from the field which validates the theoretical assessments undertaken]. These concluded that impacts from sandwave clearance activities will be temporary and reversible and will not lead to any adverse effect on integrity of the WNNC SAC. Clarifications with respect to the sandwave clearance were provided during Examination (REP1-183 and REP2-020) which

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		The main factors that are considered to influence the recovery potential (i.e. the mechanism and speed of recovery) of the levelled sandwaves are: • The dimensions of the dredged area, particularly the width and depth of the dredged channel relative to the overall sandwave height, and the alignment of the dredged channel relative to the crest axis; and • The degree of sediment mobility at the dredge location, which is in turn controlled by the environmental forcing conditions and water depth. In addition no consideration has been given to potential remediation plan using proven techniques <u>Scale of Impacts:</u> The scale of the proposed sandwave levelling is not considered as de minimus even if the sediment can be retained within the system (see Mitigation below). The project is likely to impact on the variables that help define the extent and distribution of a sandbank, namely sediment composition and biological assemblages.	provided further empirical evidence to support the conclusions made in the RIAA. The monitoring data from Race Bank demonstrated partial to full recovery of sandwaves over a period of months (REP1-183) or approximately one year (REP2-020) following dredging. The Sandwave Clearance Clarification Note (REP1-183 and REP2-020) also provided a robust analysis to establish the degree of applicability of that evidence to the Hornsea Three environment and showed that the monitoring data is an appropriate analogue for Hornsea Three, including the WNNC SAC, where recovery timeframes would be expected to be similar, due to similar water depths and sediment transport rates. These concluded, in support of the theoretical assessments for Hornsea Three, that i) the environmental conditions which govern the development and maintenance of the sandwave bedforms would not be disrupted by local levelling work; ii) that the levelled sandwaves would recover with time (in the order of months to years) to a natural equilibrium state; and iii) that the rate of recovery would vary in relation to the rate of local sediment transport processes. With respect to the NE summary of factors considered to influence recovery, this text is consistent with text from the Applicant's Sandwave Clearance Clarification Note (see paragraph 2.29 of REP1-183). This text was included to clarify that although the assessment (based on the theory and empirical evidence outlined above) shows that recovery of sandwave will occur, the precise detail of how and when these features will recover, will be governed by the very specific details of a given location (as defined by the parameters referred to by NE) and therefore there will be individual variation between sites.

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			The Applicant will work with the MMO and SNCBs to provide more specific information on sandwave clearance activities, once this detail becomes available (i.e. through pre-construction site investigation surveys to inform the final design scheme). This further detail (e.g. information on precise dredge and disposal locations, volume, local conditions etc.) will be provided by the ECoW, via the Cable Specification and Installation Plan (CSIP) and Sandwave Clearance Plan. **Scale of Impacts**: The Applicant's position is that for the maximum design scenario for sandwave clearance, noting that the actual impacts will likely be less than this, all effects will be temporary and reversible and will not represent an adverse effect on integrity of the Annex I sandbank feature or associated sub-features. Sediment composition: The Applicant will appoint a dedicated ECoW who will work with MMO and SNCBs to identify appropriate disposal locations to ensure material is disposed of within the same broad sediment type (i.e. within the WNNC, the same Annex I sub-feature), through the CSIP, as informed by pre-construction site investigation work and the final scheme design. Biological assemblages: evidence from a range of sources (see Q1.2.10 for summary of evidence sources; REP1-122) show that benthic infaunal and epifaunal assemblages will recover, with the rate of recovery dependant on the species and sediment type (e.g. species associated with mixed and coarse sediments have longer recovery rates than those associated with sand). While sandwave clearance operations will result in effects on biological assemblages, these are reversible, with full recovery of communities expected within 5 years following cable installation.

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			The Applicant's monitoring commitments are aimed at validating this for the WNNC SAC. **Conclusion** The Applicant remains committed to work with the MMO and SNCBs post consent (see further discussion of mitigation and possible remediation below), notwithstanding its position is that there is currently sufficient information on the impacts and empirical evidence to demonstrate recovery to conclude no adverse effect on integrity of the WNNC SAC due to sandwave clearance operations.
4.3	Consideration of impacts to site features and significance - Deposition of sediment	As yet the deposal location/s has/have not been agreed. Therefore there is no guarantee that the sediment will remain within the system. A loss of Annex I sediment is considered to be Likely Significant effect, The quantities proposed in the Application is not considered to be deminimis and/or in consequential. Therefore we advise that an adverse effect on integrity can't be excluded. It should be noted that there is a difference in the particle size of the Annex I sandbank sub features. Therefore there is the potential for a significant difference in particle size between the removal and disposal locations resulting in a change in the extent of Annex I habitats; the temporal scale of which is unknown for sandwave levelling and within this site. Without further restrictions on disposal locations there is also the potential for Annex I reef to be significantly impacted. We would therefore advise that there are disposal conditions included within the DML: identify the disposal locations; the locations ensure that sediment remains within the Annex I sandbanks system; the particle size as the disposal locations is	As set out in the Sandwave Clearance Plan (contained within the outline CSIP), the Applicant will work with MMO and SNCBs to identify appropriate disposal locations to ensure material is disposed of within the same broad sediment type (i.e. the same Annex I sub-feature within this SAC), which will minimise/avoid any changes in sediment composition, facilitate faster recovery of benthic communities and ensure sediments are not lost to the SAC. This will include avoiding disposal of sediment on Annex I reef locations, which, if present, will be fully assessed and delineated using pre-construction survey data and following best practice guidelines for Annex I reef assessment. The Sandwave Clearance Plan is the most appropriate mechanism by which the additional control measures proposed by Natural England could be captured. These will include (see REP7-021): • Identification of disposal locations; • Consideration of disposal locations to ensure sediment is disposed of within the SAC;

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		95% similar that of the removal location and Annex I reef and areas being managed as such (Plus buffer) are avoided All Areas of Annex I reef and areas managed as reef should be excluded for direct disposition and mechanisms should be put in place to ensure indirect impacts through sedimentation is limited to an acceptable level; including those areas to be managed as reef.	• Avoidance of Annex I reef features (including an appropriate buffer); and • Consideration of sediment composition of disposal location to reflect material being deposited.
4.4	Consideration of impacts to site features and significance - Cable Protection	Natural England's advice remains unchanged from our Deadline 1 Written Reps. Having considered the RIAA, and further documents submitted by the applicant during examination including the measures proposed to mitigate for any adverse effects, it is the advice of Natural England that it is not possible to ascertain that the proposal will not result in adverse effects on the integrity of the site in question either alone or in-combination. Further assessment and consideration of mitigation options are required, and Natural England provides the following advice on the additional assessment work required; NE remains concerned that evidence presented by the applicant does not sufficiently show that there will be no permanent, long-lasting and adverse loss of SAC habitat as a result of the proposed cable protection; in coming to this view we advise the following; - The predicted impacts will directly affect the SAC feature. - We are not satisfied that the likely impacts can be considered to be of a temporary nature. Natural England remains concerned about the decommissioning of rock protection that is proposed to make good any impact. We do not believe that this has been satisfactorily addressed by Annex 2 JdN 'Technical note for decommissioning Race Bank Export Cable rock protection' we	The RIAA presents a robust assessment of the effects of cable protection measures on marine processes and benthic ecological receptors (including the Annex I sandbank feature and associated sub-features of the WNNC SAC), which was based on a maximum design scenario for remedial cable protection (i.e. where it has not been possible to install cables to target burial depths). Based on the assessments undertaken (and further supporting evidence in REP1-138), it was concluded that cable protection measures will not lead to adverse effects on integrity of the WNNC SAC, in the maximum design scenario. The employment of sensitive cable and scour protection (and commitment to not use concrete mattressing) within designated sites has been proposed to minimise habitat loss effects by using protection measures which will minimise the change in substrate type (i.e. by using rock sizes that reflect the baseline conditions), which will therefore allow for some recovery of benthic communities and some continued ecological function in the areas affected. The Applicant has also committed to work with the MMO and SNCBs to avoid the use of cable protection wherever possible, which is secured through the Cable Protection Plan which will be managed by the ECoW for the project. **Decommissioning**

