Hornsea Three Sandbank Implementation Plan

Consultation Summary

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Table of contents

List of Tables

Acronyms

Acronym	Definition
AoS	Area of Search
BEIS	Department for Business, Energy, and Industrial Strategy
Cefas	Centre for Fisheries, Environment and Aquaculture Science
DCO	Development Consent Order
Defra	Department for Environment Food & Rural Affairs
EIFCA	Eastern Inshore Fisheries and Conservation Authority
EMP	Environmental Monitoring Plan
JNCC	Joint Nature Conservation Committee
MMO	Marine Management Organisation
NNSSR	North Norfolk Sandbanks and Saturn Reef
NFFO	National Federation of Fishermen's Organisations
SAC	Special Area of Conservation
SBIP	Sandbanks Implementation Plan[1]
SG	Steering Group
SoS	Secretary of State
WNNC	Wash and North Norfolk Coast

[1] Acronym chosen so as not to be confused with Site Integrity Plan (SIP)

1 Introduction

1.1 Purpose of this document

1. Consultation has been fundamental in developing the Sandbank Implementation Plans (SBIPs). The purpose of this document is to provide an overview of the consultation held prior to the submission of the SBIPs for The Wash and North Norfolk Coast (WNNC) Special Area of Conservation (SAC) and North Norfolk Sandbanks and Saturn Reef (NNSSR) SAC (**Table 1**) alongside a summary of all consultation responses received and the regard given by Hornsea Three (**Section 3**).

2. As consultation on the WNNC SBIP (07103743_A) and NNSSR SBIP (07122823_A) has been conducted in parallel; this Consultation Summary is relevant to both SBIPs.

3. As the subject of what constitutes appropriate compensation has been raised by consultees in relation to the Hornsea Three Development Consent Order (DCO) conditions, a standalone high-level summary of Hornsea Three's position has been included within this document. Hornsea Three appreciate the time and collaborative engagement from Steering Group (SG) members in assisting the development of the WNNC and NNSSR SBIPs.

1.2 Consultation requirement

4. As per Schedule 14 Part 2 of the DCO, a benthic compensation SG has been formed to consult on the preparation, scope, and delivery of the SBIPs prior to submission to the Secretary of State for approval. The SG has been involved in the development of the SBIP documents through discussion, review, and comment on the key scopes of work. The functioning of the SG has been governed by the Plan of Work (06827200_A) which was approved by the Secretary of State 07 September 2021.

5. The SG comprises core members who are the named consultees in Schedule 14 Part 2 of the DCO (Joint Nature Conservation Committee (JNCC), Natural England and the Marine Management Organisation (MMO). Advisory bodies (the Eastern Inshore Fisheries and Conservation Authority (EIFCA), the Department for Environment Food & Rural Affairs (Defra), the Centre for Environment, Fisheries and Aquaculture Science (Cefas), The National Federation of Fishermen's Organisations (NFFO) and the Wash and North Norfolk Marine Partnership (WNNMP)) additionally attend to ensure breadth of expertise, with an independent Chair to facilitate efficient discussion.

6. Hornsea Three note that Natural England engage as a core member to the SG in relation to the potential impacts associated with those compensation measures, rather than on the adequacy of the compensation measures themselves.

7. Consultation has also been undertaken with various other stakeholders (such as Fisheries and Oil and Gas operators) to gain a better understanding of issues in relation to target removal locations. These are captured in more detail as part of the Marine Debris Desk-based Assessment which accompanies the SBIPs as Appendix 1.

1.3 Consultation methodology

8. As detailed in **Section 3** of the WNNC and NNSSR SBIPs, as per Schedule 14 Part 2 of the DCO a benthic compensation SG has been formed to consult on the preparation of the SBIPs prior to submission to the Secretary of State.

9. The SG has been involved in the development of the SBIPs through discussion, review, and comment on four preliminary Technical Notes (listed in **Table 1**) and two drafts of the SBIPs. The key scopes of work outlined in **Table 1** are provided as Annex 2 to this Consultation Summary.

10. All formal written feedback to date from SG members has been recorded and responded to by Hornsea Three and those responses are presented in full within **Section 3** of this Consultation Summary. All written feedback received is provided as Annex 1 to this document.

Table 1: Timeline of SG meetings and documents circulated.

Meeting	Date	Supporting Documents
SG 1	02/03/2021	Hornsea Three Benthic Compensation Plan of Work (06827200_A) Hornsea Three DCO
SG 2	30/03/2021	Hornsea Three Benthic Compensation Plan of Work Hornsea Three DCO Hornsea Three Marine Debris Removal Scope of Works (06915145_A)
SG 3	27/04/2021	Hornsea Three Benthic Compensation Plan of Work Hornsea Three DCO Hornsea Three Environmental Monitoring Plan Technical Note (06951697_A) Hornsea Three Marine Debris Awareness Campaign Scope of Work (0695167_A)
SG 4	08/06/2021	Hornsea Three Supporting Document SG4 (adaptive management proposals) (07015970_A)
SG 5	21/07/21	No supporting documents. Overview of first draft SBIPs provided to the SG.
SG 6	31/08/21	No supporting documents. Comments had been received from SG Members on the SBIPs prior to the meeting and key comments were reviewed and discussed.
SG 7	09/11/21	No supporting documents. Comments had been received from SG Members on the second draft SBIPs prior to the meeting and key comments/updates were reviewed and discussed.

1.4 SBIPs note to the reader

11. Hornsea Three note that the WNNC SBIP (07103743_A) and NNSSR SBIP (07122823_A) share the same requirements and in several instances present text which have no fundamental differences.

12. **Table 2** presents a comparison of the SBIPs to enable an efficient review of both SBIPs.

Table 2 Comparison of WNNC and NNSSR SBIPs.

Section	NNSSR SBIP	WNNC SBIP
1. Introduction	No fundamental difference between SBIPs is presented	
2. Description of site and conservation objectives	These sections are different	
3. Consultation	No fundamental difference between SBIPs is presented	
4. Avoidance of impacts to Annex I reef habitats	These sections are different as the likelihood of encountering Annex 1 reef habitat differs between WNNC and NNSSR	
5. Disposal of Dredged Material	No fundamental difference between SBIPs is presented	
6. Marine debris removal campaign	The locations of the debris removal campaign are different as they are located within the relevant SAC. There is no fundamental difference in the debris removal methodology presented	
7. Awareness campaign	No fundamental difference between SBIPs is presented	

Section	NNSSR SBIP	WNNC SBIP
8. Environmental monitoring	No fundamental difference between SBIPs is presented	
9. Timetable for implementation	No fundamental difference between SBIPs is presented	
Appendix 1: Desk Based Assessment	One appendix has been provided and is relevant to both WNNC and NNSSR SBIPs	
Appendix 2: Environmental Monitoring Plan	One appendix has been provided and is relevant to both WNNC and NNSSR SBIPs	
Appendix 3: Disposal Technical Study	One appendix has been provided and is relevant to both WNNC and NNSSR SBIPs	

2 Compensation and DCO requirement

2.1 Compensation objectives and DCO requirements

13. Schedule 14 Part 2 of the DCO as granted requires Orsted Hornsea Project Three (UK) Limited (Hornsea Three) to compensate for impacts, relating to deployment of cable protection, to the Annex 1 benthic features 'sandbanks which are slightly covered by sea water all of the time' in WNNC SAC and NNSSR SAC. The impact corresponds to a predicted footprint of impact of 6% of the cable length within each of the SACs. The compensation required, as outlined in the DCO, comprises the following:

- Marine debris removal to no less than 2.77 ha at the WNNC SAC and 41.8 ha at the NNSSR SAC; and
- Marine debris awareness events and implementation of measures to facilitate the rapid recovery of lost fishing gear.

14. There is also a requirement for the development of an Environmental Monitoring Plan (EMP) (SBIP Appendix Two, 0712656_A) which details surveys to assess the effects of cable protection on sediment movement and epifauna assemblages during the operation of Hornsea Three to:

- Improve the evidence base for assessing the impacts of offshore windfarm cable installation and rock protection for future projects; and
- Conduct appropriate surveys to monitor the recovery of the areas of the NNSSR and the WNNC SAC s impacted by cable protection, post-decommissioning.

15. Although grouped with the marine debris removal and marine debris awareness requirements within the DCO conditions, it should be noted that the EMP is not considered to be a direct compensatory measure for the SACs and will instead provide invaluable evidence through quantifying the realised impact of cable protection on sandbank habitat and links to wider project monitoring commitments within Schedule 12, Part 2, Conditions 18(2)(b) and 20(2)(c) of the DCO. The package of compensation measures is comprised of a single marine debris removal campaign together with the long-term preventative measures as set out in Section 7 and Section 8 of the WNNC and NNSSR SBIPs.

16. These measures provide compensation to offset potential impacts arising from the need for secondary cable protection in areas where cables remain exposed and vulnerable to damage or is needed to stabilise cables laid in unfavourable ground conditions. Although some colonisation of the secondary protection is expected, cable protection placement covers the natural seabed, potentially reducing the area of benthic habitat available for colonisation, as assessed within the Hornsea Three Environmental Statement[2].

17. The recovery of marine debris compensates for potential habitat loss by removing obstacles from the seabed which have reduced the potential for colonisation of the benthic species that characterise the site. In terms of the Conservation Objectives of the site (which include to maintain the extent and distribution of qualifying natural habitats) the action of marine debris removal provides additional area of habitat and

[2] EN010080-000532-HOW03_6.2.2_Volume 2 - Ch 2 - Benthic Ecology.pdf (planninginspectorate.gov.uk)

increases the extent of available qualifying habitat within the site. This would result in a positive outcome for three key attributes namely:

- Extent and distribution (as it provides additional surface area of sandbank habitat available for colonisation);
- Structure and function (the removal of an obstacle then enables the key functions of sand movement to continue unabated); and
- Supporting processes (removes the anthropogenic feature that could have been affecting supporting processes (such as sediment deposition and natural flows of water).

18. The HRA conducted by the Secretary of State for Hornsea Three (BEIS, 2020)[3] concludes that '*the removal of fishing gear from both SACs would enhance the condition of the sandbank habitats*. Hornsea Three are confident that the compensation measures outlined in the SBIPs will achieve these objectives and have further widened the scope of the term marine debris (beyond solely lost or abandoned fishing gear) to maximise the benefits to the SACs.

19. Hornsea Three acknowledge the uncertainties in relation to the outcome of the package of compensation measures, including relating to the success criteria of the compensation measures, and that this is not unexpected given the relatively recent development of such initiatives in the sublittoral environment. Further discussion is provided below:

a. The removal of the debris from the SACs ensures it does not continue to cause harm to the qualifying features of the SACs. Given the global scale of marine debris, Hornsea Three recognise the likelihood that further items of debris will enter the SACs however the removal of the debris found will reduce the overall amount of debris within the SAC thereby providing an additional area of seabed for colonisation. The debris reduction and awareness raising measures are expected to address the ongoing issue of debris and reduce its accumulation in nearshore and offshore areas, including within the SACs. Marine debris is recognised globally as a significant issue and there are very few areas around the world that are not subjected to marine debris pollution in some form. Any initiatives that can reduce the amount of litter entering the marine environment provide a welcome step forward in addressing this issue. Examples of such initiatives are being implemented by various organisations and the raising awareness campaign draws on some of these initiatives to increase the chances of reducing the ongoing problem in our seas including within the impacted SACs. Given the significance of the marine litter issue, it is extremely unlikely that no litter is entering the SACs. Section 7 of the WNNC and NNSSR SBIPs highlights the debris identified within the SACs from Hornsea Three, Hornsea Two, Race Bank & Lincs offshore wind farm data. Supporting the rapid retrieval of lost fishing gear will address a certain aspect of fishing pressure noted as an existing pressure on the SACs.

b. Following a review of data from Hornsea Three pre-consent surveys and other Orsted projects, the Marine Debris Removal Desk Based Assessment (Appendix 1 to the SBIPs) concluded that there is a relatively high likelihood of finding anthropogenic material within the SACs. As discussed in Section 7 of the WNNC and NNSSR SBIPs, there are some areas with relatively high likelihood of densities of debris items on the seabed which will be targeted to optimise the likelihood of finding and retrieving sufficient debris from the seabed. The planned geophysical survey undertaken to search for debris will adopt an adaptive management approach whereby real-time monitoring and analysis of the Area of Search (AoS) will allow the AoS to be changed or extended into other areas of either of the two SACs. Complementing the debris removal, the debris reduction and awareness raising measures will provide a longer-term measure to reduce the amount of debris entering the sites. These measures together will, over the operational lifetime of Hornsea Three, provide sufficient compensation for any potential temporary long term habitat loss due to the cable protection measures.

c. As set out in the HRA findings for the Hornsea Three project (BEIS, 2020), the Secretary of State concluded that "*the removal of fishing gear will improve the condition of the habitats for the endemic epifaunal communities which are part of the sandbank ecosystem. This would contribute to the conservation objectives*

[3] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010080/EN010080-003267-EN010080%20Hornsea%20Three%20-%20Habitats%20Regulations%20Assessment.pdf

of the SAC by reducing the pressures on the biological assemblages". It is recognised that debris is not incorporated into the potential reasons for unfavourable conditions (within the SAC), but it is also recognised that items of debris will prevent the natural development of some of the sandbank habitats and colonisation by certain species. JNCC and Natural England have clarified their position that where *Sabellaria* has colonised onto a piece of anthropogenic material and developed into a reef structure, that it is not considered to be a feature of conservation interest (response provided in full in **Table 3**). An item of debris would also be expected to prevent colonisation by other species that are typical of sandbank habitats. If such reef features are not considered to be reef (from a conservation features perspective) and the debris itself prevents colonisation of other sandbank species Therefore, it is logical that the presence of debris results in a reduction in the extent and distribution of the qualifying habitats as they are preventing the colonisation by typical soft sediment benthic species.

2.2 Scale of the impact

20. The compensation, as outlined in the DCO, has been based upon a worst-case assumption of cable protection being deployed along 6% of the length of cables within the WNNC and NNSSR SACs, as outlined in the maximum design envelope consented in the DCO.

21. Hornsea Three continue to work towards deploying as low volume of cable protection as ground conditions allow and are keen to re-iterate that cable protection deployment is not a preferred approach and is only required should unforeseen challenging ground conditions or complications during cable installation be encountered. Therefore, the scale of the habitat loss impact from cable protection (if one occurs at all) on the WNNC and NNSSR SACs will not be fully understood until completion of construction.

22. Despite this fact, Hornsea Three will implement the package of benthic compensation measures prior to the impact occurring, thus potentially delivering compensation where it may not be required.

2.3 Guidance and Regulation on compensation measures

23. Guidance documents have been produced for considering and implementing compensation measures as part of the derogation process. Such documents also provide lessons learned from previous industry experience which is particularly important when trying to develop new compensatory initiatives. Previous examples of compensation stem from terrestrial or intertidal projects where it is simpler to determine the potential for, and likely success of, the measures required. Compensation within the sublittoral environment is new and the potential for success of measures is currently being developed by regulators and developers. There are a number of issues which have been identified in various guidance documents including those raised in a recent review of compensatory measures (Blake *et al*, 2020) which states that it may not always be possible to provide a like-for-like replacement of losses in the marine environment and gives an example (Cardiff Bay Barrage) where a wider environmental gain was considered to be of greater value than providing habitat replacement for negatively impacted features. The proposed debris removal and longer-term measures of debris reduction and awareness raising will provide a wider environmental gain than solely for the SACs given the wide-ranging issue of marine debris as one of the top concerns for the marine environment.

24. European Commission guidance on Managing Natura 2000 Sites (European Commission, 2018) lists examples of compensatory measures (whilst still relating to features affected by the plan or project) including habitat improvement in existing sites: improving the remaining habitat on the site concerned or restoring the habitat on another Natura 2000 site, in proportion to the loss due to the plan or project. In this respect debris clearance in either site could be used to compensate for the habitat loss due to overall cable protection works if this is necessary. Incentives for certain economic activities to sustain key ecological functions is also given as an example, which links with the initiatives for reducing litter and raising awareness of the issues of marine debris.

25. The Blake *et al* report also identifies compliance measures and summarises that "Demonstrating compliance with relevant legislation is an obligation on the developer. Ensuring that legal requirements can be reasonably demonstrated is the duty of the regulator." In terms of demonstrating compliance, the Secretary of State has deemed the measures as set out in the Hornsea Three DCO to be sufficient compensation, and Hornsea Three have taken these requirements further by implementing adaptive management measures as set out below.

2.4 Adaptive management approach

26. Adaptive management is a process whereby an activity can be adapted in response to the results of monitoring to ensure that success is achieved (i.e., amending the area from which marine debris is removed from the seabed within the relevant SAC). It is a widely used strategy to support activities where there is uncertainty around the potential for impact and/or where a flexible, robust approach is beneficial to the outcome of a project. An inherent level of uncertainty occurs in most marine activities due to the dynamic nature of the environment and the variation in sensitivity and vulnerability of species and communities that have adapted to local conditions.

27. Adaptive Management provides a management approach that facilitates flexible decision making that can be refined in response to future uncertainties. The strategy relies on reviewing progress towards goals on an agreed timeline appropriate to each measure and responding to the outcomes of monitoring and refining the actions as necessary.

28. The key uncertainties in relation to the package of benthic compensation measures which Hornsea Three are required to implement is the volume of marine debris in the SACs, and the successful uptake of the long-term debris prevention measures. Adaptive management strategies aim to address these uncertainties and adopt an approach to increase the likelihood of success. Further detail on the adaptive management strategies is provided in Section 7 and Section 8 of the WNNC and NNSSR SBIPs. Hornsea Three note that the extensive consultation on adaptive management (as detailed in **Table 1**) has ensured that the SG is aligned with the proposed adaptive management approach. In particular, Natural England note '*Natural England welcomes the inclusion of the 'trigger level' and thresholds for removal and adoption of the Orsted's adaptive management approach.*'.

3 Summary of SG consultation

29. All formal written feedback to date from SG members has been recorded and responded to by Hornsea Three and is presented in full in **Table 3**. **Table 3** is categorised in relation to each requirement of Schedule 14, Part 2, Condition 13 to provide an overview of the development of the SBIPs in relation to the advice received from SG members. The consultation approach for each requirement within Condition 13 has been consistent in that a first SG meeting was held to discuss the scope of the requirement, the first written consultation was received in relation to a technical note which summarised Hornsea Three's proposed approach to addressing the DCO requirement (this is detailed further in Table 2 of NNSSR and WNNC SBIPs) and two further stages of written comment have been received on the draft SBIPs prior to submission to BEIS.

30. Hornsea Three is pleased to close out all comments raised by MMO on the first and second draft SBIPs (see Comment ID 39), EIFCA (see Comment ID 169) and provide response to Natural England, JNCC and Defra comments on the second draft SBIPs. Hornsea Three note that no further comments were received from NFFO or WNNMP on the second draft SBIPs.

31. Hornsea Three have used the below colour coding in relation to the written comments received to demonstrate to BEIS how consultation responses have been used to steer in the development of the SBIPs.

Comment relates to the sufficiency of compensation measures. Comment received has been noted, however the purpose of the SBIPs is to sufficiently discharge the DCO requirements. Hornsea Three have provided rationale regarding the sufficiency of the measures in Section 2 of this document.
Hornsea Three fully agree with comment received and it has been incorporated in full into the SBIPs.
Hornsea Three have acknowledged and considered the comment and have provided further information in the SBIPs to address this comment.
Hornsea Three acknowledge the comment and after further consideration does not agree with the advice received and have therefore provided further rationale or clarity on its position.

Table 3: Summary of SG consultation.

Comment ID Number	Consultee	Date Received	Document	How was comment addressed	Relevant to WNNC, NNSSR or both	Comment	Response / where addressed in SBIPs
Compensation Measures secured in Schedule 14 Part 2 of Hornsea Three DCO							
1	Natural England	15/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		Both	NE acknowledges there are several benefits to the removal of marine debris. However, it is very unlikely that removing litter will improve the condition of Annex 1 sandbanks and thereby compensate for the predicted habitat loss over the lifetime of the project.	Hornsea Three is confident that the removal of marine debris will improve the condition of the sandbank habitat, further discussion regarding the benefits of marine debris removal is detailed in Section 6.2.1.2 of the NNSSR and WNNC SBIPs and the above sections of this document. Long term measures are provided as part of the compensation package.
2	Natural England	15/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		Both	NE don't consider a single debris removal campaign prior to construction would be sufficient to improve the condition of the sites for the lifetime of the project. NE consider that Orsted would have to maintain some form of removal/exclusion through the lifetime of the project to allow the litter removal to provide any potential benefit to the sites. NE do not consider there to be sufficient evidence to have confidence that an awareness campaign would result in the exclusion of a significant amount of debris for the lifetime of the project.	The awareness campaign will function as the long-term component of the marine debris campaign, with the aims of prevention and reduction of marine debris entering the marine environment. Hornsea Three would note that the provision of FfL facilities will actively remove debris from the marine environment (including the seabed within the SACs) throughout the operation of Hornsea Three and details in regard to the quantitative success of such initiatives in the south-west UK are detailed in Section 7.1.2 of the NNSSR and WNNC SBIPs.
3	Natural England	15/04/2021	Marine Debris SoW (06915145_A)		Both	In summary, whilst NE acknowledges the wider marine benefits in terms of net gain that removal of marine litter/debris could provide within SACs, there is little evidence of the impact of litter on the form and	Any habitat previously unavailable due to the presence of marine debris will be made available through its removal (compensating

Comment ID Number	Consultee	Date Received	Document	How was comment addressed	Relevant to WNNC, NNSSR or both	Comment	Response / where addressed in SBIPs
			Consulted on at SG Meeting 2 30/03/2021			function of Annex 1 habitat features in WNNC SAC and NNSSR SAC. As a result, removal of marine litter will not compensate for the impacts to SAC sandbanks resulting from the proposed development, and the overall coherence of the Natura 2000 network will not be maintained. We also hold some concerns that without appropriate design and/or mitigation measures being integrated, the methods employed to deliver marine debris removal could have wider ramifications for site features that could further hinder the conservation objectives of the sites and move them further away from favourable condition.	for loss of habitat through deposition of cable protection). The removal methodology has been specifically designed to minimise impacts to the wider site (e.g., avoidance of Annex I reef habitat), and any residual impacts to the sandbanks will be temporary and short term given the highly mobile nature of the environment. This is detailed further within Section 6 of the NNSSR and WNNC SBIPs. Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21, SNCBs agree that '*As long as a decision tree can be agreed, we believe that significant impacts to the interest features of the site can be avoided*'.
4	Natural England	15/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		Both	NE acknowledges there are several benefits to the removal of marine debris. However, it is very unlikely that removing litter will improve the condition of Annex 1 sandbanks and thereby compensate for the predicted habitat loss over the lifetime of the project.	Hornsea Three note that this comment has been received previously. A response is provided above (Comment ID 1).
5	JNCC	13/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		NNSSR	We note that the Sandbanks Compensation Strategy mainly covers inshore compensation and does not consider any active compensation offshore. Packages of measures for NNSSR alone and NNSSR / WNNC together were found in tables 1.2 and 1.3 of the Sandbanks Compensation Strategy. These comprised blue mussel bed restoration plus associated biosecurity	The restoration of blue mussel beds as compensation has not been carried forward by the Secretary of State. Hornsea Three will carry out identification and removal of debris in both the offshore and inshore SACs (as detailed within the DCO). Hornsea Three also notes that the reduction and awareness campaign

Comment ID Number	Consultee	Date Received	Document	How was comment addressed	Relevant to WNNC, NNSSR or both	Comment	Response / where addressed in SBIPs
						measures, active engagement with local stakeholders to identify and remove lost/abandoned fishing gear in nearshore areas, and an awareness campaign aimed at improved recovery measures for marine litter (fishing gear). Given that blue mussel beds are not a feature of NNSSR (and that no sandbank biotopes correlate with any that comprise blue mussel beds), that the identification and removal of debris are scheduled for inshore only, and that an education campaign has no specific impact on NNSSR, JNCC does not consider any of those options to form compensation for long-term impact to the sandbanks feature.	methodologies are also relevant for both inshore and offshore areas, given the industries and vessels anticipated to be included.
6	JNCC	13/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		NNSSR	We note that the conservation advice for NNSSR does not include marine litter as an activity of concern currently likely to impact the conservation objective status for the site. As such, our main concern would be that any litter picking activities would not further impact the conservation objectives of the site and move it further away from favourable condition.	The compensation measure (marine debris removal) relates to the conservation objectives of the NNSSR SAC (and WNNC SAC) through the extent and distribution of sandbanks. The Secretary of State has considered the conservation objectives when drafting the DCO. In addition, the removal methodology has been specifically designed to minimise impacts to wider site. Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21, SNCBs agree that '*As long as a decision tree can be agreed, we believe that significant impacts to the interest features of the site can be avoided*'. Hornsea Three would suggest that marine debris pollution is ubiquitous around the UK coastline and note that specific surveys

Comment ID Number	Consultee	Date Received	Document	How was comment addressed	Relevant to WNNC, NNSSR or both	Comment	Response / where addressed in SBIPs
							targeting marine debris load have not been conducted in NNSSR SAC.
7	JNCC	13/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		NNSSR	JNCC, therefore, does not currently hold the opinion that the package measures are fit for purpose to act in NNSSR as compensation to the cable protection measures required by BEIS. We advised BEIS of this, as well as the developer in both steering group meetings. The comments below relate solely to details of the debris removal campaign itself and the impact this campaign may have on NNSSR	This is noted, however Hornsea Three remains confident in the package of compensation measures which will be implemented. The benefits of marine debris removal are detailed in Section 6 of the NNSSR and WNNC SBIPs.
8	JNCC	13/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		NNSSR	JNCC disagrees that a one-off removal campaign followed by an educational campaign will form satisfactory compensation for the cable protection present through the lifetime of the wind farm. While undertaking one removal campaign may remove some debris from the site, the mobility of the area and the results from Cefas's litter survey series suggests that debris will continue to move around the site, move into the site and to accumulate in areas of higher debris load. There is also no assurance or evidence to suggest that an educational campaign would lead to less debris load in the site. This needs to be discussed in more detail in the third meeting of the steering group. We also question how the developer intends to target other marine debris, and what that other marine debris is expected to be composed of.	Hornsea Three have conducted a desktop assessment to target the campaign with the aim of maximising the potential for finding debris. The types of marine debris which are likely to be removed are detailed further in Section 6 of the NNSSR and WNNC SBIPs. Hornsea Three would note that the provision of FfL facilities will actively remove debris from the marine environment (including within the SACs) throughout the operation of Hornsea Three and details with regard to the quantitative success of such initiatives in the south-west UK are detailed in Section 7.1.2 of the NNSSR and WNNC SBIPs.
9	JNCC	13/04/2021	Marine Debris SoW (06915145_A)		NNSSR	We have the following comments to make regarding section 4, Proposed marine debris removal campaign. Overall, JNCC do not consider that a single debris	Noted. The awareness campaign will function as the long-term aspect of the marine debris campaign, with the aims of prevention and reduction of marine debris entering the marine

Comment ID Number	Consultee	Date Received	Document	How was comment addressed	Relevant to WNNC, NNSSR or both	Comment	Response / where addressed in SBIPs
			Consulted on at SG Meeting 2 30/03/2021			removal event represents compensation. While we understand that Orsted has discussed the appropriateness of using a single event with BEIS, JNCC continues to advise that a single debris removal event does not represent compensation, particularly in a mobile site where debris may be replaced immediately after a single removal event. We again note that the conservation advice for NNSSR does not include marine litter as an activity of concern currently likely to impact the conservation objective status for the site. We would expect it likely that Orsted would have to maintain some form of removal through the lifetime of the windfarm to allow the litter removal to provide any potential impact on the conservation objectives and question the inconsistency with the need for regular monitoring expected as part of the kittiwake package.	environment. Hornsea Three would note that the provision of FfL facilities will actively remove debris from the marine environment (including the seabed within the SACs) throughout the operation of Hornsea Three and details with regard to the quantitative success of such initiatives in the south-west UK are detailed in Section 7.1.2 of the NNSSR and WNNC SBIPs. Monitoring of this initiative, and adaptive management, have been proposed. Hornsea Three would suggest that marine debris pollution is ubiquitous around the UK coastline and note that specific surveys targeting marine debris load have not been conducted in NNSSR SAC. Re-visiting the same hectarage twice is not considered an appropriate approach in such mobile sites (as debris may not accumulate in the same area as the sediment is highly mobile) and therefore debris reduction initiatives are considered the most appropriate way to manage these aspects and implement changes which have longevity.
10	JNCC	17/06/2021	Comment on compensation measures		NNSSR	Sandbanks Compensation Strategy - The developer notes that the rationale underpinning the benefits of conducting a campaign of marine debris removal is outlined in the Sandbanks Compensation Strategy, which was submitted in February 2020 to support the Hornsea Three derogation case. We note that the Sandbanks Compensation Strategy mainly covers	Hornsea Three note that this comment has been received previously. A response is provided above (Comment ID 5).

Comment ID Number	Consultee	Date Received	Document	How was comment addressed	Relevant to WNNC, NNSSR or both	Comment	Response / where addressed in SBIPs
						inshore compensation and does not consider any active compensation offshore.	
11	JNCC	17/06/2021	Comment on compensation measures		NNSSR	Packages of measures for NNSSR alone and NNSSR / WNNC together were found in tables 1.2 and 1.3 of the Sandbanks Compensation Strategy. These comprised blue mussel bed restoration plus associated biosecurity measures, active engagement with local stakeholders to identify and remove lost/abandoned fishing gear in nearshore areas, and an awareness campaign aimed at improved recovery measures for marine litter (fishing gear). Given that blue mussel beds are not a feature of NNSSR (and that no sandbank biotopes correlate with any that comprise blue mussel beds), that the identification and removal of debris are scheduled for inshore only, and that an education campaign has no specific impact on NNSSR, JNCC does not consider any of those options to form compensation for long-term impact to the sandbanks feature.	Hornsea Three note that this comment has been received previously. A response is provided above (Comment ID 5).
12	JNCC	17/06/2021	Comment on compensation measures		NNSSR	The dML widened these original compensation measures concerning the identification and removal of marine litter to encompass identification and removal in NNSSR. As such, this then applied the Sandbank Compensation Strategy's affirmation that the compensation action was in line with the East Inshore and Offshore Marine Plans. These plans relate the impact made by litter to Marine Strategy Framework Directive requirements. Descriptor (10) of the MSFD requires that properties and quantities of marine litter do not cause harm to the coastal and marine environment. We note that the conservation advice for	Hornsea Three would suggest that marine debris pollution is ubiquitous around the UK coastline and note that specific surveys targeting marine debris load have not been conducted in NNSSR SAC. Data from other OWF projects (Hornsea Two/Race Bank/Lincs) has been used alongside Hornsea Three geophysical survey data to give Hornsea Three confidence with respect to the type and size of debris likely to be identified. This is presented in Appendix 1 to the NNSSR and WNNC SBIPs.

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						NNSSR does not include marine litter as an activity of concern currently likely to impact the conservation objective status for the site. As such, our main concern would be that any litter picking activities would not further impact the conservation objectives of the site and move it further away from favourable condition.	
13	JNCC	20/06/2021	SG4 Supporting Document: Success and adaptive management (07015970_A) Consulted on at SG Meeting 4 08/06/21		NNSSR	JNCC, therefore, does not currently hold the opinion that the package measures are fit for purpose to act in NNSSR as compensation to the cable protection measures required by BEIS. We advised BEIS of this in our responses to examination questions, as well as the developer in steering group meetings. The comments below relate solely to details of the proposed marine debris awareness campaign and the proposed environmental monitoring and the impacts that these may have on NNSSR SAC.	Hornsea Three note that this comment has been received previously. A response is provided above (Comment ID 7).
14	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A)		Both	As per our previous written and verbal advice, Natural England and JNCC do not consider that the measures outlined in the DCO compensate for lasting/permanent loss to Annex 1 sandbank feature in the Wash and Norfolk Coast SAC or North Norfolk Sandbanks and Saturn Reef SAC. We have therefore focused our advice to the project in two key areas: ensuring that the proposals will not negatively impact on the features of designated sites and ensuring that the proposed monitoring is capable of detecting changes to the condition of the feature.	Noted, Hornsea Three appreciate the position however would refer to Section 2 of this document.
15	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A)		Both	Please see previous advice as to why the SNCBs are unable to support debris removal and awareness	Noted, Hornsea Three appreciate the position however would refer to Section 2 of this document.

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			and WNNC SBIP (07103743_A)			campaign as compensation for lasting/permanent habitat loss.	
16		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID15			The SNCB advice remains unchanged.	Noted, Hornsea Three appreciate the position however would refer to Section 2 of this document.
Schedule 14 Part 2 Requirement 13 (a) Annex 1 reef							
No comments have been received under this heading.							
Schedule 14 Part 2 Requirement 13 (b)Disposal of dredged material							
17	MMO	17/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	The report presented is largely constructed to satisfy comments raised by Natural England; statutory regulator for designated areas and features. However, there is useful detail included which pertain to the designation of disposal sites.	Noted, no amendments required.
18	MMO	17/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	Table 1 of Hornsea Three Sandbank Implementation Plan – Appendix 3: Indicative Disposal Location Study; Sandwave Levelling and Seabed Preparation, details a list of sandwaves which have been identified for clearance, most of which are located within the cable corridor. Two sandwave features are located within the Array area. The report details the approximate locations of sandwave features, but Hornsea Three clarifies that this may be subject to change. This is fairly usual for operations of a similar nature.	Noted, no amendments required.

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19	MMO	17/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	Figure 1 of this document (Fig 3 of the report) details the indicative disposal areas, which Hornsea Three describes as being larger than the area of likely sandwave feature clearance. Again, this is fairly usual so as to provide flexibility dependent on whether existing sandwave features have moved or if new ones are identified.	Noted, no amendments required.
20	MMO	17/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	The proposed disposal sites along the cable corridor appear acceptable, however, shapefiles will need to be provided so that MMO can ensure that they do not overlap with existing disposal sites. Alternatively, Hornsea Three can check this themselves, though MMO would expect to see a map provided detailing any disposal sites which overlap. If the proposed sites do overlap with any open disposal site, then the proposed sites will need to be amended as open (or disused) disposal sites cannot overlap.	Noted, Figure 3 in Appendix 3 to the SBIPs has been updated to present that there is no overlap with existing disposal activities.
21	MMO	17/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	The sites within the Array appear acceptable, however, MMO cannot ascertain whether the Hornsea Three Array area has been designated as a disposal site. It is usually the case that all offshore wind farm array areas be designated as disposal sites. If the array area is designated as its own disposal site, then sandwave clearance can be assigned to the array disposal site, rather than designated separate sites for each area of clearance. Confirmation is requested as to whether the Hornsea Three array area has been designated as a disposal site?	Hornsea Three array area is not designated as a disposal area within the DML. Hornsea Three note that disposal locations are indicative at this stage subject to further pre-construction survey and consultation on proposed final disposal locations within the CSIP.

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22	MMO	17/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	The SBIP report (paragraph 4) provides a figure (Figure 1) of the potential locations that will require sandbank levelling and a subsequent figure (Figure 3), showing the potential disposal locations within the Array and along the export cable corridor. MMO suggest that Figure 3 should also show the locations of Annex I reef/potential reef as per the JNCCs most recent shapefile from the North Norfolk Sandbanks and Saturn Reef (NNSSR) SAC, as this will help inform whether and how much the disposal locations within the SAC overlap with the Annex I areas.	Noted, Figure 3 in Appendix 3 to the SBIPs has been updated to show locations of Annex 1 reef and JNCC reef management areas. Hornsea Three note that any micro-siting for Annex 1 reef will be conducted following pre-construction surveys as opposed to utilising historic Annex 1 reef data.
23	MMO	17/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	MMO also note that a 50 m buffer from Annex I Sabellaria spinulosa reefs within the Wash and North Norfolk Coast SAC and a 500m buffer within the NNSSR SAC will be applied. MMO agree that the buffer extents are appropriate for each SAC, however it is not clear whether the buffers will be based on the JNNCs shapefiles of Annex I reef or on geophysical data collected by Ørsted or both. Please can Hornsea Three confirm. MMO recommend that the JNCC's shapefiles are used in the first instance and geophysical data as supplementary information, as disposal of large volumes of sand or finer sediment than is currently present will change the sediment composition to undesirable colonising habitat for the species.	Historic data has been presented on Figure 3 in Appendix 3 to the SBIPs, and has been used to inform initial work, however final micro-siting will be carried out using pre-construction survey data as the most recent and up to date data on presence/absence of Annex 1 reef. Buffers will only be applied to the Hornsea Three pre-construction survey data if Annex I reef is shown to be present. Section 3.2 in Appendix 3 to the SBIPs has been updated to reflect this.
24	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A)		Both	Natural England notes that the data are 3-5 years old (data collected in 2016 and 2018) and therefore queries how this will be bolstered to ensure that the proposed disposal locations are fit for purpose.	Hornsea Three will conduct pre-construction surveys to inform micro-siting using the most up to date data, this is added in Section 3.2 of Appendix 3. Pre-construction surveys will

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			Consulted on at SG Meeting 6 31/08/2021				additionally be used to inform final disposal locations which will be secured in the CSIP.
25		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID24 Consulted on at SG Meeting 7 09/11/21			Natural England welcomes that Annex I surveys will be used to inform the disposal locations as well as historic surveys.	Noted, no amendments required. Historic data has been presented on Figure 3 in Appendix 3 to the SBIPs, and has been used to inform initial work, however final micro-siting will be carried out using pre-construction survey data as the most recent and up to date data on presence/absence of Annex 1 reef. Buffers will only be applied to the Hornsea Three pre-construction survey data if Annex I reef is shown to be present. Buffers will not be added to historic reef extents.
26	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	This Figure is difficult to interrogate due to the scale – we would welcome a clearer presentation.	Noted – Figure 1 in Appendix 3 has been split out into several pages to aid review.
27		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to CommentID26			Natural England welcomes the inclusion of the additional figures which provide the necessary detail.	Noted, no amendments required.

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			Consulted on at SG Meeting 7 09/11/21				
28	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	The SNCBs are concerned that an area within Saturn Reef to be managed as reef has been identified as requiring sandwave levelling and therefore disposal. We would welcome further discussions in relation to this matter as disposal at this location may have further ramifications. In addition, we again raise the point in relation to the cobble reef within the western ('dalek') arm and the need to avoid disposal within this location.	All disposal areas are indicative only and final disposal locations will be agreed in consultation on the CSIP as set out in Section 3 of Appendix 3 to the SBIPs. Figure 3 in Appendix 3 to the SBIPs has been updated to show locations of historic Annex 1 reef and JNCC reef management areas. Hornsea Three note that any micro-siting for Annex 1 reef will be conducted following pre-construction surveys as opposed to utilising historic Annex 1 reef data. All indicative disposal sites have now been amended to avoid any area of reef. These areas will be updated to reflect the findings of the pre-construction surveys if no reef is shown to be present.
29		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID28 Consulted on at SG Meeting 7 09/11/21			Natural England and JNCC welcome that areas to be managed as reef have now been excluded as areas for disposal.	Noted, no amendments required. JNCC reef management areas have been used to inform initial work, however final micro-siting will be carried out using pre-construction survey data as the most recent and up to date data on presence/absence of Annex 1 reef.

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30	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	Natural England would welcome further clarity on why areas to be managed for reef are included within the disposal locations. Our default position is that disposal should avoid both geogenic and biogenic reef.	Hornsea Three note Natural England's concern with regards to the impacts to *Sabellaria*. Should Annex I reef be found during pre-construction surveys, Hornsea Three will consult with MMO and stakeholders through the CSIP (as set out in Section 3 of Appendix 3 to the SBIPs) when final agreement on disposal locations will be reached.
31		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID30 Consulted on at SG Meeting 7 09/11/21			See our comment on point 50 above. (Presented in Comment ID 29).	Hornsea Three note that this comment has been received previously. A response is provided above (Comment ID 29)
32	MMO	14/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 7 09/11/21		Both	MMO can confirm that all comments previously raised have been satisfactorily addressed there are no further comments.	Noted, Hornsea Three are pleased to close out all previous comments raised by MMO.
33	MMO	14/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A)		Both	The below comment was raised during the first round of consultation; "The sites within the Array appear acceptable, however, I cannot ascertain whether the	Noted. Hornsea Three discussed further with MMO 04/11/21 and confirmed that this comment is closed out.

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			Consulted on at SG Meeting 7 09/11/21			Hornsea THREE Array area has been designated as a disposal site. It is usually the case that all offshore wind farm array areas be designated as disposal sites. If the array area is designated as its own disposal site, then sandwave clearance can be assigned to the array disposal site, rather than designated separate sites for each area of clearance. Can the applicant confirm whether they are aware that the Hornsea THREE array area has been designated as a disposal site?"	
34	MMO	14/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 7 09/11/21		Both	The below response was provided listed in Hornsea THREE Benthic Compensation Consultation Summary, version 4, Royal Haskoning, September 2021, stating: "Hornsea Three array area is not designated as a disposal area within the DML. Hornsea Three note that disposal locations are indicative at this stage subject to further pre-construction survey and consultation on proposed final disposal locations within the CSIP."	Noted, no amendments required. Hornsea Three discussed further with MMO 04/11/21 and confirmed that this comment is closed out.
35	MMO	14/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 7 09/11/21		Both	MMO note this response, however, with regard to clearance of sandwaves for the transmission assets, the indicative sites (or singular, consolidated site) are (is) acceptable for designation, MMO note that the activities overlap with North Norfolk Sandbanks MPA. However, as the sites are indicative at this stage, MMO recommend sites not be designated until the site(s) is/are finalised. For ease of reporting and administration, MMO recommend that the cable route	Noted, no amendments required and will be incorporated into the final CSIP. Hornsea Three discussed further with MMO 04/11/21 and confirmed that this comment is closed out.

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						in its entirety be designated as one site, so long as provision is made to ensure that disturbed sediments remain within the local systems and/or sediment cells.	
36	MMO	14/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 7 09/11/21		Both	Regarding the Array area, a disposal site should be designated as soon as the area is finalised, and before any disposal works take place. Hornsea Three indicates that this will be the case in section 3 of the Disposal Technical Study	Noted, no amendments required. Hornsea Three discussed further with MMO 04/11/21 and confirmed that this comment is closed out.
Schedule 14 Part 2 Requirement 13 (c) Marine debris removal campaign							
37	MMO	20/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		Both	There are no comments from the MMO in relation to plan of work or Marine debris removal campaign scope of work.	N/A
38	Natural England	15/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		Both	NE suggests it is unlikely that sufficient litter would be found to meaningfully improve the functioning of the sandbanks. This is compounded by the criteria Orsted have listed for debris that will be suitable for removal, which will further limit the amount likely to be removed. NE also suggest it is uncertain how the success of the approach will be measured. For these reasons, NE does not consider it appropriate for the compensation requirement to be 'discharged' if minimal litter is found in the required area of search, and we are	Hornsea Three have incorporated adaptive management strategies in response to this request, which is detailed further in Section 7 of the NNSSR and WNNC SBIPs. Hornsea Three would note that the provision of FfL facilities will actively remove debris from the marine environment (including the seabed within the SACs) throughout the operation of Hornsea Three.

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						concerned by the inconsistency between this proposed approach and the requirements for regular monitoring and adaptive management associated with the Hornsea Three kittiwake compensation.	Further, Hornsea Three have widened the definition of marine debris beyond lost or abandoned fishing gear in response to this comment, as detailed in Section 6.3 of the NNSSR and WNNC SBIPs. Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21 *'Natural England welcomes the inclusion of the 'trigger level' and thresholds for removal and adoption of the Orsted's adaptive management approach'*.
39	Natural England	15/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		Both	As noted during the steering group meeting, NE is concerned about the potential for high numbers of Unexploded Ordnance (UXOs) to be found in WNNC SAC during surveys for litter. Further clarification needs to be provided on Orsted's course of action should UXOs be found, as clearance is likely to cause further damage to site features. We highlight that subsea noise disturbance to harbour seals from detonations during the breeding and moult period (June-August) would not be supported.	The methodology for dealing with UXO is detailed further within Section 6.3.1 of the NNSSR and WNNC SBIPs. In the first instance areas of known or suspected UXO (identified from survey) will not be targeted for removal operations. Further, should UXO be identified it is not required to be detonated as outlined in CIRIA guidance (2015) and alternatively will be reported to HM Coastguard.
40	Natural England	15/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		WNNC	NE notes that the current scope of works focusses on identifying debris on the sandbanks in WNNC SAC. NE does not consider it likely that significant amounts of debris will be found on the sandbanks, as debris in The Wash typically washes up on the surrounding saltmarsh. We consider that local fishermen and diving groups are likely to be the best source of information for the location of possible debris in WNNC SAC.	Consultation with local fishermen and diving groups has been undertaken and this information fed into the process of target area identification. Hornsea Three proposed adaptive management measures in the supporting document to the SG at Meeting 4 (08/06/2021) which considered removal in other habitats within the SACs where there may be higher debris load.

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41	Natural England	15/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		Both	Prioritisation of areas needs to be approved by the steering group to ensure that issues of nature conservation are considered fully. Furthermore, we consider it would be beneficial to assess the types and amounts of debris expected within the sites before securing vessels and/or equipment for removal to ensure that the debris can be accommodated and handled in an environmentally sensitive manner.	The SG have been consulted on the AoS for marine debris removal as well as the criteria used to select the AoS. Data from other OWF projects (Hornsea Project Two/Race Bank/Lincs) has been used to give Hornsea Three confidence with respect to the type and size of debris likely to be identified. As debris is mobile it is not possible to identify the targets following data review and then commence the 12 month removal vessel procurement process without a high risk that the marine debris would either have moved or been further covered with sediment.
42	Natural England	15/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		Both	We would welcome further clarification on Orsted's intent for the long-term disposal of debris removed from the sites, as it is considered good practice within other industries to assess emissions and end uses for all decommissioned materials as part of comparative assessments concerning overall environmental impact.	Hornsea Three will assess appropriate disposal for all material removed from the seabed during the removal campaign. Recycling options will be organised where they are available, however as the debris is likely to be heavily fouled disposal is considered to be the realistic option for the majority of debris collected. This will be detailed in a Waste Management Plan (WMP) which will be submitted alongside the Marine License application. As the debris targeted for removal is not an installed asset, Hornsea Three do not consider it appropriate to follow exact decommissioning procedures. However, Hornsea Three will seek to ensure the most appropriate means of disposing debris (based on best practice

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							relevant to the type of debris removed and prioritising taking account the waste hierarchy principles) will be actioned following removal from the seabed.
43	Natural England	15/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		Both	NE agrees that any debris identified for removal should be at least partially unburied, and preferably on the surface to avoid further impact to the sites during removal. NE highlights that we would not support the use of grappling anchors within SACs without controls and further review of the intended locations and methods. This is particularly the case within areas of mixed sediment, where grappling anchors can create scarring and loss of epifauna.	The removal methodology for the marine debris removal campaign has been specifically designed to minimise impacts to the wider site (e.g., avoidance of Annex I reef habitat) and grappling techniques have not been proposed except when used in a highly controlled manner (targeted using a ROV. Only exposed or partially buried debris would be removed, detailed further within Section 6.3.1 of the NNSSR and WNNC SBIPs. Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21, SNCBs agree that '*As long as a decision tree can be agreed, we believe that significant impacts to the interest features of the site can be avoided*'.
44	Natural England	15/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		Both	Whilst NE does not consider that epifauna colonising artificial substrates comprises Annex I feature (including *Sabellaria*), if the colonised debris is contained within a wider Sabellaria reef area where there is continuous coverage from natural to artificial substrates, we would expect those not to be removed to prevent damage to the natural reefs/substrate	The removal methodology has been specifically designed to minimise impacts to the wider site (e.g., avoidance of known Annex I reef habitat feature). Any reef features identified during the marine debris removal campaign will be excluded, and Hornsea Three have proposed having a benthic specialist onboard the removal vessel to ensure all reef features are excluded from removal activities. A decision tree has been included in Section

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							6.3.3 pf the NNSSR and WNNC SBIPs. Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21, SNCBs agree that '*As long as a decision tree can be agreed, we believe that significant impacts to the interest features of the site can be avoided*'.
45	JNCC	13/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		NNSSR	We note primarily that any benefit that litter removal may have on the site will be related to the amount of litter removed and the methods used for its removal. If very little litter is removed, there will clearly be very little impact on the conservation objectives of the site. We note that the developer has been asked to search for debris over an area of 41.8ha in NNSSR. However, searching this area may result in only small amounts of debris to remove. From JNCC's experience of other industries within the site, we have previously considered permanent deposits of around 50m^3 to not represent a likely significant effect on NNSSR. Considering this, we would suggest that removal of at least 50m^3 of litter would likely be necessary to allow the litter removal to provide any potential impact on the conservation objectives. Given the above, JNCC do agree that: removal of litter (method dependent) could support the restoration of sandbank habitat within NNSSR, through benefitting both the extent and structure attributes of the sandbank feature and increase the functionality of the supporting processes of the sandbanks system. However, we note that the conservation advice for NNSSR does not include marine litter as an activity of	Hornsea Three have conducted a desktop assessment to target the campaign with the aim of maximising the potential for finding debris which is presented as Appendix 1 to the WNNC and NNSSR SBIPs. Hornsea Three acknowledge the expected type and volume of marine debris within the SACs may remain largely unclear until the campaign is underway therefore have expanded the AoS beyond that maximum area required in the DCO. Hornsea Three reiterate the purpose of the compensation is to compensate for the adverse impact of Hornsea Project Three and therefore do not consider the target of 50m^3 to be appropriate. Hornsea Three would suggest that marine debris pollution is ubiquitous around the UK coastline and note that specific surveys targeting marine debris load have not been conducted in NNSSR SAC. The Secretary of State HRA concluded '*the removal of fishing gear will improve the*

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						concern currently likely to impact the conservation objective status for the site. • mobile debris has the potential to damage biogenic reefs within the SAC. Removal of mobile debris may reduce the risk of damage to Annex I reef; however, we note that the required compensation is related to Annex I sandbanks, not reefs. We also note that up to date survey evidence will be needed to identify and remove mobile debris. • removal of debris (removal method dependent) is likely to provide an increased area of seabed habitat (extent, as above) to be available. However, we consider the suggested connection to colonisation and movement of epifauna to be uncertain. The epifauna involved in the majority of sandbank biotopes found in NNSSR is sparse and generally composed of mobile species such as crabs, hermit crabs and fish that live in association with sandbanks, such as sand eels and flatfish. These are less likely to be affected by mobile or immobile debris than sessile epifauna, which cannot move around the seafloor to avoid or minimise impact. Furthermore, epifauna is also likely to be concentrated in certain areas of the site related to sandbank movement and topography. These areas may, or may not, correspond to areas suggested as targets by the desk study.	*condition of the habitats for the endemic epifaunal communities which are part of the sandbank ecosystem. This would contribute to the conservation objectives of the SAC by reducing the pressures on the biological assemblages',* Hornsea Three support this conclusion.
46	JNCC	13/04/2021	Marine Debris SoW (06915145_A)		NNSSR	There is evidence of mobile demersal, static, and pelagic fishing effort within the site, with UK and non-UK registered vessels having been active. The highest levels of activity come from non-UK beam trawling, but	The Hornsea Three fishing consultation has included both Dutch and Danish fishers. This engagement will be extended to include any appropriate awareness campaign

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			Consulted on at SG Meeting 2 30/03/2021			these are still relatively low, with highest levels in the south and central areas of NNSSR. Evidence of UK beam trawling, non-UK demersal trawling, non-UK demersal seine, UK pots and traps and non-UK pelagic trawling is low to minimal. For an awareness campaign to effectively decrease incidence of ALDFG in the site, we would consider it necessary to engage non-UK fishing operations as the major fisheries users of the site.	methodologies as far as practicable throughout the operational life of Hornsea Three.
47	JNCC	13/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		NNSSR	We understand marine debris to be targeted in this study to be lost or abandoned, non-natural or introduced material which does not offer a practical purpose, has low biodiversity value, and may detract from the extent and functionality of the designated features of NNSSR SAC. Target marine debris items would include (for example) ALDFG such as trawl, gill and seine nets, pots / fish traps and tickler chains, and debris lost from vessels, for example, in anchorage areas and adjacent to current or historic shipping lanes. They must be items on, or just above, the seabed, and locatable through an information gathering process. The developer, however, proposes a range of limitations, and notes that priority will be given to debris on or near sandbanks of particular importance for the provisioning of the system.	Hornsea Three have conducted a desktop assessment to target the campaign with the aim of maximising the potential for finding debris presented as Appendix 1 to the WNNC and NNSSR SBIPs. This assessment has considered those sandbank areas of particular importance to the functioning of the SACs. Items on, or just above, the seabed have been proposed for removal to ensure the removal methodology is sensitive to the sandbank habitat.
48	JNCC	13/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		NNSSR	We have the following comments on this scope. While the developer proposes a necessary wide range of limitations on the types of debris that can be removed, these do considerably limit the possible impact of any campaign. This limitation is furthered in NNSSR by the expected lack of ALDFG associated with seining,	Hornsea Three acknowledge the expected type and volume of marine debris within the SACs may remain largely unclear until the search and removal campaign is underway, however would note that as debris is inherently mobile (unless it is a considerably large item) it

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						potting and fish traps, as well as the lack of anchorage areas.	is unlikely that debris from activities occurring outside of the NNSSR SAC may not have been transported into the SAC. Hornsea Three acknowledge stakeholder views and have considerably widened the term marine debris beyond lost or abandoned fishing gear.
49	JNCC	13/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		NNSSR	We agree with the need for 500m exclusion zones around any oil and gas assets. While these would include pipelines and subsea infrastructure around platforms, it would also include infrastructure away from platforms, such as wellheads, manifolds and objects temporarily placed on the seafloor in association with operations. We also agree that any debris should be at least partially unburied, and preferably on the surface to avoid further impact to the site during removal.	Hornsea Three notes this and it has been included in both the AoS selection process as well as the marine debris removal methodology (as detailed in Section 7 of the NNSSR and WNNC SBIPs).
50	JNCC	13/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		NNSSR	In terms of whether debris forms an ecological asset, JNCC do not consider that epifauna colonising artificial substrates is likely to comprise Annex I feature, and as such, we would not consider their ecological value to compensate for removal of the debris from the system. This includes debris colonised by *Sabellaria*. However, if debris is contained within a wider *Sabellaria* reef area, where there is continuous coverage from natural to artificial substrates, then we would expect those not to be removed. We note that paragraph 15 of the debris removal scope of work discusses this colonisation by species of conservation note, such as reef forming	Noted and confirmed. The removal methodology has been specifically designed to minimise impacts to wider site (e.g., avoidance of Annex I reef habitat) and any reef features identified during the marine debris removal campaign will be excluded, and Hornsea Three have proposed having a benthic specialist onboard the removal vessel to ensure all reef features are excluded from removal activities. Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21, SNCBs agree that '*As long as a decision tree can be agreed,*

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						Sabellids. Sabellids do not form reefs, and we assume that the developer means Sabellarids.	*we believe that significant impacts to the interest features of the site can be avoided*'.
51	JNCC	13/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		NNSSR	In terms of limitations related to technical feasibility, we suggest that the developer needs to consider the types and amounts of debris within the site before finding vessels and equipment that will accommodate removal of the appropriate debris rather than limit themselves before considering the possible debris size and weight.	Data from other OWF projects (Hornsea Project Two/Race Bank/Lincs) has been used to give Hornsea Three confidence with respect to the type and size of debris likely to be identified. As debris is mobile it is not possible to identify the targets following data review and then commence the 12-month removal vessel procurement process without a high risk that the marine debris would either have moved or been further covered with sediment. The removal methodology proposed can accommodate debris items of many shapes, sizes, and weights.
52	JNCC	13/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		NNSSR	Fig 1 represents JNCC's initial understanding of the marine debris known to be in NNSSR. This has been created from OGA's subsurface infrastructure layer, Cefas's North East Atlantic Seafloor Marine Litter Data layer (where the litter is noted as being a fishing line, synthetic rope or metallic deposits) and OSPAR's IA2017 seabed litter layer showing relative number of litter items per square km. From this initial look at quantities of litter in the site, we would like to highlight the following: • The majority of the litter is noted in Cefas's dataset. However, the latest of these points is 2013, and many are from 2008 – 2011, and given that the majority were noted as synthetic rope or fishing line, these pieces of debris may no longer be present, unless	Noted, the data set has been used to inform the desktop survey but has also been supplemented with more recent survey data from other sources (Hornsea Two and Three geophysical surveys). Hornsea Three notes the limitations of the available data however it should be noted that the Cefas survey only recorded the locations of marine debris on the seabed as it was incidentally encountered during sediment survey operations, and the survey did not aim to assess the debris load within NNSSR. Hornsea Three has conducted a targeted assessment which will be bolstered by geophysical survey with the aim of identifying clusters of debris load and will not

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						potentially tangled round infrastructure or buried. • The pieces of litter / debris noted are out with the topological sandbanks in the site, however, this may not be significant given the small amount of data available. • The pieces of litter / debris do not correspond to areas which JNCC believes indicate higher efforts of fishing in the site. • OSPAR undertook a litter survey as part of the Intermediate Assessment in 2017. This comprised distribution and abundance of marine litter on the seafloor in the OSPAR Maritime Area investigated on the basis of data collected by trawl surveys from seven Contracting Parties. This shows a slight gradient of litter collected over the site, with higher amounts of litter being collected to the south of the site (3-4 pieces of litter per trawl, compared to 0-3 pieces of litter per trawl over the rest of the site). We also note that this area of the site is heavily used by the oil and gas industry, and many 500m safety zones are present in that area.	be using the same techniques as the Cefas survey.
53	JNCC	13/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		NNSSR	Not enough information is currently available from data layers to identify areas likely to have relatively high densities of marine debris in NNSSR, or enough debris could be collected to act as compensation for the adverse effect to the site.	Hornsea Three notes the limitations of the available data, the desk-based assessment has been supplemented with more recent survey data from other sources (Hornsea Two and Three geophysical surveys) and the marine debris removal campaign will be supported by real time geophysical survey to aid in the identification of any debris present on the seabed within the AoS. Hornsea Three note

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							that the long-term package of debris reduction measures forms a significant part of the compensation and the single campaign of debris removal is not solely responsible for compensating for Hornsea Three impact.
54	JNCC	13/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		NNSSR	We note that the developer also intends to undertake conceptual analyses to assess hydrodynamic movement through the site to help inform priority areas of search. We are unsure what will be learned about sediment transport from this study that will contribute to understanding debris analysis, given the information already available in the site's conservation advice and Hornsea 3's marine processes application chapter.	The conceptual analysis has considered the sediment transport processes in the SACs and how they will affect debris transport if they are light enough to be moved, and exposure and burial if they are too heavy to be mobile. The information published by the site conservation advice and Hornsea Three marine processes chapter has been used to support this assessment. The intention is not to re-evaluate sediment transport processes; the intention is to apply the existing understanding to potential debris accumulation. This work is presented within Appendix 1 to the WNNC and NNSSR SBIPs.
55	JNCC	13/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		NNSSR	We understand that there are linkages between physical conditions, sediment transport and areas of accumulation / burial / exposure of marine debris. However, we would note that, from our current knowledge, there is little litter or debris in the site that would be subject to transport or burial, and also, we would not expect objects of a size greater than coarse sediment to be routinely transported in the site. Furthermore, if areas of accumulation correspond to troughs between ripples, sandwaves or sandbanks, they may correspond to areas of less represented	Hornsea Three agree that there will be a lack of transport of large items of debris, as that debris will be too heavy/large to be transported physically by tidal currents and will remain static. It is more likely to be the case that sediment will be transported around and over static debris, so there is potential for it to be buried by sediment and potentially re-exposed. However, if the debris is light/small enough to be transported, there is potential for it to

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						biotopes or habitats, such as circalittoral mixed sediments, coarse sediments or Sabellaria reef. As such, operations that impact the seabed in these areas may prove challenging.	accumulate in downslope areas as clusters and this has been investigated as part of the desktop assessment (Appendix 1 to the WNNC and NNSSR SBIPs), with the caveat that no removal operations will be undertaken within areas of close proximity to Annex I reef.
56	JNCC	13/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		NNSSR	We would like to correct the developer's understanding of Annex I sandbanks as "shallow sandbanks only". The latest European Interpretation Manual (EUR28) defines the depth at which this habitat can occur: "Slightly covered by sea water all the time" means that above a sandbank the water depth is seldom more than 20 m below chart datum. Sandbanks can, however, extend beneath 20 m below chart datum." This is transposed into UK understanding as "Annex I sandbanks slightly covered by seawater all the time occur where areas of sand form distinct elevated topographic features which are predominantly surrounded by deeper water and where the top of the sandbank is in less than 20 metres water depth. However, the sides of these sandbanks, can extend into deeper water up to 60m whilst still being considered the feature".	Hornsea Three notes this clarification and it has been incorporated where relevant within the NNSSR (and WNNC) SBIP.
57	JNCC	13/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		NNSSR	In terms of consultation, we are pleased that Orsted have already considered the need for consultation with non-UK fishing fleets.	Noted, consultation in relation to potential AoS of the marine debris removal campaign is detailed further in Annex 1 of Appendix 1 to the SBIPs.
58	JNCC	13/04/2021	Marine Debris SoW		NNSSR	While we commend the developer for looking towards an evidence-based understanding of priority areas, we	The SG has been consulted on the AoS for marine debris removal through two rounds of

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			(06915145_A) Consulted on at SG Meeting 2 30/03/2021			suggest that any scoring scheme needs to be approved by the steering group to ensure that issues of nature conservation are considered fully. The developer may wish to look at multicriteria decision analyses to undertake the scoring, as per comparative assessments of decommissioning options for the oil and gas industry. We feel that understanding success criteria will be highly challenging, and will at least need to involve the steering group, as well as potential wider consultation with organisations who have expertise in evolving and managing indicators.	consultation on the SBIPs and comments have been incorporated as appropriate. Hornsea Three consider the scoring conducted in the desktop assessment to be an appropriate methodology. Hornsea Three do not consider it to be appropriate to consult wider than the SG on the methodology for success as the requirements of the Hornsea Three DCO are clear.
59	JNCC	13/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		NNSSR	More specifically, we question whether MBES would achieve sufficient resolution to pick up non-metallic targets. Pieces of rope or line may well be less than 1m in size. We would like to see examples of MBES noting these targets.	The removal methodology is detailed further in Section 6 of the NNSSR and WNNC SBIPs which notes that the geophysical methodologies are sufficient to identify target items greater than 1 m. Examples of this are provided in the SBIPs. Items of less than 1 m in size could be removed using a grapnel across the area of debris removal however this is not considered to be supported by SNCBs and has not been progressed.
60	JNCC	13/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		NNSSR	We have the following comments to make regarding section 4.3, Marine debris removal. We understand that Orsted has considered litter removal methods used in previous surveys. However, we note a number of issues with the potential applicability of the Large et al (2005) gill net removal methods, each discussed within the paper: - The three anchored tow method is noted as being	Noted - This was an example of a potential methodology which has not been taken forward by Hornsea Three.

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						necessary for deep water removal, where lighter gear may rotate or get twisted. The paper notes that in shallower waters, methods akin to trawling are available. - Using the three anchor system potentially led to disintegration of the gill nets being removed, which would then not remove that debris from the SAC	
61	JNCC	13/04/2021	Marine Debris SoW (06915145_A) Consulted on at SG Meeting 2 30/03/2021		NNSSR	We are further concerned about the long-term disposal of any debris removed from the site. While providing advice on onshore reuse, recycling or disposal is out with JNCC's remit, we note that the oil and gas industry are expected to assess emissions and end uses for all decommissioned materials as part of comparative assessments concerning overall environmental impact. BEIS's decommissioning guidance notes that a programme must consider how the principles of the waste hierarchy will be met and show the extent to which the installation, including the topsides and the materials contained within the installation, will be re-used, recycled, or disposed of on land. We would expect the developer to continue this good practice.	Whilst debris removal does not fall under the decommissioning aspect of Hornsea Three, Hornsea Three will assess appropriate disposal for all material removed from the seabed during the removal campaign. Recycling options will be organised where they are available, however as the debris is likely to be heavily fouled disposal is considered to be the realistic option for the majority of debris collected. This will be detailed in a Waste Management Plan (WMP) which will be submitted alongside the Marine License application. As the debris targeted for removal is not an installed asset, Hornsea Three do not consider it appropriate to follow exact decommissioning procedures. However, Hornsea Three will seek to ensure the most appropriate means of disposing debris (based on best practice relevant to the type of debris removed and prioritising taking account the waste hierarchy principles) will be actioned following removal from the seabed.

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62	JNCC	20/06/2021	SG4 Supporting Document: Success and adaptive management (07015970_A) Consulted on at SG Meeting 4 08/06/21		NNSSR	While the document aims to address concerns previously raised by both JNCC and Natural England, we feel they there are considerable issues outstanding. We are unsure whether our full concerns will be raised, and how this will occur. With regard to litter removal in NNSSR, we continue to note that currently litter does not contribute to its unfavourable conservation status.	Hornsea Three are confident that the adaptive management strategies proposed are proportionate and appropriate. Hornsea Three is unclear what further full concerns have not been raised. Hornsea Three would suggest that marine debris pollution is ubiquitous around the UK coastline and note that specific surveys targeting marine debris load have not been conducted in NNSSR SAC. Data from other OWF projects (Hornsea Two/Race Bank/Lincs) has been used alongside Hornsea Three geophysical survey data to give Hornsea Three confidence with respect to the type and size of debris likely to be identified.
63	JNCC	20/06/2021	SG4 Supporting Document: Success and adaptive management (07015970_A) Consulted on at SG Meeting 4 08/06/21		NNSSR	We are concerned that in paragraph (15) it seems that the only success factor for the removal campaign is logging and reporting the removal of any marine debris of the type and size to be approved for removal in the SBIPs. This does not address the amount of litter removed, or the magnitude / significance of any potential impact on the sandbanks. JNCC remain unsure how Hornsea Three intend to demonstrate success in impacting the conservation objectives of the site through the litter removal campaign. We continue to suggest that Hornsea Three learn from threshold ranges used in other industries in NNSSR.	Hornsea Three is confident that demonstration of successful removal of debris from the seabed is an appropriate measure of success. This is supported by the wording of the DCO condition that informs the marine debris removal campaign. Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21 *'Natural England welcomes the inclusion of the 'trigger level' and thresholds for removal and adoption of the Orsted's adaptive management approach'*.
64	JNCC	20/06/2021	SG4 Supporting Document: Success and		NNSSR	JNCC do not agree that increasing the area of search is adaptive management. Adaptive management is a structured, iterative process of robust decision-making	The key uncertainties in relation to the package of benthic compensation measures which Hornsea Three are required to

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			adaptive management (07015970_A) Consulted on at SG Meeting 4 08/06/21			that aims to reduce uncertainty over time. Increasing the search area does not do this and is more simply a way to look at meeting any success goals. We note that there remains no definite commitment to double the area for debris removal if insufficient targets are found.	implement is the volume of marine debris in the SACs, and the successful uptake of the long-term debris prevention measures. Adaptive management strategies aim to address these uncertainties and adopt an approach to increase the likelihood of success. Further detail with regard to the adaptive management strategies is provided in Section 7 and Section 8 of the WNNC and NNSSR SBIPs. The SBIPs secure the commitment to expand the AoS beyond that required. Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21 *'Natural England welcomes the inclusion of the 'trigger level' and thresholds for removal and adoption of the Orsted's adaptive management approach'*.
65	Natural England	22/06/2021	SG4 Supporting Document: Success and adaptive management (07015970_A) Consulted on at SG Meeting 4 08/06/21		Both	Many aspects of the SBIP principles are being deferred (a, b, e and f) with a commitment to address these through summaries in the first iteration of the SBIP. To date, little to no information has been provided on these conditions therefore we are not yet able to comment on them. Of particular importance is (b) relating to dredge disposal locations which Natural England requested information on during the Hornsea Three examination. We are yet to receive any evidence that suitable dredge disposal locations have been investigated or identified.	Hornsea Three notes that a. b, e and f have been discussed in considerable detail at previous SG meetings. The Environmental Monitoring Technical Note 06951697_A) details in full proposals in relation to 13 (e) which Natural England presented a comprehensive response to. Hornsea Three has managed the schedule to include two review cycles of the draft SBIPs prior to their submission to BEIS to ensure stakeholders have appropriate opportunity to

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						The principles discussed in detail ((c) debris removal; and (d) awareness) are not discussed in sufficient detail within the document to address our concerns relating to the potential impacts of the proposal and again are deferred to the final SBIP.	provide consultation responses, all of which have been responded to in this document.
66	Natural England	22/06/2021	SG4 Supporting Document: Success and adaptive management (07015970_A) Consulted on at SG Meeting 4 08/06/21		Both	For the avoidance of any doubt, Natural England do not consider increasing the area of search for debris or increasing the awareness campaign to be compensation or adaptive management.	Acknowledged, further information is provided in Section 2.4 of this Consultation Summary. Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21 *'Natural England welcomes the inclusion of the 'trigger level' and thresholds for removal and adoption of the Orsted's adaptive management approach'*.
67	Natural England	22/06/2021	SG4 Supporting Document: Success and adaptive management (07015970_A) Consulted on at SG Meeting 4 08/06/21		Both	Natural England queries how the sign-off and consultation process will continue after December 2021, as there is reference to the pre-construction marine debris removal campaign being carried out in Q2/3 2022 and the results of this subsequently being reported to the BSG.	The ongoing role of the SG is presented in Section 3.1 of the NNSSR and WNNC SBIPs[4]. Results relating to the debris removal campaign will be reported to the SG and BEIS.
68	Natural England	22/06/2021	SG4 Supporting Document: Success and adaptive management		Both	Natural England notes that there is no new information on the potential target areas for debris removal within the designated sites. We will be interested to see the results of the desk-based assessment and the maps/figures that will be produced relating to the most	Noted, this document was not intended to discuss the AoS. Hornsea Three have presented the results of the DBA in Appendix 1 of the NNSSR and WNNC SBIPs following receipt of this comment.

[4] Hornsea Three note that placeholder invitations have been issued for Steering Group meetings through 2022 in line with the approach secured in the NNSSR and WNNC SBIPs.

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			(07015970_A) Consulted on at SG Meeting 4 08/06/21			appropriate target areas for debris removal within the SACs.	
69	Natural England	22/06/2021	SG4 Supporting Document: Success and adaptive management (07015970_A) Consulted on at SG Meeting 4 08/06/21		Both	Natural England reiterates that neither site is in unfavourable condition due to marine litter.	Hornsea Three would suggest that marine debris pollution is ubiquitous around the UK coastline and note that specific surveys targeting marine debris load have not been conducted in NNSSR or WNNC SAC.
70	Natural England	22/06/2021	SG4 Supporting Document: Success and adaptive management (07015970_A) Consulted on at SG Meeting 4 08/06/21		WNNC	Natural England does not have sufficient evidence to support the use of thresholds within the WNNC SAC on how much litter would need to be removed to have any benefit to the conservation objectives on the site.	Hornsea Three is confident that demonstration of successful removal of debris from the seabed is an appropriate measure of success. This is supported by the wording of the DCO condition that informs the marine debris removal campaign. As the quantity of debris present within the identified areas of search is not known, then it is not appropriate to work within a set quantity of litter to be removed. Hornsea Three note that the long term package of debris reduction measures forms a significant part of the compensation and the single campaign of debris removal is not solely responsible for compensating for Hornsea Three impact. Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21

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							'Natural England welcomes the inclusion of the 'trigger level' and thresholds for removal and adoption of the Orsted's adaptive management approach'
71	Natural England	22/06/2021	SG4 Supporting Document: Success and adaptive management (07015970_A) Consulted on at SG Meeting 4 08/06/21		Both	We note that in principle the campaign will 'avoid impacts to the sensitive features', but until further, specific details of the removal methodology and monitoring are provided we are not in a position to confirm this.	Further detail is provided in Section 6.3 of the NNSSR and WNNC SBIPs. Hornsea Three note that the exact quantity and type of debris which will be removed will not be known until the campaign is underway and therefore an envelope approach to methodology should be adopted. Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21, SNCBs agree that '*As long as a decision tree can be agreed, we believe that significant impacts to the interest features of the site can be avoided*'.
72	Natural England	22/06/2021	SG4 Supporting Document: Success and adaptive management (07015970_A) Consulted on at SG Meeting 4 08/06/21		Both	Natural England advises that some debris removal locations should be monitored post-removal to demonstrate whether the hypotheses about recovery and habitat restoration are correct and to provide information regarding the environmental response to the intervention.	Monitoring during the marine debris removal campaign will be conducted. Hornsea Three have provided provision for post-removal monitoring in Section 6.10.2 of NNSSR and WNNC SBIPs in response to the request from SNCBs.
73	Natural England	22/06/2021	SG4 Supporting Document: Success and		Both	For the avoidance of doubt, Natural England does not believe that increasing the scope of the awareness campaign is adaptive management if the marine debris removal campaign is deemed unsuccessful.	Acknowledged, further information is provided in Section 2.4 of this Consultation Summary. Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21

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			adaptive management (07015970_A) Consulted on at SG Meeting 4 08/06/21				*'Natural England welcomes the inclusion of the 'trigger level' and thresholds for removal and adoption of the Orsted's adaptive management approach'.*
74	Natural England	22/06/2021	SG4 Supporting Document: Success and adaptive management (07015970_A) Consulted on at SG Meeting 4 08/06/21		Both	Natural England notes that rocky outcrops and chalk reefs are rare and therefore advise against additional operations in these areas due to the potential to cause additional damage. Natural England do not consider this option as compensation for Annex I sandbanks.	Acknowledged. The proposed adaptive management strategy of removing debris from other habitat types (should sufficient marine debris not be removed from sandbank habitat) has not been taken forward due to this feedback.
75	MMO	17/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	Comments raised at the most recent meeting (20th July 2021) have not been included Hornsea Three Benthic Compensation Consultation Summary (paragraph 4). Comments previously raised have been included in the summary and addressed by the applicant.	Noted, meeting minutes record comments raised during the SG meetings and this document logs all written comments received.
76	MMO	17/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	During the meeting on the 20th July, MMO raised a query regarding whether the vessel monitoring system (VMS) data, used to determine potential areas of search for debris removal, included non-UK vessels. The response during the meeting was that only VMS from UK vessels had been used in the assessment due to the inaccessibility of EU VMS data. MMO suggested that	Noted, no further action required. Hornsea Three agree that UK VMS data only is sufficient to inform the desk based assessment presented as Appendix 1 to the SBIPs.

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						data collated by previous studies (e.g. Diesing et al, 2013), which used both UK and non-UK VMS data, could be used for completeness. Whilst the absence of non-UK VMS data has been acknowledged in the Sandbank Implementation Plans for each SAC, MMOs suggestion of using previously collated VMS data has not been addressed. However, it is noted that information on lost gear and fishing areas has been included, from consultations with both UK and Dutch fishers undertaken by Brown and May, that provides further information on the preferred fishing areas within NNSSR for non-UK vessels. This satisfies MMOs query.	
77	MMO	17/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	For transparency, please could any reference to VMS data in the tables of data sources used be referred to as UK VMS data.	References to VMS data in Appendix I to the NNSSR and WNNC SBIPs and Section 6.2 of NNSSR and WNNC SBIPs have been amended to refer specifically to UK VMS data.
78	MMO	17/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	The Sandbank Implementation Plans (SBIPs) for NNSSR SAC and WNNC SAC reference 'trigger levels' regarding adaptive management but do not specify what these are. MMO request that further information on what these 'trigger levels' are need to be included.	Section 6.9.1, of the NNSSR SBIP and of the WNNC SBIP states the trigger levels at which adaptive management measures would be triggered. Text in these sections has been slightly altered to ensure clarity on the trigger levels as discussed at SG meeting 6 (held 31/08/2021). Hornsea Three note that following receipt of comment on second draft SBIPs 15/10/21 MMO confirmed all previous comments on first draft were sufficiently closed out.

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79	MMO	17/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	What is the measure of success of the debris removal e.g. certain volume of debris collected? Is there a goal? This needs to be included in the methodology. It is currently unclear what the measure of success of the debris removal will be. It needs to be quantified and agreed prior to survey.	Success is demonstration of compliance with the DCO requirement (i.e., removal of debris from the required AoS). The reporting which will be drafted following completion of the debris removal campaign will provide information with regard to debris direct and indirect footprints and the number of targets removed, however this is not linked to success of the campaign. Hornsea Three note that following receipt of comment on second draft SBIPs 15/10/21 MMO confirmed all previous comments on first draft were sufficiently closed out.
80	MMO	17/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	Target locations for the Areas of Search (AoS) have been identified within both SACs. These have been informed by a scoring process using a number of difference data sources to identify hotspots of potential debris accumulation plus a conceptual analysis of debris accumulation based on hydrodynamic processes. Within the NNSSR SAC, two AoS have been identified, one within a low priority area based on hydrodynamic processes and one within a high scoring area. However, in WNNC, two AoS have been selected within areas that have high scores and none within the high priority areas based on hydrodynamic assessment. It is not clear why this high priority area has not been targeted as an AoS, please can this be clarified.	The rationale for not targeting blocks within the WNNC high priority area is set out in Section 8.1.2 of Appendix 1 to the SBIPs. Text in Section 8.1.2 has been slightly amended for clarity. Hornsea Three note that following receipt of comment on second draft SBIPs 15/10/21 MMO confirmed all previous comments on first draft were sufficiently closed out.
81	MMO	17/08/2021	NNSSR SBIP (07122823_A)		Both	The process documented in both SBIP reports (paragraphs 5 and 6) appears appropriate. However,	Section 6.9.1, of the NNSSR SBIP and of the WNNC SBIP states the trigger levels at which

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			and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21			the 'trigger levels' need to be determined and agreed before proceeding with the surveys.	adaptive management measures would be triggered. Text in these sections has been slightly altered to ensure clarity on the trigger levels as discussed at Steering Group meeting 6 (held 31/08/2021). Hornsea Three note that following receipt of comment on second draft SBIPs 15/10/21 MMO confirmed all previous comments on first draft were sufficiently closed out.
82	MMO	17/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	MMO would like to note that prior to any Marine Licence applications being submitted to undertake the removal of debris within NNSSR SAC and WNNC SAC that an EIA screening will need to be submitted. A Screening Opinion will be provided within 90 days of it being validated, this should be included in the timeline for obtaining the relevant Marine Licences along with the standard 13 week KPI to then process any Marine Licence applications submitted.	Noted, Hornsea Three has incorporated this into the marine licensing strategy for the marine debris removal campaign.
83	MMO	17/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	MMO would recommend that any AoS for potential adaptative measures should be included in all future Marine Licence applications. This is to ensure that the worse case scenario is assessed first-hand which will reduce the potential for further future variations.	Noted and agreed, no amendments required. Hornsea Three has incorporated this into the marine licensing strategy for the marine debris removal campaign.
84	MMO	17/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A)		Both	It is to be noted that MMO defer to Natural England (NE) and The Joint Nature Conservation Committee (JNNC) as the competent authorities in relation to any environmental factors within the following documents:	Noted, no amendments required.

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			Consulted on at SG Meeting 6 31/08/21			• Hornsea Three Sandbank Implementation Plan: North Norfolk Sandbanks and Saturn Reef SAC • Hornsea Three Sandbank Implementation Plan: Wash and North Norfolk Coast SAC • Hornsea Three Sandbank Implementation Plan Appendix One: Marine Debris Removal Campaign Desktop Study • Hornsea Three Sandbank Implementation Plan Appendix Two: Environmental Monitoring Plan	
85	MMO	17/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	Minor Presentational errors Figure 2.1b in Appendix 1 should be Figure 5.1b. Please correct.	Figure numbers in Appendix 1 to the NNSSR and WNNC SBIPs have been corrected.
86	MMO	17/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	Please provide a section reference for the Brown and May report referred to in paragraph 51 of Appendix 1 (Hornsea Three Sandbank Implementation Plan Appendix One: Marine Debris Removal Campaign Desktop Study).	In paragraph 51 of Appendix 1 to the NNSSR and WNNC SBIPs, a section reference to Sections 3.0 and 4.0 of the Brown and May Report (Annex I to the DBA) has been added.
87	EIFCA	20/08/2021	WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		WNNC	The recommended area of search in the Wash overlaps with the edge of popular shrimp ground but also an area where potting can occur. The adaptive management area of search on the North Norfolk Coast overlaps with potting ground. It is important that when identifying and removing marine debris from the	A sentence has been added in Section 5.2 of Appendix 1 to the SBIPs stating that, when conducting debris removal within that AoS, any static fishing gear that is marked will be treated as 'active' and would not be removed. The OFLO on vessel may try to contact the

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						SAC, active or stored pots will not accidentally be removed. How do you plan to ascertain the 'lost' status of gear?	owner and ask for the gear to be moved. This further information has been reiterated in a statement added into micro-siting of the NNSSR and WNNC SBIPs. Hornsea Three note that this comment is closed out in Comment ID 169.
88	EIFCA	20/08/2021	WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		WNNC	As always, we consider it important that open and effective dialogue is maintained with all fishing interests that utilise these areas so that they are aware of the proposals and we recommend that advance warning of activities is made through Notice to Mariners.	Hornsea Three agree that this is a highly important requirement. Consultation with the relevant fishing associations will commence prior to the debris removal campaign being undertaken and Notice to Mariners will advise those relevant vessels of the activities being undertaken. Hornsea Three note that this comment is closed out in Comment ID 169.
89	Defra	23/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	We (the Defra marine litter team) would like to see a more detailed waste management plan for the debris that is collected. This plan should reflect the waste hierarchy (in line with the 2018 Resources and Waste Strategy for England) and should consider the costs and benefits of cleaning and dismantling the debris collected with the view to reuse or recycle components, as well as the costs and benefits of sending debris to landfill.	A WMP for all debris removed will be developed with the offshore contractor and port authority (at this stage not yet known) and submitted as part of the Marine License application (as discussed and aligned at SG Meeting 6 31/08/21). Hornsea Three note that most debris removed from the seabed is likely to be considered as contaminated and therefore unable to be recycled, however this can be further clarified through drafting of the WMP. Section 6.3.4 of the WNNC and NNSSR SBIPs has been updated to include this requirement.