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		have the following comments: See Deadline 7 Cable protection Annex - The predicted Impacts are only considered by Applicant to be significant if impacting on existing Annex I *Sabellaria spinulosa* reef (priority habitat). And therefore that impact of that feature is small. However, this feature is in unfavourable condition due to anthropogenic activities. The placement of rock armour within the area for the management of reef would in our view hinder the restoration of this feature. We consider that the establishment of *Sabellaria spinulosa* on artificial substrate does not form part of the SAC feature and is not ""counting"" towards its conservation objectives, in so much as if reef grows back over rock armouring then it's still unfavourable condition, as it is not the biotope set out in conservation advice i.e. it is not a replacement for *Sabellaria spinulosa* reef on natural site sediment habitat.	The Applicant's position, as set out in the RIAA, is that decommissioning of cable protection is not necessary to avoid adverse effects on integrity and therefore that cable protection could be left in situ following decommissioning. However, the Applicant is willing to accept a requirement to decommission remedial cable protection and scour protection, subject to agreement with the MMO and SNCBs. The Rock Protection Decommissioning Methods (REP6-018) clarification note demonstrates that decommissioning of rock is possible based on current technologies, although technological advances in the coming decades would be expected to improve the efficiency of these. The Applicant is also willing to commit to undertaking a study to validate the effectiveness and test further efficiencies of rock protection decommissioning methods to the WNNC SAC and investigate possible efficiencies associated with these methodologies. This is further discussed in Appendix 22 to the Applicant's response to Deadline 9. **Effects on Annex I reefs** The Applicant's primary mitigation with respect to Annex I *Sabellaria spinulosa* reefs is to avoid these reef features during cable installation. This would ensure that rock protection would not be placed on areas of Annex I reef habitat. The Applicant's position with respect to colonisation of cable protection by *S. spinulosa* and other local benthic fauna is that this would allow some ecological function to continue within the areas affected by cable protection, minimising habitat loss effects. The Applicant has not argued that this qualifies as Annex I reef feature as there is no clear evidence

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			to support this assumption (see the Applicant's comments Stage 2, matrix 1 of the RIES; REP7-006).
4.5	Consideration of impacts to site features and significance - Phased Build	Natural England notes that in [REP - 178] the applicant has not an anticipated that recovery will happen between both the different construction stages and the phased builds. Therefore any Appropriate Assessment would need to take into account both the spatial and temporal impact to the interest feature/s of the site. As there could 13 years of impact before the site would start to recover and up to 18 before full recovery could occur unless cable protection was used when we believe there would be a permanent habitat change. Therefore we can confirm that we do not believe the cumulative impact is flawed, it is more a recognition of the temporal scale of the impacts	The Applicant is pleased to note that Natural England is now satisfied that the cumulative assessment is not flawed and that it considers the interaction between different phases of Hornsea Three. However, it is not correct to state that there could be 13 years of impact before the site would start to recover; as set out in REP1-178, once the cable is successfully installed in an area of seabed, this area would not be further disturbed, and recovery would commence immediately. While the construction phase may last up to eight years in total (potentially over two phases), the total duration of cable installation along the offshore cable corridor (including the WNNC SAC) would only be up to three years (bearing in mind the point above that cable installation occurs progressively so not all parts of the site are impacted at one time or continuously throughout that 3 year period). Even in a two phase construction scenario, areas affected by the first phase would have at least partly recovered while the second phase cable installation is occurring. As such the scenario described by Natural England would not arise.
4.6	Consideration of impacts to site features and significance - Operation and Maintenance	See Natural England advice on cable protection Deadline 7 Annex	The Applicant refers the ExA to the Applicant's response to questions F3.4 and F3.5 of the Rule 17 request for further information (PD-020). The justification for replenishment of cable protection during the operation and maintenance phase is set out in Q2.2.53 (REP4-012). The Applicant can confirm that the 25% replenishment

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			volume has not been separated out from the total cable protection volume within the draft DCO. The volumes within the DCO include the 25% replenishment, to provide an overarching volume of rock for each of the dMLs.
5.1	Mitigation	<u>Annex I sandbanks:</u> Whilst at Para 11. of Annex D4 [REP1- 217] we suggested some mitigation that has been used for other industries. The only mitigation that has been presented to reduce the impacts has been one of potential removal at the time of decommissioning. As set in our response to Deadline 6 the Cable Installation Plan and the conditions with that including the use of an ECOW may ensure the real time compliance with the requirements of the DML condition documents, but it doesn't address the current LSE sufficiently to exclude an adverse effect on integrity and meet the requirements of the habitats directives i.e. the presence/use of a ECOW s not mitigation.	The Applicant has carefully considered all mitigation options which have been suggested by NE and other interested parties throughout the pre-application and examination phases. The Applicant has reviewed the relevant section of (REP1- 217) and can confirm that rock protection is not proposed for vessel stabilisation, but the Applicant is willing to avoid/limit seabed impacts from vessels (e.g. jack up vessels) as much as practical within SACs. As such, the Applicant will commit to entirely avoiding the use of using jack up vessels within the WNNC SAC during the construction phase and will use jack up vessels within the WNNC SAC during cable repair/maintenance operations only as a last resort (e.g. adverse weather conditions), with a cable barge always used as the preferred maintenance vessel. **<u>Mitigation</u>** The Applicant has offered a range of measures to reduce effects on designated sites during the pre-application phase and during the examination phase (see also mitigation commitments for NNSSR SAC below): <u>Pre-application</u> • Micrositing around Annex I reefs within and outside SACs (see NNSSR table below for mitigation to consider cabling within temporary working areas to facilitate micrositing; this

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			additional mitigation was not considered necessary for the WNNC SAC); • Nearshore reroute to reduce footprint within the Cromer Shoal MCZ and the SAC as a whole; • The nearshore re-route was based on Section 42 consolation response from NE (see ISH7 summary) which resulted in: ○ Reductions in cable protection footprints and volumes within the SAC and MCZ combined (see Table 2.1 REP1-138); ○ Avoidance of cable protection associated with asset crossings the SAC and MCZ (Table 2.1 REP1-138); and ○ Avoidance of irreversible impacts on features within the Cromer Shoal Chalk Beds MCZ. • Commitment to use sensitive cable protection: minimises the change in sediment/substrate (compared to concrete mattressing/grout bags) to allow some ecological function during project operation (REP1-138); and • Avoiding the use of concrete mattressing in designated sites. <u>Examination phase</u> • Decommissioning of rock protection within designated sites.

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			Reflecting on NE's wider concerns in relation to cable installation, the Applicant has also sought to go above and beyond what is typically done in offshore wind farm applications, as follows: • Developed a Cable Protection and Sandwave Clearance Plans (as part of the CSIP), including and proposals for a greater level of pre-construction consultation (including input to tender process and contractor briefing) and reporting than has previously been committed to for offshore wind farm projects. • Preliminary Trenching Assessment, including a level of detail not previously provided in a DCO application for an offshore wind farm. The Applicant is also exploring how our monitoring could be maximised to provide the most useful information possible on designated sites.
			Further measures As set out in the introduction and above, the Applicant has also proposed a number of studies to aid in the achievement of conservation objectives of Annex I features of the WNNC (and other designated sites; see Appendix 22 to the Applicant's response to Deadline 9). The Applicant notes that NE in their Deadline 7 response have proposed that a Site Integrity Plan (REP7-076) should be submitted. The Applicant is currently exploring the option of developing a Site Integrity Plan for the WNNC SAC.
		Annex I reef: Micrositing around reef where possible.	**Scope of Annex I reef surveys**