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90	Defra	23/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	In addition to this pre-collection waste management plan, the monitoring of the scheme outlined in section 6.9 should include an assessment of debris post-collection, recording data such as tonnages of debris that were cleaned, dismantled, recycled, landfilled and why.	This disposal data will be collected as part of the debris removal campaign and will be recorded as far as possible (for as long as the debris remains within the view of Hornsea Three). Once the debris passes out of the responsibility of Hornsea Three then Hornsea Three cannot be responsible for the final disposal outcome. This summary information is anticipated to be provided in the reporting submitted following completion of the debris removal campaign. Section 6.9 of the WNNC and NNSSR SBIPs has been updated to reflect this.
91	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	Natural England and JNCC remain concerned that there is potential for there to be unintended impacts to the designated features of the site (c.) and that more could be done in relation to the monitoring requirements (e.).	Although Hornsea Three note that further consultation on impacts resulting from the debris removal can be considered during the Marine License application, Hornsea Three would appreciate further information with regard to impact pathways of concern to SNCBs. The debris removal has been designed to minimise all impacts to the surrounding environment, particularly sensitive features, and further rationale is provided in Section 6.2.1 of the WNNC and NNSSR SBIPs. Hornsea Three have provided provision for post-removal monitoring in Section 6.10.2 of NNSSR and WNNC SBIPs in response to the request from SNCBs.

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							Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21, SNCBs agree that '*As long as a decision tree can be agreed, we believe that significant impacts to the interest features of the site can be avoided*'.
92	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	These areas align with points (c) and (e) of the Draft Principles of Compensatory Measures included within DEFRA's recently published 'Best practice guidance for developing compensatory measures in relation to Marine Protected Areas' (https://consult.defra.gov.uk/offshore-wind-andnoise/mpa-compensation-guidance-consultation/)	Noted, no amendment required.
93	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	The Draft Principles of Compensatory Measures state that compensatory measures should: a. Link to the conservation objectives for the site or feature and address the specific damage caused by the permitted activity b. Focus on providing the same ecological function for the species or habitat that the activity is damaging OR, where this is not technically possible, provide functions and properties that are comparable to those that originally justified designations c. Not negatively impact on any other sites or features; d. Ensure the overall coherence of designated sites and the integrity of the MPA network; and e. Be able to be monitored to demonstrate that they have delivered effective and sustainable compensation for the impact of the project. The monitoring and management strategy must require further action to be taken if the compensation is not successful	Noted, no amendment required.

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94	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	It should be noted that as well as the habitats listed, this site was also designated for coastal lagoons, Harbour seal (*Phoca vitulina*), and Otter (*Lutra lutra*).	Noted, the site description In Section 2 of the WNNC SBIP has been updated in line with this clarification.
95		25/10/2021	WNNC SBIP (07103743_A) Received in relation to Comment ID94 Consulted on at SG Meeting 7 09/11/21		WNNC	Natural England notes that these features have now been listed.	Noted, no amendments required.
96	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	Natural England and JNCC remain concerned that the anticipated field report, which will be submitted to the Secretary of State, and the subsequent summary report seem to be the only measure of success for the removal campaign, neither of which provide any indication of the seabed footprint that will be impacted by the debris removal. We also note that no monitoring of seabed recovery will be undertaken and consequently the impacts of the intervention will not be understood or quantified.	Hornsea Three note that success is demonstration of compliance with the DCO requirement (i.e., removal of debris from the required AoS). The reporting which will be drafted following completion of the debris removal campaign will provide information with regard to debris direct and indirect footprints and the number of targets removed, however this is not linked to success of the campaign. Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21 '*Natural England welcomes the inclusion of the 'trigger level' and thresholds for removal and adoption of the Orsted's adaptive management approach*'.

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							Hornsea Three have provided provision for post-removal monitoring in Section 6.10.2 of NNSSR and WNNC SBIPs in response to the request from SNCBs.
97		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID96 Consulted on at SG Meeting 7 09/11/21			We note that a monitoring section has now been included in Section 6. And that 5 locations where an object larger that 10m has been removed will be monitored. However, there is currently limited information on how and when monitoring will take place. We assume because reference is made elsewhere in the SBIP to tying this monitoring in with the DML monitoring requirements, that this is unlikely to occur immediately after removal. Therefore, comparisons between surveys immediately after removal and subsequent years to demonstrate the full extent of recovery will not be possible. JNCC and NE reiterate that Natural England and JNCC do not consider that looking at the nature of epifauna assemblage change to be an appropriate part of monitoring, given that in many sandbank habitats, mobile and sessile epifauna may be sparse and not major parts of characteristic communities. We note that the survey methodology referred to relates solely to geophysical surveys and Drop Down Video (DDV). As such we understand that Hornsea Three means to survey epifauna only with no infaunal analysis.	Hornsea Three note the request for further clarification and have provided further detail in Section 6.10.2 in NNSSR and WNNC SBIPs in response to the request from SNCBs. This has been supplemented with consultation on this point held between Hornsea Three and SNCBs 27/10/21 to ensure advice was sufficiently understood and there was alignment regarding Hornsea Three proposal for post-removal monitoring. Hornsea Three note that although vessel sharing may occur when undertaking the monitoring presented in Section 6.10.2 of NNSSR and WNNC SBIPs and monitoring in relation to DML conditions, the survey reporting will not overlap, and the objectives of each monitoring requirement will not be impacted by these efficiencies. Hornsea Three note that collection of infauna data is not included in the monitoring as the recovery potential of infaunal communities can be robustly assumed from the habitat recovery inferred from WROV images, given the wealth

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							of knowledge on this collated through research and monitoring for the aggregates industry and others. Further information is provided in Section 6.10.2 of NNSSR and WNNC SBIPs.
98	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	There is the suggestion that a core reef approach has been applied, but we query whether there is sufficient data coverage to apply a core reef approach here. Natural England do not have enough data to use the core reef approach in this area, and so it should only be applied if Ørsted have collected or have access to a time series of appropriate data (delineated extents with confidence in absence as well as presence). Natural England and JNCC do not believe this to be the case, therefore our position is that all reef identified should be considered. It should also be noted that the core reef approach is only relevant for S. spinulosa reef, and that the installation area is also important for geogenic reef. Stony reef and circalittoral rock are both sub features of the sandbank feature of the WNNC SAC. We therefore advise that areas of both biogenic and geogenic reef are avoided.	All biogenic reef identified in the GIS data set has been considered (and excluded) in the first instance, as detailed within Appendix 1 to the SBIPs. The offshore debris removal campaign is then structured as such to enable Hornsea Three to then ground truth reef presence/absence and "core" status during Stages 1 and 3 of the debris removal campaign. Any additional reef will then be excluded from removal activities with the appropriate buffer applied. Section 4.2 of the WNNC and NNSSR SBIPs has been amended for clarity and further text provided in Section 6.2.1 of the NNSSR and WNNC SBIPs
99		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID98		WNNC	We note that the use of the core reef approach has been clarified and that all Annex I reef will be avoided We still recommend that feature data is incorporated when considering avoidance of Annex I geogenic reef.	Section 6.2.1.1 of the NNSSR and WNNC SBIPs has been amended to clarify that geogenic reef will be considered as a sensitive feature and decision making as outlined in the decision tree will be implemented should geogenic reef features be identified.

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			Consulted on at SG Meeting 7 09/11/21				
100	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	We are not clear why Figure 1 only shows the Natural England evidence base for Cromer. The feature data for the WNNC would have been more relevant, in particular the reef point data for this part of the site which contains Annex I: Detailed Comments on the Sandbank Implementation Plans (SBIPs) and Appendices Page 4 of 14 approximately 133 data points for geogenic reef in the south-east of the site where the cable comes ashore.	Hornsea Three cannot identify any outstanding data however if further data is provided Hornsea Three can include this in the DBA. Further text has been provided in Section 6.2.1 of the NNSSR and WNNC SBIPs to provide greater clarity on the geogenic reef data used. Hornsea Three note that stony reef is mapped in the DBA and is not in the recommended AoS in WNNC SAC. Circalittoral reef is included in MAGIC application and is in the excluded area in WNNC SAC as an exclusion zone.
101	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	Reference is made to the avoidance of Sabellaria reef management areas in reference to cable protection deployment, however it is unclear whether such areas have been included as exclusion zones for the purposes of marine debris removal (Section 6.3.1, paragraph 51 and Table 7). These areas should be avoided during marine debris removal. Please note that this comment is in response to 'Section 4.1.3 – Further Commitments' presented in the NNSSR SBIP. There is not a Further Commitments section presented in the WNNC SBIP however, the advice here is relevant to both sites.	All reef identified in the GIS data set has been considered (and excluded) in the first instance, as detailed within Appendix 1 to the SBIPs. This includes JNCC reef management areas in NNSSR SAC. Section 4.2 in WNNC and NNSSR SBIPs outlines the avoidance in terms of the marine debris removal, and text added to 4.1.3 in NNSSR SBIP, and Section 6.3.1 and Table 7 have also been made clearer in both the WNNC and NNSSR SBIPs. Further text has also been provided in Section 6.2.1 of the NNSSR and WNNC SBIPs. As there are no JNNC reef management areas present in the WNNC a "Further Commitments" section is not relevant for this SBIP.

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102		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID101 Consulted on at SG Meeting 7 09/11/21			Paragraphs 46 and 107: Based on the amended methodologies, the litter clearance being a one off discrete activity, the avoidance of reef and the use of ROV (Remote Operated Vehicle) and jetting to remove the debris, Natural England no longer advises that byelaw areas should be excluded.	Noted, no amendments required. Hornsea Three appreciate the further consideration from Natural England with regard to this point.
103	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	It should be noted that the Natural England S. spinulosa reef map for the WNNC is for the confirmed core reef, and so the assertion that the desktop study is considering all previous reef identified is incorrect. It is NE and JNCC's understanding that a log of all debris encountered will be provided to steering group members as evidence of the scale/type/volume of debris encountered and of how effective this exercise is at dealing with different debris types. The log should include information on: - the location, size, and nature of the debris; - whether the debris was recovered, a recovery was attempted and aborted, or if the debris was left in situ.	The DBA considered all available data on reef locations - if Natural England have additional data which should be used in the DBA Hornsea Three would appreciate the provision of this data. The offshore campaign is then structured as such to enable Hornsea Three to then ground truth reef presence/absence and "core" status during Stages 1 and 3 of the debris removal campaign. Section 6.7 of the WNNC and NNSSR SBIPs provides further detail with regard to the content of the reporting which includes that information requested by SNCBs.
104		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A)		Both	Para. 22 it remains unclear if new geophysical data will be reviewed by the onboard ecologist prior to the commencement of the debris removal, or if historic geophysical data and then real time ROV footage will be used to confirm present/absence of reef. This should	Hornsea Three direct SNCBs to Section 6.3.3 of the WNNC and NNSSR SBIPs which details the survey sequence of events. This was further clarified during the SG meeting held 09/11/21.

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			Received in relation to Comment ID103 Consulted on at SG Meeting 7 09/11/21			be clarified. The credentials of the benthic ecologist should be shared with the benthic steering group. Natural England wishes to see further information on the decision tree to be followed by the onboard ecologist to determine if the long term ecological benefit to the geogenic reef substrate is greater than the single localised disturbance impact experienced as part of the removal activities.	The credentials of the benthic ecologist will be appropriate to the scope required. Hornsea Three conducted further consultation with SNCBs 27/10/21 and reached alignment that the further detailed decision tree will be submitted as part of the Marine License application to allow additional rounds of consultation with SNCBs. The detailed decision tree will follow the outline provided in Section 6.3.3 of the WNNC and NNSSR SBIPs.
105	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	More clarity is needed regarding the reference to 'previous surveys' in this section. It is unclear if this is referring to Hornsea Project Three previous surveys or surveys from other projects. It should be noted that the debris removal campaign is proposed in other parts of the SAC to that of the Hornsea Project Three cable route. Please also see our detailed comments on the Appendices below.	Text has been amended in Section 4.2 of the WNNC and NNSSR SBIPs regarding the term previous surveys. It should be noted that the debris removal campaign will not be implemented within Hornsea Three Order Limits.
106		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID105 Consulted on at SG Meeting 7 09/11/21			Please see comment for point 6 provided above. Comment presented as Comment ID 104.	Hornsea Three note that this comment has been received previously. A response is provided above (Comment ID 104)

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107	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	Natural England and JNCC welcome the use of the WROV during the debris removal process. However, it is assumed that there is likely to need to be further discussion regarding the positioning of the WROV on the seabed to reach the object. Therefore, it will not only be the footprint of the object that needs to be considered in any assessment, but also footprint of the WROV to reach the required location.	Hornsea Three agree that the WROV may interact with the seabed however note that this will introduce localised and minor sediment movement only. Further consideration of this aspect will be considered as part of the Marine License application however is not anticipated to introduce significant impacts to sensitive features. Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21, SNCBs agree that '*As long as a decision tree can be agreed, we believe that significant impacts to the interest features of the site can be avoided*'.
108		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID107 Consulted on at SG Meeting 7 09/11/21			Natural England and JNCC welcome that the ROV will do 'fly-bys' to help the benthic ecologist identify the landing location for the WROV and/or whether or not above seabed jetting may be required. It would be helpful to have more detail on the decision tree in relation to this point.	Hornsea Three conducted further consultation with SNCBs 27/10/21 and reached alignment that the further detailed decision tree will be submitted as part of the Marine License application to allow additional consultation with SNCBs. The detailed decision tree will follow the outline provided in Section 6.3.3 of the WNNC and NNSSR SBIPs.
109	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A)		WNNC	Please note that shipping lanes in The Wash often overlap with areas of reef, for instance, The Well. It is not clear how the removal of debris from mixed sediment will help with the functionality of Annex I sandbanks.	The DBA which is Appendix 1 to the SBIPs outlines that all AoS lie within areas demarcated as Annex I sandbank habitat, as defined in the JNCC MPA mapper. Sandbank features include, as a sub-feature, subtidal mixed sediments which are more likely to be

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			Consulted on at SG Meeting 6 31/08/21				sensitive to disturbance than subtidal sand and therefore the ecological benefit here is considered most important.
110		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID109 Consulted on at SG Meeting 7 09/11/21		WNNC	This comment remains outstanding.	Section 6.1 of the WNNC SBIP has been amended to include a cross reference to the relevant information on sediment types in Section 6.2.1.2 of WNNC SBIP.
111	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	It is not clear from these maps that the area of search only interacts with Annex I sandbanks. It is Natural England and JNCC's understanding is that only Annex I sandbanks will be targeted.	The DBA which is Appendix 1 to the SBIPs specifies that all AoS are located within Annex I sandbank habitat, as defined in the JNCC MPA mapper
112		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID111			Natural England notes there is a preference for more stable coarse and mixed sediment to be targeted for debris removal. However, Natural England highlights that on many sandbank habitats, mobile and sessile epifauna may be sparse and not major parts of characteristic communities.	This is discussed in Section 6.2.1.2 of the WNNC and NNSSR SBIPs.

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			Consulted on at SG Meeting 7 09/11/21				
113	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	Hornsea Project Two is not in the vicinity of nor does it overlap with WNNC SAC. Please see comments on the Appendices in Annex 1 of this letter.	Text within Section 6.2.1 has been amended in WNNC and NNSSR SBIPs. Hornsea Three note that although Hornsea Project Two does not overlap with either WNNC or NNSSR SACs it is within close proximity to NNSSR and is in a similarly offshore environment and likely to reflect debris densities in the wider southern North Sea environment.
114		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID113 Consulted on at SG Meeting 7 09/11/21		WNNC	We note that references to Hornsea Project Two have been removed.	Noted, no amendments required.
115	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	Please clarify if monitoring will be undertaken to prove the predictions being made in this section in relation to, for example, indirect scouring of the seabed caused by debris.	Any indirect impacts caused by the presence of debris (such as scour) will be logged by the WROV and this information will be provided in the reporting associated with the debris removal campaign detailed within Section 6.10 of WNNC and NNSSR SBIPs.

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116		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID115 Consulted on at SG Meeting 7 09/11/21			We are not aware this confirmation has been provided.	Hornsea Three direct SNCBs to Section 6.10 of WNNC and NNSSR SBIPs which details the information which will comprise the post-campaign reporting. This includes whether the debris was causing scour impacts to seabed.
117	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	Based on this section, it is our understanding that pieces of debris will no longer count towards any targets. Please clarify if this understanding is correct.	If the debris is greater than 1m in size and able to be identified during the geophysical survey than it will be considered as a target, with each "piece" becoming an individual target.
118		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID117 Consulted on at SG Meeting 7 09/11/21			Natural England and JNCC welcome the clarification which has been provided in relation to this matter.	Noted, no amendments required.

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119	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	If Natural England and JNCC are not being consulted between investigations and removal, then a decision tree for the specialist on board should be agreed with the BSG.	A decision tree has been included in Section 6.3.3 of the NNSSR and WNNC SBIPs. A further detailed decision tree will be developed with the WROV contractor and specialists to support the Marine License application.
120		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID119 Consulted on at SG Meeting 7 09/11/21			As noted above within point 6, we wish to see further information on the decision tree to be followed by the onboard ecologist.	Hornsea Three note that this comment has been received previously. A response is provided above (Comment ID 104).
121	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	We note the proposed methods of removal in this section (and Table 8) and reiterate that methods must not be used that further damage the protected features of the site. There remain outstanding concerns in this regard.	Although Hornsea Three note that further consultation on impacts resulting from the debris removal can be considered during the Marine License application, Hornsea Three would appreciate further information with regard to impact pathways of concern to SNCBs. The debris removal has been designed to minimise all impacts to the surrounding environment, particularly sensitive features. Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21, SNCBs agree that '*As long as a decision tree*

Comment ID Number	Consultee	Date Received	Document	How was comment addressed	Relevant to WNNC, NNSSR or both	Comment	Response / where addressed in SBIPs
							can be agreed, we believe that significant impacts to the interest features of the site can be avoided'.
122		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID122 Consulted on at SG Meeting 7 09/11/21			As long as a decision tree can be agreed, we believe that significant impacts to the interest features of the site can be avoided.	Hornsea Three support the conclusion that significant impacts to the interest features of the site can be avoided.
123	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	Natural England and JNCC remain concerned that the anticipated field report, which will be submitted to the Secretary of State (SoS), and the subsequent summary report seem to be the only measure of success for the removal campaign, neither of which provide any indication of the potential footprint within which debris will be removed. We also note that no monitoring of seabed recovery is expected to be undertaken and therefore are unsure how Hornsea Project Three will demonstrate the impact of their intervention on the feature.	Hornsea Three note that success is demonstration of compliance with the DCO requirement (i.e., removal of debris from the required AoS). The reporting which will be drafted following completion of the debris removal campaign will provide information with regard to debris direct and indirect footprints and the number of targets removed, however this is not linked to success of the campaign. Hornsea Three have provided provision for post-removal monitoring in Section 6.10.2 of NNSSR and WNNC SBIPs in response to the request from SNCBs.

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124		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID123 Consulted on at SG Meeting 7 09/11/21			Please see response to Point 2 provided above. Comment provided in Comment ID 97	Hornsea Three note that this comment has been received previously. A response is provided above (Comment ID 97).
125	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	The SNCBs are concerned that the adaptive management approach will potentially increase the area of impacts to the site and therefore this requires further consideration. Adaptive management should be a structured, iterative process of robust decision-making that aims to reduce uncertainty over time. Simply increasing the area of search area does not necessarily ensure that sufficient targets will be found, and risks increasing the area over which the marine debris removal could have a negative impact on site features.	The adaptive management approach increases the likelihood of identifying an area of high debris density, therefore removing maximum debris targets. Hornsea Three would appreciate further information with regard to impact pathways of concern to SNCBs. The debris removal has been designed to minimise all impacts to the surrounding environment, particularly sensitive features. Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21 *'Natural England welcomes the inclusion of the 'trigger level' and thresholds for removal and adoption of the Orsted's adaptive management approach'*.
126		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A)			Section 6.9.1 Natural England welcomes the inclusion of the 'trigger level' and thresholds for removal and adoption of the Orsted's adaptive management approach.	Noted, no amendments required. Hornsea Three appreciate SNCB alignment with the proposed approach to adaptive management.

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			Received in relation to Comment ID125 Consulted on at SG Meeting 7 09/11/21				
127	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	It would be helpful in the SBIP to set out how the target densities were identified to achieve the maximum ecological benefit, and what that ecological benefit looks like.	The target densities were informed by previous surveys and are indicative of the minimum density of debris expected to be found during the Hornsea Three marine debris removal campaign. Actual densities will not be known until the initial geophysical survey is carried out and each target is confirmed as debris using the WROV however considerably larger AoS than are required in the Hornsea Three DCO have been targeted for surveying to identify those areas of high debris density. There is clear ecological benefit in removing debris that is not native to the sandbank environment as outlined in Section 2 of this document.
128		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID127			See point 17 above. We are still unclear what the ecological benefit for sandbanks looks like.	Hornsea Three note that the ecological benefits for sandbanks are provided in Section 2 within this document.

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			Consulted on at SG Meeting 7 09/11/21				
129	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	The 'trigger level' should be clearly defined.	Section 6.9.1, of the NNSSR SBIP and of the WNNC SBIP states the trigger levels at which adaptive management measures would be triggered. Text in these sections has been slightly altered to ensure clarity on the trigger levels as discussed at SG meeting 6 (held 31/08/2021). Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21 '*Natural England welcomes the inclusion of the 'trigger level' and thresholds for removal and adoption of the Orsted's adaptive management approach*'.
130		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID129 Consulted on at SG Meeting 7 09/11/21			Natural England and JNCC welcome the further clarity provided on this matter.	Noted, no amendments required.
131	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A)		Both	As mentioned above, there is geogenic reef as well as biogenic reef within WNNC. This should be captured here.	Text has been included in Section 6.2.1.1 of the NNSSR and WNNC SBIPs in relation to geogenic reef.

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			and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21				
132		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID131 Consulted on at SG Meeting 7 09/11/21		WNNC	Natural England welcomes the consideration of geogenic reef in paragraphs 42 – 44. We advise that Subtidal stony Reef has a Medium-High sensitivity to removal of substratum, with a pressure benchmark of 30 cm (WNNC SAC AoO). The feature may therefore be sensitive water jet or pumps to 1m depth. Whilst subtidal stony reef is not a designated feature of the NNSSR SAC, it is an Annex I habitat and a feature of the WNNC SAC.	Paragraph 40 of the WNNC SBIP has been updated to clarify process should geogenic reef be identified during the debris removal campaign. Hornsea Three note that further detail regarding any adaptions to the debris removal methodology resulting from sensitive feature presence will be secured in the detailed decision tree submitted as part of the Marine License application.
133	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	We would like to request if any survey data can be shared with Natural England and JNCC to help inform further management of the site.	All data collected during the offshore campaign will be provided to Natural England and JNCC to help inform further management of the site. This has been included in Section 6.7 of WNNC and NNSSR SBIPs.
134		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to			We note that reports will be made available, but we query whether this will also include the metadata behind those reports/figures, which would provide important context to the reports.	Hornsea Three will provide all metadata along with the reports as stated in Section 6.7 of the WNNC and NNSSR SBIPs. Section 6.10.2 of WNNC and NNSSR SBIPs secures this commitment.

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			Comment ID133 Consulted on at SG Meeting 7 09/11/21				
135	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	We would welcome as a minimum a proportion of locations being revisited to demonstrate that recovery has occurred and is rapid, as this currently remains an evidence gap and may help with wider discussions about removal of infrastructure and recovery. It would be good to monitor recovery/infill of holes and scour left by debris both before and after removal to add to evidence base that removal of it is contributing to recovery of the feature.	Hornsea Three have provided provision for post-removal monitoring in Section 6.10.2 of NNSSR and WNNC SBIPs in response to the request from SNCBs.
136		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID135 Consulted on at SG Meeting 7 09/11/21			See response to Point 2 provided above. Comment provided in Comment ID 97.	Hornsea Three note that this comment has been received previously. A response is provided above (Comment ID 97).
137	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A)		WNNC	Natural England notes that the proposal is to undertake a single debris removal campaign between June and September 2022, during a period when harbour seals, a feature of The Wash and Norfolk Coast (WNNC) SAC, are most sensitive. The sensitivity is	Additional information has been added to Section 8.1, Paragraphs 106 and 112 of the DBA (Appendix 1), which outlines that the recommended AoS is over 3.5km away from the nearest sandbank exposed at low tide, and

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			Consulted on at SG Meeting 6 31/08/21			heightened when they are hauled out on sandbanks during low tide. Natural England would welcome further consideration of how impacts to this species will be avoided/reduced/mitigated during the campaign and any subsequent adaptive management.	the adaptive management AoS in WNNC is 2km from the nearest area of intertidal habitat, therefore there is no risk of disturbance to seal haul outs.
138		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID137 Consulted on at SG Meeting 7 09/11/21			Natural England notes that in Section 108 there is a reference to the AoS being undertaken 2km from intertidal areas, leading to a conclusion that there are unlikely to be impacts to seals. However, there is no considerations of the likelihood of marine interactions with seals and appropriate protocols identified.	When operating in the WNNC SAC, the vessel(s) used during the debris removal campaign would be slow-moving (and stationary during the actual process of removing debris), thereby allowing seals to easily avoid marine interactions and minimising the risk of collision or excessive disturbance. Consideration of this feature of WNNC SAC will be provided in the Marine License application submitted to support the marine debris removal campaign.
139	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	We wish to highlight that activities occurring as part of the campaign and/or adaptive management should be a minimum of 300m away from any intertidal habitats to avoid disturbance to Annex I passage and over wintering birds during July, August and September.	Additional information has been added to Section 8.1, Paragraphs 106 and 112 of the DBA (Appendix 1), which outlines the fact that the recommended AoS is over 3.5km away from the nearest sandbank exposed at low tide, and the adaptive management AoS is 2km from the nearest area of intertidal habitat, therefore there is no risk of disturbance to over wintering bird foraging.
140		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A)			Natural England notes that as per our comment 27 above, the concerns around seals and waterbirds using intertidal habitats have been addressed.	Noted, no amendments required.

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			Received in relation to Comment ID139 Consulted on at SG Meeting 7 09/11/21				
141	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	It is not clear to the SNCBs what the purpose of the 'reference areas' are. However, we note that The Wash reference area is in a hot spot for non-breeding common scoter which are a feature of the Greater Wash SPA. Therefore, disturbance and displacement to these species need to be considered further depending on the purpose of these areas is, and we would recommend consideration of more suitable alternatives if possible.	Additional clarification on the reference areas (referred to in Figure 2.1) is provided in Appendix 1 to the SBIPs. It is noted that the reference areas are purely for the purpose of demonstrating the scale of the removal campaign and are in no way representative of the areas to be targeted.
142		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID141 Consulted on at SG Meeting 7 09/11/21			This concern remains outstanding.	Further clarity has been added to the relevant section of Appendix 1 to the SBIPs, including removal of the term 'reference area', and instead introduced a description of 'demonstrative' areas that are randomly placed and included in Figure 2.1 only to provide an indication of spatial scale.
143	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A)		Both	Natural England would welcome further clarity on the relevance of Hornsea Project Two data in defining the design of the compensation measures and/or	Use of Hornsea Two data has been clarified in Table 3.1 in Appendix 1 to the SBIPs, which sets out that the data is used to provide a general

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			and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21			monitoring, when the AoS for that project is outside the two designated sites impacted by Hornsea Project Three.	impression of marine debris presence and densities in the wider southern North Sea area. Section 6.2 of Appendix 1 to the SBIPs provides full details on the use of Hornsea Two data for this purpose.
144		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID143 Consulted on at SG Meeting 7 09/11/21			We note that reference to Hornsea Project 2 has been removed.	Noted, no amendments required.
145	Natural England and JNCC Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	Natural England suggest the Natural England marine evidence base should be included and used in the initial screening as part of the desk-based work to identify exclusion zones for the Area of Search (AoS). JNCC MPA Mapper is referenced in the Tables 3.1 and 5.1, but the Natural England marine evidence base is not.	This data source has been reviewed and consists of case studies from across the country. The case study of relevance is included in the DBA presented as Appendix 1 to WNNC and NSSR SBIPs.
146		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to			This comment remains outstanding.	Hornsea Three can confirm that the Natural England evidence base (i.e., specifically point and polygon data relating to distribution of Annex I reef and Annex I sandbank) has been fully incorporated. Tables 3.1 and 5.1 of Appendix 1 to the SBIPs have been updated to reflect this and provide information on how the

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			Comment ID145 Consulted on at SG Meeting 7 09/11/21				data has been used when defining the AoS. This has been supplemented with consultation on this point held between Hornsea Three and SNCBs 27/10/21.
147		25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21			Please be advised that we have lower confidence that data and reference material dated prior to 2013 remain relevant, given the tidal surge during that year and changes to the marine environment that occurred. Therefore, project specific data will need to be collected to inform the deployment of compensation measures to ensure that there is no further damage to the sites.	Hornsea Three understands that there is no recent bathymetric data (or other data) that covers the entire WNNC or NNSSR SAC areas upon which assessments could have been based. Hence, Hornsea Three had to focus our attention on what was available, which is, older than 2013. Hornsea Three understand that significant storm events can cause changes to sandbanks, particularly by waves near their crests when they are close to the sea surface. However, the sandbanks are likely to recover after the storm to a situation where they are dynamically stable with the more typical condition, which is driven by tidal currents. Although the storms may cause short-term changes induced by waves, Hornsea Three understand that they would not be long-lasting, and the sand banks would recover to a morphology similar to before the storm driven by the predominant currents. Additionally, storms have been occurring for many centuries before the recent 2013 storms and so they are part of the natural process of sandbank development and evolution which is described in the data/information that we present in the

Comment ID Number	Consultee	Date Received	Document	How was comment addressed	Relevant to WNNC, NNSSR or both	Comment	Response / where addressed in SBIPs
							DBA, which is relevant to the discussion of how the sandbanks function at a landscape-scale in the WNNC and NNSSR SACs.
148		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID147 Consulted on at SG Meeting 7 09/11/21			This comment remains outstanding.	Hornsea Three understand, that there is no recent bathymetric data (or other data) that covers the entire SAC areas upon which the assessments could have been based, therefore all available data has been used (noted that it is older than 2013). Hornsea Three understand that significant storm events can cause changes to sand banks, particularly by waves near their crests when they are close to the sea surface. However, the sand banks are likely to recover after the storm to a situation where they are dynamically stable with the more typical condition, which is driven by tidal currents. Although the storms may cause short-term changes induced by waves, Hornsea Three are confident that they would not be long-lasting, and the sand banks would recover to a morphology similar to before the storm driven by the predominant currents. It should be noted that storms have been occurring for many centuries before the recent 2013 storms and so they are part of the natural process of sand bank development and evolution which is described in the data/information presented in Appendix 1 to the SBIPs, which is relevant to the discussion of how the sand banks function at a landscape-scale in the SACs.

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149	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	Whilst we recognise the intention may have been to identify locations with greater benefits to sediment transport, the SNCBs advise against ranking the designated site importance of Annex I sandbanks on their ability to influence sediment transportation within the site and wider environment. This is not a key principle for designation and is not part of conservation objectives on the site. No one sandbank is more important than another.	Accepted and appreciate the comment. The discussion in Sections 4.1 and 4.2 of the DBA have been changed to reflect this.
150		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID149 Consulted on at SG Meeting 7 09/11/21			Natural England advises that paragraph 21 should include reference to both sediment processes and conservation objectives.	Sections 4.1 and 4.2 of the DBA have been amended to include reference to both sediment processes and conservation objectives.
151	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	Please be advised that if 'like for like' is being sought then sandbanks that are exposed on some low tides are not the same as sandbanks covered by seawater all of the time and they provide different site functions and comprise of different supporting to mobile species habitats. This will need to be taken into consideration within any HRA.	Hornsea Three have identified areas where debris can be removed to restore the functionality of the sandbank habitat. The campaign will not target sandbanks that are exposed at low tides, there is a depth limitation of 10 m relating to vessel access. The depth of each AoS is presented in Section 8 of Appendix 1 to the SBIPs.
152		25/10/2021	NNSSR SBIP (07122823_A)			This concern remains outstanding.	Hornsea Three are identifying areas where debris can be removed to restore the

Comment ID Number	Consultee	Date Received	Document	How was comment addressed	Relevant to WNNC, NNSSR or both	Comment	Response / where addressed in SBIPs
			and WNNC SBIP (07103743_A) Received in relation to Comment ID151 Consulted on at SG Meeting 7 09/11/21				functionality of the sandbank habitat. The marine debris removal campaign will not target sandbanks that are exposed at low tides. This is included as a note in Paragraph 28 of the DBA.
153	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	Please be advised that Burham Flats and Docking Shoal sandbanks are outside of designated benthic SACs	Noted and agreed. They have been removed from the discussion in Section 4.2 of Appendix 1 to the SBIPs.
154		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID153 Consulted on at SG Meeting 7 09/11/21			No further comment.	Noted, no amendments required.
155	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A)		Both	The SNCBs advise that areas to be managed as *Sabellaria spinulosa* reef such as Fisheries byelaw areas should be avoided to ensure that there are no further	Text has been included in Section 6.2.1 of the WNNC SBIP in relation to EIFCA by-law areas and their avoidance. Hornsea Three appreciate

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			and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21			impacts to reef and/or supporting habitat. Though it should be recognised that as the compensation is for Annex I sandbanks and not reef, these areas should not be a primary focus for any campaign in any event.	Natural England advice with regard to EIFCA byelaw area and would appreciate further steer with regard to this comment following review of second draft SBIPs.
156		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID155 Consulted on at SG Meeting 7 09/11/21			Based on the amended methodologies, the litter clearance being a one off discrete activity, the avoidance of reef and the use of ROV (Remote Operated Vehicle) and jetting to remove the debris, Natural England no longer advises that byelaw areas should be excluded.	Hornsea Three note that this comment has been received previously. A response is provided above (Comment ID 102)
157	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	Given The Wash has been an active bombing range and surrounded by RAF bases since the war there is a high probability that UXO will be identified. Whilst it is stated that UXO will be not removed as part of the debris removal campaign, there is the potential that identified UXO may ultimately need to be removed or managed as a health and safety matter. This was the case during the Race Bank cable installation.	Hornsea Three will not remove any UXO as part of the marine debris removal campaign. UXO locations will be recorded, excluded, and avoided in line with the CIRIA guidance (2015). The benthic compensation measures (including marine debris removal campaign) are separate from any cable installation works and therefore HSE risk can be managed differently.
158		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to			This concern remains outstanding.	As part of the marine debris removal campaign, Hornsea Three will not remove / detonate identified UXOs; instead, and in line with CIRIA guidance on UXOs for the construction industry (2009), Hornsea Three

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			Comment ID157 Consulted on at SG Meeting 7 09/11/21				will be responsible for reporting identified UXOs to HM Coastguard in the first instance. The Marine License application for the marine debris removal campaign will not include an application for UXO detonations.
159	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	The SNCBs would expect the most up to date reef data to inform the areas of search, noting that Sabellaria reef can establish with 12 months. Any older data increase the risk of Sabellaria spinulosa reef being present.	Clarifying information has been added to Section 5 of Appendix 1 to the SBIPs confirming that any areas of new reef, identified during Stages 1 or 3 of the campaign would be avoided with the appropriate buffers applied.
160		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID59 Consulted on at SG Meeting 7 09/11/21			See our comment at Point 6 above. Comment presented as Comment ID 104.	Hornsea Three note that this comment has been received previously. A response is provided above (Comment ID 104)
161	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	The SNCBs are concerned in relation to the proposal to focus on coarser sediment as this mostly likely to be location where Annex I reef is located.	Coarser sediment is targeted as it more likely to be impacted by cable protection deployment and less sensitive to disturbance than finer sediment types. Text has been included in Section 6.2.1 of the NNSSR and WNNC SBIPs to provide additional justification on this point.

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							Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21, SNCBs agree that '*As long as a decision tree can be agreed, we believe that significant impacts to the interest features of the site can be avoided*'.
162		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID161 Consulted on at SG Meeting 7 09/11/21			See our comment at point 6 above. Comment presented as Comment ID 104.	Hornsea Three note that this comment has been received previously. A response is provided above (Comment ID 104)
163	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	The SNCBs are concerned that an area within the southern part of the western ('dalek') arm in NNSSR SAC has been identified as a potential area for debris removal. This area was identified as part of the Hornsea Project Three characterisation surveys as being cobble reef. Due to its high ecological importance and sensitivity, we would advise against undertaking debris removal in this location, especially without further modification of techniques to ensure minimal footprint from the WROV and other associated tools/activities.	Text has been included in Section 6.2.1 of the NNSSR and WNNC SBIPs in relation to geogenic reefs and sediment types, including known extent of geogenic reef in NNSSR. Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21, SNCBs agree that '*As long as a decision tree can be agreed, we believe that significant impacts to the interest features of the site can be avoided*'.
164		25/10/2021	NNSSR SBIP (07122823_A)			Based on the amended methodologies, the litter clearance being a one off discrete activity, the avoidance of reef and the use of ROV (Remote	Hornsea Three note that this comment has been received previously. A response is provided above (Comment ID 102)

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			and WNNC SBIP (07103743_A) Received in relation to Comment ID163 Consulted on at SG Meeting 7 09/11/21			Operated Vehicle) and jetting to remove the debris, Natural England no longer advise that fishery byelaw areas should be excluded.	
165	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	We would expect any monitoring of the recovery of the areas of the SACs impacted by the development to also include those areas identified for compensation. This is needed to ascertain whether said compensation has been successful in the context of the conservation objectives of the designated site.	Hornsea Three have provided provision for post-removal monitoring in Section 6.10.2 of NNSSR and WNNC SBIPs in response to the request from SNCBs. However, this monitoring is secured in the SBIPs and is not a requirement of the EMP. The DCO requirement 13 (e) does not link to the marine debris removal campaign and sits as a separate piece of work to investigate the specific effects of cable protection in relation to sediment and epifauna.
166		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID165			See our comment at Point 2 above. Comment provided in Comment ID 97	Hornsea Three note that this comment has been received previously. A response is provided above (Comment ID 97).

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			Consulted on at SG Meeting 7 09/11/21				
167	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	Whilst we concur that reef on anthropogenic structures is not considered to be Annex I Reef, there is a high likelihood that any object with established reef on it will be surrounded by Annex I Reef. Therefore, even with the use of an ROV we are concerned about unintended impacts. Also, we note that reef is most likely to establish in the troughs between sandbanks on mixed sediment. We continue to have concerns with targeting areas of mixed sediment that requires further consideration.	If Annex 1 reef is surrounding the item of debris covered in *Sabellaria spinulosa* then the area would be excluded as detailed in Section 6.3.1 of WNNC and NNSSR SBIPs. Although Hornsea Three note that further consultation on impacts resulting from the debris removal can be considered during the Marine License application, Hornsea Three would appreciate further information with regard to impact pathways of concern to SNCBs.
168		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID167 Consulted on at SG Meeting 7 09/11/21			This comment is now resolved.	Noted, no amendments required.
169	EIFCA	23/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A)		Both	EIFCA have now reviewed the additions detailing your proposals about how to ascertain whether gear is active or lost and are comfortable with you plans to treat gear marked at the surface as active or wet stored and to be avoided, along with close liaison with	Noted, no amendments required. Hornsea Three will continue to engage with EIFCA regarding fisheries consultation prior to commencement of the marine debris removal campaign.

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			Consulted on at SG Meeting 7 09/11/21			fishermen and the issuing of NTM's and don't have any further comments on this. Thank you for addressing this is the documents following the previous consultation.	
170	EIFCA	23/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 7 09/11/21		Both	EIFCA request that if you do retrieve any lost/unmarked gear with whelk tags on the gear that you pass on the details on the tags to ourselves so we can let fishermen know that you have their lost gear. We know that replacing lost gear is expensive for fishermen and would like to facilitate them retrieving it where possible.	Noted, text has been added to Section 6.3.4 of WNNC and NNSSR SBIPs to secure this commitment.
Schedule 14 Part 2 Requirement 13 (d) awareness campaign							
171	Natural England	11/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		Both	Natural England has two points to raise in relation to ensuring that impacts are reduced from the proposed rapid retrieval activities (pages 8-9, sections 3.1.1.-3.1.2): 1) An agreed methodology to ensure that there are no impacts to interest features of the SACs; 2) Training for divers on sensitive habitats such as *Sabellaria spinulosa* reef, to ensure those areas are avoided or to trigger further consultation with SNCBs on the debris in question and merits of removal. These will need to be considered further in any scope of works. In addition, there would need to be a mechanism to guarantee that 3rd parties who may be involved in the removal work are signed up to them. Whilst Natural England is focussed on providing comments on the awareness campaign in relation to ensuring that no further damage will result to the designated sites, on this occasion Natural England do	Hornsea Three is no longer taking forward the SeaSearch initiative (detailed in the awareness campaign SoW) as part of the package of measures proposed for the awareness campaign as the SG was not supportive of this measure.

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						note that as regards terrestrial litter entering the marine environment during storm events, it may be helpful for you to discuss any such initiatives with the Environment Agency.	
172	MMO	10/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		Both	The methodologies set out in this campaign seem appropriate.	Noted.
173	MMO	10/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		Both	Orsted needs to ensure that no further damage to the Annex I habitats occur during any retrieval of lost fishing gear or other marine debris.	The removal methodology has been specifically designed to minimise impacts to wider site (e.g., avoidance of Annex I reef habitat), and any residual impacts to the sandbanks will be temporary and short term given the highly mobile nature of the environment. This is detailed further within Section 6 of the NNSSR and WNNC SBIPs. Hornsea Three note that following receipt of comment on second draft SBIPs 25/10/21, SNCBs agree that '*As long as a decision tree can be agreed, we believe that significant impacts to the interest features of the site can be avoided*'. Any rapid retrieval techniques will be conducted with vessels who operate in the vicinity of SACs under their normal fishing practices.

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174	JNCC	11/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		NNSSR	Fishing gear: As discussed in the previous set of comments from JNCC, we note that there is evidence of mobile demersal, static and pelagic fishing effort within NNSSR, from UK and non-UK registered vessels. The highest levels of activity come from non-UK beam trawling. Evidence of UK beam trawling, non-UK demersal trawling, non-UK demersal seine, UK pots and traps and non-UK pelagic trawling is low to minimal. We note that Orsted expects debris in NNSSR to be comprised predominantly of larger nets and pots, however, given the above, we would not expect many lost pots to be present in the site. We would also note that, for an awareness campaign to effectively decrease incidence of ALDFG in the site, we continue to consider it necessary to fully engage non-UK fishing operations as the major users of the site. No details have yet been provided to the Steering Group on this aspect of engagement. We request further details to be provided regarding the offshore fisheries stakeholders involved, both in the UK and outwith the UK, as well as a discussion of how these engagements will capture the full stakeholder landscape.	Fisheries consultation has been undertaken with both UK and non-UK fishers and this will be extended to other aspects of the awareness campaign as appropriate. Consultation in relation to potential AoS of the marine debris removal campaign is detailed further in Annex 1 of Appendix 1 to the SBIPs
175	JNCC	11/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		NNSSR	Other industries: Hornsea Three anticipates that marine debris may be related to offshore industries such as shipping and oil and gas development, particularly in relation to offshore areas including the NNSSR SAC. We are aware that Hornsea Three have been in communication with OPRED, and strongly suggest that they continue this	Noted, consultation with OPRED has been conducted [on this point] and OPRED are supportive in terms of Hornsea Three target marine debris type and would not support the inclusion of third-party O&G assets in this definition.

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						dialogue with all necessary teams in OPRED, including their Environmental Management Team and their Offshore Decommissioning Unit, to ensure that only appropriate third-party assets are being considered for removal.	
176	JNCC	11/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		NNSSR	Onshore litter sources: While JNCC do not expect that NNSSR would contain significant amounts on marine debris deriving from onshore sources, we acknowledge that this may occur and would be interested to see how Hornsea Three's consultants will assess this impact.	Noted - however monitoring of impact offshore within SACs is not proposed as reasonable or proportionate in relation to the longer-term debris reduction initiatives. This is due to the multitude of marine debris sources entering the marine environment, the mobility of marine debris throughout the marine environment and the inherent variability of the marine environment posing a substantial challenge to linking any change in the volumes of marine debris within the SACs directly to the implementation of the awareness campaign with a high confidence.
177	JNCC	11/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		NNSSR	Adapting the awareness campaign scope: We are pleased that Hornsea Three show a willingness to adapt and evolve their marine debris plans to take account of other initiatives, and, from analysis of their marine debris removal campaign.	Noted.
178	JNCC	11/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		NNSSR	Monitoring the awareness campaign: JNCC remain unsure how any success factor would relate to the achievement of the conservation objectives of the site. While uptake of transponders / use of rapid retrieval methodologies can be measured as a success factor for the campaign, transposing that	Section 7 of the NNSSR (and WNNC) SBIPs details how the debris reduction and awareness campaign will be monitored. Further information in regard to the ongoing role of the SG is provided in Section 3.1 of the NNSSR (and WNNC) SBIPs.

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						to success factors that show impact to the site is considerably more challenging. We would be keen to understand how Hornsea Three intend to do this. The same can be said for any success factors measured through an increase in stakeholder understanding in relation to the impacts of marine debris, or stakeholder behaviour change. We are also unsure how quantitative uptake of the measures could be used to infer the amount of debris that would have otherwise been discarded into the marine environment. We question how annual monitoring will relate to the current Steering Group – does Hornsea Three expect the Steering Group to continue through the lifetime of the awareness campaign, and how will Hornsea Three guarantee continued understanding of participants through such a long time span?	
179	JNCC	11/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		NNSSR	Minimising lost and abandoned fishing gear As noted above, at the next steering group meeting, we would like some information on how Hornsea Three's consultation with offshore fishing operators is being undertaken, and what insights have been gained from their local knowledge of marine debris in NNSSR.	Noted, Hornsea Three have provided further information of fisheries consultation carried out to date. Consultation in relation to potential AoS of the marine debris removal campaign is detailed further in Annex 1 of Appendix 1 to the SBIPs.
180	JNCC	11/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		NNSSR	Transponders on gear We consider that transponders may prove beneficial to the retrieval of lost fishing gear, though not in relation to the achievements of the conservation objectives of the site. Information on whether NetTag technology is appropriate in the depths seen in and around NNSSR, and with the fishing patterns seen offshore, would be	Noted, Hornsea Three have provided further information around the NetTag initiative and possible alternatives should NetTag be identified to have implementation challenges in Section 7 of the NNSSR and WNNC SBIPs.

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						welcome. We would also like to know whether the consultation around use of NetTag has involved offshore fishermen or non-UK representatives. While use of transponders would seem beneficial to the retrieval of lost fishing gear, we note that this initiative would only address accidental loss of gear. Accidental events are challenging to assess in terms of impact to achievement of conservation objectives, given that it would be difficult to predict seabed impact. We also consider that any success factor for this measure would need to relate to debris removed, not numbers of transponders in use.	
181	JNCC	11/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		NNSSR	Marking of lost gear We note that this is suggested as a retrieval method for inshore debris. As such, JNCC will not comment further.	Noted - Hornsea Three has not progressed as an initiative due to SG feedback.
182	JNCC	11/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		NNSSR	Disposing of fishing gear at end of life We are unsure as to how much of this suggestion would impact on the offshore fleets, as well as how this could be discharged outwith the UK. However, JNCC do consider that recycling and reuse of fishing gear could prove beneficial, though not in relation to the achievements of the conservation objectives of the site.	Noted, this has been incorporated into the compensation where practicable.
183	JNCC	11/05/2021	Awareness Campaign SoW (0695167_A)		NNSSR	Increasing industry awareness We are unsure whether awareness events for offshore industries would be appropriate or useful. The oil and gas industry must report to BEIS materials lost or discarded at sea, including any materials deposited	Noted - Hornsea Three does not query other industry practices, however there is significant value in knowledge sharing to maximise the learning and communication possibilities. Following consultation with OPRED, Hornsea

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			Consulted on at SG Meeting 3 27/04/2021			under conditions of force majeure, and every reasonable attempt must be made to recover them. Each loss has to be reported within six hours of the loss. Oil and Gas UK provides more information about what should be reported: "Some common sense should be applied as to the lower level of item that is reportable, e.g. a spanner is not reportable, but a scaffold pole could be pulled up by nets, plastic sheeting can harm wildlife and block water intakes and small items, e.g. radioactive sources, can be hazardous."1 As such, we are unsure what an awareness event would add to the industry's understanding, given the standards they already have to employ, or how it would provide any measure of success in terms of impact.	Three is confident that the industry regulator would be receptive to further information regarding debris load, and debris type, in NNSSR (and WNNC) SACs.
184	Eastern Inshore Fisheries and Conservation Authority (EIFCA)	12/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		WNNC	Do you plan on trailing with pots or other static gears? We would be very interested to hear about how the trial goes.	Trials would take place with representative gear used within the SACs (pots and static gear) as part of the implementation phase of the debris reduction and awareness campaign. The SG will be kept informed regarding these trials.
185	EIFCA	12/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		WNNC	It would be useful to know how expensive tags are in order to determine whether there were be a cost benefit to fishers	Hornsea Three anticipate funding the rapid retrieval mechanism.

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186	EIFCA	12/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		WNNC	Be aware of animosity from fisherman towards SeaSearch - needs to be considered and handled carefully	Agreed - Hornsea Three has not taken this forward as an initiative due to feedback from the SG.
187	EIFCA	12/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		WNNC	We have been having conversations with SeaSearch around similar proposals for a system whereby lost gear is identified and tagged in Cromer Shoal Chalk Beds MCZ	Noted - Hornsea Three has not taken this forward as an initiative due to feedback from the SG.
188	EIFCA	12/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		WNNC	Must be able to be certain that potting gear identified is not active	Noted - Hornsea Three has not taken this forward as an initiative due to feedback from the SG.
189	EIFCA	12/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		WNNC	Must be long-term to be successful – secured beyond the lifetime of the project	Noted - Hornsea Three are required to provide framework over the lifetime of the project and aims to ensure initiatives are embedded and can secure onward support beyond the operational life of Hornsea Three.
190	EIFCA	20/08/2021	WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		WNNC	Boston and Kings Lynn ports could also provide potential Fishing for Litter collection port locations as these are both big and busy fishing ports.	Hornsea Three agree with the potential of the measure at these ports and therefore Boston and Kings Lynn have been included in the initial consultation as potential ports which may implement the FfL measure. This is detailed

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							further in Section 7.1.2 of NNSSR and WNNC SBIPs.
191	EIFCA	20/08/2021	WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		WNNC	One of your measures for the awareness campaign is for a Gear Marker Fund, the marking of gear is something which Eastern IFCA support and would like to improve across the district. We would like to be involved with any developments of this measure to ensure that they are aligned with our own requirements.	Following approval of the NNSSR and WNNC SBIPs, Hornsea Three will continue to consult with the SG to ensure that the long term benthic compensation measures align with stakeholder requirements and advice.
192	NFFO	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	In response to the proposal to partnership with local initiatives contained in the draft implementation plan we would suggest that the ports of Boston and Kings Lynn are included in the target list. These are both significant fishing ports in the region and in relation to WNNC SAC. A preliminary canvassing of our members suggests that a Fish for Litter Scheme would be well received in both ports.	Hornsea Three agree with the potential of the measure at these ports and therefore Boston and Kings Lynn have been included in the initial consultation as potential ports which may implement the FfL measure. This is detailed further in Section 7.1.2 of NNSSR and WNNC SBIPs.
193	NFFO	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	In addition, the proposal does not mention the potential for fishing for litter schemes to recover none fishing litter caught in fishing gear during fishing operations. There is an impression that the litter is generated solely by fishing. The fishing for litter campaign in Scotland and the South West highlights that the litter recovered under the scheme is from multiple sources: https://www.fishingforlitter.org.uk/assets/file/FFLS%202014%20-17%20Final%20Report.pdf. The scheme also highlights the costs of marine litter to fishing through dumped catch, repairs to gear and lost fishing time.	Noted and agreed. Further clarification has been added to Section 7.1.2 of the WNNC and NNSSR SBIPs.

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194	NFFO	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	Research evaluating the scheme elsewhere in the South West is available here: http://sciencesearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=17938 This highlights the simplicity yet effectiveness of the scheme that is unique in voluntarily collecting litter at sea, its role in providing a focus for awareness promotion and behaviour change, and the positive feedback for those involved which in turn helps to reinforce the good practice. Improved hauls were also reported as a result of reduced litter.	Noted and agreed. Further clarification has been added to Section 7.1.2 of the WNNC and NNSSR SBIPs.
195	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	It would be useful if it was more explicit what Hornsea Project Three supporting NetTag technology would entail ("NetTagtechnology(orothersimilar rapid retrieval technology) detailed in Section 7.1.7 would be made available and Hornsea Three would support its use").	Throughout the implementation phase of the rapid retrieval compensation measure (Section 9 of the NNSSR and WNNC SBIPs) Hornsea Three will establish with the relevant fishing associations the most appropriate way for distributing the methodology taken forward. At this stage this is considered to be a system whereby vessels relevant to the measure are encouraged to take part through consultation and are then required to apply to Hornsea Three to receive the rapid retrieval technology.
196		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to			We note that reference to NetTag has not been updated in Version 2. However, reference to 'gear marker' has. The SNCBs seek clarity regarding this – does this mean 'gear marker' is Hornsea Project Three's preferred option?	Hornsea Three maintain either NetTag or a gear marker fund as viable long-term initiatives. Hornsea Three note that there are outstanding considerations as to the feasibility of each mechanism and therefore the mechanism taken forward will be confirmed during

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			Comment ID195 Consulted on at SG Meeting 7 09/11/21				implementation of the rapid retrieval technology.
197	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	We would like to draw attention to the draft Principles of Compensatory Measures, and in particular point (e) on monitoring the effectiveness of compensation in MPAs.	Noted, no amendment required.
198		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID197 Consulted on at SG Meeting 7 09/11/21			See response to point 2 provided above. Comment provided in Comment ID 97	Hornsea Three note that this comment has been received previously. A response is provided above (Comment ID 97).
199	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/21		Both	We note that retrieval of fishing gear by fisherman as a result of the rapid retrieval mechanisms holds the potential for further damage to the protected features of the WNNC and NNSSR SAC, depending on the method of retrieval. This paragraph also states that consultation with "some fishers" received a "positive response", yet no guarantee of ongoing buy-in from	Any rapid retrieval techniques will be conducted with vessels who operate in the vicinity of SACs under their normal fishing practices. Hornsea Three cannot control an activity that already takes place (making retrieval more efficient will reduce impact). Hornsea Three remain in consultation with

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						fishers and commitment to use of appropriate retrieval methods that minimise damage can be provided.	Kingfisher with regard to the potential supporting project of mapping sensitive areas within WNNC and NNSSR SACs to provide to fishing vessels and hope to provide further information in the final SBIPs submitted to BEIS. Successful gear marker funds have been implemented on the west coast of the UK by Ørsted with high take up of the initiative.
200		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID199 Consulted on at SG Meeting 7 09/11/21			These concerns remain outstanding.	The development of this response has been supplemented with consultation on this point held between Hornsea Three and SNCBs 27/10/21 to ensure advice was sufficiently understood and discussion within SG meeting 7 held 09/11/21 to further identify solutions. Hornsea Three propose that as part of the awareness campaign events, existing best practice guidance on retrieving lost fishing gear will be promoted. This has been added to Section 7.1.3 of NNSSR and WNNC SBIPs.
Schedule 14 Part 2 Requirement 13 (e) Environmental Monitoring Plan							
201	Natural England	11/05/2021	Monitoring Campaign TN (06951697_A) Consulted on at SG Meeting 3 27/04/2021		Both	It is Natural England's understanding that the three requirements under Paragraph 13 (e) Schedule 14 of the DCO is to provide evidence in relation to: 1) Assess the effects of cable protection on sediment movement and epifauna assemblages during the operation of the Project 2) Improve the evidence base for assessing the impacts of offshore windfarm cable installation and rock protection for future projects i.e. improve the evidence base to remove the uncertainties in relation to	Noted - see below responses to individual comments.

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						designated site advice where there is 'reasonable scientific doubt' in relation to impacts to interest features. (Please note this relates to the evidence and analysis used to inform impact assessment more than 'data gaps') 3) Through appropriate surveys monitor the recovery of the areas of the NNSSR and the WNNC impacted by cable protection, post-decommissioning ideally to remove uncertainties Currently Natural England do not believe that the proposed monitoring satisfactorily delivers the above requirements.	
202	Natural England	11/05/2021	Monitoring Campaign TN (06951697_A) Consulted on at SG Meeting 3 27/04/2021		Both	1) Sediment Transport In considering potential disruption to sediment transport, the focus should be on understanding how sediment currently moves (near field and far field) through models and monitoring, and then determine the scale of any changes and implications thereof from the placement of linear cable protection on several parallel cables, within particular locations. It would be helpful if specific questions relating to sediment transport evidence gaps could be identified. For example (but not exclusively): – Do the mobile sandbanks continue to migrate over the cable protection and if so, what depth is the sediment over the cable protection, and how long does the protection remain covered? Do the impacted areas continue to function as part of the sandbank system? – In relation to W&NNC SAC - is sediment supply to the Norfolk coast disrupted by the presence of multiple	Hornsea Three does not consider it appropriate to run models as part of the monitoring campaign, as any far field effects are not significant (as demonstrated by the EIA). Any effects will be local to the cable protection. -Mobile sand banks are expected to migrate over cable protection. The depth of sediment will depend on the rate of migration and the thickness of the sediment pile within the bank. The protection will remain covered until it emerges at the other side of the bank after it has passed over. This would be a very long term effect given the size of a sand bank and is not significant in EIA terms. -The purpose of the monitoring would be to determine if impacted areas continue to function as part of the system. -Sediment supply to coast is not relevant to

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						cables being protected? – Is there scouring around the cable protection and how does that change over time? Does this affect the structure and function of the site? – Does sediment composition change on the leeward side of the cable protection and does this hinder the conservation objectives of the site? – Do any changes to sediment transport impact on other features such as Annex I reef, and if so how? This would allow the BSG to better consider the most appropriate survey methodologies to progress. It may also be beneficial for Orsted to consult with a sediment transport specialist to inform these discussions and help design the monitoring.	habitat loss within the SAC and therefore out of scope for the monitoring programme. -Scour will be local to the cable protection which is the targeted area for the monitoring. -There will be no noticeable change in sediment characteristics on the 'down-drift' side of the protection. Sediment would potentially build on the updrift side to form a ramp and will eventually be transported over to the other side maintaining the characteristics that existed prior to protection. -Direct impacts to Annex I reef are not part of this monitoring. Indirect impacts of changes to sediment transport will be interpreted from the monitoring results. The survey methodologies outlined in Appendix 2 of the SBIPs are appropriate to the monitoring that is required.
203	Natural England	11/05/2021	Monitoring Campaign TN (06951697_A) Consulted on at SG Meeting 3 27/04/2021		Both	2) Evidence Base Natural England believes that this requirement is a cross cutting one that includes improving evidence regarding several impacts, which also include sediment transportation (above) and cable protection decommissioning (below). As this requirement emerges from the uncertainties identified during a Habitats Regulation Assessment (HRA), it is our view that the improvements to the evidence base must relate to the interest features of the designated sites, and the conservation objectives relating to the structure and	The Hornsea Three DCO states "*an environmental monitoring plan to include: appropriate surveys to assess the effects of cable protection on sediment movement and epifauna assemblages during the operation of the Project, to improve the evidence base for assessing the impacts of offshore windfarm cable installation and rock protection for future projects; and appropriate surveys to monitor the recovery of the areas of the NNSSR and the WNNC impacted by cable protection, post-decommissioning*". Therefore, the

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						function of the relevant features, in order to help reduce consenting risk going forwards.	Environmental Monitoring Plan has very specific objectives in relation to the discharge of the DCO requirement. Surveys have been designed to be replicable in other areas by other developers, and therefore not specifically designed for the SACs, except for the site-specific recoverability surveys. The comments and questions are welcomed and will form part of the wider assessment of the effects of cable protection (in terms of community change), however Hornsea Three has been tasked with provision of data to help close the data gap, which the proposed monitoring achieves.
204	Natural England	11/05/2021	Monitoring Campaign TN (06951697_A) Consulted on at SG Meeting 3 27/04/2021		Both	Therefore, Natural England advises relating the improvement of the evidence base back to the conservation objectives for the SACs and the uncertainties raised during examination. As with 1) above, this would be best facilitated by developing a series of questions that could be answered as part of this work, that could be narrowed down in discussion with the BSG. All questions should link back to the structure and function of the interest features and the conservation objectives of the site. Questions could include (but not exclusively): – How do the communities present on the cable protection differ from the surrounding sediments that were there prior to deposition of cable protection? How far do any changes in sediment composition and	The Hornsea Three DCO states "*an environmental monitoring plan to include: appropriate surveys to assess the effects of cable protection on sediment movement and epifauna assemblages during the operation of the Project, to improve the evidence base for assessing the impacts of offshore windfarm cable installation and rock protection for future projects; and appropriate surveys to monitor the recovery of the areas of the NNSSR and the WNNC impacted by cable protection, post-decommissioning*". Therefore, the Environmental Monitoring Plan has very specific objectives in relation to the discharge of the DCO requirement. Surveys have been designed to be replicable in other areas by

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						infaunal communities extend? Does this change over time? (Attempting to answer this question is likely to require thorough baseline sampling prior to cable deposition and then monitoring of an analogous area within MPA) – How is colonisation related to sediment transport? I.e. if cable protection is persistently covered, do the communities function the same as unimpacted sediment communities? If the cable protection is cyclically covered and uncovered what does this mean for the communities functioning? – Are there changes to biogeochemical composition of sediment surrounding cable protection e.g. organic matter accumulation? – How does colonisation of the installed cable protection compare with the communities present within Annex 1 geogenic reef, and/ or the mixed sediment associated with Annex 1 sandbank?	other developers, and therefore not specifically designed for the SACs, except for the site-specific recoverability surveys. The comments and questions are welcomed and will form part of the wider assessment of the effects of cable protection (in terms of community change), however Hornsea Three has been tasked with provision of data to help close the data gap, which the proposed monitoring achieves.
205	Natural England	11/05/2021	Monitoring Campaign TN (06951697_A) Consulted on at SG Meeting 3 27/04/2021		Both	We agree that one way of testing the duration of the impacts and the extent to which site features recover would be to monitor benthic communities over time to compare them with those lost through the placement of cable protection. However, we advised during the Hornsea Three examination that while the placement of rock protection may be colonised by mobile epifaunal species found within sandbank systems, there remains uncertainty in relation to changes to the benthic communities in affected areas, and how these changes may affect other site features. These changes could potentially hinder the conservation objectives for	Hornsea Three has committed to the use of cable protection as a last resort and to a worst-case scenario of 118,440m^2 of cable protection within the NNSSR SAC and 27,720m^2 of cable protection within the WNNC SAC. These risks were also assessed as non-significant during EIA and it is unlikely that colonisation of the rock protection would have any significant impact on the site features.

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						the sites. Therefore, the monitoring of the colonisation of rock protection must be designed to answer specific questions regarding impacts to site features. When reporting, conclusions should be drawn regarding how the evidence relates to AEoI. We also note that there is a risk that focusing solely on the colonisation of rock protection may become a limiting factor if other cable protection methods e.g. mattresses are taken forward (see comment 6 below).	
206	Natural England	11/05/2021	Monitoring Campaign TN (06951697_A) Consulted on at SG Meeting 3 27/04/2021		Both	3) Cable protection removal and recovery There is limited information provided within the document (page 12, para. 32) to fully understand what is being proposed for this requirement. Following the BSG on 27th April 2021 it is our understanding that Orsted propose to monitor the recovery of benthic habitats following the decommissioning of the Hornsea Project Three cable protection, which will be in 30+ years and part of a separate consent. Therefore, rather than designing the monitoring now it would be much better to develop an In-Principle Monitoring Plan that sets out the specific questions the monitoring must answer and commitments included to ensure that this is revisited at the time of decommissioning and included in the Application. Natural England also query what will happen in regard to monitoring after decommissioning if the lifetime of the project is extended. In addition, due to the time period that will elapse before there are any findings, Natural England do not believe that this is in the spirit of the requirement to improve the evidence base in relation to the ability to	The monitoring has been designed to be repeatable at all stages of the lifecycle of Hornsea Three, from pre-construction through to decommissioning to provide a robust and statistically sound data set. Hornsea Three will be required to carry out a full decommissioning survey at the end of the development as per the DCO and accompanying deemed marine licences. Hornsea Three therefore do not feel that it is appropriate for an in-principle monitoring plan for decommissioning to sit alongside this Environmental Monitoring Plan (EMP), especially given the DCO requirements that underpin the monitoring. The EMP includes the provision for review and inclusion of additional surveys should there be grounds for their need.

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						decommission cable protection, by understanding the associated impacts of removal on designated features and the recoverability of those features following the removal. Therefore, we suggest that alternative options e.g. trials of decommissioning techniques, monitoring of 3rd party decommissioning of assets as part of a partnership project would be beneficial.	
207	Natural England	11/05/2021	Monitoring Campaign TN (06951697_A) Consulted on at SG Meeting 3 27/04/2021		Both	4) Monitoring of sediment plumes Natural England is not aware of persistent sediment plumes being created by the placement of cable protection. If sediment becomes suspended by this activity, we believe that it will settle relatively quickly, and it will be challenging to provide any meaningful monitoring data to demonstrate this assumption. The grout plumes at the Lynn and Inner Dowsing offshore windfarms observed through aerial photography settled out relatively quickly, and whilst there was wide dispersal across the Inner Dowsing Race Bank and North Ridge SAC, the levels of deposition were not considered to be significant to relevant benthic species, which are tolerant of sediment smothering within mobile sediment systems. Therefore, it may be more appropriate to consider other evidence gaps to monitor.	Acknowledged, on consideration Hornsea Three concur with Natural England and this aspect will not be taken forward.
208	Natural England	11/05/2021	Monitoring Campaign TN (06951697_A) Consulted on at SG Meeting 3 27/04/2021		Both	5) Tools Natural England agrees with JNCC in relation to uncertainties associated with using OneBenthic beyond aggregates for setting limits for acceptable change in sediment composition and its relationship/effect on benthic communities to determine change and	Hornsea Three notes the concerns of the SG around the OneBenthic tool and, while Hornsea Three would advocate for some benefits of the OneBenthic tool, this has not been taken forward into the Environmental Monitoring Plan.

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						recovery potential outside of the cable protection areas. Therefore, Natural England also advises that Hornsea Three consider options beyond the OneBenthic tool for this purpose.	
209	Natural England	11/05/2021	Monitoring Campaign TN (06951697_A) Consulted on at SG Meeting 3 27/04/2021		Both	6) Focus on Rock protection Natural England notes that the monitoring is focused solely on the placement of rock protection. However, as stated during our meeting on 15th April 2021, Natural England advises that every effort should be made to minimise the project impacts as much as possible, including using other forms of protection which have a proven track record of removal. Therefore, we advise the monitoring proposed as part of the benthic steering group shouldn't hinder the ability to further mitigate the project, and equally the monitoring options should be flexible enough to not be dependent on the type of cable protection used for this project.	Hornsea Three acknowledge that if no cable protection is required within the SACs then the monitoring will by default also not be required. Hornsea Three continue to work towards deployment minimum cable protection and agree with Natural England that this monitoring requirement should not encourage deployment of cable protection where it is not required. The monitoring methodology is applicable to all types of cable protection.
210	Natural England	11/05/2021	Monitoring Campaign TN (06951697_A) Consulted on at SG Meeting 3 27/04/2021		Both	7) Reporting Natural England would welcome clarity on when, how and to whom the outcome of monitoring will be provided. Will the BSG be reconvened? Who will be discharging this requirement? This is particularly relevant to those aspects of the monitoring proposals that will be undertaken several years (or even decades) from now.	Hornsea Three propose that the review and discharge of any monitoring reports produced in relation to the Environmental Monitoring Plan will be submitted to MMO and consulted as relevant with SNCBs. This approach has been confirmed as appropriate with BEIS and MMO.
211	MMO	10/05/2021	Monitoring Campaign TN (06951697_A)		Both	The proposed monitoring approach for epifauna appears appropriate, with both the cable protection and the seabed either side of this to be included for comparison. However, MMO defer to the	Noted.

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			Consulted on at SG Meeting 3 27/04/2021			recommendations provided by the impending Cefas cable protection project report regarding specifics[5].	
212	MMO	10/05/2021	Monitoring Campaign TN (06951697_A) Consulted on at SG Meeting 3 27/04/2021		Both	Monitoring a gradient effect from source of impact may be preferable to the use of control areas due to the potential difference in natural changes between each location. Please see the recent publication by Methratta (2020), which compares before-after-impact-control (BACI) and before-after-gradient (BAG) methodologies (referenced below).	Noted and agreed - use of transects to monitor the impacts of the cable protection provides a gradient approach. It should also be noted that monitoring will take place both before and after the placement of rock protection, as well as before and after the removal of it.
213	MMO	10/05/2021	Monitoring Campaign TN (06951697_A) Consulted on at SG Meeting 3 27/04/2021		Both	The inclusion of grab sampling to provide a quantitative change in habitat based on sediment type may not be appropriate, as much of the epifauna inhabiting Annex I sandbanks will be mobile and therefore less dependant on specific sediment characteristics. This methodology may be more applicable to areas of coarser sediment which are suitable for establishment of Annex I Sabellaria spinulosa reef and sessile epifauna, although we would not advise grab sampling in areas of already established Annex I S. spinulosa reef. The approach developed under OneBenthic in relation to 'acceptable change' could then potentially be applied to determine the degree of change and whether the presence of the cable protection has significantly influenced the surrounding habitats. To determine 'acceptable change' in sediment type would, however, require multiple grab samples per habitat type to set the initial baseline envelope.	Noted - grab sampling is included in the methodology as an optional aspect if required.

[5] Report referenced to contains the further comments from MMO to the Monitoring Campaign TN

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214	MMO	10/05/2021	Monitoring Campaign TN (06951697_A) Consulted on at SG Meeting 3 27/04/2021		Both	MMO recognises that the precise locations of cable protection will be unknown at preconstruction and welcome the approach of assessing the baseline via regular transects along the export cable corridor within the SACs, with great transect frequency occurring within areas of higher heterogeneity.	Noted and agreed, this is detailed further within the Environmental Monitoring Plan presented as Appendix 2.
215	JNCC	11/05/2021	Monitoring Campaign TN (06951697_A) Consulted on at SG Meeting 3 27/04/2021		NNSSR	We agree with Hornsea Three that environmental monitoring does not directly compensate for habitat loss resulting from the deployment of cable protection within the WNNC and NNSSR SACs, but that DCO condition 13 of Schedule 14 includes Environmental Monitoring Plans (EMPs) for the cable protection deployed within the SACs. We note that Hornsea Three anticipate that the EMPs will identify sample locations using a worst case assumption in terms of cable protection being deployed along 6% of the length of cables within the SACs. We note that Hornsea Three are considering environmental monitoring only in terms of improving the current evidence base for colonisation of cable protection, and in terms of informing whether the current approach of assessment of cable protection deployment is proportionate. We consider that this is fundamentally incorrect, and that monitoring should be undertaken to understand the impact of the protective materials, and how the deployment of protective materials may impact on the achievement of the conservation objectives of the site. We also feel that there is a lack of consideration of monitoring of the debris collection activities and their	The Hornsea Three DCO states "*an environmental monitoring plan to include: appropriate surveys to assess the effects of cable protection on sediment movement and epifauna assemblages during the operation of the Project, to improve the evidence base for assessing the impacts of offshore windfarm cable installation and rock protection for future projects; and appropriate surveys to monitor the recovery of the areas of the NNSSR and the WNNC impacted by cable protection, post-decommissioning*". Therefore, the environmental monitoring plan has very specific objectives in relation to the discharge of the DCO requirement. Surveys have been designed to be replicable in other areas by other developers, and therefore not specifically designed for the SACs, with the exception of the site-specific recoverability surveys. The questions are noted and will form part of the wider assessment of the effects of cable protection (in terms of community change), however Hornsea Three has been tasked with provision of data to help close the

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						potential impact, and consider it fundamental for Hornsea Three to add detail around this into future opinions for the Steering Group.	data gap, which the proposed monitoring achieves. Details around the environmental; monitoring during debris collection was discussed at SG meeting 4 and is detailed further in the NNSSR and WNNC SBIPs.
216	JNCC	11/05/2021	Monitoring Campaign TN (06951697_A) Consulted on at SG Meeting 3 27/04/2021		NNSSR	Hornsea Three note that one of the aims of the proposed environmental monitoring is to record any physical or biological changes that could affect the temporary long-term natural distribution, structure and function of the sites, as well as the long-term survival of their typical species. We would suggest that the monitoring should look to understand impact on all conservation objective attributes of NNSSR. • JNCC do not consider it appropriate to simply assess the effects of cable protection on sediment movement and epifauna assemblages. • JNCC do not consider that looking at the nature of epifaunal assemblage change to be an appropriate part of monitoring, given that in many sandbank habitats, mobile and sessile epifauna may be sparse and not major parts of characteristic communities. We also note our previous comments during Hornsea Three's Section 56 consultation and examination concerning our lack of confidence in Hornsea Three's benthic survey analyses. In these comments we noted that we considered that the methods used for faunistic analysis by the applicant were such that there was little opportunity that true ecological patterns and relationships could emerge. As such, we had low	The Hornsea Three DCO states "*an environmental monitoring plan to include: appropriate surveys to assess the effects of cable protection on sediment movement and epifauna assemblages during the operation of the Project, to improve the evidence base for assessing the impacts of offshore windfarm cable installation and rock protection for future projects; and appropriate surveys to monitor the recovery of the areas of the NNSSR and the WNNC impacted by cable protection, post-decommissioning*". Therefore, the Environmental Monitoring Plan has very specific objectives in relation to the discharge of the DCO requirement. Surveys have been designed to be replicable in other areas by other developers, and therefore not specifically designed for the SACs, with the exception of the site-specific recoverability surveys. The questions are noted and will form part of the wider assessment of the effects of cable protection (in terms of community change), however Hornsea Three has been tasked with provision of data to help close the

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						confidence in the biotoping results, as well as any conclusions as to characterisation or monitoring resulting from them.	data gap, which the proposed monitoring achieves.
217	JNCC	11/05/2021	Monitoring Campaign TN (06951697_A) Consulted on at SG Meeting 3 27/04/2021		NNSSR	We are unsure as to why sediment plumes resulting from cable placement activities are being considered as part of the impacts. As far as JNCC is aware, this is not an impact that has been considered during the section 56 application and examination.	As noted above, monitoring of sediment plumes has been noted for removal.
218	JNCC	11/05/2021	Monitoring Campaign TN (06951697_A) Consulted on at SG Meeting 3 27/04/2021		NNSSR	• Use of grab sampling should depend on the seabed habitats in the areas to be sampled. JNCC would not expect grab sampling to occur in areas of Annex I reef. We would expect multiple samples per station to be taken for any grab sampling. Grab sampling should include analyses of infauna as well as epifauna. • Hornsea Three propose to use the predictive methods developed by Cefas that use particle size analysis (PSA) to set limits for acceptable change in sediment composition and its relationship/effect on benthic communities to determine change and recovery potential outside of the cable protection areas. JNCC recommends that Hornsea Three consider options beyond the OneBenthic tool for this purpose. We are uncertain that OneBenthic is appropriate for understanding limits for change outwith its original use in aggregates monitoring, and we still have a number of significant concerns around the statistics used in the tool to provide limits for acceptable change. • We note Hornsea Three's use of control sites. We	Noted - grab sampling is included in the methodology as an optional aspect and would not be undertaken in any areas of Annex I reef habitats. Alternative methods of monitoring change as an alternative to the OneBenthic tool have been proposed in the Environmental Monitoring Plan. Control sites would be within the SACs and within the Hornsea Three Order Limits.

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						would like more information on the control sites Hornsea Three expect to use – would they be within NNSSR, or outwith the site, what evidence has been used to select them? We note that any control sites would have to be similar in terms of biotope, as well as physical slope / topographic form to the areas impacted.	
219	JNCC	11/05/2021	Monitoring Campaign TN (06951697_A) Consulted on at SG Meeting 3 27/04/2021		NNSSR	• DEFRA, the Crown Estate and BEIS are working with various stakeholders to create the Offshore Wind Environmental Evidence Register (OWEER). JNCC is managing the project, and both JNCC and Natural England, alongside wider stakeholders, have provided expertise as to evidence gaps and prioritisation. The benthic area of OWEER will include expert prioritisation of the various research projects undertaken in relation to effects of cable protection and research gaps. We would expect Hornsea Three to incorporate this knowledge around evidence gaps and ongoing research into their thinking when OWEER is available. This is expected to be early June 2021[6]. • We also do not consider that looking at colonisation timescales for rock protection to be an appropriate part of monitoring. While understanding colonisation may be an evidence gap around cable protection, it does not provide any understanding of how achievement of the site's conservation objectives would be impacted. • We also note that previous discussions have occurred	Noted, Hornsea Three will look to incorporated OWEER once available. As stated above, the environmental monitoring is linked to addressing evidence & research gaps associated with the conclusion of AeOI, which several industry forums have flagged as a substantial issue.

[6] Document awaiting publication

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						among JNCC, NE and Hornsea Three regarding ecologically sensitive rock protection. Our position on this remains the same. We strongly recommend that any consideration of ecologically sensitive rock protection must relate to restoration of the site, not to which rock sizes are most facilitative for colonisation. • JNCC do agree, however, that any studies Hornsea Three undertake analysing recovery potential associated with different types of cable protection, or grades of rock used, may help fill important evidence gaps.	
220	MMO Local Office	10/05/2021	Awareness Campaign SoW & Monitoring Campaign TN (0695167_A) (06951697_A) Consulted on at SG Meeting 3 27/04/2021		Both	There is enough information provided within the supporting documents to understand the methodology, and the equipment that will be used. However, as these are plans for environmental monitoring and marine debris awareness campaigns, it is unclear as to when an MMO inspection could possibly take place. – this would be discussed as and when any licence applications are submitted.	Noted – Hornsea Three will cooperate with MMO to discharge their functions in relation to licensable activities.
221	MMO Local Office	10/05/2021	Awareness Campaign SoW & Monitoring Campaign TN (0695167_A) (06951697_A) Consulted on at SG Meeting 3 27/04/2021		Both	Prior to commencement of any proposed surveys / works, an up-to-date schedule including the specific timings and dates of the works would be highly beneficial on a regular basis in order to ensure that an effective enforcement inspection could take place. – as above we would discuss this at the point of licence applications	Noted - a timeline has been provided in Section 9 of the NNSSR and WNNC SBIPs. Hornsea Three will cooperate with MMO to discharge their functions in relation to licensable activities.

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222	MMO Local Office	10/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		Both	The Fisheries Liaison Officer (FLO) and any local fisheries groups should be utilised in order to engage with the fishing industry as much as possible. It should also be noted that there are a number of under 10m inshore fishing vessels along the Holderness and Lincolnshire coastlines, they are unlikely to fish at the Hornsea 3 cable array area, but may have some gear (or knowledge of lost gear) in the vicinity of the cable corridor. These may not show up on survey statistics as they do not have AIS or VMS on board their vessels.	Noted, an appropriate FLO will be appointed by Hornsea Three to aid engagement with local fishers. The fishing community has been included in the fisheries consultation process. Hornsea Three are additionally proposing to have an FLO on the vessel during the debris removal campaign to ensure close collaboration with local fisheries.
223	MMO Local Office	10/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		Both	Lost fleets of pots are quite expensive, with a pot frame costing in the region of £100-£200, prior to adding any netting and ropes associated with each fleet. A fleet can range from 10 - 100 pots, depending on the size of fishing vessel working on the fleets. The use of transponders on lost gear will hopefully be seen as a positive step to work with the industry.	Agreed, initial consultation with fishing associations aligns with this response.
224	MMO Local Office	10/05/2021	Awareness Campaign SoW (0695167_A) Consulted on at SG Meeting 3 27/04/2021		Both	Gear disposal bins would also probably be welcomed at many of the local ports as disposal of gear can be quite costly. The fishing for litter program was previously successfully implemented at Hornsea, with many of the local fishers actively taking part.	Noted, Hornsea Three is proposing collaboration with the Fishing for Littler initiative and will include gear disposal as far as practicable.
225	MMO	17/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 3 27/04/2021		Both	In previous consultations, the monitoring proposal included grab sampling in addition to video, however the EMP no longer includes grab sampling. Whist MMO queried the value of collecting grab samples for determining changes in epifauna communities, the SNCBs suggested that grab sampling could provide additional information on any functional changes to the	Grab sampling has been removed from the EMP as this sampling methodology is not relevant for the proposed monitoring methodology outlined in the EMP. As per the DCO requirement, Hornsea Three will not be monitoring infauna and therefore have

Comment ID Number	Consultee	Date Received	Document	How was comment addressed	Relevant to WNNC, NNSSR or both	Comment	Response / where addressed in SBIPs
						infauna/biogeochemistry due to the presence of cable protection. However, this would only be suitable if the precise location of the cable protection was known prior to cable laying as samples would need to be collected pre-cable laying to allow comparisons to be made during the operational phase of the development. The reports suggest that the precise locations of cable protection will not be known prior to cable laying. Please could this be confirmed whether this is the case?	designed the monitoring methodology accordingly. Hornsea Three can confirm that precise locations of cable protection required will not be fully known until construction is complete. Cable protection deployment is not a preferred approach and is only required should unforeseen challenging ground conditions or complications during cable installation be encountered.
226	MMO	17/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 3 27/04/2021		Both	The MMO will become the regulator of the EMP as agreed with BEIS on 12th July 2021 following approval of the Environmental Monitoring Plan (EMP) by the Secretary of State which is required to discharge Schedule 14, Part 2 13(e).	Noted, no amendments required.
227	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	It should be noted that the decommissioning will not be for decades, and therefore will not help projects currently in the initiation phase. We would welcome the industry doing further monitoring of infrastructure removal and recovery before decommissioning.	Hornsea Three appreciate the value in this data, however, cannot conduct infrastructure removal studies at this stage. Post-removal monitoring of marine debris (secured in the SBIPs) may provide further evidence base to the recovery of habitat following removal of hard substrate.
228		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A)			This concern remains outstanding.	Hornsea Three appreciate the value in this data, however, cannot conduct infrastructure removal studies at this stage. Post-removal monitoring of marine debris (secured in the SBIPs) may provide further evidence base to

Comment ID Number	Consultee	Date Received	Document	How was comment addressed	Relevant to WNNC, NNSSR or both	Comment	Response / where addressed in SBIPs
			Received in relation to Comment ID 227 Consulted on at SG Meeting 7 09/11/21				the recovery of habitat following removal of hard substrate.
229	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	The MMO will become the regulator of the EMP and all further consultation on the EMP will be conducted with MMO and the relevant SNCBs' We query why the MMO is deemed to be the regulator of this EMP for the SBIPs, given the relevance of its findings to the compensatory measures that the SoS has mandated. We also feel the rest of the Steering Group, should be given the opportunity to provide consultation responses to the EMP, not just the SNCBs.	The MMO will be the regulatory body as agreed with the MMO and BEIS. All relevant stakeholders (including other parties outside of the SNCBs) will be provided with monitoring reports following their approval by MMO. Text within Section 5.2 of Appendix 2 of the SBIPs has been amended to reflect that position.
230		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID243 Consulted on at SG Meeting 7 09/11/21			This comment remains outstanding. Without further evidence Natural England cannot agree with certainty that the placement of cable protection along 6 export cables in the near shore area is unlikely to impact on coastal process/far field effects. Therefore, we would support further monitoring to determine whether this is the case.	Any far field effects (including coastal processes) are not considered to be significant (as demonstrated within Hornsea Three EIA), and any effects will be local to the cable protection and therefore conducting far field assessments will not aid in delivering the aim of the EMP: improving evidence base to increase certainty in the assessment of future projects.
231	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A)		Both	We would like to refer Hornsea Project Three back to previous comments regarding the benthic aspects of The Offshore Wind Environment Evidence Register	Noted and text added to Section 5.2 of Appendix 2 of the SBIPs to reflect the use of OWEER.