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		When undertaking Pre construction Annex I reef surveys in an area with the same side scan sonar a 'reef' return is identified and the extent of that habitat is mapped. That potential reef area is then ground truthed using grab samples and drop down video to determine the reefiness qualities i.e. elevation, abundance and patchiness. The micro siting condition is to avoid areas of reef no matter what the quality. Therefore the suggestion to avoid reef where possible is outside the proposed mitigation. In addition to this if cable protection is installed then there will be a permanent change to the habitat and therefore we believe that there will be a loss of feature extent and the management measures for the site would be hindered. Accordingly consideration of the most appropriate installation technique/tool would is required.	The Applicant agrees with the broad scope of the pre-construction surveys to identify Annex I reefs in the offshore cable corridor, which will include both geophysical datasets (including sidescan sonar) which will be ground truthed by seabed imagery and grab sampling (if appropriate, noting this is a destructive sampling method) to determine the location, extents and quality of each reef according to best practice guidelines. The precise scope of the pre-construction surveys will be agreed with the MMO in consultation with SNCBs. As set out above, the Applicant is confident that it will be possible to micro-site to avoid all Annex I reefs during cable installation, and this will be agreed with the MMO in consultation with SNCBs via the CSIP. This would ensure that rock protection would not be placed on areas of Annex I reef habitat. In this context it is important to note that previous surveys of this part of the North Norfolk coast have not recorded Annex I biogenic reefs. The Applicant therefore maintains that the likelihood of development of Annex I reefs in this part of The Wash and North Norfolk Coast SAC prior to construction is low (see paragraph 5.4.5.1 to 5.4.5.6 of the RIAA).
6.1	Recovery	We note the Applicant's conclusion of "high confidence that the seabed will recover to a new natural equilibrium state within a timescale of months to years." We would suggest that approaching a new equilibrium may not be in accord with restoration of the site, if that new equilibrium is out with the sediment composition or biological communities expected from the designated feature.	The statement made in relation to "natural equilibrium state" is in relation to recovery of sandwaves following sandwave clearance operations. The Applicant can advise that recovery of sandwaves to a new natural equilibrium state would not be outwith the sediment composition or biological communicates expected from the WNNC SAC and so Natural England's concern would not arise. The use of the term "natural equilibrium state" acknowledges that sandwaves are mobile features both within and outside designated

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			sites. The mobile bedforms which may require clearance to ensure burial below the reference seabed level (i.e. to ensure successful installation and avoid use of cable protection) are characteristic of an active and dynamic sedimentary environment which is conducive to the development, maintenance and migration of sandwaves. As such, the seabed is not a static environment and the shape of the bedform following recovery may recover to its original condition (e.g. rebuilding a single crest feature, although likely displaced in the direction of natural migration) or it may change (e.g. a single crest feature might bifurcate or merge with another nearby bedform). All such possible outcomes are consistent with the natural processes and bedform configurations that characterise sandwave fields within such a dynamic environment. This would not adversely affect the onward form and function of the individual bedform features, or the Annex I sandbank feature as a whole (REP1-183 and APP-061). As such recovery of sandwaves to a new natural equilibrium state would not be outwith the sediment composition or biological communicates expected from the WNNC SAC, with the equilibrium state consistent with the prevailing natural processes and the dynamic nature of natural morphological change.
		Natural England agrees The applicant has cited that *Sabellaria spinulosa* reef can establish on rock amour and therefore the Annex I habitat can recover. However, it is the SNCB advice that the establishment of *Sabellaria spinulosa* on artificial substrate doesn't "count" towards favourable condition, in so much as if reef grows back over rock armouring then it's still unfavourable condition, as it is not the biotope set out in conservation advice i.e.	The Applicant's primary mitigation with respect to Annex I *S. spinulosa* reefs is to avoid these reef features during cable installation. This would ensure that rock protection would not be placed on areas of Annex I reef habitat. The Applicant's position with respect to colonisation of cable protection by *S. spinulosa* and other local benthic fauna is that this would allow some ecological function to continue within the areas affected by cable protection. The Applicant has not argued that this

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		it is not a replacement for *Sabellaria spinulosa* reef on natural site sediment habitat.	qualifies as Annex I reef feature as there is no clear evidence to support this assumption (see the Applicant's comments Stage 2, matrix 1 of the RIES; REP7-006).
7.1	Restoration	No consideration has been given to any remediation plan using proven techniques for any Annex I habitat. Natural England doesn't believe that there is any remediation and/or restoration that can be undertaken to restore Reef feature to any pre impact state.	The Applicant considers that remediation of the Annex I sandbanks features is not necessary as following Hornsea Three cable installation, recovery of sediments and associated biological communities will occur through natural processes. Similarly, the Applicant's position is the primary mitigation to avoid Annex I reefs is appropriate to ensure direct impacts on these features do not occur and therefore no restoration of this feature is necessary. However, in the unlikely event that monitoring shows that recovery has not occurred, the Applicant will work with the MMO and SNCBs to undertake appropriate remediation of the features affected. This is likely to be informed by the proposals put forward by the Applicant to aid SNCBs in the achievement of conservation objectives of the SAC.

Summary of Natural England's Advice on North Norfolk Sandbanks and Saturn Reef SAC (REP7-067) and Applicant's Position.

Comment No.		Natural England Advice	Applicant's Position
1.1	Feature condition	**Annex I sandbanks** Our latest view on condition is that the sandbank feature is in unfavourable condition and needs to be restored to favourable condition. Restoration of the feature requires an overall reduction, or removal, of pressures associated with human activities that cause impacts to the sandbanks' extent and distribution, delineated by both substratum and biological communities. As such, any human activities which can cause pressures resulting in changes to substratum or biological communities to the sandbank feature may present a risk to the site's restoration. We note that there is no expectation that The Applicant should demonstrate recovery of the site. Recovery is an objective for all sectors placing pressure on the site, including oil and gas, renewables, aggregates and fisheries. We do, however, expect The Applicant to demonstrate the risk levels that they believe their proposed operations will present to the restoration of the extent and distribution of the sandbank feature. We note that The Applicant may find our discussion of mitigation below helpful in this. As a minimum, this would be to demonstrate that proposed activities will be mitigated to not impede restoration, i.e. that activities will not increase the site's exposure to damaging pressures, particularly in regard to changes in extent and distribution of substratum and biological communities.	**Annex I sandbanks** The RIAA was undertaken in line with the latest conservation advice for the NNSSR SAC, i.e. this Annex I feature being in unfavourable condition. Further discussion of the relevant assessments and conclusions associated with Hornsea Three cable installation and operation within the NNSSR SAC are outlined below. However, the Applicant would note that the conservation objectives state that the restore objective is based on expert judgment; specifically, JNCC's understanding of the feature's sensitivity to pressures which can be exerted by ongoing activities i.e. demersal fishing, oil and gas sector activities and cabling. The conservation objectives note that confidence in this objective would be improved with longer-term monitoring and access to better information on the activities taking place within the site and recommend that activities must look to minimise, as far as is practicable, disturbance and changes to the sediment composition, finer scale topography and biological communities within the site. **Commitments made to date** The Applicant has worked with SNCBs and other stakeholders throughout the pre-application phase, to minimise impacts on Annex I features of the NNSSR SAC (see Mitigation below for further details), including refining the project parameters to reduce impacts on the Annex I features. The Applicant has committed to using cable protection measures which reflect the baseline environment, to minimise change the substratum and allow continued ecological function in areas affected by cable protection.

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			The Applicant has also committed to considering the sediment composition when identifying disposal locations for sandwave clearance within the NNSSR SAC, to minimise potential changes in sediment type during cable installation. The Applicant has also committed to proactive engagement before, during and following cable installation, via the Cable Protection Plan and Sandwave Clearance Plan (both of which will be managed by a nominated ECoW for the project), in order to minimise the use of cable protection within designated sites, wherever possible. These plans will also provide SNCBs with better access to information on Hornsea Three activities within the SAC, ensuring reporting of key project information (e.g. volumes and footprints of infrastructure) in compliance with the project envelope. The Applicant has also provided a robust monitoring strategy for cable installation impacts within the NNSSR SAC in line with recommendations set out in the conservation objectives. **<u>Proposals to aid conservation objectives</u>** In addition, the Applicant has proposed two proposals which would aid SNCBs in the achievement of conservation objectives for the NNSSR SAC, by providing greater understanding of the amount of infrastructure within the NNSSR SAC and providing high quality monitoring data of Annex I reef habitats within the SAC (discussed under SNCB site management below). These were developed with the conservation objectives for the NNSSR SAC in mind and to help restore the site to favourable condition. These are further discussed below (see Survey Data - SNCB site management) and are set out in Appendix 22 to the Applicant's response to Deadline 9.