Comment ID Number	Consultee	Date Received	Document	How was comment addressed	Relevant to WNNC, NNSSR or both	Comment	Response / where addressed in SBIPs
			and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021			(OWEER). OWEER includes expert prioritisation of various research projects undertaken in relation to effects of cable protection and research gaps. Given the methodology laid out in Appendix 2 looks to fill evidence gaps we encourage Hornsea Project Three to incorporate the knowledge around evidence gaps and ongoing research into their thinking when OWEER is available.	
232		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID231 Consulted on at SG Meeting 7 09/11/21			Paragraph 23: There is no linkage between the findings of the OWEER work defining the Hornsea Project Three monitoring design and/or the monitoring findings.	Paragraph 23 of Appendix 2 to the SBIPs has been amended to include further information regarding OWEER. The reports available on OWEER have been reviewed and reiterate the data gap for understanding epifaunal colonisation of hard substrate used for cable protection.
233	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	Natural England is concerned that there is no information provided on who (Ørsted/OFTO) will undertake monitoring in the longer term, and that only the MMO in consultation with the relevant SNCB will be commenting of the effectiveness of the monitoring. We question why BEIS, as having mandated the compensation, and the wider benthic steering group would not be afforded this opportunity.	The MMO will be the regulatory body as agreed with the MMO and BEIS. All relevant stakeholders (including other parties outside of the SNCBs) will be provided with monitoring reports following their approval by MMO. Text within Section 3.2 and 5.2 of Appendix 2 of the SBIPs has been amended to reflect that position. It is anticipated that the monitoring will be conducted by Orsted.
234		25/10/2021	NNSSR SBIP (07122823_A)			Natural England notes the intension to provide copies of the report to the core steering group members, but it	Paragraph 55 of Appendix 2 to the SBIPs has been amended to make the process clearer

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			and WNNC SBIP (07103743_A) Received in relation to Comment ID233 Consulted on at SG Meeting 7 09/11/21			remains unclear how consultation responses and further requirements will be taken forward.	and cross reference added. Hornsea Three notes that this process of submitting monitoring reports to MMO for approval is standard for all project-related monitoring requirements.
235	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	We note that the survey methodology referred to in this section relates solely to geophysical surveys and Drop Down Video (DDV). As such, we understand that Hornsea Project Three mean to survey epifauna only (with no infaunal analysis) and would refer back to a previous comment made stating that "Natural England do not consider that looking at the nature of epifaunal assemblage change to be an appropriate part of monitoring, given that in many sandbank habitats, mobile and sessile epifauna may be sparse and not major parts of characteristic communities".	As per the DCO requirement, Hornsea Three will not be monitoring the infauna and therefore have designed the monitoring methodology accordingly. Hornsea Three note that changes to epifaunal communities resulting from cable protection presence is a key evidence gap which the monitoring secured in the EMP will address.
236		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID235			Please see response to Point 2 provided above. Comment provided in Comment ID 97	Hornsea Three note that this comment has been received previously. A response is provided above (Comment ID 97).

Comment ID Number	Consultee	Date Received	Document	How was comment addressed	Relevant to WNNC, NNSSR or both	Comment	Response / where addressed in SBIPs
			Consulted on at SG Meeting 7 09/11/21				
237	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	In determining the timeframes for monitoring, it would be useful to understand what evidence of feature recovery timescales has been used. We would expect any monitoring plan to be tailored to the expected recovery timeframes of the specific features being monitored. This would also apply to any post-decommissioning monitoring (Section 4.4, paragraph 46).	Recovery text has been added to Section 4.4 of Appendix 2 of the SBIPs to provide rationale to the timeframes proposed for monitoring.
238		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID237 Consulted on at SG Meeting 7 09/11/21			Natural England notes that consideration of recovery timeframes has now been included. However, it would be helpful to have monitoring designed to demonstrate that this has occurred within the predicted timeframes.	Paragraph 54 of Appendix 2 of the SBIPs has been amended for clarity.
239	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	Natural England queries how adaptive monitoring will be agreed.	As set out in Section 5.3 of Appendix 2 of the SBIPs, any changes to the monitoring, including adaptive monitoring, will be discussed, and agreed with the MMO and SNCBs.

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240		25/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Received in relation to Comment ID239 Consulted on at SG Meeting 7 09/11/21			This comment remains outstanding.	Section 5.3 of Appendix 2 of the SBIPs has been amended for clarity. Hornsea Three note that the approach proposed is standard for all project-related monitoring requirements.
241	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	Natural England's previous SLA advice remains unchanged by the updated versions.	Noted, no further amendments required.
242	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	Natural England and JNCC do not agree with EIA assessments and assertions being applied to HRA derogations cases, as the focus of the latter should be on the conservation objectives of specific sites.	Hornsea Three note that the EMP is required to meet a strict requirement as outlined in the DCO as opposed to addressing all areas of uncertainty within the Hornsea Three HRA derogation case. The monitoring presented in the EMP meets that objective set out in the DCO.
243	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A)		Both	Coastal areas are part of the Wash and North Norfolk Coast SAC and therefore if impacts occur in the marine environment which change the coastal processes then there is a potential wider impact pathway to features of the site	Any far field effects (including coastal processes) are not considered to be significant (as demonstrated by the EIA) and any effects will be local to the cable protection and therefore conducting far field assessments will

Comment ID Number	Consultee	Date Received	Document	How was comment addressed	Relevant to WNNC, NNSSR or both	Comment	Response / where addressed in SBIPs
			Consulted on at SG Meeting 6 31/08/2021				not aid in delivering the aim of the EMP: improving evidence base to increase certainty in the assessment of future projects.
244	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	Natural England notes that much of our previous advice provided to help Hornsea Project Three excel at delivering the SoS requirements and provide the most useful intelligence/data to address evidence gaps has not been addressed. We would therefore welcome further communications on this matter.	Natural England's advice has been incorporated into the relevant documents where relevant and appropriate, for example monitoring post-removal of debris (secured in the SBIPs) and providing further rationale with regard to the monitoring proposed in the EMP. Hornsea Three would encourage further discussion as to where SNCBs feel that this has not occurred however Hornsea Three note that the EMP is drafted to meet the relevant DCO requirement.
245	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	Please be advised that Natural England doesn't have a specific opportunity to monitor rock removal. This is something further for Hornsea Project Three to explore with input from the BSG.	Hornsea Three appreciate the value in this data, however, cannot conduct rock removal studies at this stage. Post-removal monitoring of marine debris (secured in the SBIPs) may provide further evidence base to the recovery of habitat following removal of hard substrate.
246	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	Whilst Hornsea Project Three believes that the monitoring plan covers all cable protection, Natural England disagrees as only rock protection is referenced.	Hornsea Three note that whilst the methodology of the EMP can be carried out on all cable protection types, only that which is installed by Hornsea Three can be monitored by Hornsea Three. Hornsea Three does not have consent to deploy concrete mattress within WNNC or NNSSR SAC.

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							Hornsea Three note that the DCO requirement is only relevant to the monitoring of rock protection deployed, however Hornsea Three have developed the transect monitoring methodology presented in the EMP to be relevant to any type of cable protection (therefore transferable to other projects conducting similar monitoring in different habitat or locations).
247	Natural England and JNCC	25/08/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 6 31/08/2021		Both	As set out under the monitoring plan comments (Table 3 of Annex 1 of this letter), Natural England and JNCC are concerned that a compensatory Environmental Monitoring Plan (EMP) is very distinct from a standard EMP. Therefore, we question how any outputs will be openly and transparently consulted upon, when the DML condition referred to only relates to the MMO in consultation with the relevant SNCB. We believe that there is a wider requirement for BEIS and other stakeholders to be made aware of the outcomes, so that evidence gaps can not only be filled, but lessons can be learnt (even if this is only to modify/standardise monitoring methodologies).	Hornsea Three agree that ensuring the monitoring results are shared widely is of critical importance to understanding the realised impact of cable protection presence to sediment movement and epifauna. The MMO will be the regulatory body as agreed with the MMO and BEIS however all relevant stakeholders will be provided with monitoring reports as outlined in the EMP.
248	Defra	21/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A)		Both	Defra do not have substantive comments on the Implementation Plans however Defra want to flag flag that our research report on subsea cable protection is now available (Determining the potential implications of subsea cable protection to seabed assemblages) and	The Defra report[7] has been reviewed and whilst not strictly relevant to the project stage, Hornsea Three notes that the methodology presented in the EMP is aligned with the Defra

[7] Defra, UK - Science Search

Comment ID Number	Consultee	Date Received	Document	How was comment addressed	Relevant to WNNC, NNSSR or both	Comment	Response / where addressed in SBIPs
			Consulted on at SG Meeting 7 09/11/21			would be valuable to reflect upon for the Environmental Monitoring Plan (Appendix 2).	report. Text has been added in Section 3.2 of Appendix 2 of the SBIPs to this effect.
249	Defra	21/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 7 09/11/21		Both	The report (see row above) contains useful information on methodologies for data collection and analysis to determine meaningful seabed community changes as well as considering how the characteristics of colonising organisms may alter to help understand the potential implications of cable protection for local ecological functioning.	The methodology designed for the monitoring in the EMP is appropriate, and whilst the Defra research report is informative and offers an alternative method in using ROV it does identify that ROV does not give such good quality images as DDV (also see comment above). It may be that with additional work the ROV method can be shown to provide a better methodology but given the risk above, at this time Hornsea Three prefer to stay with the DDV method which is tried and tested as a method of achieving good quality still images that can be used to identify macrofauna. It is accepted that the method used data that was collated for cable protection asset integrity inspections.
250	Defra	21/10/2021	NNSSR SBIP (07122823_A) and WNNC SBIP (07103743_A) Consulted on at SG Meeting 7 09/11/21		Both	Para 44 notes that If recovery is found to be relatively rapid, the frequency of future monitoring will be reduced. It would be beneficial to note that, conversely, monitoring schedules will be suitably adapted if recovery is found to be slower than expected.	Paragraph 45 in Appendix 2 of the SBIPs has been amended to clarify that monitoring schedules will be suitably adapted (with the inclusion of a Year 10 survey) if recovery is found to be slower than expected.
251	Defra	21/10/2021	NNSSR SBIP (07122823_A)		Both	Para 55 notes that monitoring repots will be shared "once they have been deemed to not be of any commercial sensitivity" Can you elaborate on what	Commercial sensitivities predominantly relate to the Contractor undertaking the survey. Hornsea Three is required to align the initial

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			and WNNC SBIP (07103743_A) Consulted on at SG Meeting 7 09/11/21			those sensitivities might be please and how likely it is that the data will be restricted? Recovery from cable protection is a critical evidence gap and your data will be valuable in helping fill this so we'd be keen to see it shared as quickly and widely as possible.	survey result with the Contractor prior to their publication externally. The data will not be restricted from publication as a result of this commercial sensitivity.

Annex 1

Written advice received from the Steering Group

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Rosalyn Jones
Offshore Environment Manager
Ørsted

EMAIL ONLY

Our reference:
DCO/2016/00001

10 May 2021

Dear Rosy,

Hornsea Three Benthic Compensation Environmental Monitoring Plan: Technical Note. Royal Haskoning DHV/Ørsted April 2021.

Hornsea Three Benthic Compensation Marine Debris Awareness Campaign: Proposed Scope of Work. Royal Haskoning DHV/Ørsted April 2021.

Hornsea Three is required to implement a package of benthic compensation measures to compensate for impact, resulting from the deployment of cable protection, to the Annex I benthic features; 'Sandbanks slightly covered by water at all time', in the Wash and North Norfolk Coast (WNNC) Special Area of Conservation (SAC) and the North Norfolk Sandbanks and Saturn Reef (NNSSR) SAC. Ørsted have provided a technical note (document in paragraph 4 above) outlining proposals with regards to environmental monitoring of cable protection deployed within WNNC SAC and NNSSR SAC, along with a proposed marine debris awareness campaign. Both proposals were presented to the Benthic Steering Group on the 27th April 2021

1. The proposed monitoring approach for epifauna appears appropriate, with both the cable protection and the seabed either side of this to be included for comparison. However, MMO defer to the recommendations provided by the impending Cefas cable protection project report regarding specifics.

2. Monitoring a gradient effect from source of impact may be preferable to the use of control areas due to the potential difference in natural changes between each location. Please see the recent publication by Methratta (2020), which compares before-after-impact-control (BACI) and before-after-gradient (BAG) methodologies (referenced below).

3. The inclusion of grab sampling to provide a quantitative change in habitat based on sediment type may not be appropriate, as much of the epifauna inhabiting Annex I sandbanks will be mobile and therefore less dependant on specific sediment characteristics. This methodology may be more applicable to areas of coarser sediment which are suitable for establishment of Annex I Sabellaria spinulosa reef and sessile epifauna, although we would not advise grab sampling in areas of already established Annex I S. spinulosa reef. The approach developed under OneBenthic in relation to 'acceptable change' could then potentially be applied to determine the degree of change and whether the presence of the cable protection has significantly influenced the surrounding habitats. To determine 'acceptable change' in sediment type would, however, require multiple grab samples per habitat type to set the initial baseline envelope.

4. MMO recognises that the precise locations of cable protection will be unknown at preconstruction and welcome the approach of assessing the baseline via regular transects along the export cable corridor within the SACs, with great transect frequency occurring within areas of higher heterogeneity.

Marine Debris Awareness Campaign

5. The methodologies set out in this campaign seem appropriate.

6. Ørsted needs to ensure that no further damage to the Annex I habitats occur during any retrieval of lost fishing gear or other marine debris.

Kind regards

Leanne Tan
Marine Case Officer

D [redacted]
E

References:

Methratta, E.T., 2020. Monitoring fisheries resources at offshore wind farms: BACI vs. BAG designs. *ICES Journal of Marine Science*, *77*(3), pp.890-900


Marine
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Rosalyn Jones
(By email only)

Our reference:
DCO/2016/00001

17 August 2021

Dear Rosalyn Jones,

Hornsea Project Three – Benthic Compensation: Sandbank Implementation Plan (SBIP): North Norfolk Sandbanks and Saturn Reef SAC and Wash and North Norfolk Coast SAC

Thank you for submitting the DRAFT Sandbank Implementation Plan (SBIP): North Norfolk Sandbanks and Saturn Reef SAC and Wash and North Norfolk Coast SAC in relation to Hornsea Three Benthic Compensation. Received by the Marine Management Organisation (MMO) on 26th July 2021. This document is prepared to satisfy the requirement of Schedule 14: Part 2 Benthic Compensation Measures of the DCO, conditions which have been addressed in the SBIP;

Schedule 14 Part 2: Condition 13

13. Each SIP must accord with the principles set out in the Sandbanks Compensation Strategy relating to the protected feature "sandbanks slightly covered by water all the time" and must include the following:

(a) details of how all impacts to Annex 1 reef habitats within designated sites will be avoided;

(b) details of the locations for the disposal of dredged material, and evidence that the disposal mechanism will allow sediment to be retained within the sandbank system and avoid impacts to other features, particularly reef habitats;

(c) details of the areas which will be subject to marine debris removal, which should equate to no less than 41.80 ha at NNSSR and 2.77 ha at WNNC;

(d) details of the marine debris awareness events, and measures to facilitate the rapid recovery of lost fishing gear, as detailed in the sandbanks compensation strategy. Such measures should be applied to both NNSSR and WNCC;

(e) an environmental monitoring plan to include: appropriate surveys to assess the effects of cable protection on sediment movement and epifauna assemblages during the operation of the Project, to improve the evidence base for assessing the impacts of offshore windfarm cable installation and rock protection for future projects; and appropriate surveys to monitor the recovery of the areas of the NNSSR and the WNNC impacted by cable protection, post-decommissioning; and

(f) Details of the timetable for implementation of each measure.

The MMO has reviewed the document provided, along with our technical advisors at the Centre for Environment, Fisheries and Aquaculture Science (Cefas) and our comments are below:

Benthic Comments

1. Comments raised at the most recent meeting (20th July 2021) have not been included Hornsea Three Benthic Compensation Consultation Summary (paragraph 4). Comments previously raised have been included in the summary and addressed by the applicant.

2. During the meeting on the 20th July, MMO raised a query regarding whether the vessel monitoring system (VMS) data, used to determine potential areas of search for debris removal, included non-UK vessels. The response during the meeting was that only VMS from UK vessels had been used in the assessment due to the inaccessibility of EU VMS data. MMO suggested that data collated by previous studies (e.g. Diesing et al, 2013), which used both UK and non-UK VMS data, could be used for completeness. Whilst the absence of non-UK VMS data has been acknowledged in the Sandbank Implementation Plans for each SAC, MMOs suggestion of using previously collated VMS data has not been addressed. However, it is noted that information on lost gear and fishing areas has been included, from consultations with both UK and Dutch fishers undertaken by Brown and May, that provides further information on the preferred fishing areas within NNSSR for non-UK vessels. This satisfies MMOs query.

3. For transparency, please could any reference to VMS data in the tables of data sources used be referred to as UK VMS data.

4. The Sandbank Implementation Plans (SBIPs) for NNSSR SAC and WNNC SAC reference 'trigger levels' regarding adaptive management but do not specify what these are. MMO request that further information on what these 'trigger levels' are need to be included.

5. What is the measure of success of the debris removal e.g. certain volume of debris collected? Is there a goal? This needs to be included in the methodology. It is currently unclear what the measure of success of the debris removal will be. It needs to be quantified and agreed prior to survey.

6. In previous consultations, the monitoring proposal included grab sampling in addition to video, however the EMP no longer includes grab sampling. Whist MMO queried the value of collecting grab samples for determining changes in epifauna communities, the SNCBs suggested that grab sampling could provide additional information on any functional changes to the infauna/biogeochemistry due to the presence of cable protection. However, this would only be suitable if the precise location of the cable protection was known prior to cable laying as samples would need to be collected pre-cable laying to allow comparisons to be made during the operational phase of the development. The reports suggest that the precise locations of cable protection will not be known prior to cable laying. Please could this be confirmed whether this is the case?

7. Target locations for the Areas of Search (AoS) have been identified within both SACs. These have been informed by a scoring process using a number of difference data sources to identify hotspots of potential debris accumulation plus a conceptual analysis of debris accumulation based on hydrodynamic processes. Within the NNSSR SAC, two AoS have been identified, one within a low priority area based on hydrodynamic processes and one within a high scoring area. However, in WNNC, two AoS have been selected within areas that have high scores and none within the high priority areas based on hydrodynamic assessment. It is not clear why this high priority area has not been targeted as an AoS, please can this be clarified.

8. The process documented in both SBIP reports (paragraphs 5 and 6) appears appropriate. However, the 'trigger levels' need to be determined and agreed before proceeding with the surveys.

Site Disposal Comments

9. The report presented is largely constructed to satisfy comments raised by Natural England,; statutory regulator for designated areas and features. However, there is useful detail included which pertain to the designation of disposal sites.

10. Table 1 of Hornsea THREE Sandbank Implementation Plan – Appendix 3: Indicative Disposal Location Study; Sandwave Levelling and Seabed Preparation, details a list of sandwaves which have been identified for clearance, most of which are located within the cable corridor. Two sandwave features are located within the Array area. The report details the approximate locations of sandwave features, but Hornsea Three clarifies that this may be subject to change. This is fairly usual for operations of a similar nature.

11. Figure 1 of this document (Fig 3 of the report) details the indicative disposal areas, which Hornsea Three describes as being larger than the area of likely sandwave feature clearance. Again, this is fairly usual so as to provide flexibility dependent on whether existing sandwave features have moved or if new ones are identified.

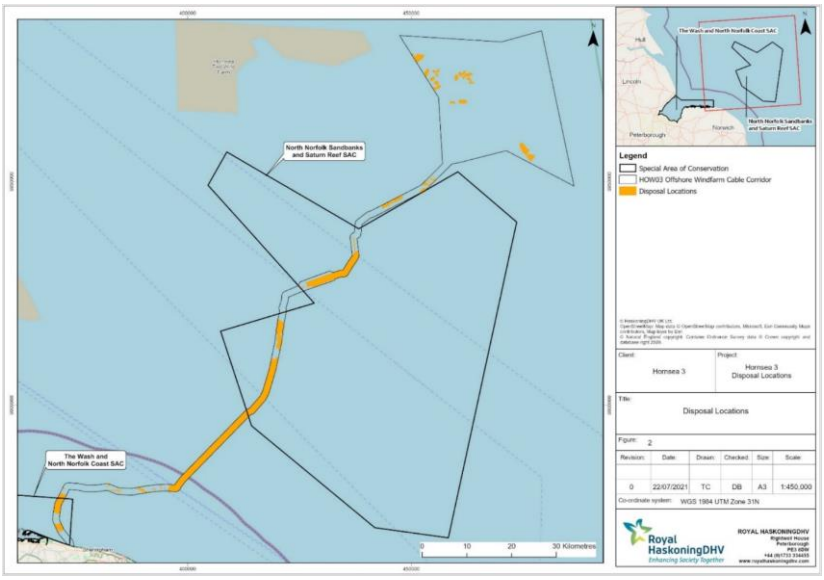

Figure 1. Indicative disposal areas in the export cable corridor and array site

12. The proposed disposal sites along the cable corridor appear acceptable, however, shapefiles will need to be provided so that MMO can ensure that they do not overlap with existing disposal sites. Alternatively, Hornsea Three can check this themselves, though MMO would expect to see a map provided detailing any disposal sites which overlap. If the proposed sites do overlap with any open disposal site, then the proposed sites will need to be amended as open (or disused) disposal sites cannot overlap.

13. The sites within the Array appear acceptable, however, MMO cannot ascertain whether the Hornsea Three Array area has been designated as a disposal site. It is usually the case that all offshore wind farm array areas be designated as disposal sites. If the array area is designated as its own disposal site, then sandwave clearance can be assigned to the array disposal site, rather than designated separate sites for each area of clearance. Confirmation is requested as to whether the Hornsea Three array area has been designated as a disposal site?

14. The SBIP report (paragraph 4) provides a figure (Figure 1) of the potential locations that will require sandbank levelling and a subsequent figure (Figure 3), showing the potential disposal locations within the Array and along the export cable corridor. MMO suggest that Figure 3 should also show the locations of Annex I reef/potential reef as per the JNCCs most recent shapefile from the North Norfolk Sandbanks and Saturn Reef (NNSSR) SAC, as this will help inform whether and how much the disposal locations within the SAC overlap with the Annex I areas.

15. MMO also note that a 50 m buffer from Annex I *Sabellaria spinulosa* reefs within the Wash and North Norfolk Coast SAC and a 500m buffer within the NNSSR SAC will be applied. MMO agree that the buffer extents are appropriate for each SAC, however it is not clear whether the buffers will be based on the JNNCs shapefiles of Annex I reef or on geophysical data collected by Ørsted or both. Please can Hornsea Three confirm. MMO recommend that the JNCC's shapefiles are used in the first instance and geophysical data as supplementary information, as disposal of large volumes of sand or finer sediment than is currently present will change the sediment composition to undesirable colonising habitat for the species.

Other Comments

16. The MMO will become the regulator of the EMP as agreed with BEIS on 12th July 2021 following approval of the Environmental Monitoring Plan (EMP) by the Secretary of State which is required to discharge Schedule 14, Part 2 13(e).

17. MMO would like to note that prior to any Marine Licence applications being submitted to undertake the removal of debris within NNSSR SAC and WNNC SAC that an EIA screening will need to be submitted. A Screening Opinion will be provided within 90 days of it being validated, this should be included in the timeline for obtaining the relevant Marine Licences along with the standard 13 week KPI to then process any Marine Licence applications submitted.

18. MMO would recommend that any AoS for potential adaptative measures should be included in all future Marine Licence applications. This is to ensure that the worse case scenario is assessed first-hand which will reduce the potential for further future variations.

19. It is to be noted that MMO defer to Natural England (NE) and The Joint Nature Conservation Committee (JNNC) as the competent authorities in relation to any environmental factors within the following documents:

    - Hornsea Three Sandbank Implementation Plan: North Norfolk Sandbanks and Saturn Reef SAC
    - Hornsea Three Sandbank Implementation Plan: Wash and North Norfolk Coast SAC
    - Hornsea Three Sandbank Implementation Plan Appendix One: Marine Debris Removal Campaign Desktop Study
    - Hornsea Three Sandbank Implementation Plan Appendix Two: Environmental Monitoring Plan

20. Minor Presentational errors Figure 2.1b in Appendix 1 should be Figure 5.1b. Please correct.

21. Please provide a section reference for the Brown and May report referred to in paragraph 51 of Appendix 1 (Hornsea Three Sandbank Implementation Plan Appendix One: Marine Debris Removal Campaign Desktop Study).

The MMO requests that the issues raised above are addressed and that any amendments made are submitted to the MMO for review.

Your feedback

We are committed to providing excellent customer service and continually improving our standards and we would be delighted to know what you thought of the service you have received from us. Please help us by taking a few minutes to complete the following short survey (https://www.surveymonkey.com/r/MMOMLcustomer).

If you require any further information please do not hesitate to contact me using the details provided below.

Yours sincerely,

[redacted]

Leanne Tan
Marine Case Officer

D [redacted]
M
E

References

Diesing, M., Stephens, D., Aldridge, J. (2013) A proposed method for assessing the extent of the seabed significantly affected by demersal fishing in the Greater North Sea. ICES Journal of Marine Science, 70 (6), pp.1085-1096

Marine Management Organisation

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Rosalyn Jones
(By email only)

Our reference:
DCO/2016/00001

14 October 2021

Dear Rosalyn Jones,

Hornsea Project Three – Benthic Compensation: Sandbank Implementation Plan (SBIP): North Norfolk Sandbanks and Saturn Reef SAC and Wash and North Norfolk Coast SAC

Thank you for submitting the DRAFT Sandbank Implementation Plan (SBIP) V2: North Norfolk Sandbanks and Saturn Reef SAC and Wash and North Norfolk Coast SAC in relation to Hornsea Three Benthic Compensation. Received by the Marine Management Organisation (MMO) on 24th September 2021. This document is prepared to satisfy the requirement of Schedule 14: Part 2 Benthic Compensation Measures of the DCO, conditions which have been addressed in the SBIP;

Schedule 14 Part 2: Condition 13

13. Each SIP must accord with the principles set out in the Sandbanks Compensation Strategy relating to the protected feature "sandbanks slightly covered by water all the time" and must include the following:

(a) details of how all impacts to Annex 1 reef habitats within designated sites will be avoided;

(b) details of the locations for the disposal of dredged material, and evidence that the disposal mechanism will allow sediment to be retained within the sandbank system and avoid impacts to other features, particularly reef habitats;

(c) details of the areas which will be subject to marine debris removal, which should equate to no less than 41.80 ha at NNSSR and 2.77 ha at WNNC;

(d) details of the marine debris awareness events, and measures to facilitate the rapid recovery of lost fishing gear, as detailed in the sandbanks compensation strategy. Such measures should be applied to both NNSSR and WNCC;

(e) an environmental monitoring plan to include: appropriate surveys to assess the effects of cable protection on sediment movement and epifauna assemblages during the operation of the Project, to improve the evidence base for assessing the impacts of offshore windfarm cable installation and rock protection for future projects; and appropriate surveys to monitor the recovery of the areas of the NNSSR and the WNNC impacted by cable protection, post-decommissioning; and

(f) Details of the timetable for implementation of each measure.

The MMO has reviewed the document provided, along with our technical advisors at the Centre for Environment, Fisheries and Aquaculture Science (Cefas) and our comments are below:

Benthic Comments

1. MMO can confirm that all comments previously raised have been satisfactorily addressed there are no further comments.

Site Disposal Comments

1. The below comment was raised during the first round of consultation;

   "*The sites within the Array appear acceptable, however, I cannot ascertain whether the Hornsea THREE Array area has been designated as a disposal site. It is usually the case that all offshore wind farm array areas be designated as disposal sites. If the array area is designated as its own disposal site, then sandwave clearance can be assigned to the array disposal site, rather than designated separate sites for each area of clearance. Can the applicant confirm whether they are aware that the Hornsea THREE array area has been designated as a disposal site?*"

2. The below response was provided listed in Hornsea THREE Benthic Compensation Consultation Summary, version 4, Royal Haskoning, September 2021, stating:

   "*Hornsea Three array area is not designated as a disposal area within the DML. Hornsea Three note that disposal locations are indicative at this stage subject to further pre-construction survey and consultation on proposed final disposal locations within the CSIP*."

3. MMO note this response, however, with regard to clearance of sandwaves for the transmission assets, the indicative sites (or singular, consolidated site) are (is) acceptable for designation, MMO note that the activities overlap with North Norfolk Sandbanks MPA. . However, as the sites are indicative at this stage, MMO recommend sites not be designated until the site(s) is/are finalised. For ease of reporting and administration, MMO recommend that the cable route in its entirety be designated as one site, so long as provision is made to ensure that disturbed sediments remain within the local systems and/or sediment cells.

4. Regarding the Array area, a disposal site should be designated as soon as the area is finalised, and before any disposal works take place. Hornsea Three indicates that this will be the case in section 3 of the Disposal Technical Study

The MMO requests that the issues raised above are addressed and that any amendments made are submitted to the MMO for review.

Your feedback

We are committed to providing excellent customer service and continually improving our standards and we would be delighted to know what you thought of the service you have received from us. Please help us by taking a few minutes to complete the following short survey (https://www.surveymonkey.com/r/MMOMLcustomer).

If you require any further information please do not hesitate to contact me using the details provided below.

Yours sincerely,

[redacted]

Leanne Tan
Marine Case Officer

D [redacted]
M
E

Date: 15 April 2021
Our ref: SLA/
Your ref: NA

Foss House
Kings Pool
1-2 Peasholme Green
York
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BY EMAIL ONLY

Dear Rosy,

Service Level Agreement (Charged Advice)
Ørsted
Development proposal and location: Hornsea Project Three Offshore Wind Farm

This advice is being provided as part of Natural England's Service Level Agreement with Ørsted. Ørsted have asked Natural England to provide advice upon:

- Marine Debris Removal Campaign: Proposed Scope of work

This advice is provided in accordance with the Service Level Agreement dated 17th June 2020.

In support of the second Benthic Compensation Steering Group Meeting (30 March 2021), Natural England (NE) was provided with a scope of work for the marine debris removal campaign to deliver benthic compensation in the Wash and North Norfolk Coast Special Area of Conservation (WNNC SAC) and North Norfolk Sandbanks and Saturn Reef (NNSSR) SAC. Below, we provide our overarching position on the debris removal campaign and also technical comments on the scope of works.

NE position on the debris removal campaign as compensation

Natural England (NE) highlights that the conservation advice for the WNNC and NNSSR SACs does not include marine litter as a factor currently likely to impact the favourable condition status of the sites. Whilst we note that Section 2.1 provides a list of possible benefits the removal of marine debris could serve, the compensation measures are required to account for the lasting habitat loss to the Annex 1 sandbank feature only, and it is this impact that the measure must prove effective for. As there is a lack of evidence to suggest that litter is negatively affecting the form and function of Annex 1 sandbanks within the site, it is very unlikely that removing litter will improve the condition of Annex 1 sandbanks and thereby compensate for the predicted habitat loss over the lifetime of the project.

As marine litter is not currently considered to be negatively impacting the sites, it follows that it is unlikely that sufficient litter will be found to meaningfully improve the functioning of the sandbanks. This is compounded by the criteria Ørsted have listed for debris that will be suitable for removal, which will further limit the amount likely to be removed. Whilst we appreciate Ørsted's intent to use a range of data sources to refine the areas of search to those most likely to contain debris, it is unclear how the success of this approach will be measured, and how compensation will be provided if insufficient debris is found in the search areas. NE does not consider it appropriate for the compensation requirement to be 'discharged' if minimal litter is found in the required area of search, and we are concerned by the inconsistency between this proposed approach and the requirements for regular monitoring and adaptive management associated with the Hornsea 3 kittiwake compensation.

Furthermore, even in the unlikely event that sufficient litter is present, we do not consider that a single debris removal campaign prior to construction would be sufficient to improve the condition of the sites for the lifetime of the project. While we understand that BEIS have confirmed that Ørsted are only required to carry out a single removal campaign, NE continues to advise that a single debris removal event does not represent compensation, particularly in a mobile site where debris may be replaced immediately after a single removal event. This is also the position of JNCC. Notwithstanding our other concerns about the appropriateness of the compensatory measures, we consider that Ørsted would have to maintain some form of removal/exclusion through the lifetime of the project to allow the litter removal to provide any potential benefit to the sites. We acknowledge that Ørsted consider the awareness campaign to be the long-term component of the package to reduce and/or prevent further marine litter in the sites, however we do not consider there to be sufficient evidence to have confidence that an awareness campaign would result in the exclusion of a significant amount of debris for the lifetime of the project.

In summary, whilst NE acknowledges the wider marine benefits in terms of net gain that removal of marine litter/debris could provide within SACs, there is little evidence of the impact of litter on the form and function of Annex 1 habitat features in WNNC SAC and NNSSR SAC. As a result, removal of marine litter will not compensate for the impacts to SAC sandbanks resulting from the proposed development, and the overall coherence of the Natura 2000 network will not be maintained. We also hold some concerns that without appropriate design and/or mitigation measures being integrated, the methods employed to deliver marine debris removal could have wider ramifications for site features that could further hinder the conservation objectives of the sites and move them further away from favourable condition.

Technical comments on the debris removal campaign

As noted during the steering group meeting, NE is concerned about the potential for high numbers of Unexploded Ordnance (UXOs) to be found in WNNC SAC during surveys for litter. Further clarification needs to be provided on Ørsted's course of action should UXOs be found, as clearance is likely to cause further damage to site features. We highlight that subsea noise disturbance to harbour seals from detonations during the breeding and moult period (June-August) would not be supported.

NE notes that the current scope of works focusses on identifying debris on the sandbanks in WNNC SAC. NE does not consider it likely that significant amounts of debris will be found on the sandbanks, as debris in The Wash typically washes up on the surrounding saltmarsh. We consider that local fishermen and diving groups are likely to be the best source of information for the location of possible debris in WNNC SAC.

We welcome that the developer is taking an evidence based approach to refining search areas likely to contain debris within the sites, however we consider that any prioritisation of areas needs to be approved by the steering group to ensure that issues of nature conservation are considered fully. Furthermore, we consider it would be beneficial to assess the types and amounts of debris expected within the sites before securing vessels and/or equipment for removal to ensure that the debris can be accommodated and handled in an environmentally sensitive manner.

We would welcome further clarification on Ørsted's intent for the long-term disposal of debris removed from the sites, as it is considered good practice within other industries to assess emissions and end uses for all decommissioned materials as part of comparative assessments concerning overall environmental impact.

NE agrees that any debris identified for removal should be at least partially unburied, and preferably on the surface to avoid further impact to the sites during removal. NE highlights that we would not support the use of grappling anchors within SACs without controls and further review of the intended locations and methods. This is particularly the case within areas of mixed sediment, where grappling anchors can create scarring and loss of epifauna.

Whilst NE does not consider that epifauna colonising artificial substrates comprises Annex I feature (including *Sabellaria*), if the colonised debris is contained within a wider *Sabellaria* reef area where there is continuous coverage from natural to artificial substrates, we would expect those not to be removed to prevent damage to the natural reefs/substrate.

For clarification of any points in this letter, please contact me using the details provided below.

☒ The advice provided in this letter has been through Natural England's Quality Assurance process

The advice provided within the Service Level Agreement is the professional advice of the Natural England adviser named below. It is the best advice that can be given based on the information provided so far. Its quality and detail is dependent upon the quality and depth of the information which has been provided. It does not constitute a statutory response or decision, which will be made by Natural England acting corporately in its role as statutory consultee to the competent authority after an application has been submitted. The advice given is therefore not binding in any way and is provided without prejudice to the consideration of any statutory consultation response or decision which may be made by Natural England in due course. The final judgement on any proposals by Natural England is reserved until an application is made and will be made on the information then available, including any modifications to the proposal made after receipt of discretionary advice. All pre-application advice is subject to review and revision in the light of changes in relevant considerations, including changes in relation to the facts, scientific knowledge/evidence, policy, guidance or law. Natural England will not accept any liability for the accuracy, adequacy or completeness of, nor will any express or implied warranty be given for, the advice. This exclusion does not extend to any fraudulent misrepresentation made by or on behalf of Natural England.

Yours sincerely,

Emma John
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Rosalyn Jones

Date: 13 April 2021

Offshore Environment Manager
UK Consents, Development Offshore
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Dear Rosalyn,

Before the second Steering Group meeting, JNCC was provided with a draft scope of work for the debris removal campaign. This outlines Hornsea Three's proposals with regard to the desktop study that will recommend suitable areas of search within North Norfolk Sandbanks and Saturn Reef SAC (NNSSR) and the Wash and North Norfolk Coast SAC (WNNC), and that informs discussion within the Steering Group. The debris removal scope of work outlines the process that will be undertaken to identify suitable target areas for the debris removal campaign, and provides information on the data sources that will feed into the desktop study.

This note provides JNCC's comments on the scope of work, focussing on potential operations within NNSSR. Our response is provided in three parts:

1) Overall opinion on whether dML condition 13(c) acts as compensation for impact to the sandbanks feature of NNSSR
2) Technical opinion on the aim of the debris removal campaign
3) Technical opinion on the details provided on the debris removal campaign

Overall opinion on whether dML condition 13(c) acts as compensation for impact to the sandbanks feature of NNSSR

Sandbanks Compensation Strategy - The developer notes that the rationale underpinning the benefits of conducting a campaign of marine debris removal is outlined in the Sandbanks Compensation Strategy, which was submitted in February 2020 to support the Hornsea Three derogation case. We note that the Sandbanks Compensation Strategy mainly covers inshore compensation and does not consider any active compensation offshore.

Packages of measures for NNSSR alone and NNSSR / WNNC together were found in tables 1.2 and 1.3 of the Sandbanks Compensation Strategy. These comprised blue mussel bed restoration plus associated biosecurity measures, active engagement with local stakeholders to identify and remove lost/abandoned fishing gear in nearshore areas, and an awareness campaign aimed at improved recovery measures for marine litter (fishing gear). Given that blue mussel beds are not a feature of NNSSR (and that no sandbank biotopes correlate with any that comprise blue mussel beds), that the identification and removal of debris are scheduled for inshore only, and that an education campaign has no specific impact on NNSSR, JNCC does not consider any of those options to form compensation for long-term impact to the sandbanks feature.

The dML widened these original compensation measures concerning the identification and removal of marine litter to encompass identification and removal in NNSSR. As such, this then applied the Sandbank Compensation Strategy's affirmation that the compensation action was in line with the East Inshore and Offshore Marine Plans. These plans relate the impact made by litter to Marine Strategy Framework Directive requirements. Descriptor (10) of the MSFD requires that properties and quantities of marine litter do not cause harm to the coastal and marine environment. We note that the conservation advice for NNSSR does not include marine litter as an activity of concern currently likely to impact the conservation objective status for the site. As such, our main concern would be that any litter picking activities would not further impact the conservation objectives of the site and move it further away from favourable condition.

JNCC, therefore, does not currently hold the opinion that the package measures are fit for purpose to act in NNSSR as compensation to the cable protection measures required by BEIS. We advised BEIS of this, as well as the developer in both steering group meetings. The comments below relate solely to details of the debris removal campaign itself and the impact this campaign may have on NNSSR.

Technical opinion on the aim of the debris removal campaign

The developer anticipates that the removal of marine debris can act to serve a number of purposes related to restoration of sandbank and reef habitat. We have the following comments on this, noting that removal of potential navigation and safety hazards are outwith the remit of JNCC.

We note primarily that any benefit that litter removal may have on the site will be related to the amount of litter removed and the methods used for its removal. If very little litter is removed, there will clearly be very little impact on the conservation objectives of the site. We note that the developer has been asked to search for debris over an area of 41.8ha in NNSSR. However, searching this area may result in only small amounts of debris to remove. From JNCC's experience of other industries within the site, we have previously considered permanent deposits of around $50m^3$ to not represent a likely significant effect on NNSSR. Considering this, we would suggest that removal of at least $50m^3$ of litter would likely be necessary to allow the litter removal to provide any potential impact on the conservation objectives.

Given the above, we do agree that:

- removal of litter (method dependent) could support the *restoration* of sandbank habitat within NNSSR, through benefitting both the extent and structure attributes of the sandbank feature and increase the functionality of the supporting processes of the sandbanks system. However, we note that the conservation advice for NNSSR does not include marine litter as an activity of concern currently likely to impact the conservation objective status for the site.
- mobile debris has the potential to damage biogenic reefs within the SAC. Removal of mobile debris may reduce the risk of damage to Annex I reef, however, we note that the required compensation is related to Annex I sandbanks, not reefs. We also note that up to date survey evidence will be needed to identify and remove mobile debris.
- removal of debris (removal method dependent) is likely to provide an increased area of seabed habitat (extent, as above) to be available. However, we consider the suggested connection to colonisation and movement of epifauna to be uncertain. The epifauna involved in the majority of sandbank biotopes found in NNSSR is sparse and generally composed of mobile species such as crabs, hermit crabs and fish that live in association with sandbanks, such as sandeels and flatfish. These are less likely to be affected by mobile or immobile debris than sessile epifauna, which cannot move around the seafloor to avoid or minimise impact. Furthermore, epifauna is also likely to be concentrated in certain areas of the site related to sandbank movement and topography. These areas may, or may not, correspond to areas suggested as targets by the desk study.

We also note that alongside the removal of existing marine debris, an awareness campaign will be implemented which will aim to reduce the marine debris entering the SAC. The aim of the awareness campaign will be to reduce the incidence, and improve the recovery, of ALDFG and is also anticipated to target other marine debris. The two activities are strongly linked and integral to delivering compensation. We have the following comments on this.

There is evidence of mobile demersal, static and pelagic fishing effort within the site, with UK and non-UK registered vessels having been active. The highest levels of activity come from non-UK beam trawling, but these are still relatively low, with highest levels in the south and central areas of NNSSR. Evidence of UK beam trawling, non-UK demersal trawling, non-UK demersal seine, UK pots and traps and non-UK pelagic trawling is low to minimal. For an awareness campaign to effectively decrease incidence of ALDFG in the site, we would consider it necessary to engage non-UK fishing operations as the major fisheries users of the site.

Ørsted noted in the second Steering Group meeting that they had discussed further with BEIS and concluded that only one litter removal campaign will be undertaken, and that the longer term part of the compensation will occur from the educational work. While this is not specifically mentioned in the scope of work, we would like to comment on this. JNCC disagrees that a one-off removal campaign followed by an educational campaign will form satisfactory compensation for the cable protection present through the lifetime of the wind farm. While undertaking one removal campaign may remove some debris from the site, the mobility of the area and the results from Cefas's litter survey series suggests that debris will continue to move

around the site, move into the site and to accumulate in areas of higher debris load. There is also no assurance or evidence to suggest that an educational campaign would lead to less debris load in the site. This needs to be discussed in more detail in the third meeting of the steering group.

We also question how the developer intends to target other marine debris, and what that other marine debris is expected to be composed of.

Technical opinion on the details provided on the debris removal campaign

1. Scope of 'marine debris'

We understand marine debris to be targeted in this study to be lost or abandoned, non-natural or introduced material which does not offer a practical purpose, has low biodiversity value and may detract from the extent and functionality of the designated features of NNSSR SAC. Target marine debris items would include (for example) ALDFG such as trawl, gill and seine nets, pots / fish traps and tickler chains, and debris lost from vessels, for example, in anchoraging areas and adjacent to current or historic shipping lanes. They must be items on, or just above, the seabed, and locatable through an information gathering process. The developer, however, proposes a range of limitations, and notes that priority will be given to debris on or near sandbanks of particular importance for the provisioning of the system.

We have the following comments on this scope. While the developer proposes a necessary wide range of limitations on the types of debris that can be removed, these do considerably limit the possible impact of any campaign. This limitation is furthered in NNSSR by the expected lack of ALDFG associated with seining, potting and fish traps, as well as the lack of anchoraging areas.

We agree with the need for 500m exclusion zones around any oil and gas assets. While these would include pipelines and subsea infrastructure around platforms, it would also include infrastructure away from platforms, such as wellheads, manifolds and objects temporarily placed on the seafloor in association with operations. We also agree that any debris should be at least partially unburied, and preferably on the surface to avoid further impact to the site during removal.

In terms of whether debris forms an ecological asset, we do not consider that epifauna colonising artificial substrates is likely to comprise Annex I feature, and as such, we would not consider their ecological value to compensate for removal of the debris from the system. This includes debris colonised by *Sabellaria*. However, if debris is contained within a wider *Sabellaria* reef area, where there is continuous coverage from natural to artificial substrates, then we would expect those not to be removed. We note that paragraph 15 of the debris removal scope of work discusses this colonisation by species of conservation note, such as reef-forming Sabellids. Sabellids do not form reefs, and we assume that the developer means sabellarids.

In terms of limitations related to technical feasibility, we suggest that the developer needs to consider the types and amounts of debris within the site before finding vessels and equipment that will accommodate removal of the appropriate debris rather than limit themselves before considering the possible debris size and weight.

Most of the sediment in NNSSR is mobile to some degree. Sandwaves are best developed on the inner banks indicating the sediment surface is regularly mobilised by tidal currents, while the outer banks have small or no sandwaves associated with them (Collins et al.,1995). Direct measurements of bedform migration rates are presently limited; however, observational evidence from analogous settings elsewhere in the southern North Sea suggests rates of migration may be in the order of several metres per year in the vicinity of sandbank systems (Knaapen et al, 2005). This would suggest that debris could be discoverable if the desk study and positional survey are not over a year apart.

2. Areas of search for removal

The developer highlights methods they expect to use to focus marine debris removal, involving a desktop study of publicly available information on potential debris locations, consultation with third parties and conceptual analyses to assess hydrodynamic movement through the site. We have the following comments on these.

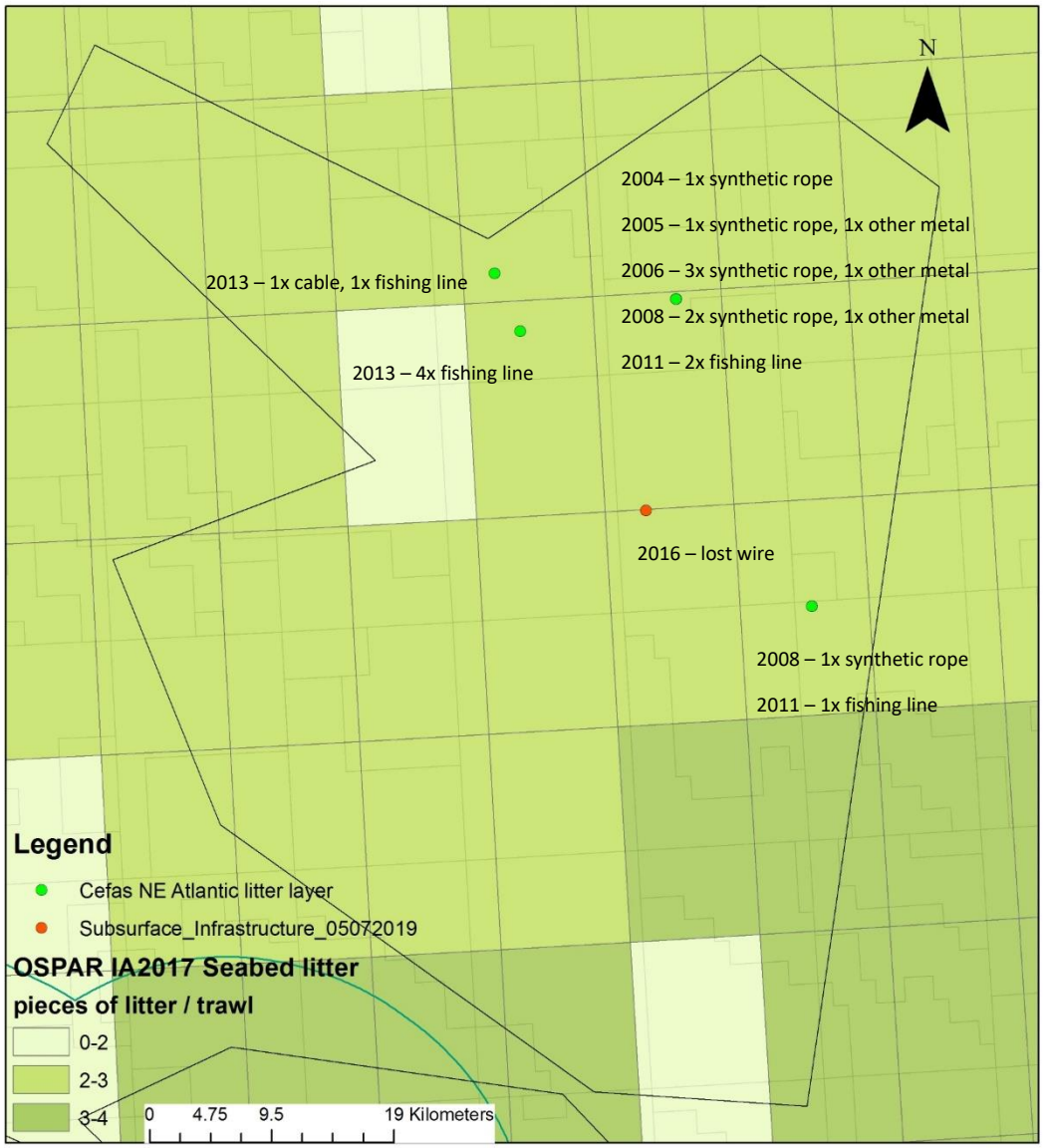
Fig 1 represents JNCC's initial understanding of the marine debris known to be in NNSSR. This has been created from OGA's subsurface infrastructure layer, Cefas's North East Atlantic Seafloor Marine Litter Data layer (where the litter is noted as being a fishing line, synthetic rope or metallic deposits) and OSPAR's IA2017 seabed litter layer showing relative number of litter items per square km. From this initial look at quantities of litter in the site, we would like to highlight the following:

- The majority of the litter is noted in Cefas's dataset. However, the latest of these points is 2013, and many are from 2008 – 2011, and given that the majority were noted as synthetic rope or fishing line, these pieces of debris may no longer be present, unless potentially tangled round infrastructure or buried.
- The pieces of litter / debris noted are outwith the topological sandbanks in the site, however, this may not be significant given the small amount of data available.
- The pieces of litter / debris do not correspond to areas which JNCC believes indicate higher efforts of fishing in the site.
- OSPAR undertook a litter survey as part of the Intermediate Assessment in 2017[1]. This comprised distribution and abundance of marine litter on the seafloor in the OSPAR Maritime Area investigated on the basis of data collected by trawl surveys from seven Contracting Parties. This shows a slight gradient of litter collected over the site, with higher amounts of litter being collected to the south of the site (3-4 pieces of litter per trawl, compared to 0-3 pieces of litter per trawl over the rest of the site). We also note

[1] https://oap.ospar.org/en/ospar-assessments/intermediate-assessment-2017/pressures-human-activities/marine-litter/composition-and-spatial-distribution-litter-seafloor/; https://odims.ospar.org/layers/geonode:ospar_ia2017_seabed_litter_2017_04_001

that this area of the site is heavily used by the oil and gas industry, and many 500m safety zones are present in that area.

Fig 1: JNCC map of NNSSR showing known debris



As such, we do not believe that enough information is currently available from data layers to identify areas likely to have relatively high densities of marine debris in NNSSR, nor do we believe that enough debris could be collected to act as compensation for the adverse effect to the site.

We note that the developer also intends to undertake conceptual analyses to assess hydrodynamic movement through the site to help inform priority areas of search. We are unsure what will be learned about sediment transport from this study that will contribute to understanding debris analysis, given the information already available in the site's conservation advice and Hornsea 3's marine processes application chapter.

We understand that there are linkages between physical conditions, sediment transport and areas of accumulation / burial / exposure of marine debris. However, we would note that, from our current knowledge, there is little litter or debris in the site that would be subject to transport or burial, and also, we would not expect objects of a size greater than coarse sediment to be routinely transported in the site. Furthermore, if areas of accumulation correspond to troughs between ripples, sandwaves or sandbanks, they may correspond to areas of less represented biotopes or habitats, such as circalittoral mixed sediments, coarse sediments or *Sabellaria* reef. As such, operations that impact the seabed in these areas may prove challenging.

We would like to correct the developer's understanding of Annex I sandbanks as "*shallow sandbanks only*". The latest European Interpretation Manual (EUR28) defines the depth at which this habitat can occur: "*Slightly covered by sea water all the time" means that above a sandbank the water depth is seldom more than 20 m below chart datum. Sandbanks can, however, extend beneath 20 m below chart datum.*" This is transposed into UK understanding as *"Annex I sandbanks slightly covered by seawater all the time occur where areas of sand form distinct elevated topographic features which are predominantly surrounded by deeper water and where the top of the sandbank is in less than 20 metres water depth. However, the sides of these sandbanks, can extend into deeper water up to 60m whilst still being considered the feature"*.

In terms of consultation, we are pleased that Ørsted have already considered the need for consultation with non-UK fishing fleets.

3. Recommending areas of search

We have the following comments to make regarding section 3.7, Recommending areas of search.

While we commend the developer for looking towards an evidence-based understanding of priority areas, we suggest that any scoring scheme needs to be approved by the steering group to ensure that issues of nature conservation are considered fully. The developer may wish to look at multicriteria decision analyses to undertake the scoring, as per comparative assessments of decommissioning options for the oil and gas industry. We feel that understanding success criteria will be highly challenging, and will at least need to involve the steering group, as well as potential wider consultation with organisations who have expertise in evolving and managing indicators.

4. Debris campaign

We have the following comments to make regarding section 4, Proposed marine debris removal campaign.

Overall, we do not consider that a single debris removal event represents compensation. While we understand that Ørsted has discussed the appropriateness of using a single event with BEIS, JNCC continues to advise that a single debris removal event does not represent compensation, particularly in a mobile site where debris may be replaced immediately after a single removal event. We again note that the conservation advice for NNSSR does not include marine litter as an activity of concern currently likely to impact the conservation objective status for the site. We would expect it likely that Ørsted would have to maintain some form of removal through the lifetime of the windfarm to allow the litter removal to provide any potential impact on the conservation objectives, and question the inconsistency with the need for regular monitoring expected as part of the kittiwake package.

More specifically, we question whether MBES would achieve sufficient resolution to pick up non-metallic targets. Pieces of rope or line may well be less than 1m in size. We would like to see examples of MBES noting these targets.

5. Removal methods

We have the following comments to make regarding section 4.3, Marine debris removal.

We understand that Ørsted has considered litter removal methods used in previous surveys. However, we note a number of issues with the potential applicability of the Large et al (2005) gill net removal methods, each discussed within the paper:

- The three anchored tow method is noted as being necessary for deep water removal, where lighter gear may rotate or get twisted. The paper notes that in shallower waters, methods akin to trawling are available.
- Using the three anchor system potentially led to disintegration of the gill nets being removed, which would then not remove that debris from the SAC

We are further concerned about the long-term disposal of any debris removed from the site. While providing advice on onshore reuse, recycling or disposal is outwith JNCC's remit, we note that the oil and gas industry are expected to assess emissions and end uses for all decommissioned materials as part of comparative assessments concerning overall environmental impact. BEIS's decommissioning guidance notes that a programme must consider how the principles of the waste hierarchy will be met and show the extent to which the installation, including the topsides and the materials contained within the installation, will be re-used, recycled or disposed of on land. We would expect the developer to continue this good practice.

Please contact me with any questions regarding the above comments.

Yours sincerely,

Dr Becky Hitchin

Offshore Industries Advice Manager

Email

Date: 11 May 2021
Our ref: NA
Your ref: NA

BY EMAIL ONLY

To: Rosy Jones ROSJN@orsted.co.uk;
Karma Leyland KALEY@orsted.co.uk

Cc: Emma Brown, Lou Burton, Martin Kerby

Lateral,
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Dear Rosy,

Development proposal and location: Hornsea Project Three Offshore Windfarm

Written comments from Natural England following Benthic Steering Group Meeting #3

Thank you for consulting Natural England on the following documents provided prior to the third Benthic Steering Group (BSG) meeting held on 27th April 2021.

- **Hornsea Three – Proposed Environmental Monitoring (06954567_A)**
- **Hornsea Three – Proposed Marine Debris Awareness Campaign (06951697_A)**

As per our letter dated 19th April 2021, Natural England is focussing our advice on ensuring that further impacts to the interest features of the two SACs will be avoided.

General Comments

As raised by Natural England during the BSG meeting on 27th April 2021 we would welcome further consideration by Ørsted on the following matters:

- Transparency – Natural England would welcome further consideration by Ørsted on how you will ensure that this is an open and transparent process. We consider this should include enabling BSG members to have sight of each other's written responses to Ørsted, and where possible minutes or summaries of 1:1 discussions. This would need to be agreed by all parties.

- Monitoring prior to debris removal – As per the 2nd BSG meeting (30th March 2021) and Natural England's follow up written response (sent 15th April 2021), Natural England advises that benthic survey data will be required to inform the scope of works for the removal of debris. Therefore, further consideration should be given as to where the scope of this monitoring (which is separate to the monitoring relating to Paragraph 13 (e) Schedule 14) will be outlined and agreed. It needs to be made clear to the BSG where the monitoring of the debris removal campaign will be captured, as Natural England are currently concerned that this aspect has not yet been addressed.

- Nature conservation enhancement opportunities ('Net Gain') – notwithstanding our advice regarding the appropriateness of debris removal as a compensatory measure, Natural England

would welcome Ørsted exploring the prospect of potential ecological enhancement provided by further clearance campaigns beyond the single one proposed.

Hornsea Three – Proposed Environmental Monitoring (06954567_A)

It is Natural England's understanding that the three requirements under Paragraph 13 (e) Schedule 14 of the DCO is to provide evidence in relation to:

1) Assess the effects of cable protection on sediment movement and epifauna assemblages during the operation of the Project
2) Improve the evidence base for assessing the impacts of offshore windfarm cable installation and rock protection for future projects i.e. improve the evidence base to remove the uncertainties in relation to designated site advice where there is 'reasonable scientific doubt' in relation to impacts to interest features. (Please note this relates to the evidence and analysis used to inform impact assessment more than 'data gaps')
3) Through appropriate surveys monitor the recovery of the areas of the NNSSR and the WNNC impacted by cable protection, post-decommissioning ideally to remove uncertainties

Currently we do not believe that the proposed monitoring satisfactorily delivers the above requirements. The reasons for this are summarised below:

1) Sediment Transport

In considering potential disruption to sediment transport, the focus should be on understanding how sediment currently moves (near field and far field) through models and monitoring, and then determine the scale of any changes and implications thereof from the placement of linear cable protection on several parallel cables, within particular locations. It would be helpful if specific questions relating to sediment transport evidence gaps could be identified. For example (but not exclusively):

- Do the mobile sandbanks continue to migrate over the cable protection and if so, what depth is the sediment over the cable protection, and how long does the protection remain covered? Do the impacted areas continue to function as part of the sandbank system?
- In relation to W&NNC SAC - is sediment supply to the Norfolk coast disrupted by the presence of multiple cables being protected?
- Is there scouring around the cable protection and how does that change over time? Does this affect the structure and function of the site?
- Does sediment composition change on the leeward side of the cable protection and does this hinder the conservation objectives of the site?
- Do any changes to sediment transport impact on other features such as Annex I reef, and if so how?

This would allow the BSG to better consider the most appropriate survey methodologies to progress. It may also be beneficial for Ørsted to consult with a sediment transport specialist to inform these discussions and help design the monitoring.

2) Evidence Base

Natural England believes that this requirement is a cross cutting one that includes improving evidence regarding several impacts, which also include sediment transportation (above) and cable protection decommissioning (below). As this requirement emerges from the uncertainties identified during an Habitats Regulation Assessment (HRA), it is our view that **the improvements to the evidence base must relate to the interest features of the designated sites, and the conservation objectives relating to the structure and function of the relevant features,** in order to help reduce consenting risk going forwards.

Therefore, Natural England advises relating the improvement of the evidence base back to the conservation objectives for the SACs and the uncertainties raised during examination. As with 1) above, this would be best facilitated by developing a series of questions that could be answered as part of this work, that could be narrowed down in discussion with the BSG. **All questions should link back to the structure and function of the interest features and the conservation objectives of the site.**

Questions could include (but not exclusively):

- How do the communities present on the cable protection differ from the surrounding sediments that were there prior to deposition of cable protection? How far do any changes in sediment composition and infaunal communities extend? Does this change over time? (Attempting to answer this question is likely to require thorough baseline sampling prior to cable deposition and then monitoring of an analogous area within MPA)
- How is colonisation related to sediment transport? I.e. if cable protection is persistently covered, do the communities function the same as unimpacted sediment communities? If the cable protection is cyclically covered and uncovered what does this mean for the communities functioning?
- Are there changes to biogeochemical composition of sediment surrounding cable protection e.g. organic matter accumulation?
- How does colonisation of the installed cable protection compare with the communities present within Annex 1 geogenic reef, and/ or the mixed sediment associated with Annex 1 sandbank?

We agree that one way of testing the duration of the impacts and the extent to which site features recover would be to monitor benthic communities over time to compare them with those lost through the placement of cable protection. However, we advised during the Hornsea Three examination that while the placement of rock protection may be colonised by mobile epifaunal species found within sandbank systems, there remains uncertainty in relation to changes to the benthic communities in affected areas, and how these changes may affect other site features. These changes could potentially hinder the conservation objectives for the sites. Therefore the monitoring of the *colonisation* of rock protection must be designed to answer specific questions regarding impacts to site features. When reporting, conclusions should be drawn regarding how the evidence relates to AEoI.

We also note that there is a risk that focusing solely on the colonisation of rock protection may become a limiting factor if other cable protection methods e.g. mattresses are taken forward (see comment 6 below).

3) Cable protection removal and recovery

There is limited information provided within the document (page 12, para. 32) to fully understand what is being proposed for this requirement. Following the BSG on 27th April 2021 it is our understanding that Ørsted propose to monitor the recovery of benthic habitats following the decommissioning of the Hornsea Project Three cable protection, which will be in 30+ years and part of a separate consent. Therefore, rather than designing the monitoring now it would be much better to develop an In-Principle Monitoring Plan that sets out the specific questions the monitoring must answer and commitments included to ensure that this is revisited at the time of decommissioning and included in the Application. Natural England also query what will happen in regard to monitoring after decommissioning if the lifetime of the project is extended.

In addition, due to the time period that will elapse before there are any findings, we do not believe that this is in the spirit of the requirement to improve the evidence base in relation to the ability to decommission cable protection, by understanding the associated impacts of removal on designated features and the recoverability of those features following the removal. Therefore, we suggest that alternative options e.g. trials of decommissioning techniques, monitoring of 3rd party decommissioning of assets as part of a partnership project would be beneficial.

Further Comments on the Proposed Environmental Monitoring:

4) Monitoring of sediment plumes

Natural England is not aware of *persistent* sediment plumes being created by the placement of cable protection. If sediment becomes suspended by this activity, we believe that it will settle relatively quickly, and it will be challenging to provide any meaningful monitoring data to demonstrate this assumption. The grout plumes at the Lynn and Inner Dowsing offshore windfarms observed through aerial photography settled out relatively quickly, and whilst there was wide dispersal across the Inner Dowsing Race Bank and North Ridge SAC, the levels of deposition were not considered to be significant to relevant benthic species, which are tolerant of sediment smothering within mobile sediment systems. Therefore, it may be more appropriate to consider other evidence gaps to monitor.

5) Tools

Natural England agrees with JNCC in relation to uncertainties associated with using OneBenthic beyond aggregates for setting limits for acceptable change in sediment composition and its relationship/effect on benthic communities to determine change and recovery potential outside of the cable protection areas. Therefore, Natural England also advises that Hornsea Three consider options beyond the OneBenthic tool for this purpose.

6) Focus on Rock protection

Natural England notes that the monitoring is focused solely on the placement of rock protection. However, as stated during our meeting on 15th April 2021, Natural England advises that every effort should be made to minimise the project impacts as much as possible, including using other forms of protection which have a proven track record of removal. Therefore, we advise the monitoring proposed as part of the benthic steering group shouldn't hinder the ability to further mitigate the project, and equally the monitoring options should be flexible enough to not be dependent on the type of cable protection used for this project.

7) Reporting

Natural England would welcome clarity on when, how and to whom the outcome of monitoring will be provided. Will the BSG be reconvened? Who will be discharging this requirement? This is particularly relevant to those aspects of the monitoring proposals that will be undertaken several years (or even decades) from now.

Hornsea Three – Proposed Marine Debris Awareness Campaign (06951697_A)

Natural England has two points to raise in relation to ensuring that impacts are reduced from the proposed rapid retrieval activities (pages 8-9, sections 3.1.1.-3.1.2):

1) An agreed methodology to ensure that there are no impacts to interest features of the SACs;
2) Training for divers on sensitive habitats such as *Sabellaria spinulosa* reef, to ensure those areas are avoided or to trigger further consultation with SNCBs on the debris in question and merits of removal.

These will need to be considered further in any scope of works. In addition, there would need to be a mechanism to guarantee that 3rd parties who may be involved in the removal work are signed up to them.

Whilst Natural England is focussed on providing comments on the awareness campaign in relation to ensuring that no further damage will result to the designated sites, on this occasion we do note that as regards terrestrial litter entering the marine environment during storm events, it may be helpful for you to discuss any such initiatives with the Environment Agency.

Action from BSG meeting #3

There was an action for Natural England to '*provide a contact within Natural England's marine litter team to enable acquisition of the information around Natural England's work on sources and levels based on beach cleans'.*

On reflection, we feel we are not the appropriate organisation to supply the required information, and suggest that Hornsea Project Three contact the Marine Conservation Society who we believe are in a better position to supply information and data obtained from beach cleans regarding sources and quantities of marine litter. The Marine Conservation Society email address for enquires is: info@mcsuk.org.

As we have recently stated (letter dated 19th April), Natural England's primary focus as members of the BSG will be relating to the debris removal methodology, and any relevant matters relating to the discharge of the dML and/or Marine Licences required for the debris removal. As discussed with the Hornsea Project Three team, we will be in 'listening mode' only for aspects relating to the education and awareness campaign as this is not our area of expertise.

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

Yours sincerely,

Alice Morley
Yorkshire and North Lincolnshire Team
[redacted]

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Rosalyn Jones

Date: 11 May 2021

Offshore Environment Manager
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Dear Rosalyn,

Before the third Steering Group meeting, JNCC was provided with two documents for review: Hornsea Three Proposed Marine Debris Awareness Campaign (06951697_A) and Hornsea Three Proposed Environmental Monitoring (06954567_A).

These documents outline (1) Hornsea Three's proposals with regard to measures which could be progressed to form the scope of the marine debris awareness campaign and (2) Hornsea Three's proposals with regard to environmental monitoring of cable protection deployed.

This note provides JNCC's comments on the scope of work, focussing on potential operations within NNSSR. Our response is provided in three parts:

1) Overall opinion on whether dML condition 13(c) acts as compensation for impact to the sandbanks feature of NNSSR
2) Technical opinion on the proposed marine debris awareness campaign
3) Technical opinion on the proposed environmental monitoring

Overall opinion on whether dML condition 13(c) acts as compensation for impact to the sandbanks feature of NNSSR

Sandbanks Compensation Strategy - The developer notes that the rationale underpinning the benefits of conducting a campaign of marine debris removal is outlined in the Sandbanks Compensation Strategy, which was submitted in February 2020 to support the Hornsea Three derogation case. We note that the Sandbanks Compensation Strategy mainly covers inshore compensation and does not consider any active compensation offshore.

Packages of measures for NNSSR alone and NNSSR / WNNC together were found in tables 1.2 and 1.3 of the Sandbanks Compensation Strategy. These comprised blue mussel bed restoration plus associated biosecurity measures, active engagement with local stakeholders to identify and remove lost/abandoned fishing gear in nearshore areas, and an awareness

campaign aimed at improved recovery measures for marine litter (fishing gear). Given that blue mussel beds are not a feature of NNSSR (and that no sandbank biotopes correlate with any that comprise blue mussel beds), that the identification and removal of debris are scheduled for inshore only, and that an education campaign has no specific impact on NNSSR, JNCC does not consider any of those options to form compensation for long-term impact to the sandbanks feature.

The dML widened these original compensation measures concerning the identification and removal of marine litter to encompass identification and removal in NNSSR. As such, this then applied the Sandbank Compensation Strategy's affirmation that the compensation action was in line with the East Inshore and Offshore Marine Plans. These plans relate the impact made by litter to Marine Strategy Framework Directive requirements. Descriptor (10) of the MSFD requires that properties and quantities of marine litter do not cause harm to the coastal and marine environment. We note that the conservation advice for NNSSR does not include marine litter as an activity of concern currently likely to impact the conservation objective status for the site. As such, our main concern would be that any litter picking activities would not further impact the conservation objectives of the site and move it further away from favourable condition.

JNCC, therefore, does not currently hold the opinion that the package measures are fit for purpose to act in NNSSR as compensation to the cable protection measures required by BEIS. We advised BEIS of this in our responses to examination questions, as well as the developer in steering group meetings. The comments below relate solely to details of the proposed marine debris awareness campaign and the proposed environmental monitoring and the impacts that these may have on NNSSR SAC.

Technical opinion on the scope of the marine debris awareness campaign

Hornsea Three are proposing to implement an awareness campaign which aims to reduce the volume of marine debris entering the WNNC and NNSSR SACs. This may also impact the wider marine environment, in particularly subtidal sandbanks outside of the SACs.

The awareness campaign will focus on stakeholder engagement to promote buy-in to a 'stopping at source' approach to reducing marine debris. It aims to target several marine debris sources including lost and abandoned fishing gear, debris from other industries and from onshore sources.

We have the following comments on this technical opinion.

Fishing gear:

As discussed in the previous set of comments from JNCC, we note that there is evidence of mobile demersal, static and pelagic fishing effort within NNSSR, from UK and non-UK registered vessels. The highest levels of activity come from non-UK beam trawling. Evidence of UK beam trawling, non-UK demersal trawling, non-UK demersal seine, UK pots and traps and non-UK pelagic trawling is low to minimal.

We note that Ørsted expects debris in NNSSR to be comprised predominantly of larger nets and pots, however, given the above, we would not expect many lost pots to be present in the site. We would also note that, for an awareness campaign to effectively decrease incidence of ALDFG in the site, we continue to consider it necessary to fully engage non-UK fishing operations as the major users of the site. No details have yet been provided to the Steering Group on this aspect of engagement. We request further details to be provided regarding the offshore fisheries stakeholders involved, both in the UK and outwith the UK, as well as a discussion of how these engagements will capture the full stakeholder landscape.

Other industries:

Hornsea Three anticipates that marine debris may be related to offshore industries such as shipping and oil and gas development, particularly in relation to offshore areas including the NNSSR SAC. We are aware that Hornsea Three have been in communication with OPRED, and strongly suggest that they continue this dialogue with all necessary teams in OPRED, including their Environmental Management Team and their Offshore Decommissioning Unit, to ensure that only appropriate third-party assets are being considered for removal.

Onshore litter sources:

While we do not expect that NNSSR would contain significant amounts on marine debris deriving from onshore sources, we acknowledge that this may occur and would be interested to see how Hornsea Three's consultants will assess this impact.

Adapting the awareness campaign scope:

We are pleased that Hornsea Three show a willingness to adapt and evolve their marine debris plans to take account of other initiatives, and also, from analysis of their marine debris removal campaign.

Monitoring the awareness campaign:

We remain unsure how any success factor would relate to the achievement of the conservation objectives of the site. While uptake of transponders / use of rapid retrieval methodologies can be measured as a success factor for the campaign, transposing that to success factors that show impact to the site is considerably more challenging. We would be keen to understand how Hornsea Three intend to do this. The same can be said for any success factors measured through an increase in stakeholder understanding in relation to the impacts of marine debris, or stakeholder behaviour change.

We are also unsure how quantitative uptake of the measures could be used to infer the amount of debris that would have otherwise been discarded into the marine environment.

We question how annual monitoring will relate to the current Steering Group – does Hornsea Three expect the Steering Group to continue through the lifetime of the awareness campaign,

and how will Hornsea Three guarantee continued understanding of participants through such a long time span?

Marine debris awareness campaign proposals

Minimising lost and abandoned fishing gear

As noted above, at the next steering group meeting, we would like some information on how Hornsea Three's consultation with offshore fishing operators is being undertaken, and what insights have been gained from their local knowledge of marine debris in NNSSR.

Rapid Retrieval Methodology: Transponders on gear

We consider that transponders may prove beneficial to the retrieval of lost fishing gear, , though not in relation to the achievements of the conservation objectives of the site. Information on whether NetTag technology is appropriate in the depths seen in and around NNSSR, and with the fishing patterns seen offshore, would be welcome. We would also like to know whether the consultation around use of NetTag has involved offshore fishermen or non-UK representatives.

While use of transponders would seem beneficial to the retrieval of lost fishing gear, we note that this initiative would only address accidental loss of gear. Accidental events are challenging to assess in terms of impact to achievement of conservation objectives, given that it would be difficult to predict seabed impact.

We also consider that any success factor for this measure would need to relate to debris removed, not numbers of transponders in use.

Rapid Retrieval Methodology: Marking of lost gear

We note that this is suggested as a retrieval method for inshore debris. As such, JNCC will not comment further.

Disposing of fishing gear at end of life

We are unsure as to how much of this suggestion would impact on the offshore fleets, as well as how this could be discharged outwith the UK. However, we do consider that recycling and reuse of fishing gear could prove beneficial, though not in relation to the achievements of the conservation objectives of the site.

Increasing industry awareness

We are unsure whether awareness events for offshore industries would be appropriate or useful. The oil and gas industry must report to BEIS materials lost or discarded at sea, including any materials deposited under conditions of force majeure, and every reasonable attempt must be made to recover them. Each loss has to be reported within six hours of the loss. Oil and

Gas UK provides more information about what should be reported: "*Some common sense should be applied as to the lower level of item that is reportable, e.g. a spanner is not reportable, but a scaffold pole could be pulled up by nets, plastic sheeting can harm wildlife and block water intakes and small items, e.g. radioactive sources, can be hazardous.*"[1] As such, we are unsure what an awareness event would add to the industry's understanding, given the standards they already have to employ, or how it would provide any measure of success in terms of impact.

Technical opinion on the scope of environmental monitoring

We agree with Hornsea Three that environmental monitoring does not directly compensate for habitat loss resulting from the deployment of cable protection within the WNNC and NNSSR SACs, but that DCO condition 13 of Schedule 14 includes Environmental Monitoring Plans (EMPs) for the cable protection deployed within the SACs. We note that Hornsea Three anticipate that the EMPs will identify sample locations using a worst case assumption in terms of cable protection being deployed along 6% of the length of cables within the SACs.

We note that Hornsea Three are considering environmental monitoring *only* in terms of improving the current evidence base for colonisation of cable protection, and in terms of informing whether the current approach of assessment of cable protection deployment is proportionate. We consider that this is fundamentally incorrect, and that monitoring should be undertaken to understand the impact of the protective materials, and how the deployment of protective materials may impact on the achievement of the conservation objectives of the site.

We also feel that there is a lack of consideration of monitoring of the debris collection activities and their potential impact, and consider it fundamental for Hornsea Three to add detail around this into future opinions for the Steering Group.

We have the following comments to make on the scope of the monitoring proposals:

- Hornsea Three note that one of the aims of the proposed environmental monitoring is to record any physical or biological changes that could affect the temporary long-term natural distribution, structure and function of the sites, as well as the long-term survival of their typical species. We would suggest that the monitoring should look to understand impact on all conservation objective attributes of NNSSR.
- We do not consider it appropriate to simply assess the effects of cable protection on sediment movement and epifauna assemblages.
- We do not consider that looking at the nature of epifaunal assemblage change to be an appropriate part of monitoring, given that in many sandbank habitats, mobile and sessile epifauna may be sparse and not major parts of characteristic communities. We also note our previous comments during Hornsea Three's Section 56 consultation and examination concerning our lack of confidence in Hornsea Three's benthic survey analyses. In these comments we noted that we considered that the methods used for faunistic analysis by the applicant were such that there was little opportunity that true ecological patterns and relationships could emerge. As such, we had low confidence

[1] https://oilandgasukenvironmentallegislation.co.uk/contents/topic_files/offshore/dropped-objects.htm

in the biotoping results, as well as any conclusions as to characterisation or monitoring resulting from them.

- We are unsure as to why sediment plumes resulting from cable placement activities are being considered as part of the impacts. As far as JNCC is aware, this is not an impact that has been considered during the section 56 application and examination.

We have the following comments to make on the methodologies of the monitoring proposals:

- Use of grab sampling should depend on the seabed habitats in the areas to be sampled. JNCC would not expect grab sampling to occur in areas of Annex I reef. We would expect multiple samples per station to be taken for any grab sampling. Grab sampling should include analyses of infauna as well as epifauna.
- Hornsea Three propose to use the predictive methods developed by Cefas that use particle size analysis (PSA) to set limits for acceptable change in sediment composition and its relationship/effect on benthic communities to determine change and recovery potential outside of the cable protection areas. JNCC recommends that Hornsea Three consider options beyond the OneBenthic tool for this purpose. We are uncertain that OneBenthic is appropriate for understanding limits for change outwith its original use in aggregates monitoring, and we still have a number of significant concerns around the statistics used in the tool to provide limits for acceptable change.
- We note Hornsea Three's use of control sites. We would like more information on the control sites Hornsea Three expect to use – would they be within NNSSR, or outwith the site, what evidence has been used to select them? We note that any control sites would have to be similar in terms of biotope, as well as physical slope / topographic form to the areas impacted.

We have the following specific comments to make on the aim of addressing evidence gaps:

- DEFRA, the Crown Estate and BEIS are working with various stakeholders to create the Offshore Wind Environmental Evidence Register (OWEER). JNCC is managing the project, and both JNCC and Natural England, alongside wider stakeholders, have provided expertise as to evidence gaps and prioritisation. The benthic area of OWEER will include expert prioritisation of the various research projects undertaken in relation to effects of cable protection and research gaps. We would expect Hornsea Three to incorporate this knowledge around evidence gaps and ongoing research into their thinking when OWEER is available. This is expected to be early June 2021.
- We also do not consider that looking at colonisation timescales for rock protection to be an appropriate part of monitoring. While understanding colonisation may be an evidence gap around cable protection, it does not provide any understanding of how achievement of the site's conservation objectives would be impacted.
- We also note that previous discussions have occurred among JNCC, NE and Hornsea Three regarding ecologically sensitive rock protection. Our position on this remains the same. We strongly recommend that any consideration of ecologically sensitive rock protection must relate to restoration of the site, not to which rock sizes are most facilitative for colonisation.

- We do agree, however, that any studies Hornsea Three undertake analysing recovery potential associated with different types of cable protection, or grades of rock used, may help fill important evidence gaps.

Please contact me with any questions regarding the above comments.

Yours sincerely,

Dr Becky Hitchin

Offshore Industries Advice Manager

Date: 22 June 2021
Our ref: SLA/Hornsea 3 - 355257
Your ref: N/A

BY EMAIL ONLY
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LS11 9AT

Dear Rosy,

Development proposal and location: Hornsea Project Three Offshore Windfarm

Written comments from Natural England following Benthic Steering Group Meeting #4

Thank you for consulting Natural England on the following documents provided prior to the forth Benthic Steering Group (BSG) meeting held on 8th June 2021.

- **Hornsea Three Supporting Document Steering Group 08062021 (07015970_A)**

General Comments

This document does not address the concerns previously raised by Natural England therefore our previous advice (such as that provided following the third BSG meeting[1]) remains unchanged.

We would also like to re-iterate, as per our letter dated 19th April 2021, that Natural England is focussing our advice on ensuring that further impacts to the interest features of the two SACs will be avoided.

Comments on the Supporting Document

Paragraph	Natural England comment
9	Many aspects of the SBIP principles are being deferred (a, b, e and f) with a commitment to address these through summaries in the first iteration of the SBIP. To date, little to no information has been provided on these conditions therefore we are not yet able to comment on them. Of particular importance is (b) relating to dredge disposal locations which Natural England requested information on during the Hornsea Three examination. We are yet to receive any evidence that suitable dredge disposal locations have been investigated or identified. The principles discussed in detail ((c) debris removal; and (d) awareness) are not discussed in sufficient detail within the document to address our concerns relating to the potential impacts of the proposal and again are deferred to the final SBIP.
13	For the avoidance of any doubt, we do not consider increasing the area of search for debris or increasing the awareness campaign to be compensation or adaptive management.

[1] Hornsea 3 BSG meeting #3 (27th April) written comments

15	Natural England queries how the sign-off and consultation process will continue after December 2021, as there is reference to the pre-construction marine debris removal campaign being carried out in Q2/3 2022 and the results of this subsequently being reported to the BSG.
16	Natural England notes that there is no new information on the potential target areas for debris removal within the designated sites. We will be interested to see the results of the desk-based assessment and the maps/figures that will be produced relating to the most appropriate target areas for debris removal within the SACs.
18	Natural England reiterates that neither site is in unfavourable condition due to marine litter.
19	Natural England does not have sufficient evidence to support the use of thresholds within the WNNC SAC on how much litter would need to be removed to have any benefit to the conservation objectives on the site.
20	We note that in principle the campaign will 'avoid impacts to the sensitive features', but until further, specific details of the removal methodology and monitoring are provided we are not in a position to confirm this.
27	Natural England advises that some debris removal locations should be monitored post-removal to demonstrate whether the hypotheses about recovery and habitat restoration are correct and to provide information regarding the environmental response to the intervention.
30	For the avoidance of doubt, Natural England does not believe that increasing the scope of the awareness campaign is adaptive management if the marine debris removal campaign is deemed unsuccessful.
Table 1	Natural England notes that rocky outcrops and chalk reefs are rare and therefore advise against additional operations in these areas due to the potential to cause additional damage. We do not consider this option as compensation for Annex I sandbanks.