Comment No.		Natural England Advice	Applicant's Position
		Annex I reef Our latest view on condition is that the reef feature is in unfavourable condition and needs to be restored to favourable condition. Installation and/or removal of infrastructure may have a continuing effect on extent and distribution of the reef within the site. Restoration of the feature requires an overall reduction, or removal, of pressures associated with human activities that cause impacts to the reefs' extent and distribution, delineated by both substratum and biological communities. As such, any human activities which can cause pressures resulting in changes to substratum or biological communities to the reef feature may present a risk to the site's restoration. Activities must look to minimise, as far as is practicable, damaging the established, i.e. high confidence, reef within the site.	**Annex I reef** The RIAA was undertaken in line with the latest conservation advice for the NNSSR SAC, i.e. this Annex I feature being in unfavourable condition. As set out in the Applicant's response to Q2.2.54 (REP4-012), the Applicant's position is that the primary mitigation which has been proposed by the Applicant (i.e. to undertake pre-construction surveys to delineate the extent of Annex I reefs at the time of construction and to develop mitigation measures, such as micrositing, to avoid these features) remains appropriate for avoiding direct impacts to Annex I *S. spinulosa* reef within the NNSSR SAC. The Applicant considers that the use of detailed pre-construction Annex I habitat surveys will ensure high confidence Annex I reefs can be avoided, thereby reducing the need to precautionary buffers to be applied for Hornsea Three (discussed further below). **Ability to microsite** The Applicant accepts the Natural England definition of 'high confidence reef', i.e. *Broadly, areas mapped as high confidence reef are a result of surveys that used a combination of remote sensing and ground truthing and/or were specifically designed to identify Annex I habitats* (REP3-077). The Applicant believes that its approach is consistent with Natural England's advice that activities must look to minimise, as far as is practicable, damaging the established, i.e. high confidence, reef within the site. The Applicant confirms that pre-construction surveys will be appropriately scoped to identify and delineate these, with a view to micrositing to avoid direct impacts. Appropriate mitigation will be

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			discussed and agreed with the MMO and SNCBs via the CSIP prior to construction. The Applicant notes that NE/JNCC have identified areas to be managed as Annex I reef based on locations where reef has been recorded with buffers (i.e. up to 500 m from point locations) to account for ephemerality of these features and potential movement of these between now and construction. The Applicant would note that the pre-construction Annex I reef surveys proposed by the Applicant will fulfil the same ecological/conservation objective (i.e. protection of 'high confidence reef') thereby reducing the need for precautionary margins and buffers (discussed further in Q2.2.54; REP4-012). **Additional mitigation** However, with a view to providing reassurance to NE on the ability to microsite around Annex I reefs within the NNSSR SAC, the Applicant has proposed an adjustment to the Work Plans to extend a short section of the Hornsea Three offshore cable corridor into the adjacent temporary working areas. This provides additional space for micrositing around Annex I reefs that may develop between Examination and the construction phase, to maximise the effectiveness of the primary mitigation of avoidance of Annex I reefs (see REP6-038). **Proposals to aid conservation objectives** In addition, as set out above, the Applicant has proposed proposals which would aid SNCBs in the achievement of conservation objectives for the NNSSR SAC, including one study to provide high quality monitoring data of Annex I *S. spinulosa* reef habitats within the SAC. These proposals were specifically

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			developed with the conservation objectives for the NNSSR SAC in mind and to help restore the site to favourable condition (discussed under Survey Data - SNCB site management; see Appendix 22 to the Applicant's response to Deadline 9 for full details).
2.1	Survey Data - Project specific incl. Survey effort	NE considered that the initial survey effort was sufficient to provide a basic consent characterisation of the development area, and that this level of information remains suitable at an EIA scale. Recognising that further surveys will be required should consent be granted. However, Natural England highlights that the levels of information/evidence/data required to understand the potential scale of the impacts of a proposal on designated site features often go beyond those that would be required to characterise the development area. Especially where an Adverse Effect on Integrity can't be ruled out and/or consideration is required in relation to the suitability of any proposed mitigation measures to minimise the impacts to an acceptable level. Often, the tools and techniques required to undertake a development activity, such as cable installation, can vary significantly depending on the ground conditions, and consequently the impacts arising from the installation can also vary. In some cases, the requirements in a particular location may be easily determined from a fairly basic level of site characterisation. For example, where exposed bedrock is identified it may be relatively easy to confirm the techniques required for installation and to consider the impacts on that feature. However, in a sediment habitat, the techniques required may depend not only on the surface	The Applicant considers that the level of information is sufficient for the purposes of EIA and HRA. The characterisation of the NNSSR SAC therefore includes a detailed characterisation of both the Annex I features and associated faunal communities, as well as the ground conditions for cable installation, and it is therefore the Applicant's position that the characterisation is robust and allows for a conclusion, beyond reasonable scientific doubt, of no adverse effect on integrity from Hornsea Three. **Benthic ecology baseline** The Applicant has produced a baseline characterisation for benthic ecology within the NNSSR SAC based on site specific sampling (including geophysical data ground truthed by sediment sampling and seabed imagery data) and desktop data sources, as discussed and agreed during pre-application consultation with the Marine Processes, Benthic Ecology and Fish Ecology Expert Working Group (EWG) as part of the Evidence Plan process (which has a specific focus on Habitats Regulations Assessment; see APP-035). This included the approach to characterisation of the offshore cable reroute, which was implemented to reduce the length of cables (and associated impacts) within the NNSSR SAC. The Applicant considers that this characterisation is appropriate for the purposes of the RIAA, with Annex I features (and associated biotopes) identified using appropriate guidelines for marine habitat

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		substrate/biotope, but also on the underlying geology, and therefore further investigative work may be required in order to establish the likely installation method before the impacts could be considered and/or mitigated. It would have been beneficial if a more complete PEIr had been provided during the pre-application phase and during this phase sufficient time was allowed for issues and potential evidence gaps to be addressed. However, the lack of additional evidence to reduce the uncertainty in relation to scale of the impacts and possible mitigation measures is unlikely to resolved within the examination phase and remains an outstanding concern.	classification in UK waters and following methodologies used on previous offshore wind farm projects. Clarification on biotope classifications within the NNSSR SAC was also provided during the Examination phase (REP7-022; discussed further below) which showed that the biotopes identified within the Hornsea Three benthic ecology study area, and specifically within these designated sites, are typical of those present within the southern North Sea as demonstrated through the desktop data. **Ground conditions baseline** The ground conditions have also been fully characterised, with the tools and techniques included within the project description for Hornsea Three demonstrated to be appropriate for the ground conditions within the NNSSR SAC (see REP6-026). The assessment within the RIAA considered a maximum design scenario following the Rochdale Envelope approach, ensuring that all the tools considered within the project description were within the envelope assessed. For cable installation impacts, a disturbance corridor of 30 m width was assumed for sandwave clearance, 25 m for boulder clearance in the offshore cable corridor and 15 m for cable installation. All installation tools were within these maximum design scenarios assessed.
2.2	Survey Data - SNCB site management	As part of management of designated sites, the SNCBs will periodically commission designated site surveys. However, due to the size of the offshore sites it is unlikely that the whole site will be surveyed at any one time. These surveys are broad scale mapping surveys to inform site management measures and therefore are not	Monitoring of cabling impacts pre and post construction will be used to confirm the effects on Annex I features of the NNSSR SAC are no greater than predicted for the maximum design envelope assessed. **Proposals to aid conservation objectives**