Natural England written response to BSG meeting #4

At the BSG meeting Natural England was pressed for views on appropriate adaptive management measures. The intention of adaptive management in this instance would be to ensure that the measures put forward would result in adequate compensation for the loss of sandbank feature. As previously highlighted, whilst we acknowledge that the benthic measures put forward by the project may satisfy the DCO requirements, we do not consider that they adequately compensate for the loss of sandbank feature within the SACs. Furthermore, we do not consider that they could be adapted in order to deliver adequate compensation without expanding the scope and nature of the measures far beyond that required in the DCO.

Consequently, as highlighted in our letter dated 19th April we have stated that the focus of our advice will be on ensuring that the methodologies put forward avoid additional impacts to designated sites, rather than on the merits of these proposals as compensatory measures.

We would be grateful if our letter dated 19th April and this subsequent clarification could be shared with the Chair ahead of the next BSG, to ensure that the Chair is fully sighted and understands the capacity in which Natural England is seeking to input to discussion.

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

Yours sincerely,

Alice Morley
Yorkshire and North Lincolnshire Team
[redacted]

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Rosalyn Jones

Date: 17 June 2021

Offshore Environment Manager
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Dear Rosy,

Before the fourth Steering Group meeting, JNCC was provided with one document for review: Steering Group Meeting #4 Supporting Document. This document addresses some key questions raised by members of the Steering Group on conditions (c) and (d) during initial meetings, and in subsequent written feedback.

This note provides JNCC's comments on the supporting document. Our response is provided in two parts:

1) Overall opinion on whether dML condition 13(c) acts as compensation for impact to the sandbanks feature of NNSSR
2) Technical opinion on the supporting document

Overall opinion on whether dML condition 13(c) acts as compensation for impact to the sandbanks feature of NNSSR

Sandbanks Compensation Strategy - The developer notes that the rationale underpinning the benefits of conducting a campaign of marine debris removal is outlined in the Sandbanks Compensation Strategy, which was submitted in February 2020 to support the Hornsea Three derogation case. We note that the Sandbanks Compensation Strategy mainly covers inshore compensation and does not consider any active compensation offshore.

Packages of measures for NNSSR alone and NNSSR / WNNC together were found in tables 1.2 and 1.3 of the Sandbanks Compensation Strategy. These comprised blue mussel bed restoration plus associated biosecurity measures, active engagement with local stakeholders to identify and remove lost/abandoned fishing gear in nearshore areas, and an awareness campaign aimed at improved recovery measures for marine litter (fishing gear). Given that blue mussel beds are not a feature of NNSSR (and that no sandbank biotopes correlate with any that comprise blue mussel beds), that the identification and removal of debris are scheduled for inshore only, and that an education campaign has no specific impact on NNSSR,

JNCC does not consider any of those options to form compensation for long-term impact to the sandbanks feature.

The dML widened these original compensation measures concerning the identification and removal of marine litter to encompass identification and removal in NNSSR. As such, this then applied the Sandbank Compensation Strategy's affirmation that the compensation action was in line with the East Inshore and Offshore Marine Plans. These plans relate the impact made by litter to Marine Strategy Framework Directive requirements. Descriptor (10) of the MSFD requires that properties and quantities of marine litter do not cause harm to the coastal and marine environment. We note that the conservation advice for NNSSR does not include marine litter as an activity of concern currently likely to impact the conservation objective status for the site. As such, our main concern would be that any litter picking activities would not further impact the conservation objectives of the site and move it further away from favourable condition.

JNCC, therefore, does not currently hold the opinion that the package measures are fit for purpose to act in NNSSR as compensation to the cable protection measures required by BEIS. We advised BEIS of this in our responses to examination questions, as well as the developer in steering group meetings. The comments below relate solely to details of the proposed marine debris awareness campaign and the proposed environmental monitoring and the impacts that these may have on NNSSR SAC.

Supporting document for Steering Group 4

While the document aims to address concerns previously raised by both JNCC and Natural England, we feel they there are considerable issues outstanding. We are unsure whether our full concerns will be raised, and how this will occur.

With regard to litter removal in NNSSR, we continue to note that currently litter does not contribute to its unfavourable conservation status.

We are concerned that in paragraph (15) it seems that the only success factor for the removal campaign is logging and reporting the removal of any marine debris of the type and size to be approved for removal in the SBIPs. This does not address the amount of litter removed, or the magnitude / significance of any potential impact on the sandbanks. We remain unsure how Hornsea Three intend to demonstrate success in impacting the conservation objectives of the site through the litter removal campaign. We continue to suggest that Hornsea Three learn from threshold ranges used in other industries in NNSSR.

We do not agree that increasing the area of search is adaptive management. Adaptive management is a structured, iterative process of robust decision-making that aims to reduce uncertainty over time. Increasing the search area does not do this, and is more simply a way to look at meeting any success goals. We note that there remains no definite commitment to double the area for debris removal if insufficient targets are found.

Steering group interaction going forward

We have two comments to make regarding expectations of JNCC in steering group meetings going forward. Firstly, we were uncomfortable about the chairing of the last meeting. We felt that both ourselves and Natural England were put into challenging positions by the chair that were not helpful in taking the conversation forward.

Secondly, I would like to note that I am leaving JNCC, and as such, won't be attending steering group meetings anymore. It has been a pleasure working with you, and I am handing over to Jillian Whyte, who has been a sandbanks specialist in JNCC for several years. She has considerable experience of advising on sandbanks from both a renewables and an oil and gas point of view. Her email is [redacted], and if she could be included in all emails and meeting invitations from now on, that would be great.

Please contact me with any questions regarding the above comments.

Yours sincerely,

[redacted]

Dr Becky Hitchin

Offshore Industries Advice Manager

Email [redacted]

Date: 25 August 2021
Our ref: SLA – Hornsea Project Three
Your ref: NA

BY EMAIL ONLY

Dear Rosy,

Service Level Agreement (Charged Advice)
Ørsted
Development proposal and location: Hornsea Project Three Offshore Wind Farm

Sandbank Implementation Plans (SBIPs) – Wash and North Norfolk Coast (WNNC) SAC and North Norfolk Sandbanks and Saturn Reef (NNSSR) SAC

Please accept this advice in accordance with the Service Level Agreement between Natural England and Ørsted dated 17th June 2020.

Thank you consulting Natural England and JNCC on the first drafts of the Hornsea Project Three SBIPs for WNNC SAC and NNSSR SAC received on 26th July 2021. This is a joint response from Natural England and JNCC.

In providing our advice we have reviewed the following documents:

- NNSSR SAC SBIP (Version 3.0, dated 26/07/21)
- WNNC SAC SBIP (Version 3.0, dated 26/07/21)
- Appendix 1 Marine Debris Removal Campaign Desktop Study (Version 3.0, dated 26/07/21)
- Appendix 2 Environmental Monitoring Plan (Version 3.0, dated 26/07/21)
- Appendix 3 Disposal Technical Study (Version 2, dated 02/08/21)
- Compensation Consultation Summary (07124534_A) (for consultation)

Overarching comments

As per our previous written and verbal advice, Natural England and JNCC do not consider that the measures outlined in the DCO compensate for lasting/permanent loss to Annex 1 sandbank feature in the Wash and Norfolk Coast SAC or North Norfolk Sandbanks and Saturn Reef SAC.

We have therefore focused our advice to the project in two key areas: ensuring that the proposals will not negatively impact on the features of designated sites, and ensuring that the proposed monitoring is capable of detecting changes to the condition of the feature.

These areas align with points (c) and (e) of the Draft Principles of Compensatory Measures included within DEFRA's recently published 'Best practice guidance for developing compensatory measures in relation to Marine Protected Areas' (https://consult.defra.gov.uk/offshore-wind-and-noise/mpa-compensation-guidance-consultation/)

The Draft Principles of Compensatory Measures state that compensatory measures should:

a. *Link to the conservation objectives for the site or feature and address the specific damage caused by the permitted activity;*

b. *Focus on providing the same ecological function for the species or habitat that the activity is damaging OR, where this is not technically possible, provide functions and properties that are comparable to those that originally justified designation;*
c. *Not negatively impact on any other sites or features;*
d. *Ensure the overall coherence of designated sites and the integrity of the MPA network; and*
e. *Be able to be monitored to demonstrate that they have delivered effective and sustainable compensation for the impact of the project. The monitoring and management strategy must require further action to be taken if the compensation is not successful*

We remain concerned that there is potential for there to be unintended impacts to the designated features of the site (c.) and that more could be done in relation to the monitoring requirements (e.).

We have included more detailed comments on the documents sent to us for review in Annex 1 of this letter.

For clarification of any points in this letter, please contact me using the details provided below.

☒ The advice provided in this letter has been through Natural England's Quality Assurance process

The advice provided within the Service Level Agreement is the professional advice of the Natural England adviser named below. It is the best advice that can be given based on the information provided so far. Its quality and detail are dependent upon the quality and depth of the information which has been provided. It does not constitute a statutory response or decision, which will be made by Natural England acting corporately in its role as statutory consultee to the competent authority after an application has been submitted. The advice given is therefore not binding in any way and is provided without prejudice to the consideration of any statutory consultation response or decision which may be made by Natural England in due course. The final judgement on any proposals by Natural England is reserved until an application is made and will be made on the information then available, including any modifications to the proposal made after receipt of discretionary advice. All pre-application advice is subject to review and revision in the light of changes in relevant considerations, including changes in relation to the facts, scientific knowledge/evidence, policy, guidance, or law. Natural England will not accept any liability for the accuracy, adequacy, or completeness of, nor will any express or implied warranty be given for, the advice. This exclusion does not extend to any fraudulent misrepresentation made by or on behalf of Natural England.

Yours sincerely,

Alice Morley
Yorkshire and North Lincolnshire Team
[redacted]

Annex I: Detailed Comments on the Sandbank Implementation Plans (SBIPs) and Appendices

Please note that for the purposes of this Annex 'the SNCBs' refers to Natural England and JNCC.

Comments on Sandbank Implementation Plans

A number of our comments on the SBIPs relate to both the Wash and North Norfolk Coast (WNNC) SAC and the North Norfolk Sandbanks and Saturn Reef (NNSSR) SAC, as a number of sections of the SBIP documents are the same. Therefore in Table 1 below, we have included a column labelled 'applicability' which highlights where comments are related to NNSSR SAC, WNNC SAC, or both.

Table 1. Detailed comments on Sandbank Implementation Plans

Ref. point	Applicability		Section	Comment
	NNSSR	WNNC		
1		✓	Section 2 Description of Site and Conservation Objectives Paragraph 8	It should be noted that as well as the habitats listed, this site was also designated for coastal lagoons, Harbour seal (*Phoca vitulina),* and Otter (*Lutra lutra*).
2	✓	✓	Section 3.1 Ongoing Role of the Steering Group Paragraph 15	We remain concerned that the anticipated field report, which will be submitted to the Secretary of State, and the subsequent summary report seem to be the only measure of success for the removal campaign, neither of which provide any indication of the seabed footprint that will be impacted by the debris removal. We also note that no monitoring of seabed recovery will be undertaken and consequently the impacts of the intervention will not be understood or quantified.
3		✓	Section 4.1.1 Likelihood of Annex 1 Reef Paragraph 17	There is the suggestion that a core reef approach has been applied, but we query whether there is sufficient data coverage to apply a core reef approach here. Natural England do not have enough data to use the core reef approach in this area, and so it should only be applied if Ørsted have collected or have access to a time series of appropriate data (delineated extents with confidence in absence as well as presence). We do not believe this to be the case, therefore our position is that all reef identified should be considered. It should also be noted that the core reef approach is only relevant for *S. spinulosa* reef, and that the installation area is also important for geogenic reef. Stony reef and circalittoral rock are both sub features of the sandbank feature of the WNNC SAC. We therefore advise that areas of both biogenic and geogenic reef are avoided.
4		✓	Page 10 Figure 1	We are not clear why Figure 1 only shows the Natural England evidence base for Cromer. The feature data for the WNNC would have been more relevant, in particular the reef point data for this part of the site which contains

Annex I: Detailed Comments on the Sandbank Implementation Plans (SBIPs) and Appendices

				approximately 133 data points for geogenic reef in the south-east of the site where the cable comes ashore.
5	✓	✓	Section 4.1.3 Further Commitments Paragraph 21 (of NNSSR)	Reference is made to the avoidance of *Sabellaria* reef management areas in reference to cable protection deployment, however it is unclear whether such areas have been included as exclusion zones for the purposes of marine debris removal (Section 6.3.1, paragraph 51 and Table 7). These areas should be avoided during marine debris removal. Please note that this comment is in response to 'Section 4.1.3 – Further Commitments' presented in the NNSSR SBIP. There is not a Further Commitments section presented in the WNNC SBIP however, the advice here is relevant to both sites.
6		✓	Page 11 Section 4.2 Implementation of the Compensation Measures Paragraph 21	It should be noted that the Natural England *S. spinulosa* reef map for the WNNC is for the confirmed core reef, and so the assertion that the desktop study is considering all previous reef identified is incorrect. It is NE and JNCC's understanding that a log of all debris encountered will be provided to steering group members as evidence of the scale/type/volume of debris encountered and of how effective this exercise is at dealing with different debris types. The log should include information on: - the location, size, and nature of the debris; - whether the debris was recovered, a recovery was attempted and aborted, or if the debris was left in situ.
7	✓	✓	Section 4.2 Implementation of the Compensation Measures Paragraph 21 (WNNC) / Paragraph 24 (NNSSR)	More clarity is needed regarding the reference to 'previous surveys' in this section. It is unclear if this is referring to Hornsea Project Three previous surveys or surveys from other projects. It should be noted that the debris removal campaign is proposed in other parts of the SAC to that of the Hornsea Project Three cable route. Please also see our detailed comments on the Appendices below.
8	✓	✓	Section 4.2 Implementation of the Compensation Measures Paragraph 23 (WNNC) / Paragraph 26 (NNSSR)	We welcome the use of the WROV during the debris removal process. However, it is assumed that there is likely to need to be further discussion regarding the positioning of the WROV on the seabed to reach the object. Therefore, it will not only be the footprint of the object that needs to be considered in any assessment, but also footprint of the WROV to reach the required location.

Annex I: Detailed Comments on the Sandbank Implementation Plans (SBIPs) and Appendices

9		✓	Section 6.1 Requirement 13(c): Marine Debris Removal Campaign Paragraph 32	Please note that shipping lanes in The Wash often overlap with areas of reef, for instance, The Well. It is not clear how the removal of debris from mixed sediment will help with the functionality of Annex I sandbanks.
10	✓	✓	Figure 3	It is not clear from these maps that the area of search only interacts with Annex I sandbanks. It is Natural England and JNCC's understanding is that only Annex I sandbanks will be targeted.
11		✓	Section 6.2.1 Anticipated Debris Densities Paragraph 39	Hornsea Project Two is not in the vicinity of nor does it overlap with WNNC SAC. Please see comments on the Appendices in Annex 1 of this letter.
12	✓	✓	Section 6.2.2 Anticipated Debris Condition Paragraph 46 (WNNC) / Paragraph 49 (NNSSR)	Please clarify if monitoring will be undertaken to prove the predictions being made in this section in relation to, for example, indirect scouring of the seabed caused by debris.
13	✓	✓	Section 6.3.3.3 Stage 3a/b: Target Investigation Survey Paragraph 63 (WNNC) / Paragraph 66 (NNSSR)	Based on this section, it is our understanding that pieces of debris will no longer count towards any targets. Please clarify if this understanding is correct.
14	✓	✓	Section 6.3.3.3 Stage 3a/b: Target Investigation Survey Paragraph 64 (WNNC) / Paragraph 67 (NNSSR)	If Natural England and JNCC are not being consulted between investigations and removal, then a decision tree for the specialist on board should be agreed with the BSG.
15	✓	✓	Section 6.3.3.4 Stage 3c: Removal of Debris	We note the proposed methods of removal in this section (and Table 8) and reiterate that methods must not be used that further damage the protected features of the site. There remain outstanding concerns in this regard.
16	✓	✓	Section 6.7 Compliance	We remain concerned that the anticipated field report, which will be submitted to the Secretary of State (SoS),

Annex I: Detailed Comments on the Sandbank Implementation Plans (SBIPs) and Appendices

			Paragraph 97 (WNNC) / Paragraph 100 (NNSSR) & Section 6.9 Monitoring Paragraph 109 (WNNC) / Paragraph 112 (NNSSR)	and the subsequent summary report seem to be the only measure of success for the removal campaign, neither of which provide any indication of the potential footprint within which debris will be removed. We also note that no monitoring of seabed recovery is expected to be undertaken and therefore are unsure how Hornsea Project Three will demonstrate the impact of their intervention on the feature.
17	✓	✓	Section 6.8 Adaptive Management	The SNCBs are concerned that the adaptive management approach will potentially increase the area of impacts to the site and therefore this requires further consideration. Adaptive management should be a structured, iterative process of robust decision-making that aims to reduce uncertainty over time. Simply increasing the area of search area does not necessarily ensure that sufficient targets will be found, and risks increasing the area over which the marine debris removal could have a negative impact on site features.
18	✓	✓	Section 6.8 Adaptive Management Paragraph 100 (WNNC) / Paragraph 103 (NNSSR)	It would be helpful in the SBIP to set out how the target densities were identified to achieve the maximum ecological benefit, and what that ecological benefit looks like.
19	✓	✓	Section 6.8 Adaptive Management Paragraph 104 (WNNC) / Paragraph 107 (NNSSR)	The ‘trigger level’ should be clearly defined.
20		✓	Section 6.9 Monitoring Paragraph 106	As mentioned above, there is geogenic reef as well as biogenic reef within WNNC. This should be captured here.
21	✓	✓	Section 6.9 Monitoring Paragraph 107 (WNNC) / Paragraph 110 (NNSSR)	We would like to request if any survey data can be shared with Natural England and JNCC to help inform further management of the site.

Annex I: Detailed Comments on the Sandbank Implementation Plans (SBIPs) and Appendices

22	✓	✓	Section 6.9 Monitoring Paragraph 109 (WNNC) / Paragraph 112 (NNSSR)	We would welcome as a minimum a proportion of locations being revisited to demonstrate that recovery has occurred and is rapid, as this currently remains an evidence gap and may help with wider discussions about removal of infrastructure and recovery. It would be good to monitor recovery/infill of holes and scour left by debris both before and after removal to add to evidence base that removal of it is contributing to recovery of the feature.
23	✓	✓	Table 10	It would be useful if it was more explicit what Hornsea Project Three supporting NetTag technology would entail ("*NetTag technology (or other similar rapid retrieval technology) detailed in* ***Section 7.1.7*** *would be made available and Hornsea Three would support its use"*).
24	✓	✓	Section 6.9 Monitoring	We would like to draw attention to the draft Principles of Compensatory Measures, and in particular point (e) on monitoring the effectiveness of compensation in MPAs.
25	✓	✓	Section 7.1.1.1 NetTag Transponders Paragraph 121 (WNNC) / Paragraph 124 (NNSSR)	We note that retrieval of fishing gear by fisherman as a result of the rapid retrieval mechanisms holds the potential for further damage to the protected features of the WNNC and NNSSR SAC, depending on the method of retrieval. This paragraph also states that consultation with "some fishers" received a "positive response", yet no guarantee of ongoing buy-in from fishers and commitment to use of appropriate retrieval methods that minimise damage can be provided.
26	✓	✓	Section 8 Requirement 13 (e): Environmental Monitoring of Operation and Post-Decommissioned Cable Protection	It should be noted that the decommissioning will not be for decades, and therefore will not help projects currently in the initiation phase. We would welcome the industry doing further monitoring of infrastructure removal and recovery before decommissioning.

Annex I: Detailed Comments on the Sandbank Implementation Plans (SBIPs) and Appendices

Comments on Appendix 1 – Marine Debris Removal Campaign Desktop Study

Table 2. Detailed Comments on Appendix 1 – Marine Debris Removal Campaign Desktop Study

Ref. point	Section	Comment
27	2.1 Rationale and Aims for the Campaign Paragraph 9	Natural England notes that the proposal is to undertake a single debris removal campaign between June and September 2022, during a period when harbour seals, a feature of The Wash and Norfolk Coast (WNNC) SAC, are most sensitive. The sensitivity is heightened when they are hauled out on sandbanks during low tide. Natural England would welcome further consideration of how impacts to this species will be avoided/reduced/mitigated during the campaign and any subsequent adaptive management.
28	2.1 Rationale and Aims for the Campaign Paragraph 9	We wish to highlight that activities occurring as part of the campaign and/or adaptive management should be a minimum of 300m away from any intertidal habitats to avoid disturbance to Annex I passage and over wintering birds during July, August and September.
29	Figure 2.1	It is not clear to the SNCBs what the purpose of the 'reference areas' are. However, we note that The Wash reference area is in a hot spot for non-breeding common scoter which are a feature of the Greater Wash SPA. Therefore, disturbance and displacement to these species need to be considered further depending on the purpose of these areas is, and we would recommend consideration of more suitable alternatives if possible.
30	Table 3.1	Natural England would welcome further clarity on the relevance of Hornsea Project Two data in defining the design of the compensation measures and/or monitoring, when the AoS for that project is outside the two designated sites impacted by Hornsea Project Three.
31	Table 3.1 Table 5.1 Section 7.1.1. Annex 1 Sandbank Habitat	Natural England suggest the Natural England marine evidence base should be included and used in the initial screening as part of the desk-based work to identify exclusion zones for the Area of Search (AoS). JNCC MPA Mapper is referenced in the Tables 3.1 and 5.1, but the Natural England marine evidence base is not.
32	Section 4.1.2 Sandbanks of Key Importance Paragraph 26	Please be advised that we have lower confidence that data and reference material dated prior to 2013 remain relevant, given the tidal surge during that year and changes to the marine environment that occurred. Therefore, project specific data will need to be collected to inform the deployment of compensation measures to ensure that there is no further damage to the sites.

Annex I: Detailed Comments on the Sandbank Implementation Plans (SBIPs) and Appendices

33	Section 4.1.2 Sandbanks of Key Importance Paragraph 27	Whilst we recognise the intention may have been to identify locations with greater benefits to sediment transport, the SNCBs advise against ranking the designated site importance of Annex I sandbanks on their ability to influence sediment transportation within the site and wider environment. This is not a key principle for designation and is not part of conservation objectives on the site. No one sandbank is more important than another.
34	Section 4.2.1 Sandbanks of Key Importance Paragraph 32	Please be advised that if 'like for like' is being sought then sandbanks that are exposed on some low tides are not the same as sandbanks covered by seawater all of the time and they provide different site functions and comprise of different supporting to mobile species habitats. This will need to be taken into consideration within any HRA.
35	Section 4.2.2 North Norfolk Coast Paragraph 33	Please be advised that Burham Flats and Docking Shoal sandbanks are outside of designated benthic SACs
36	Section 5 Excluded Areas (Also Figure 7.2, and Section 8.1.2 AoS Identification in WNNC SAC, Paragraph 104	The SNCBs advise that areas to be managed as *Sabellaria spinulosa* reef such as Fisheries byelaw areas should be avoided to ensure that there are no further impacts to reef and/or supporting habitat. Though it should be recognised that as the compensation is for Annex I sandbanks and not reef, these areas should not be a primary focus for any campaign in any event.
37	Section 5 Excluded Areas Paragraph 38	Given The Wash has been an active bombing range and surrounded by RAF bases since the war there is a high probability that UXO will be identified. Whilst it is stated that UXO will be not removed as part of the debris removal campaign, there is the potential that identified UXO may ultimately need to be removed or managed as a health and safety matter. This was the case during the Race Bank cable installation.
38	Table 5.1	The SNCBs would expect the most up to date reef data to inform the areas of search, noting that *Sabellaria* reef can establish with 12 months. Any older data increase the risk of *Sabellaria spinulosa* reef being present.
39	Section 7.1.2 Habitat Loss Resulting from Cable	The SNCBs are concerned in relation to the proposal to focus on coarser sediment as this mostly likely to be location where Annex I reef is located.

	Protection Deployment Paragraph 84	
40	Figure 7.1	The SNCBs are concerned that an area within the southern part of the western ('dalek') arm in NNSSR SAC has been identified as a potential area for debris removal. This area was identified as part of the Hornsea Project Three characterisation surveys as being cobble reef. Due to its high ecological importance and sensitivity we would advise against undertaking debris removal in this location, especially without further modification of techniques to ensure minimal footprint from the WROV and other associated tools/activities.

Annex I: Detailed Comments on the Sandbank Implementation Plans (SBIPs) and Appendices

Comments on Appendix 2 – Environmental Monitoring Plan

Natural England and JNCC wish to highlight that monitoring should be undertaken to understand the impact of cable protection, and how its deployment may impact on the achievement of the conservation objectives of the site. We note that, despite having highlighted this previously, there is no provision for monitoring in the context of conservation objectives of the designated sites.

We would also like to reference the comments previously raised by Natural England (dated 11th May) following the third benthic steering group held on 27th April 2021 where we provided extensive comments on the Proposed Environmental Monitoring technical note (doc. Ref: 06954567_A)[1]. We are disappointed that the monitoring proposals and suggestions put forward by Natural England have not been progressed further. These previous comments still stand, and we urge Ørsted to consider/ acknowledge them.

Table 3. Detailed Comments on Appendix 2 – Environmental Monitoring Plan

Ref. point	Section	Comment
41	Section 1.2 Purpose of this Document Paragraph 5	We would expect any monitoring of the recovery of the areas of the SACs impacted by the development to also include those areas identified for compensation. This is needed to ascertain whether said compensation has been successful in the context of the conservation objectives of the designated site.
42	Section 2.2 Post-approval Consultation Paragraph 9	'*The MMO will become the regulator of the EMP and all further consultation on the EMP will be conducted with MMO and the relevant SNCBs'* We query why the MMO is deemed to be the regulator of this EMP for the SBIPs, given the relevance of its findings to the compensatory measures that the SoS has mandated. We also feel the rest of the Steering Group, should be given the opportunity to provide consultation responses to the EMP, not just the SNCBs.
43	Section 3.2 Addressing Evidence Gaps	We would like to refer Hornsea Project Three back to previous comments regarding the benthic aspects of The Offshore Wind Environment Evidence Register (OWEER). OWEER includes expert prioritisation of various research projects undertaken in relation to effects of cable protection and research gaps. Given the methodology laid out in Appendix 2 looks to fill evidence gaps we encourage Hornsea Project Three to incorporate the knowledge around evidence gaps and ongoing research into their thinking when OWEER is available.
44	Section 4 Environmental Monitoring	Natural England is concerned that there is no information provided on who (Ørsted/OFTO) will undertake monitoring in the longer term, and that only the MMO in consultation

[1] Hornsea 3 BSG meeting #3 (27th April) written comments

Annex I: Detailed Comments on the Sandbank Implementation Plans (SBIPs) and Appendices

	Survey Methodology	with the relevant SNCB will be commenting of the effectiveness of the monitoring. We question why BEIS, as having mandated the compensation, and the wider benthic steering group would not be afforded this opportunity.
45	Section 4.1, Environmental Monitoring Survey Methodology	We note that the survey methodology referred to in this section relates solely to geophysical surveys and Drop-Down Video (DDV). As such, we understand that Hornsea Project Three mean to survey epifauna only (with no infaunal analysis) and would refer back to a previous comment made stating that "*We do not consider that looking at the nature of epifaunal assemblage change to be an appropriate part of monitoring, given that in many sandbank habitats, mobile and sessile epifauna may be sparse and not major parts of characteristic communities*".
46	Section 4.3 Operational Monitoring, Paragraph 40 & Section 4.4 Post-decommissioning Monitoring Paragraph 46	In determining the timeframes for monitoring, it would be useful to understand what evidence of feature recovery timescales has been used. We would expect any monitoring plan to be tailored to the expected recovery timeframes of the specific features being monitored. This would also apply to any post-decommissioning monitoring (Section 4.4, paragraph 46).
47	Section 5.3 Adapting Monitoring According to Results	Natural England queries how adaptive monitoring will be agreed.

Annex I: Detailed Comments on the Sandbank Implementation Plans (SBIPs) and Appendices

Comments on Appendix 3 – Indicative Disposal Location Study

We welcome the provision of this additional information, however, we feel there are a number of areas that require further discussion ahead of the submission of the SBIP. The SNCBs would welcome further engagement on this aspect of the plan. In the table below we have highlighted a number of areas requiring further consideration, in order for us to understand the rationale behind the disposal locations, and to ensure that the objective to dispose sediment in a way that enables it to be retained within the sandbank system whilst avoiding impacts to reef features (or areas to be managed as reef) can be met.

Table 4. Detailed Comments on Appendix 3 – Indicative Disposal Location Study

Ref. point	Section	Comment
48	Section 1.3 Scope Paragraph 8	Natural England notes that the data are 3-5 years old (data collected in 2016 and 2018) and therefore queries how this will bolstered to ensure that the proposed disposal locations are fit for purpose.
49	Figure 1	This Figure is difficult to interrogate due to the scale – we would welcome a clearer presentation.
50	Figure 3	The SNCBs are concerned that an area within Saturn Reef to be managed as reef has been identified as requiring sandwave levelling and therefore disposal. We would welcome further discussions in relation to this matter as disposal at this location may have further ramifications. In addition, we again raise the point in relation to the cobble reef within the western (’dalek’) arm and the need to avoid disposal within this location.
51	Section 3.2 Avoidance of *Sabellaria spinulosa* Reef	Natural England would welcome further clarity on why areas to be managed for reef are included within the disposal locations. Our default position is that disposal should avoid both geogenic and biogenic reef.

Annex I: Detailed Comments on the Sandbank Implementation Plans (SBIPs) and Appendices

Comments on Compensation Consultation Summary

i) Natural England previous SLA advice remains unchanged by the updated versions.
ii) We do not agree with EIA assessments and assertions being applied to HRA derogations cases, as the focus of the latter should be on the conservation objectives of specific sites.
iii) Coastal areas are part of the Wash and North Norfolk Coast SAC and therefore if impacts occur in the marine environment which change the coastal processes then there is a potential wider impact pathway to features of the site
iv) Natural England notes that much of our previous advice provided to help Hornsea Project Three excel at delivering the SoS requirements and provide the most useful intelligence/data to address evidence gaps has not been addressed. We would therefore welcome further communications on this matter.
v) Please be advised that Natural England doesn't have a specific opportunity to monitor rock removal. This is something further for Hornsea Project Three to explore with input from the BSG.
vi) Whilst Hornsea Project Three believes that the monitoring plan covers all cable protection, Natural England disagrees as only rock protection is referenced.

As set out under the monitoring plan comments (Table 3 of Annex 1 of this letter), Natural England and JNCC are concerned that a compensatory Environmental Monitoring Plan (EMP) is very distinct from a standard EMP. Therefore, we question how any outputs will be openly and transparently consulted upon, when the DML condition referred to only relates to the MMO in consultation with the relevant SNCB. We believe that there is a wider requirement for BEIS and other stakeholders to be made aware of the outcomes, so that evidence gaps can not only be filled, but lessons can be learnt (even if this is only to modify/standardise monitoring methodologies).

Table 5. Detailed Comments on Compensation Consultation Summary

Ref. point	Section	Comment
52	Section 2.1 Compensation Objectives and DCO Requirements Paragraphs 11&12	Please see previous advice as to why the SNCBs are unable to support debris removal and awareness campaign as compensation for lasting/permanent habitat loss.
53	Section 2.1 Compensation Objectives and DCO Requirements Paragraph 14c	Whilst we concur that reef on anthropogenic structures is not considered to be Annex I Reef, there is a high likelihood that any object with established reef on it will be surrounded by Annex I Reef. Therefore, even with the use of an ROV we are concerned about unintended impacts. Also, we note that reef is most likely to establish in the troughs between sandbanks on mixed sediment. We continue to have concerns with targeting areas of mixed sediment that requires further consideration.

Date: 25 October 2021
NE ref: Case 10827 Consultation 36885

BY EMAIL ONLY

Dear Rosy,

Service Level Agreement (Charged Advice)
Ørsted
Development proposal and location: Hornsea Project Three Offshore Wind Farm

Sandbank Implementation Plans (SBIPs) – Wash and North Norfolk Coast (WNNC) SAC and North Norfolk Sandbanks and Saturn Reef (NNSSR) SAC

Please accept this advice in accordance with the Service Level Agreement between Natural England and Ørsted dated 17th June 2020.

Thank you for your email received 24 September 2021 regarding consultation on the second draft of the WWNC and NNSSR Sandbank Implementation Plans. This advice is provided in addition to our previous comments on the first consultation, which were provided jointly with JNCC on the 25 August 2021. In providing our advice we have reviewed the following documents:

- NNSSR SAC SBIP (Version 4.0, dated 24/09/21)
- WNNC SAC SBIP (Version 4.0, dated 24/09/21)
- Appendix 1 Marine Debris Removal Campaign Desktop Study (Version 4.0, dated 24/09/21)
- Appendix 2 Environmental Monitoring Plan (Version 4.0, dated 24/09/21)
- Appendix 3 Disposal Technical Study (Version 4, dated 24/09/21)
- Compensation Consultation Summary (Version 4 24/09/21)

Our detailed advice is included in the Table within Annex I, and focuses on those 'track changes' made within the document since the first consultation. However, our overarching concerns regarding the suitability of the measure remain and are reiterated below.

Overarching comments

As per our previous written and verbal advice, Natural England and JNCC do not consider that the measures outlined in the DCO compensate for lasting/permanent loss to Annex 1 sandbank feature in the Wash and Norfolk Coast SAC or North Norfolk Sandbanks and Saturn Reef SAC.

We have therefore focused our advice to the project in two key areas: ensuring that the proposals will not negatively impact on the features of designated sites, and ensuring that the proposed monitoring is capable of detecting changes to the condition of the feature.

These areas align with points (c) and (e) of the Draft Principles of Compensatory Measures included within DEFRA's recently published 'Best practice guidance for developing compensatory measures in relation to Marine Protected Areas' (https://consult.defra.gov.uk/offshore-wind-and-noise/mpa-compensation-guidance-consultation/)

The Draft Principles of Compensatory Measures state that compensatory measures should:

a. *Link to the conservation objectives for the site or feature and address the specific damage caused by the permitted activity;*

b. *Focus on providing the same ecological function for the species or habitat that the activity is damaging OR, where this is not technically possible, provide functions and properties that are comparable to those that originally justified designation;*
c. *Not negatively impact on any other sites or features;*
d. *Ensure the overall coherence of designated sites and the integrity of the MPA network; and*
e. *Be able to be monitored to demonstrate that they have delivered effective and sustainable compensation for the impact of the project. The monitoring and management strategy must require further action to be taken if the compensation is not successful*

We note that some positive changes have been made to the proposals in response to SNCB concerns, which is welcomed. However, we remain concerned that there is potential for there to be unintended impacts to the designated features of the SACs (c.) and that more could be done in relation to the monitoring requirements (e.). We have included more detailed comments on the documents sent to us for review in Annex 1 of this letter.

For clarification of any points in this letter, please contact me using the details provided below.

Yours sincerely,

Tamara Rowson
Norfolk and Suffolk Team
E-mai[redacted]
Telep

☒ The advice provided in this letter has been through Natural England's Quality Assurance process

The advice provided within the Service Level Agreement is the professional advice of the Natural England adviser named below. It is the best advice that can be given based on the information provided so far. Its quality and detail are dependent upon the quality and depth of the information which has been provided. It does not constitute a statutory response or decision, which will be made by Natural England acting corporately in its role as statutory consultee to the competent authority after an application has been submitted. The advice given is therefore not binding in any way and is provided without prejudice to the consideration of any statutory consultation response or decision which may be made by Natural England in due course. The final judgement on any proposals by Natural England is reserved until an application is made and will be made on the information then available, including any modifications to the proposal made after receipt of discretionary advice. All pre-application advice is subject to review and revision in the light of changes in relevant considerations, including changes in relation to the facts, scientific knowledge/evidence, policy, guidance, or law. Natural England will not accept any liability for the accuracy, adequacy, or completeness of, nor will any express or implied warranty be given for, the advice. This exclusion does not extend to any fraudulent misrepresentation made by or on behalf of Natural England.

Annex I: Detailed Comments on the updated Sandbank Implementation Plans (SBIPs) and Appendices

Please note that for the purposes of this Annex 'the SNCBs' refers to Natural England and JNCC.

Comments on 'updated' Sandbank Implementation Plans

This Table presents our previous advice on the SBIPs alongside updated advice on the latest version. As before, a number of our comments on the SBIPs relate to both the Wash and North Norfolk Coast (WNNC) SAC and the North Norfolk Sandbanks and Saturn Reef (NNSSR) SAC, as a number of sections of the SBIP documents are the same. Therefore in Table 1 below we have included a column labelled 'applicability' which highlights where comments are related to NNSSR SAC, WNNC SAC, or both.

Table 1. Detailed comments on Sandbank Implementation Plans

Ref. point	Applicability		Section	Comments 25 August 2021	Comments 25 October 2021
	NNS	WNNC			
1		✓	Section 2 Description of Site and Conservation Objectives Paragraph 8	It should be noted that as well as the habitats listed, this site was also designated for coastal lagoons, Harbour seal (*Phoca vitulina),* and Otter (*Lutra lutra*).	Natural England notes that these features have now been listed.
2	✓	✓	Section 3.1 Ongoing Role of the Steering Group Paragraph 15	We remain concerned that the anticipated field report, which will be submitted to the Secretary of State, and the subsequent summary report seem to be the only measure of success for the removal campaign, neither of which provide any indication of the seabed footprint that will be impacted by the debris removal. We also note that no monitoring of seabed recovery will be undertaken and consequently the impacts of the intervention will not be understood or quantified.	We note that a monitoring section has now been included in Section 6. And that 5 locations where an object larger that 10m has been removed will be monitored. However, there is currently limited information on how and when monitoring will take place. We assume because reference is made elsewhere in the SBIP to tying this monitoring in with the DML monitoring requirements, that this is unlikely to occur immediately after removal. Therefore, comparisons between surveys immediately after removal and subsequent years to demonstrate the full extent of recovery will not be possible. JNCC and NE reiterate that we do not consider that looking at the nature of epifauna assemblage change

					to be an appropriate part of monitoring, given that in many sandbank habitats, mobile and sessile epifauna may be sparse and not major parts of characteristic communities. We note that the survey methodology referred to relates solely to geophysical surveys and Drop Down Video (DDV). As such we understand that Hornsea Three means to survey epifauna only with no infaunal analysis.
3		✓	Section 4.1.1 Likelihood of Annex 1 Reef Paragraph 17	There is the suggestion that a core reef approach has been applied, but we query whether there is sufficient data coverage to apply a core reef approach here. Natural England do not have enough data to use the core reef approach in this area, and so it should only be applied if Ørsted have collected or have access to a time series of appropriate data (delineated extents with confidence in absence as well as presence). We do not believe this to be the case, therefore our position is that all reef identified should be considered. It should also be noted that the core reef approach is only relevant for *S. spinulosa* reef, and that the installation area is also important for geogenic reef. Stony reef and circalittoral rock are both sub features of the sandbank feature of the WNNC SAC. We therefore advise that areas of both biogenic and geogenic reef are avoided.	We note that the use of the core reef approach has been clarified and that all Annex I reef will be avoided We still recommend that feature data is incorporated when considering avoidance of Annex I geogenic reef

4		✓	Page 10 Figure 1	We are not clear why Figure 1 only shows the Natural England evidence base for Cromer. The feature data for the WNNC would have been more relevant, in particular the reef point data for this part of the site which contains approximately 133 data points for geogenic reef in the south-east of the site where the cable comes ashore.	
5	✓	✓	Section 4.1.3 Further Commitments Paragraph 21 (of NNSSR)	Reference is made to the avoidance of *Sabellaria* reef management areas in reference to cable protection deployment, however it is unclear whether such areas have been included as exclusion zones for the purposes of marine debris removal (Section 6.3.1, paragraph 51 and Table 7). These areas should be avoided during marine debris removal. Please note that this comment is in response to 'Section 4.1.3 – Further Commitments' presented in the NNSSR SBIP. There is not a Further Commitments section presented in the WNNC SBIP however, the advice here is relevant to both sites.	Paragraphs 46 and 107: Based on the amended methodologies, the litter clearance being a one off discrete activity, the avoidance of reef and the use of ROV (Remote Operated Vehicle) and jetting to remove the debris, Natural England no longer advises that byelaw areas should be excluded.