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		of sufficient resolution and/or scale to be used to determine impacts to designated features from sustainable development. As set out at Deadline 6 in relation to management measures for the restoration for Saturn Reef, the SNCBs have to use the best available information, determine confidence levels and then apply appropriate precaution to ensure a site favourable condition	In addition, the Applicant is willing to commit to a number of proposals which would aid SNCBs in the achievement of conservation objectives for the SACs coinciding with the Hornsea Three offshore cable corridor. This includes two studies within the NNSSR SAC: • A collaborative project with JNCC to help quantify the amount of infrastructure within the NNSSR SAC, to allow for further studies to be scoped to provide further evidence on effects that these existing infrastructure are having on the Annex I features of the SAC; and • A collaborative project with JNCC and NE to determine the extents and condition of Annex I *S. spinulosa* reefs in the north west section of the SAC, including repeated surveys to provide a time series of the extents and condition of these reef habitats over time. As a responsible developer, Ørsted has a track record of contributing towards strategic ecological research and monitoring programmes related to offshore wind development. The proposals put forward for Hornsea Three (see Appendix 22 to the Applicant's response to Deadline 9) are therefore proposed in the spirit of cooperation with SNCBs, with a view to aiding in the achievement of the conservation objectives of the SACs.
2.3	Survey Data - Desked based Study	It is prudent to use all available data sets to support project specific data and/or fil any evidence gaps. During the evidence plan process JNCC highlighted the data sets held by the oil and gas companies within this site. These data sets helped informed alteration of the route near the Darlek arm.	**Biotope classification** The comment from JNCC is acknowledged. The Applicant has used all desktop information sources which have been made available to the Applicant, both during the pre-application phase during Evidence Plan discussions via the EWG and since.

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3.1	Characterisation - Biotopes	Whilst we recognise that the biotopes used by the applicant are more precautionary than alternative ones. The approach taken to biotope classification does not follow the standard approach. Whilst this may present varying levels of risk in understanding the impacts of this application to features at an EIA level and within designated sites (which will be detailed below), Natural England would also highlight the importance of the use of a 'common currency' approach to facilitate in combination and cumulative assessments, not just for this project, but for future plans and projects that may need to take account of Hornsea 3 in their assessments.	The Applicant welcomes and agrees with the NE comment that the biotopes used by the Applicant are more precautionary than possible alternatives. It follows that any issues over approach do not affect the conclusions for the purposes of the RIAA. The Applicant is content that the approach taken in the analysis of benthic datasets and biotope classification is robust (and precautionary as NE advice) and was in line with best practice guidelines. Guidelines provided by NE at Deadline 7 (REP7-072) have not previously been provided to or drawn to attention of the Applicant by Natural England either during pre-application consultation or during examination. It is also not clear how relevant these are, as they primarily relate to monitoring and not to characterisation surveys or biotope classification. **Use of biotopes in in-combination assessment** To clarify, the approach taken to the Hornsea Three in-combination assessments (e.g. see section 5.9 of the RIAA; APP-051) has been to consider such effects at an Annex I feature level, rather than at the level of biotope. This is entirely consistent with the approach taken for cumulative/in-combination assessments for other offshore wind farms and other offshore industries, which also consider effects on a feature, rather than a biotope level. Biotope classifications, assigned from site specific surveys and desktop information, are typically used to provide an assessment of the sensitivity of the communities characterising the Annex I features, with the assessment of magnitude of impacts (e.g. footprints within designated features) undertaken on at an Annex I feature level. This approach was adopted for Hornsea Three. This is considered to be the most practical method for undertaking in-combination assessments due to the acknowledged limitation that

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			biotope allocation can be somewhat subjective and dependent on expert opinion of the scientist undertaking the analysis. As such, the 'common currency' used is the Annex I features and sub-features, following the conservation objectives of the relevant SAC.
3.2	Characterisation - Site Features	**Annex I sandbanks** JNCC considers that the site boundary delineates the sandbank feature, supported by the original Site Assessment Document (JNCC, 2010) and further validated by recent biological community analysis (Parry et al., 2015). Therefore there is no site fabric and any or all impacts with the site will be on Annex I features	The Applicant agrees and notes that this is in line with the approach taken in the RIAA (i.e. assuming the entire SAC is Annex I sandbank feature).
		Annex I reef See point above about management measures for Saturn Reef.	See response to comments above
4.1	Consideration of impacts to site features and significance - Site Preparation work (none sandwave levelling)	In the Applicants RIAA [APP - 051] Benthic impacts from the cable route prep. were not included such as grapnel run, UXO clearance, boulder clearance and sandwave clearance. Therefore further consideration should be given to the cumulative impacts to the site features.	The Applicant can confirm that these pre-construction activities were considered within the envelope assessed in the RIAA: Sandwave clearance: see Table 4.1, Table 5.7 of the RIAA; Boulder clearance: see Table 4.1 and Table 5.7 of the RIAA; Grapnel runs and UXO clearance: These were considered, although not specifically discussed in the impact assessment as effects associated with these activities will be within the corridors considered for temporary habitat loss (i.e. up to 30 m for sandwave clearance; see Applicant's response to Q1.2.27; REP1-122) and are therefore within the maximum design scenario assessed and no further consideration of cumulative impacts is necessary. The Applicant notes that UXO clearance activity is not being sought under this consent application, although while this activity is

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			not being consented at this stage, the assessment has considered UXO clearance as part of the assessment, albeit in a qualitative way as detail was not available. If required UXO clearance will be subject to a new Marine Licence application at the appropriate juncture. This matter has been discussed and agreed with the MMO.
4.2	Consideration of impacts to site features and significance - Sandwave levelling	**Annex I sandbanks** Location of impact: Natural England advises that the proposed sandwave levelling within NNS SAC is levelling/changing of Annex I habitats i.e. mobile part of Annex I sandbanks and wholly within designated feature. Recovery: Sandwave clearance activities have only been proposed and undertaken relatively recently and consequently there is limited evidence on how well this approach works, whether cables remain buried thus avoiding the need for additional cable protection, and very limited evidence on how quickly dredged areas recover. The applicant has provided additional information in REP-020 outlining their experience at one of their other projects, Race Bank Offshore Windfarm. This report provides some evidence to support the potential for recovery of affected features after sandwave levelling has occurred. However, at this stage there is not sufficient information available to determine if full recovery to pre impact condition can be achieved or to determine a potential timescale for recovery, and it is also unclear if the findings at Race Bank (nearshore project) would be relatable to all sandwave/sandbank features, including the much larger examples found further offshore.	**Location of impact** The Applicant agrees that sandwave clearance activities will be within the Annex I sandbank feature of the NNSSR SAC and can confirm this is in line with the approach taken to the assessment within the RIAA. **Recovery** While sandwave clearance activities have been included as a specific activity to secure consent for those activities up front within the more recent offshore wind farm DCO applications (to avoid post consent marine licence applications as occurred for Rounds 1 and 2 offshore wind farm projects), this method has been used, and continues to be used, in the oil and gas industry for pipeline installation in areas of mobile seabed. The assessment presented within the RIAA, and supporting assessments within Volume 2, Chapter 1: Marine Processes of the Environmental Statement (APP-061), are based on the best available evidence which includes a combination of sediment dynamics theory, geomorphological processes theory and empirical evidence from the field which validates theoretical assessments undertaken. These concluded that impacts from sandwave clearance activities will be temporary and reversible and will not lead to adverse effect on integrity of the WNNC SAC.

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		The main factors that are considered to influence the recovery potential (i.e. the mechanism and speed of recovery) of the levelled sandwaves are: • The dimensions of the dredged area, particularly the width and depth of the dredged channel relative to the overall sandwave height, and the alignment of the dredged channel relative to the crest axis; and • The degree of sediment mobility at the dredge location, which is in turn controlled by the environmental forcing conditions and water depth. It would therefore be useful to ensure any assessment of the offshore sites take this into consideration and we believe that the relevant site information is available to undertake such an assessment. Understanding these factors would also inform assessment of hydrological process impact within site integrity tests. In addition no consideration has been given to potential remediation plan using proven techniques. <u>Scale of Impacts:</u> The scale of the proposed sandwave levelling with North Norfolk Sandbanks is X which is a considerable volume of material and can't be considered as de minimus even if the sediment can be retained within the system (see Mitigation below). It would be good to know how the proposed sandwave levelling will impact on Ower and Leman sandbanks and how that will effect their contribution to site feature. Based on our current understanding, JNCC do not consider it likely that human activities taking place within the site have the potential to permanently impact on the large-scale topography of the North	Clarifications with respect to the sandwave clearance were provided during Examination (REP1-183 and REP2-020) which provided further empirical evidence to support the conclusions made in the RIAA. The monitoring data from Race Bank demonstrated partial to full recovery of sandwaves over a period of months (REP1-183) or approximately one year (REP2-020) following dredging. The Sandwave Clearance Clarification Note (REP1-183 and REP2-020) also provided a robust analysis to establish the degree of applicability of that evidence to the Hornsea Three environment and showed that the monitoring data is an appropriate analogue for Hornsea Three, including the NNSSR SAC, although the timeframe for full recovery may be longer for the NNSSR SAC due to greater water depths and relatively lower rates of sediment transport. These concluded, in support to the theoretical assessments for Hornsea Three, that i) the environmental conditions which govern the development and maintenance of the sandwave bedforms would not be disrupted by local levelling work; ii) that the levelled sandwaves would recover with time (in the order of months to years) to a natural equilibrium state; and iii) that the rate of recovery would vary in relation to the rate of local sediment transport processes. With respect to the factors considered to influence recovery, this text is from the Applicant's Sandwave Clearance Clarification Note (see paragraph 2.29 of REP1-183). This text was included to clarify that although the assessment (based on the theory and empirical evidence outlined above) shows that recovery of sandwave will occur, the precise detail of how and when these features will recover, will be governed by the very specific details

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		Norfolk sandbanks. They could, however, have an impact on the other variables that help define the extent and distribution of a sandbank, namely sediment composition and biological assemblages. Of note for the industrial activities taking place within the site are operations associated with the deposition of material (e.g. rock dump), or other alteration of surface sediment (e.g. drill cuttings and cabling operations), that are likely to lead to a persistent change to substrate which is not suitable habitat for sandbank communities. As such, some of the sandbank's extent and distribution is lost, in that there are areas present within the site that no longer represent sandbank feature, as defined by sediment composition and/or biological communities, because the substrate has been changed. We believe that there has been physical change in sediment composition as a result of industrial activity in the site, but it is unclear what impact this may have on overall sediment composition and distribution. Furthermore, due to lack of evidence about deposits present within the site (i.e. not based on anticipated worst case scenario estimates), it is currently not possible to quantify the loss of extent.	of a given location (as defined by the parameters referred to by NE) and therefore there will be individual variation between sites. The Applicant will work with the MMO and SNCBs to provide more specific information on sandwave clearance activities, once this detail becomes available (i.e. through pre-construction site investigation surveys to inform the final design scheme). This further detail (e.g. information on precise dredge and disposal locations, volume, local conditions etc.) will be provided by the ECoW, via the CSIP and Sandwave Clearance Plan. **Scale of Impacts** The Applicant's position is that for the maximum design scenario for sandwave clearance, all effects will be temporary and reversible and therefore will not represent an adverse effect on integrity of the Annex I sandbank feature. Effects of sandwave clearance on the Leman and Ower sandbanks has been considered in paragraph 1.11.5.12 to 1.11.5.13 of Volume 2, Chapter 1: Marine Processes of the Environmental Statement (APP-061). Due to the thickness of the sediment in these sandbanks and the horizontal and vertical extent of disturbance from sandwave clearance (should this be required on these sandbanks), the potential for major disturbance to the sandbank 'core' is considered to be very low. The macro scale processes which maintain the form of the sandbanks will be unaffected by any localised disturbance of sediment across the crest/flanks of the sandbank and therefore recovery of the feature within the area affected to its natural equilibrium is expected following cable installation.

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			Sediment composition: The Applicant will appoint a dedicated ECoW who will work with MMO and SNCBs to identify appropriate disposal locations to ensure material is disposed of within the same broad sediment type (i.e. within the WNNC, the same Annex I sub-feature), through the CSIP, as informed by pre-construction site investigation work and the final scheme design. Biological assemblages: evidence from a range of sources (see Q1.2.10 for summary of evidence sources; REP1-122) show that benthic infaunal and epifaunal assemblages will recover, with the rate of recovery dependant on the species and sediment type (e.g. species associated with mixed and coarse sediments have longer recovery rates than those associated with sand). While sandwave clearance operations will result in effects on biological assemblages, these are reversible, with full recovery of communities expected within 5 years following cable installation. The Applicant's monitoring commitments are aimed at validating this for the WNNC SAC. As outlined above, the Applicant has committed to ensuring that all activities within the SAC associated with Hornsea Three cable installation and operation are reported in a clear and auditable manner to demonstrate compliance with the maximum design scenario assessed and to help SNCBs better understand activities within the SAC, in line with the conservation objectives. **Conclusion** The Applicant remains committed to working with the MMO and SNCBs post consent (see further discussion of mitigation), notwithstanding, its position is that there is currently sufficient information on the impacts and empirical evidence to demonstrate

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			recovery to conclude no adverse effect on integrity of the WNNC SAC due to sandwave clearance operations.
4.3	Deposition of sediment	**Annex I sandbanks** As yet the deposal location/s has/have not been agreed. Therefore there is no guarantee that the sediment will remain within the system. A loss of Annex I sediment is considered to be Likely Significant effect, The quantities proposed (X m3) in the Application this is not considered to be de minimus and/or in consequential. Therefore we advise that an adverse effect on integrity can't be excluded. It should be noted that there is a difference in the particle size of the Annex I sandbank sub features. Therefore there is the potential for a significant difference in particle size between the removal and disposal locations resulting in a change in the extent of Annex I habitats; the temporal scale of which is unknown for sandwave levelling and within this site. Without further restrictions on disposal locations there is also the potential for Annex I reef to be significantly impacted. We would therefore advise that there are disposal conditions included within the DML: identify the disposal locations; the locations ensure that sediment remains within the Annex I sandbanks system; the particle size as the disposal locations is 95% similar that of the removal location and Annex I reef and areas being managed as such (Plus buffer) are avoided	As set out in the Sandwave Clearance Plan (within the outline CSIP), the Applicant will work with MMO and SNCBs to identify appropriate disposal locations to ensure material is disposed of within the same broad sediment type to avoid changes to the sediment composition within the Annex I sandbanks feature. This will minimise/avoid any changes in sediment composition, facilitate faster recovery of benthic communities and ensure sediments are not lost to the SAC. This will include avoiding disposal of sediment on Annex I reef locations, which, if present, will be fully assessed and delineated using pre-construction survey data and following best practice guidelines for Annex I reef assessment. The Sandwave Clearance Plan is the most appropriate mechanism by which the additional control measures proposed by Natural England could be captured. These will include (see REP7-021): • Identification of disposal locations; • Consideration of disposal locations to ensure sediment is disposed of within the SAC; • Avoidance of Annex I reef features (including an appropriate buffer); and • Consideration of sediment composition of disposal location to reflect material being deposited.

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		Annex I reefs All Areas of Annex I reef and areas managed as reef should be excluded for direct disposition and mechanisms should be put in place to ensure indirect impacts through sedimentation is limited to an acceptable level; including those areas to be managed as reef.	The Applicant agrees that sediment will be disposed of to avoid Annex I reefs, including an appropriate buffer to ensure avoidance of indirect impacts. This is committed to within the Sandwave Clearance Plan (see REP7-021).
4.4	Cable protection	**Annex I reefs** Natural England's advice remains unchanged from our Deadline 1 Written Reps. Having considered the RIAA, and further documents submitted by the applicant during examination including the measures proposed to mitigate for any adverse effects. It is the advice of Natural England that it is not possible to ascertain that the proposal will not result in adverse effects on the integrity of the site in question either alone or incombination. Further assessment and consideration of mitigation options is required, and Natural England provides the following advice on the additional assessment work required; NE remains concerned that evidence presented by the applicant does not sufficiently show that there will be no permanent, long-lasting and adverse loss of SAC habitat as a result of the proposed cable protection; in coming to this view we advise the following; - The predicted impacts will directly affect the SAC feature. - We are not satisfied that the likely impacts can be considered to be of a temporary nature. Natural England remains concerned about the decommissioning of rock protection that is proposed to make good any impact. We do not believe that this has been satisfactorily addressed by Annex 2 JdN 'Technical note for decommissioning	The RIAA presents a robust assessment of the effects of cable protection measures on marine processes and benthic ecological receptors (including the Annex I sandbank feature of the NNSSR SAC), which was based on a maximum design scenario for cable crossing and remedial cable protection. Based on the assessments undertaken (and further supporting evidence in REP1-138), it was concluded that cable protection measures will not lead to adverse effects on integrity of the NNSSR SAC, for the maximum design scenario. The employment of sensitive cable and scour protection (and commitment to not use concrete mattressing) within designated sites has been proposed to minimise habitat loss effects by using protection measures which will minimise the change in substrate/sediment type (i.e. rock sizes that reflect the baseline conditions), which will therefore allow for some recovery of benthic communities and some continued ecological function in the areas affected. The Applicant will work with the MMO and SNCBs to avoid the use of cable protection wherever possible, which is secured through the Cable Protection Plan which will be managed by the ECoW for the project.

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		Race Bank Export Cable rock protection' we have the following comments: See Annex C of D7 response. - The predicted Impacts are only considered by Applicant to be significant if impacting on existing Annex I *Sabellaria spinulosa* reef (priority habitat). And therefore that impact of that feature is small. However, this feature is in unfavourable condition due to anthropogenic activities. The placement of rock armour within the area for the management of reef would in our view hinder the restoration of this feature. We consider that the establishment of *Sabellaria spinulosa* on artificial substrate does not form part of the SAC feature and is not ""counting"" towards its conservation objectives, in so much as if reef grows back over rock armouring then it's still unfavourable condition, as it is not the biotope set out in conservation advice i.e. it is not a replacement for *Sabellaria spinulosa* reef on natural site sediment habitat.	**Decommissioning** The Applicant's position, as set out in the RIAA, is that decommissioning of cable protection is not necessary to avoid adverse effects on integrity and therefore that cable protection would be left in situ following decommissioning. However, the Applicant is willing to accept a requirement to decommission remedial cable protection and scour protection, subject to agreement with the MMO and SNCBs. The Rock Protection Decommissioning Methods (REP6-018) clarification note demonstrates that decommissioning of rock is possible based on current technologies, although technological advances in the coming decades would be expected to improve the efficiency of these. As part of the Hornsea Three proposals outlined above, the Applicant has proposed a project with the MMO and NE, including a desktop study and field trials to validate the effectiveness and efficiency of decommissioning rock protection in the southern North Sea and improve efficiency of techniques currently available (see Appendix 22 to the Applicant's response to Deadline 9). **Effects on Annex I reefs** With respect to effects of cable protection on Annex I reefs, the Applicant's primary mitigation with respect to Annex I *S. spinulosa* reefs is to avoid these reef features during cable installation. This would ensure that rock protection would not be placed on areas of Annex I reef habitat. The Applicant's position with respect to colonisation of cable protection by *S. spinulosa* and other local benthic fauna is that this would allow ecological function to continue within the areas affected by cable protection. The Applicant has not argued that this qualifies as Annex I reef feature

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			as there is no evidence to support this assumption (see the Applicant's comments Stage 2, Matrix 1 of the RIES; REP7-006).
4.5	Phased Build	Natural England notes that in [REP - 178] the applicant has not an anticipated that recovery will happen between both the different construction stages and the phased builds. Therefore any Appropriate Assessment would need to take into account both the spatial and temporal impact to the interest feature/s of the site. As there could 13 years of impact before the site would start to recover and up to 18 before full recovery could occur unless cable protection was used when we believe there would be a permanent habitat change. Therefore we can confirm that we do not believe the cumulative impact is flawed, it is more a recognition of the temporal scale of the impacts	The Applicant is pleased to note that Natural England is now satisfied that the cumulative assessment is not flawed and that it considers the interaction between different phases of Hornsea Three. However, it is not correct to state that there could be 13 years of impact before the site would start to recover; as set out in REP1-178, once the cable is successfully installed in an area of seabed, this area would not be further disturbed, and recovery would commence immediately. While the construction phase may last up to eight years in total (potentially over two phases), the total duration of cable installation along the offshore cable corridor (including the NNSSR SAC) would only be up to three years (bearing in mind the point above that cable installation occurs progressively so not all parts of the site are impacted at one time or continuously throughout that 3 year period). Even in a two phase construction scenario, areas affected by the first phase would have at least partly recovered while the second phase cable installation is occurring. As such the scenario described by NE here (i.e. 13 years of impact and 18 years before full recovery) would not arise.
4.6	Operation and Maintenance	See Natural England advice on cable protection (ANNEX C @ D7)	The Applicant refers the ExA to the Applicant's response to questions F3.4 and F3.5 of the Rule 17 request for further information (PD-020). The justification for replenishment of cable protection during the operation and maintenance phase is set out in Q2.2.53 (REP4-012). The Applicant can confirm that the 25% replenishment

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			volume has not been separated out from the total cable protection volume within the draft DCO. The volumes within the DCO include the 25% replenishment, to provide an overarching volume of rock for each of the dMLs.
5.1	Mitigation	**Annex I sandbanks** Whilst at Para 11. of Annex D4 [REP1- 217] we suggested some mitigation that has been used for other industries. The only mitigation that has been presented to reduce the impacts has been one of potential removal at the time of decommissioning. As set in our response to Deadline 6 the Cable Installation Plan and the conditions with that including the use of an ECOW may ensure the real time compliance with the requirements of the DML condition documents, but it doesn't address the current LSE sufficiently to exclude an adverse effect on integrity and meet the requirements of the habitats directives i.e. the presence/use of a ECOW s not mitigation."	The Applicant has carefully considered all mitigation options which have been proposed by NE and other interested parties throughout the pre-application and examination phases. The Applicant has revisited the relevant section of (REP1- 217) and can confirm that rock protection is not proposed for vessel stabilisation, however the Applicant is willing to avoid/limit seabed impacts from vessels (e.g. jack up vessels) as much as practical within SACs. As such, the Applicant will commit to entirely avoiding the use of using jack up vessels within the NNSSR SAC during the construction phase and will use jack up vessels within the NNSSR SAC during cable repair/maintenance operations only as a last resort (e.g. adverse weather conditions), with a cable barge always used as the preferred maintenance vessel. The Applicant has offered a range of mitigation measures to date during the pre-application phase and during the examination phase (see also mitigation commitments for WNNC SAC above): Pre-application • Micrositing around Annex I reefs within and outside SACs; • Reduction in Cable Protection maximum design scenario assumptions from the PEIR - Assumed all cable protection could be placed within NNSSR SAC in PEIR which was refined on the basis of no more than 10% for the cables within the site, resulting in ~50% cable protection from PEIR (see REP1-138 for details);

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			• Offshore reroute to reduce export cable footprint within the NNSSR SAC – reduction of total cable length in NNSSR by 78 km; • Removed the NNSSR SAC from the HVAC booster station search area, removing the potential for habitat loss impacts from foundations and scour protection; • Commitment to use sensitive cable protection: minimises the change in sediment/substrate (compared to concrete mattressing/grout bags) to allow some ecological function during project operation (REP1-138); and • Avoiding the use of concrete mattressing in designated sites. <u>Examination phase</u> • Decommissioning of rock protection. • Use of temporary working areas for cable installation to avoid *S. spinulosa* reefs. Reflecting on NE's wider concerns in relation to cable installation, the applicant has also sought to go above and beyond what is typically done in offshore wind farm applications, as follows: • Developed a Cable Protection and Sandwave Clearance Plans (as part of the CSIP), including and proposals for a greater level of pre-construction consultation (including input to tender process and contractor briefing) and reporting than has previously been committed to for offshore wind farm projects.

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			• Preliminary Trenching Assessment, including a level of detail not previously provided in a DCO application for an offshore wind farm. The Applicant has also proposed a number of proposals (see Appendix 22 to the Applicant's response to Deadline 9) which aim to aid SNCBs in the achievement of conservation objectives for the SACs coinciding with the Hornsea Three offshore cable corridor.
			Further measures As set out in the introduction and above, the Applicant has also proposed a number of studies to aid in the achievement of conservation objectives of Annex I features of the NNSSR SAC (and other designated sites; see Appendix 22 to the Applicant's response to Deadline 9). The Applicant notes that NE in their Deadline 7 response have proposed that a Site Integrity Plan (REP7-076) should be submitted. The Applicant is currently exploring the option of developing a Site Integrity Plan for the NNSSR SAC.
		Annex I reefs Based on JNCC reef layer data provided at Deadline 5 NE and JNCC advise that the *Sabellaria spinulosa* area to be managed as reef straddles the Saturn reef area of the cable route. {Put in RB advice about byelaw]. Therefore, we advise that this management area is avoided. If as anticipated the removal of anthropogenic activities enables the recovery of Annex I reef and cabling is permitted within this area there is a high probability that there will be sufficient space to micro-	**Annex I reefs** See the Applicant's position above in relation to micrositing around Annex I reef features. The wording "where possible" has been included to account for an unlikely eventuality whereby Annex I *S. spinulosa* reef (as defined by pre-construction surveys described above) extend across the entire Hornsea Three offshore cable corridor. As set out in paragraph 5.6.1.11 et seq. of the RIAA, it is highly likely that the primary mitigation (i.e. avoidance of Annex I reefs) will be effective

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		route around the reef features. Therefore, whilst we continue to advocate that the standard mitigation measure/marine licence conditioned to avoid reef features is included in the Projects DML it may not be feasible to do so. To address this the Applicant has included the caveat 'where possible', but NE and JNCC have concerns about the increased level of risk to the integrity of the site such a caveat would endorse as there are no parameters to assess and agree what is "possible". We do not consider the applicant's consideration of routing through 'lower quality' reef to be acceptable, because in terms of restoration of conservation objectives the 'lower quality' reef mentioned by the applicant is still contained within area to be managed as reef, with the protection provided by Annex I status. Furthermore whether reef is avoided or not during installation there does remain a risk during O&M cable remediation activities that reef could establish across the cable corridor or nearby areas where remediation activities needed to occur. Accordingly, every effort should be made, with input from the MMO and NE, to minimise the impacts at the time of undertaking the works.	due to the width of the Hornsea Three offshore cable corridor and the majority of historic reef locations being outside the offshore cable corridor. The proposed extension of the offshore cable corridor into temporary working areas (REP6-038) will further increase the potential for micrositing. In the unlikely event that cables cannot be microsited around Annex I reefs (i.e. where Annex I reefs extend across the entire ~2.5 km offshore cable corridor in this part of the SAC), cables may need to be routed through areas of lower quality reef, as agreed with the MMO and SNCBs via the CSIP. As outlined in the RIAA (see also response to Q1.2.20; REP1-122), *S. spinulosa* has a medium sensitivity to disturbance and therefore could recover following cable installation. In this eventuality of Annex I reef extending across the entire offshore cable corridor (i.e. far greater than their current extents), the Applicant would assume the condition of Annex I reefs within this part of the SAC would no longer be unfavourable. As such, direct impacts on a small proportion of the periphery of such a feature would not represent an adverse effect on integrity, with recovery expected to occur following cable installation. The condition of Annex I reefs at the time of construction would also be informed by the proposed study within the NNSSR SAC to determine extents and condition of Annex I *S. spinulosa* reefs in the north west section of the SAC (see Survey Data - SNCB site management above). However, this is an unlikely scenario and the Applicant has demonstrated that the offshore cable corridor is sufficiently wide (particularly when considering the Applicants ability to install cables within the adjacent temporary working areas; REP6-038) to

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			avoid direct impacts on Annex I *S. spinulosa* reefs, and "where possible" has been included within the mitigation to allow for the unlikely scenario outlined above.
6.1	Recovery	**Annex I sandbanks** We note the Applicant's conclusion of "high confidence that the seabed will recover to a new natural equilibrium state within a timescale of months to years." We would suggest that approaching a new equilibrium may not be in accord with restoration of the site, if that new equilibrium is out with the sediment composition or biological communities expected from the designated feature.	The statement made in relation to "natural equilibrium state" refers to recovery of sandwaves following sandwave clearance operations. The Applicant can advise that recovery of sandwaves to a new natural equilibrium state would not be outwith the sediment composition or biological communicates expected from the NNSSR SAC and so Natural England's concern would not arise. The use of the term "natural equilibrium state" acknowledges that sandwaves are mobile features both within and outside designated sites. The mobile bedforms which may require clearance to ensure burial below the reference seabed level (i.e. to ensure successful installation and avoid use of cable protection) are characteristic of an active and dynamic sedimentary environment which is conducive to the development, maintenance and migration of sandwaves. As such, the seabed not a static environment and the shape of the bedform following recovery may recover to its original condition (e.g. rebuilding a single crest feature, although likely displaced in the direction of natural migration) or it may change (e.g. a single crest feature might bifurcate or merge with another nearby bedform). All such possible outcomes are consistent with the natural processes and bedform configurations that characterise sandwave fields within such a dynamic environment. This would not adversely affect the onward form and function of the individual bedform features, or the Annex I sandbank feature as a whole (REP1-183 and APP-061). As such recovery of sandwaves to a new natural equilibrium state would not be outwith the sediment

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			composition or biological communicates expected from the WNNC SAC, with the equilibrium state consistent with the prevailing natural processes and the dynamic nature of natural morphological change.
		Annex I reefs Natural England agrees The applicant has cited that *Sabellaria spinulosa* reef can establish on rock amour and therefore the Annex I habitat can recover. However, it is the SNCB advice that the establishment of *Sabellaria spinulosa* on artificial substrate doesn't "count" towards favourable condition, in so much as if reef grows back over rock armouring then it's still unfavourable condition, as it is not the biotope set out in conservation advice i.e. it is not a replacement for *Sabellaria spinulosa* reef on natural site sediment habitat.	The Applicant's primary mitigation with respect to Annex I *S. spinulosa* reefs is to avoid these reef features during cable installation. This would ensure that rock protection would not be placed on areas of Annex I reef habitat. The Applicant's position with respect to colonisation of cable protection by *S. spinulosa* and other local benthic fauna is that this would allow ecological function to continue within the areas affected by cable protection. The Applicant has not argued that this qualifies as Annex I reef feature as there is no clear evidence to support this assumption (see the Applicant's comments Stage 2, matrix 1 of the RIES; REP7-006).
7.1	Restoration	**Annex I sandbanks** No consideration has been given to any remediation plan using proven techniques for any Annex I habitat. **Annex I reef** Natural England doesn't believe that there is any remediation and/or restoration that can be undertaken to restore Reef feature to any pre impact state.	The Applicant considers that remediation of the Annex I sandbanks features is not necessary, following Hornsea Three cable installation recovery of sediments and associated biological communities will occur through natural processes. Similarly, the Applicant's position is the primary mitigation to avoid Annex I reefs is appropriate to ensure direct impacts on these features do not occur and therefore no remediation would be necessary. However, in the unlikely event that monitoring shows that recovery has not occurred, the Applicant will work with the MMO and SNCBs to undertake appropriate remediation of the features affected. This is likely to be informed by the proposals put forward

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			by the Applicant to aid SNCBs in the achievement of conservation objectives of the SAC.