6		✓	Page 11 Section 4.2 Implementation of the Compensation Measures Paragraph 21	It should be noted that the Natural England *S. spinulosa* reef map for the WNNC is for the confirmed core reef, and so the assertion that the desktop study is considering all previous reef identified is incorrect. It is NE and JNCC's understanding that a log of all debris encountered will be provided to steering group members as evidence of the scale/type/volume of debris encountered and of how effective this exercise is at dealing with different debris types. The log should include information on: - the location, size, and nature of the debris; - whether the debris was recovered, a recovery was attempted and aborted, or if the debris was left in situ.	Para. 22 it remains unclear if new geophysical data will reviewed by the onboard ecologist prior to the commencement of the debris removal, or if historic geophysical data and then real time ROV footage will be used to confirm present/absence of reef. This should be clarified. The credentials of the benthic ecologist should be shared with the benthic steering group. Natural England wishes to see further information on the decision tree to be followed by the onboard ecologist to determine if the long term ecological benefit to the geogenic reef substrate is greater than the single localised disturbance impact experienced as part of the removal activities.
7	✓	✓	Section 4.2 Implementation of the Compensation Measures Paragraph 21 (WNNC) / Paragraph 24 (NNSSR)	More clarity is needed regarding the reference to 'previous surveys' in this section. It is unclear if this is referring to Hornsea Project Three previous surveys or surveys from other projects. It should be noted that the debris removal campaign is proposed in other parts of the SAC to that of the Hornsea Project Three cable route. Please also see our detailed comments on the Appendices below.	Please see comment for point 6 provided above.

8	✓	✓	Section 4.2 Implementation of the Compensation Measures Paragraph 23 (WNNC) / Paragraph 26 (NNSSR)	We welcome the use of the WROV during the debris removal process. However, it is assumed that there is likely to need to be further discussion regarding the positioning of the WROV on the seabed to reach the object. Therefore, it will not only be the footprint of the object that needs to be considered in any assessment, but also footprint of the WROV to reach the required location.	We welcome that the ROV will do 'fly-bys' to help the benthic ecologist identify the landing location for the WROV and/or whether or not above seabed jetting may be required. It would be helpful to have more detail on the decision tree in relation to this point.
9		✓	Section 6.1 Requirement 13(c): Marine Debris Removal Campaign Paragraph 32	Please note that shipping lanes in The Wash often overlap with areas of reef, for instance, The Well. It is not clear how the removal of debris from mixed sediment will help with the functionality of Annex I sandbanks.	This comment remains outstanding.
10	✓	✓	Figure 3	It is not clear from these maps that the area of search only interacts with Annex I sandbanks. It is Natural England and JNCC's understanding is that only Annex I sandbanks will be targeted.	Natural England notes there is a preference for more stable coarse and mixed sediment to be targeted for debris removal. However, Natural England highlights that on many sandbank habitats, mobile and sessile epifauna may be sparse and not major parts of characteristic communities.
11		✓	Section 6.2.1 Anticipated Debris Densities Paragraph 39	Hornsea Project Two is not in the vicinity of nor does it overlap with WNNC SAC. Please see comments on the Appendices in Annex 1 of this letter.	We note that references to Hornsea Project Two have been removed.

12	✓	✓	Section 6.2.2 Anticipated Debris Condition Paragraph 46 (WNNC) / Paragraph 49 (NNSSR)	Please clarify if monitoring will be undertaken to prove the predictions being made in this section in relation to, for example, indirect scouring of the seabed caused by debris.	We are not aware this confirmation has been provided.
13	✓	✓	Section 6.3.3.3 Stage 3a/b: Target Investigation Survey Paragraph 63 (WNNC) / Paragraph 66 (NNSSR)	Based on this section, it is our understanding that pieces of debris will no longer count towards any targets. Please clarify if this understanding is correct.	We welcome the clarification which has been provided in relation to this matter.
14	✓	✓	Section 6.3.3.3 Stage 3a/b: Target Investigation Survey Paragraph 64 (WNNC) / Paragraph 67 (NNSSR)	If Natural England and JNCC are not being consulted between investigations and removal, then a decision tree for the specialist on board should be agreed with the BSG.	As noted above within point 6, we wish to see further information on the decision tree to be followed by the onboard ecologist.
15	✓	✓	Section 6.3.3.4 Stage 3c: Removal of Debris	We note the proposed methods of removal in this section (and Table 8) and reiterate that methods must not be used that further damage the protected features of the site. There remain outstanding concerns in this regard.	As long as a decision tree can be agreed, we believe that significant impacts to the interest features of the site can be avoided.

16	✓	✓	Section 6.7 Compliance Paragraph 97 (WNNC) / Paragraph 100 (NNSSR) & Section 6.9 Monitoring Paragraph 109 (WNNC) / Paragraph 112 (NNSSR)	We remain concerned that the anticipated field report, which will be submitted to the Secretary of State (SoS), and the subsequent summary report seem to be the only measure of success for the removal campaign, neither of which provide any indication of the potential footprint within which debris will be removed. We also note that no monitoring of seabed recovery is expected to be undertaken and therefore are unsure how Hornsea Project Three will demonstrate the impact of their intervention on the feature.	Please see response to Point 2 provided above.
17	✓	✓	Section 6.8 Adaptive Management	The SNCBs are concerned that the adaptive management approach will potentially increase the area of impacts to the site and therefore this requires further consideration. Adaptive management should be a structured, iterative process of robust decision-making that aims to reduce uncertainty over time. Simply increasing the area of search area does not necessarily ensure that sufficient targets will be found, and risks increasing the area over which the marine debris removal could have a negative impact on site features.	Section 6.9.1 Natural England welcomes the inclusion of the 'trigger level' and thresholds for removal and adoption of the Orsted's adaptive management approach.

18	✓	✓	Section 6.8 Adaptive Management Paragraph 100 (WNNC) / Paragraph 103 (NNSSR)	It would be helpful in the SBIP to set out how the target densities were identified to achieve the maximum ecological benefit, and what that ecological benefit looks like.	See point 17 above. We are still unclear what the ecological benefit for sandbanks looks like.
19	✓	✓	Section 6.8 Adaptive Management Paragraph 104 (WNNC) / Paragraph 107 (NNSSR)	The 'trigger level' should be clearly defined.	We welcome the further clarity provided on this matter.
20		✓	Section 6.9 Monitoring Paragraph 106	As mentioned above, there is geogenic reef as well as biogenic reef within WNNC. This should be captured here.	Natural England welcomes the consideration of geogenic reef in paragraphs 42 – 44. We advise that Subtidal stony Reef has a Medium-High sensitivity to removal of substratum, with a pressure benchmark of 30 cm (WNNC SAC AoO). The feature may therefore be sensitive water jet or pumps to 1m depth. Whilst subtidal stony reef is not a designated feature of the NNSSR SAC, it is an Annex I habitat and a feature of the WNNC SAC.
21	✓	✓	Section 6.9 Monitoring Paragraph 107 (WNNC) / Paragraph 110 (NNSSR)	We would like to request if any survey data can be shared with Natural England and JNCC to help inform further management of the site.	We note that reports will be made available, but we query whether this will also include the metadata behind those reports/figures, which would provide important context to the reports.

22	✓	✓	Section 6.9 Monitoring Paragraph 109 (WNNC) / Paragraph 112 (NNSSR)	We would welcome as a minimum a proportion of locations being revisited to demonstrate that recovery has occurred and is rapid, as this currently remains an evidence gap and may help with wider discussions about removal of infrastructure and recovery. It would be good to monitor recovery/infill of holes and scour left by debris both before and after removal to add to evidence base that removal of it is contributing to recovery of the feature.	See response to Point 2 provided above.
23	✓	✓	Table 10	It would be useful if it was more explicit what Hornsea Project Three supporting NetTag technology would entail ("*NetTag technology (or other similar rapid retrieval technology) detailed in **Section 7.1.7** would be made available and Hornsea Three would support its use"*).	We note that reference to NetTag has not been updated in Version 2. However, reference to 'gear marker' has. The SNCBs seek clarity regarding this – does this mean 'gear marker' is Hornsea Project Three's preferred option?
24	✓	✓	Section 6.9 Monitoring	We would like to draw attention to the draft Principles of Compensatory Measures, and in particular point (e) on monitoring the effectiveness of compensation in MPAs.	See response to point 2 provided above.
25	✓	✓	Section 7.1.1.1 NetTag Transponders Paragraph 121 (WNNC) / Paragraph 124 (NNSSR)	We note that retrieval of fishing gear by fisherman as a result of the rapid retrieval mechanisms holds the potential for further damage to the protected features of the WNNC and NNSSR SAC, depending on the method of retrieval. This paragraph also states that consultation with "some fishers" received a "positive response", yet no guarantee of ongoing buy-in from fishers and commitment to use of appropriate retrieval methods that minimise damage can be provided.	These concerns remain outstanding.

26	✓	✓	Section 8 Requirement 13 (e): Environmental Monitoring of Operation and Post-Decommissioned Cable Protection	It should be noted that the decommissioning will not be for decades, and therefore will not help projects currently in the initiation phase. We would welcome the industry doing further monitoring of infrastructure removal and recovery before decommissioning.	This concern remains outstanding.

Comments on Appendix 1 – Marine Debris Removal Campaign Desktop Study

Table 2. Detailed Comments on Appendix 1 – Marine Debris Removal Campaign Desktop Study

Ref. point	Section	Comments 25 August 2021	Comments 25 October 2021
27	2.1 Rationale and Aims for the Campaign Paragraph 9	Natural England notes that the proposal is to undertake a single debris removal campaign between June and September 2022, during a period when harbour seals, a feature of The Wash and Norfolk Coast (WNNC) SAC, are most sensitive. The sensitivity is heightened when they are hauled out on sandbanks during low tide. Natural England would welcome further consideration of how impacts to this species will be avoided/reduced/mitigated during the campaign and any subsequent adaptive management.	Natural England notes that in Section 108 there is a reference to the AoS being undertaken 2km from intertidal areas, leading to a conclusion that there are unlikely to be impacts to seals. However, there is no considerations of the likelihood of marine interactions with seals and appropriate protocols identified.
28	2.1 Rationale and Aims for the Campaign Paragraph 9	We wish to highlight that activities occurring as part of the campaign and/or adaptive management should be a minimum of 300m away from any intertidal habitats to avoid disturbance to Annex I passage and over wintering birds during July, August and September.	Natural England notes that as per our comment 27 above, the concerns around seals and waterbirds using intertidal habitats have been addressed.
29	Figure 2.1	It is not clear to the SNCBs what the purpose of the 'reference areas' are. However, we note that The Wash reference area is in a hot spot for non-breeding common scoter which are a feature of the Greater Wash SPA. Therefore, disturbance and displacement to these species need to be considered further depending on the purpose of these areas is, and we would recommend consideration of more suitable alternatives if possible.	This concern remains outstanding.

30	Table 3.1	Natural England would welcome further clarity on the relevance of Hornsea Project Two data in defining the design of the compensation measures and/or monitoring, when the AoS for that project is outside the two designated sites impacted by Hornsea Project Three.	We note that reference to Hornsea Project 2 has been removed.
31	Table 3.1 Table 5.1 Section 7.1.1. Annex 1 Sandbank Habitat	Natural England suggest the Natural England marine evidence base should be included and used in the initial screening as part of the desk-based work to identify exclusion zones for the Area of Search (AoS). JNCC MPA Mapper is referenced in the Tables 3.1 and 5.1, but the Natural England marine evidence base is not.	This comment remains outstanding.
32	Section 4.1.2 Sandbanks of Key Importance Paragraph 26	Please be advised that we have lower confidence that data and reference material dated prior to 2013 remain relevant, given the tidal surge during that year and changes to the marine environment that occurred. Therefore, project specific data will need to be collected to inform the deployment of compensation measures to ensure that there is no further damage to the sites.	This comment remains outstanding.
33	Section 4.1.2 Sandbanks of Key Importance Paragraph 27	Whilst we recognise the intention may have been to identify locations with greater benefits to sediment transport, the SNCBs advise against ranking the designated site importance of Annex I sandbanks on their ability to influence sediment transportation within the site and wider environment. This is not a key principle for designation and is not part of conservation objectives on the site. No one sandbank is more important than another.	Natural England advises that paragraph 21 should include reference to both sediment processes and conservation objectives.

34	Section 4.2.1 Sandbanks of Key Importance Paragraph 32	Please be advised that if 'like for like' is being sought then sandbanks that are exposed on some low tides are not the same as sandbanks covered by seawater all of the time and they provide different site functions and comprise of different supporting to mobile species habitats. This will need to be taken into consideration within any HRA.	This concern remains outstanding.
35	Section 4.2.2 North Norfolk Coast Paragraph 33	Please be advised that Burham Flats and Docking Shoal sandbanks are outside of designated benthic SACs	No further comment.
36	Section 5 Excluded Areas (Also Figure 7.2, and Section 8.1.2 AoS Identification in WNNC SAC, Paragraph 104	The SNCBs advise that areas to be managed as *Sabellaria spinulosa* reef such as Fisheries byelaw areas should be avoided to ensure that there are no further impacts to reef and/or supporting habitat. Though it should be recognised that as the compensation is for Annex I sandbanks and not reef, these areas should not be a primary focus for any campaign in any event.	Based on the amended methodologies, the litter clearance being a one off discrete activity, the avoidance of reef and the use of ROV (Remote Operated Vehicle) and jetting to remove the debris, Natural England no longer advises that byelaw areas should be excluded.
37	Section 5 Excluded Areas Paragraph 38	Given The Wash has been an active bombing range and surrounded by RAF bases since the war there is a high probability that UXO will be identified. Whilst it is stated that UXO will be not removed as part of the debris removal campaign, there is the potential that identified UXO may ultimately need to be removed or managed as a health and safety matter. This was the case during the Race Bank cable installation.	This concern remains outstanding.

38	Table 5.1	The SNCBs would expect the most up to date reef data to inform the areas of search, noting that *Sabellaria* reef can establish with 12 months. Any older data increase the risk of *Sabellaria spinulosa* reef being present.	See our comment at Point 6 above.
39	Section 7.1.2 Habitat Loss Resulting from Cable Protection Deployment Paragraph 84	The SNCBs are concerned in relation to the proposal to focus on coarser sediment as this mostly likely to be location where Annex I reef is located.	See our comment at point 6 above.
40	Figure 7.1	The SNCBs are concerned that an area within the southern part of the western ('dalek') arm in NNSSR SAC has been identified as a potential area for debris removal. This area was identified as part of the Hornsea Project Three characterisation surveys as being cobble reef. Due to its high ecological importance and sensitivity, we would advise against undertaking debris removal in this location, especially without further modification of techniques to ensure minimal footprint from the WROV and other associated tools/activities.	Based on the amended methodologies, the litter clearance being a one off discrete activity, the avoidance of reef and the use of ROV (Remote Operated Vehicle) and jetting to remove the debris, Natural England no longer advise that fishery byelaw areas should be excluded.

Comments on Appendix 2 – Environmental Monitoring Plan

Natural England and JNCC wish to highlight that monitoring should be undertaken to understand the impact of cable protection, and how its deployment may impact on the achievement of the conservation objectives of the site. We note that, despite having highlighted this previously, there is no provision for monitoring in the context of conservation objectives of the designated sites.

We would also like to reference the comments previously raised by Natural England (dated 11th May 2021) following the third benthic steering group held on 27th April 2021 where we provided extensive comments on the Proposed Environmental Monitoring technical note (doc. Ref: 06954567_A)[1]. We are disappointed that the monitoring proposals and suggestions put forward by Natural England have not been progressed further. These previous comments still stand, and we urge Ørsted to carefully consider amending the scope of the monitoring to reflect this advice.

Table 3. Detailed Comments on Appendix 2 – Environmental Monitoring Plan

Ref. point	Section	Comments 25 August 2021	Comments 25 October 2021
41	Section 1.2 Purpose of this Document Paragraph 5	We would expect any monitoring of the recovery of the areas of the SACs impacted by the development to also include those areas identified for compensation. This is needed to ascertain whether said compensation has been successful in the context of the conservation objectives of the designated site.	See our comment at Point 2 above.
42	Section 2.2 Post-approval Consultation Paragraph 9	'*The MMO will become the regulator of the EMP and all further consultation on the EMP will be conducted with MMO and the relevant SNCBs'* We query why the MMO is deemed to be the regulator of this EMP for the SBIPs, given the relevance of its findings to the compensatory measures that the SoS has mandated. We also feel the rest of the Steering Group, should be given the opportunity to provide consultation responses to the EMP, not just the SNCBs.	This comment remains outstanding.

V2	Section 3.1.1 Para. 15		Without further evidence Natural England cannot agree with certainty that the placement of cable protection along 6 export cables in the near shore area is unlikely to impact on coastal process/far field effects. Therefore, we would support further monitoring to determine whether this is the case.
43	Section 3.2 Addressing Evidence Gaps	We would like to refer Hornsea Project Three back to previous comments regarding the benthic aspects of The Offshore Wind Environment Evidence Register (OWEER). OWEER includes expert prioritisation of various research projects undertaken in relation to effects of cable protection and research gaps. Given the methodology laid out in Appendix 2 looks to fill evidence gaps we encourage Hornsea Project Three to incorporate the knowledge around evidence gaps and ongoing research into their thinking when OWEER is available.	Paragraph 23: There is no linkage between the findings of the OWEER work defining the Hornsea Project Three monitoring design and/or the monitoring findings.
44	Section 4 Environmental Monitoring Survey Methodology	Natural England is concerned that there is no information provided on who (Ørsted/OFTO) will undertake monitoring in the longer term, and that only the MMO in consultation with the relevant SNCB will be commenting of the effectiveness of the monitoring. We question why BEIS, as having mandated the compensation, and the wider benthic steering group would not be afforded this opportunity.	Natural England notes the intension to provide copies of the report to the core steering group members, but it remains unclear how consultation responses and further requirements will be taken forward.

45	Section 4.1, Environmental Monitoring Survey Methodology	We note that the survey methodology referred to in this section relates solely to geophysical surveys and Drop-Down Video (DDV). As such, we understand that Hornsea Project Three mean to survey epifauna only (with no infaunal analysis) and would refer back to a previous comment made stating that "*We do not consider that looking at the nature of epifaunal assemblage change to be an appropriate part of monitoring, given that in many sandbank habitats, mobile and sessile epifauna may be sparse and not major parts of characteristic communities*"[1].	Please see response to Point 2 provided above.
46	Section 4.3 Operational Monitoring, Paragraph 40 & Section 4.4 Post-decommissioning Monitoring Paragraph 46	In determining the timeframes for monitoring, it would be useful to understand what evidence of feature recovery timescales has been used. We would expect any monitoring plan to be tailored to the expected recovery timeframes of the specific features being monitored. This would also apply to any post-decommissioning monitoring (Section 4.4, paragraph 46).	Natural England notes that consideration of recovery timeframes has now been included. However, it would be helpful to have monitoring designed to demonstrate that this has occurred within the predicted timeframes.
47	Section 5.3 Adapting Monitoring According to Results	Natural England queries how adaptive monitoring will be agreed.	This comment remains outstanding.

[1] Hornsea 3 BSG meeting #3 (27th April) written comments

Comments on Appendix 3 – Indicative Disposal Location Study

Table 4. Detailed Comments on Appendix 3 – Indicative Disposal Location Study

Ref. point	Section	Comment	
48	Section 1.3 Scope Paragraph 8	Natural England notes that the data are 3-5 years old (data collected in 2016 and 2018) and therefore queries how this will bolstered to ensure that the proposed disposal locations are fit for purpose.	Natural England welcomes that Annex I surveys will be used to inform the disposal locations as well as historic surveys.
49	Figure 1	This Figure is difficult to interrogate due to the scale – we would welcome a clearer presentation.	Natural England welcomes the inclusion of the additional figures which provide the necessary detail.
50	Figure 3	The SNCBs are concerned that an area within Saturn Reef to be managed as reef has been identified as requiring sandwave levelling and therefore disposal. We would welcome further discussions in relation to this matter as disposal at this location may have further ramifications. In addition, we again raise the point in relation to the cobble reef within the western ('dalek') arm and the need to avoid disposal within this location.	We welcome that areas to be managed as reef have now been excluded as areas for disposal.
51	Section 3.2 Avoidance of *Sabellaria spinulosa* Reef	Natural England would welcome further clarity on why areas to be managed for reef are included within the disposal locations. Our default position is that disposal should avoid both geogenic and biogenic reef.	See our comment on point 50 above.

Comments on Compensation Consultation Summary

i) Natural England previous SLA advice remains unchanged by the updated versions.
ii) We do not agree with EIA assessments and assertions being applied to HRA derogations cases, as the focus of the latter should be on the conservation objectives of the impacted sites.
iii) Coastal areas are part of the Wash and North Norfolk Coast SAC and therefore if impacts occur in the marine environment which change the coastal processes then there is a potential wider impact pathway to features of the site.
iv) Natural England notes that much of our previous advice provided to help Hornsea Project Three excel at delivering the SoS requirements and provide the most useful intelligence/data to address evidence gaps has not been addressed. We would therefore welcome further communications on this matter.
v) Please be advised that Natural England doesn't have a specific opportunity to monitor rock removal. This is something further for Hornsea Project Three to explore with input from the BSG.
vi) Whilst Hornsea Project Three believes that the monitoring plan covers all methods of cable protection, Natural England disagrees as only rock protection is referenced.

As set out under the monitoring plan comments (Table 3 of Annex 1 of this letter), Natural England and JNCC are concerned that a compensatory Environmental Monitoring Plan (EMP) is very distinct from a standard EMP. Therefore, we question how any outputs will be openly and transparently consulted upon when the DML condition referred to only relates to the MMO in consultation with the relevant SNCB. We believe that there is a wider requirement for BEIS and other stakeholders to be made aware of the outcomes, not only so that evidence gaps can be filled, but so that lessons can be learnt (even if this is only to modify/standardise monitoring methodologies).

Table 5. Detailed Comments on Compensation Consultation Summary

Ref. point	Section	Comment on 25th August 2021	Comments on 25th October 2021
52	Section 2.1 Compensation Objectives and DCO Requirements Paragraphs 11&12	Please see previous advice as to why the SNCBs are unable to support debris removal and awareness campaign as compensation for lasting/permanent habitat loss.	The SNCB advice remains unchanged.

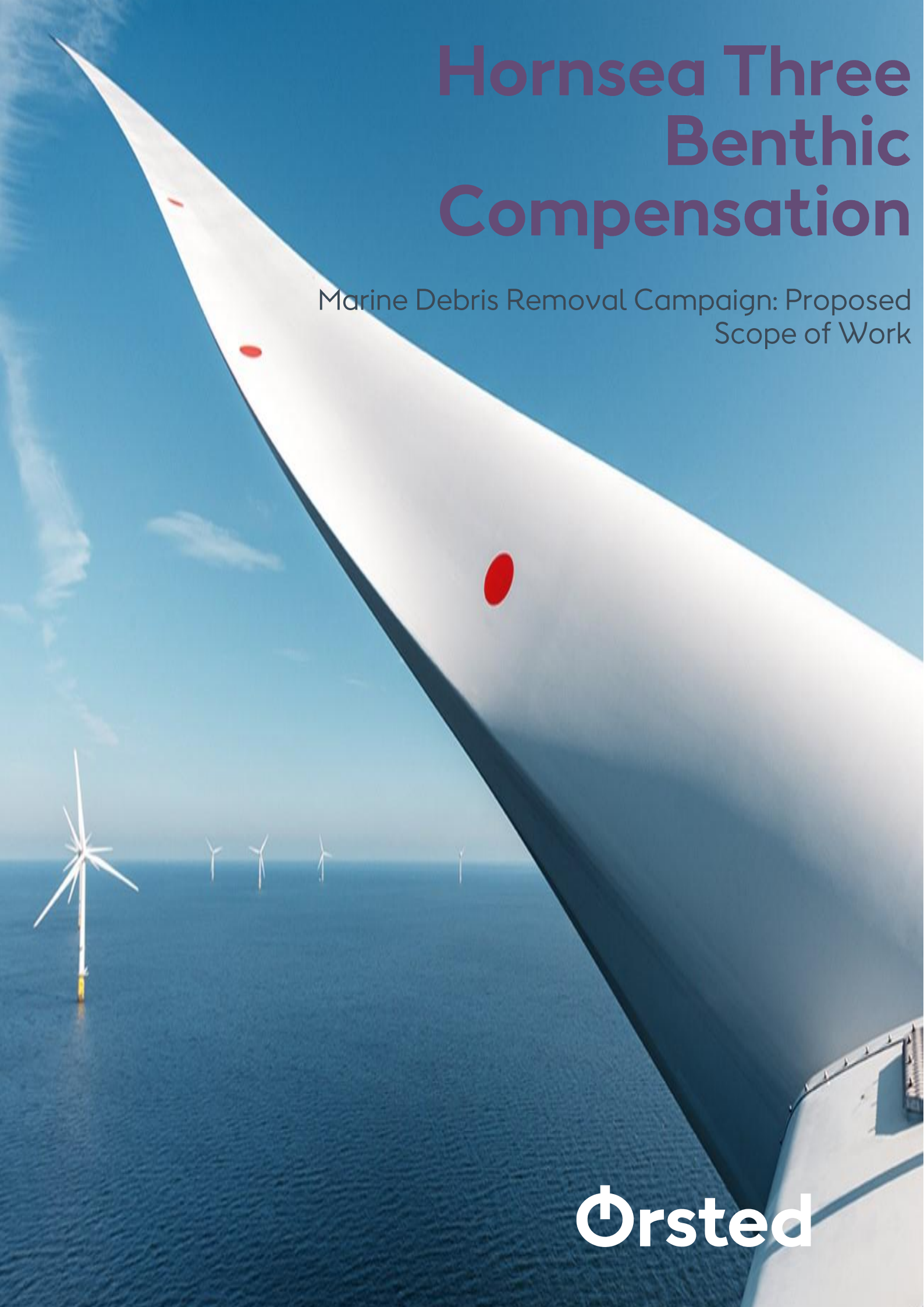
53	Section 2.1 Compensation Objectives and DCO Requirements Paragraph 14c	Whilst we concur that reef on anthropogenic structures is not considered to be Annex I Reef, there is a high likelihood that any object with established reef on it will be surrounded by Annex I Reef. Therefore, even with the use of an ROV we are concerned about unintended impacts. Also, we note that reef is most likely to establish in the troughs between sandbanks on mixed sediment. We continue to have concerns with targeting areas of mixed sediment that requires further consideration.	This comment is now resolved.

Annex 2

Scopes of Work submitted to the Steering Group for Consultation

Hornsea Three Benthic Compensation

Marine Debris Removal Campaign: Proposed Scope of Work



Ørsted

Document Control

Document Properties	
Author	Royal HaskoningDHV
Checked by	Rosalyn Jones
Approved by	Karma Leyland
Title	**Marine Debris Removal Campaign: Proposed Scope of Work**

Version History

Date	Version	Status	Description / Changes
09/03/21	1	Draft	Initial Draft
10/03/21	2	Draft	Update following Hornsea Three internal review
12/03/21	3	Final	Final draft for distribution to Steering Group

Table of contents

List of Tables

List of Figures

Acronyms

Acronym	Definition
ALDFG	Abandoned, lost or otherwise discarded fishing gear
BEIS	Department for Business, Energy and Industrial Strategy
DCO	Development Consent Order
EIFCA	Eastern Inshore Fisheries and Conservation Authority
MALSF	Marine Aggregates Levy Sustainability Fund
MMO	Marine Management Organisation
NNSSR	North Norfolk Sandbanks and Saturn Reef SAC
OGUK	Oil and Gas UK
REC	Regional Environmental Characterisation
SAC	Special Area of Conservation
SBIP	Sandbanks Implementation Plan
UXO	Unexploded Ordnance
VMS	Vessel Monitoring System
WNNC	The Wash and North Norfolk Coast SAC

1 Introduction

1.1 Project background

1. Ørsted's Hornsea Project Three (UK) (Hornsea Three) is the third project to be developed within the Hornsea Zone. Hornsea Three lies approximately 120 km off the Norfolk coast and 160 km off the Yorkshire coast to the east of Hornsea Project One and Two and covers an area of 696 km^2.
2. A Development Consent Order (DCO) was awarded to Hornsea Three on 31st December 2020. Hornsea Three is working towards reaching a final investment decision and taking Hornsea Three through the execution and construction phases.
3. Hornsea Three is required to implement a package of benthic compensation measures to compensate for impacts, resulting from the deployment of cable protection, to the Annex 1 benthic features 'sandbanks slightly covered by water at all time' in The Wash and North Norfolk Coast (WNNC) SAC and North Norfolk Sandbanks and Saturn Reef (NNSSR) SAC.
4. The Hornsea Three DCO outlines the required benthic compensation measures which much accord with the Sandbanks Compensation Strategy[1] and must be drafted into seperate Sandbank Implementation Plans (SBIPs) for the NNSSR and the WNNC SAC and submitted to the Secretary of State for approval:

   (a) details of how all impacts to Annex 1 reef habitats within designated sites will be avoided;

   (b) details of the locations for the disposal of dredged material, and evidence that the disposal mechanism will allow sediment to be retained within the sandbank system and avoid impacts to other features, particularly reef habitats;

   (c) details of the areas which will be subject to marine debris removal, which should equate to no less than 41.80 ha at NNSSR and 2.77 ha at WNNC;

   (d) details of the marine debris awareness events, and measures to facilitate the rapid recovery of lost fishing gear, as detailed in the sandbanks compensation strategy. Such measures should be applied to both NNSSR and WNNC;

   (e) an environmental monitoring plan to include: appropriate surveys to assess the effects of cable protection on sediment movement and epifauna assemblages during the operation of the Project, to improve the evidence base for assessing the impacts of offshore windfarm cable installation and rock protection for future projects; and appropriate surveys to monitor the recovery of the areas of the NNSSR and the WNNC impacted by cable protection, post-decommissioning; and

   (f) Details of the timetable for implementation of each measure.

1.2 Purpose of this document

5. Hornsea Three is required to consult on the scope and delivery of the benthic compensation measures with a Steering Group of key stakeholders. That Steering Group has been formed, with the first meeting being held on March 2nd 2021, and further consultation on the benthic compensation measures as listed above will be conducted throughout 2021.
6. The second Steering Group meeting will be held on March 30th 2021 and consultation will focus predominantly on Hornsea Three's proposed scope for the campaign of marine debris removal (Schedule 14 pt 2 paragraph 13 (c)). This meeting will focus primarily on the methodology of the desktop study which will be used to identify and recommend suitable areas for the marine debris removal campaign to target.
7. This technical note has been drafted to outline Hornsea Three's proposals with regard to the desktop study which will recommend suitable areas of search within NNSSR and WNNC SACs and inform discussion within the Steering Group forum. This technical note outlines the process which will be undertaken to identify suitable target areas for the debris removal campaign and provides information with regard to the data sources which will feed in to this desktop study. An overview of the proposed

[1] EN010080-003190-HOW03_CON02_Appendix2A_SandbanksCompensationStrategy.pdf (planninginspectorate.gov.uk)

offshore works associated with the debris removal campaign has been provided in this document for consultation however greater detail will be available at later stages of consultation following the completion of the desktop study and Hornsea Three communication with potential contractors in relation to the removal works.

2 Developing the scope of the marine debris removal campaign

2.1 Aim of the debris removal campaign

8. The rationale which underpins the benefits of conducting a campaign of marine debris removal is outlined in the Sandbanks Compensation Strategy, which was submitted in February 2020 to support the Hornsea Three derogation case. Such action is in line with the East Inshore and Offshore Marine Plans[2].
9. It is anticipated that the removal of marine debris can act to serve the following purposes:
   - Support the restoration of sandbank habitat within the SACs, through benefitting the structure attribute of the sandbank feature and increase the functionality of the sandbanks system by increasing the availability of sediment for transportation within the SAC systems;
   - Mobile debris (i.e. items which may be moved along, or just above, the seabed by hydrodynamic / sedimentary forces) has the potential to damage biogenic reefs within the SAC when it makes contact with and dragged across the seabed by currents. Removal of mobile debris is expected to reduce the risk of damage to Annex 1 reef and other habitats and improve the ecological conditions for those specieis which rely on its associated communities;
   - Removal of debris, both mobile and non-mobile, would allow the seabed to function more naturally and provide an increased area of seabed habitat to be available for colonisation and movement of epifauna; and
   - Remove potential navigation and safety hazards which may snag fishing gear and therefore the removal of marine debris may result in fewer further fishing gear losses through debris entanglement.
10. It should be noted that alongside the removal of existing marine debris in NNSSR SAC and WNNC SAC, an awareness campaign will be implemented which will aim to reduce the marine debris entering the SACs. The awareness campaign will focus on stakeholder engagement to promote a 'stopping at source' approach to reducing marine debris and encourage participation in local / national schemes and initiatives, such as 'Fishing for Litter'. The aim of the awareness campaign will be to reduce the incidence, and improve the recovery, of abandoned, lost or otherwise discarded fishing gear (ALDFG) and is also anticipated to target other marine debris. The details of this awareness campaign will be consulted on with the Steering Group at later meetings and will not be discussed further in this technical note; however, the two activities are strongly linked and integral to delivering compensation.

2.2 Scope of the term 'marine debris'

11. For the purpose of the Hornsea Three benthic compensation measures, 'marine debris' consists of any lost or abandoned, non-natural or introduced material on the seabed which does not offer a practical purpose, has low biodiversity value and may detract from the extent and functionality of the designated features of NNSSR SAC and WNNC SAC. Given that the purpose of the compensation is to assist in the restoration of sandbank functionality, it is marine debris associated with such habitat that will form the focus of the measures. 'Marine debris' in this instance will only include items that are on, or just above, the seabed and therefore can be located through an information-gathering process undertaken in the desk study.
12. It is important to be pragmatic in determining what marine debris would be practicably detectable and removable during the campaign. Target marine debris items would include (for example) ALDFG such as trawl, gill and seine nets, pots / fish traps and tickler chains, and debris lost from vessels, for example, in anchoraging areas and adjacent to current or historic shipping lanes. During the desktop study, it is anticipated that prioritisation will be given to those items most readily identifiable and locatable through the information-gathering process during the desktop study, especially those located on or

[2] East Inshore and East Offshore Marine Plans (publishing.service.gov.uk)

near to sandbanks of particular importance for the provisioning of sediment within the SAC system. However, the question of prioritisation will form a topic for consultation with the Steering Group in relation to the recommendations made by the desktop study.

13. Debris large enough to be identified during acoustic surveys (detailed further in section 4.1) would be targeted (although smaller items may be removed on an *ad hoc* basis during delivery of the campaign). Upper size limits of debris would be limited by the capability of vessels and equipment used for the removal, which will be consulted on with the Steering Group through the presentation of the proposed removal methodology following consultation with potential contractors.

2.2.1 Exclusions

14. There may be instances where certain areas within the NNSSR or WNNC SACs, or specific types of marine debris, are excluded from consideration for removal. As per the Sandbanks Compensation Strategy, removal of debris posing technical feasibility issues (including completely buried debris), ownership liability issues and / or health and safety risks (such as the presence of unexploded ordnance (UXO)) will not be proposed for removal. Exclusion zones of 500m will be implemented around oil and gas assets, such as subsea pipelines and platforms, in NNSSR SAC (there are no oil and gas assets in WNNC SAC). A safety zone of 500 m is a standard buffer to protect subsea structures.

15. It is anticipated that marine debris that is of biological or ecological value would generally be excluded. During the desktop study phase of the campaign it is likely to be difficult to identify whether marine debris has formed an ecological asset; however, subsequent groundtruthing surveys undertaken prior to removal (i.e. remote operated vehicles) may indicate that marine debris has been colonised (particularly by species of conservation note, such as reef-forming Sabellids). Such instances should be considered on a case by case basis, through the analysis of groundtruthing survey output by an experienced benthic ecologist (detailed further in section 4.2), to compare the biological value against the potential depreciation of sandbanks habitat. Where the biological / ecological value of items outweighs the benefits of removal, they would be left *in situ*.

16. Areas of *Sabellaria* reef would be avoided with an appropriate buffer of 50m to ensure no damage is caused to any reef features. It should be noted that, given the focus on restoration of sandbank habitat and communities, debris with colonies / settlements that do not naturally occur on or near sandbank habitats would not necessarily be excluded from removal.

17. Marine debris items that represent sites of archaeological value (for example, debris associated with historic wrecks) would be excluded and 50m buffers applied to prevent accidental damage during debris removal. It is not anticipated that marine debris entangled within sites of archaeological value would be targeted for removal due to the sensitivity of those sites.

18. It should also be noted that the mobile nature of sandbanks will limit the nature of the debris that could be targeted in the campaign, since it will limit the time available between identifying debris with sidescan (or similar) and groundtruthing surveys, and subsequent removal. Debris within areas identified during the desktop study process would need to be of sufficient size and nature that it would not be buried or transported a significant distance (prior to removal efforts being mobilised) by means of sedimentary movement and thus rendering removal efforts futile. On the other hand, conceptual analysis of natural sedimentary movement within the SACs would be used to identify areas where marine debris would collect as a result of sedimentary processes, as described in Section 3.4.

19. Locations that may contain UXO would be identified and an appropriate buffer zone of 50m left around such locations for health and safety reasons. The CIRIA guidance (2015) on UXO would be used to develop a method for risk analysis of such areas.

2.3 Scope of the marine debris removal campaign

20. The desktop study will be used to identify and recommend suitable areas for the marine debris removal campaign to target. The scope of that desktop assessment is outlined in Section 3 of this technical note and will be consulted on with the Steering Group.

21. Upon completion of the desktop assessment, recommendations will be made and consulted with the Steering Group regarding the areas within the SACs which should be prioritised for marine debris removal. These areas to target will be drafted into the SBIPs, and submitted to the Secretary of State for approval, and will comprise areas totalling at least 41.80 ha at NNSSR SAC and 2.77 ha at WNNC

SAC. These areas may be broken down into smaller units depending on the priority of the area and the anticipated density of marine debris within each area.

22. Following the SBIPs approval, currently anticipated Q1 2022, the marine debris removal campaign will be conducted in the summer season of 2022 to utilise the good weather window. This single campaign for marine debris removal is in line with that proposed in paragraph 3.25 of the Sandbanks Compensation Strategy.

3 Identifying areas of search for removal

3.1 Aim of the desktop study

23. The principle aim of the desktop study is to identify appropriate locations where to focus marine debris removal efforts at NNSSR SAC and WNNC SAC. The scope of the desktop study set out in this technical note will be consulted upon with the Steering Group.

24. The following sections outline the various data sources which will be utilised to infrom the selection of the areas of search:

- Desktop data sources (third-party, publicly available information on potential debris locations, characterisation of areas to exclude and characterisation of sandbank features);
- Consultation: (conversations with third parties to ascertain debris locations, e.g., known debris hot-spots); and
- Conceptual analysis (critical assessment of hydrodynamic and sedimentary processes and how they may affect the distribution of marine debris within the SACs).

3.2 Identification of sandbanks of key importance:

25. The desktop study would also undertake a conceptual review of the nature of the sandbanks within the SACs, using existing bathymetry and expert knowledge of hydrodynamic and sedimentary processes in this area of the North Sea. In this way, priority sandbank locations, in terms of those that are of most importance to a well-functioning sediment transport system, can be identified.

26. With an understanding of the areas likely to have relatively high densities of marine debris and the sandbanks that are of particular importance to sedimentary movements, a balanced decision can be made on the most suitable sites for the removal campaign to focus. Locations identified in the desktop study will be agreed upon with the Steering Group and submitted as part of the SBIPs.

3.3 Desktop data sources

27. Publicly available data sources will be utilised (and additional data procured if required) to identify areas with the potential for a higher density marine debris. Data sources proposed to be evaluted and used are presented in Table 1. All reasonable endeavours will be made to obtain each data source and an assessment of the data quality will be made within the desktop study.

Table 1: Data sources to be used when identifying locations for marine debris removal.

Data source	Information type	Purpose
Cefas North East Atlantic Seafloor Marine Litter Data	Cefas' datahub includes litter data obtained during fish and environmental surveys in UK waters, including the central and southern North Sea, from 1992 to 2014 http://data.cefas.co.uk/#/View/3479. Data on litter is provided using the classification system set out by Galgani *et al.* (2013), allowing for different types of debris / litter to be identified (including ALDFG). Cefas has also examined the distribution and abundance of marine litter on the seafloor off the UK coast within 39 independent scientific surveys. Such work was conducted between 1992 and 2017 within the International Bottom Trawl Survey (IBTS), the ICES Ground Fish Surveys (Q4SW) and the Clean Seas Environment Monitoring Programme (CSEMP) (Maes et al., 2018).	The data will be used to help identify potential 'hotspots' of debris in NNSSR SAC and WNNC SAC.
Marine Management Organisation (MMO) Dropped Objects reporting database	To fulfil the conditions of marine licences, the MMO requires that items dropped from vessels or infrastructure involved with the licensable activities are reported via the Dropped Object Procedure Form. The MMO will be approached regarding the availability of this data within NNSSR SAC and WNNC SAC.	The data will be used to help identify potential 'hotspots' of debris in NNSSR SAC and WNNC SAC.
Department for Business, Energy and Industrial Strategy (BEIS) database	Oil and gas industries must report all materials lost or discarded at sea (excluding those legally deposited under relevant legislation), including details of location, quantity and type. BEIS will be approached regarding the availability of this data within NNSSR SAC and WNNC SAC.	The data will be used to help identify potential 'hotspots' of debris in NNSSR SAC and WNNC SAC.
Marine Aggregates Levy Sustainability Fund (MALSF) aggregates data	MALSF data includes outputs from regional environmental characterisation (REC) surveys between 2004 and 2011. During REC surveys, side-scan sonar, magnetometer and bathymetry survey data are acquired. This data is available from the Crown Estate and Cefas. These parties will be approached for MALSF data availability within NNSSR SAC and WNNC SAC to identify marine debris that is likely to have remained *in situ* since the surveys were undertaken.	The data will be used to help identify potential 'hotspots' of debris in NNSSR SAC and WNNC SAC.
UK Admiralty Wrecks Database	The UK Hydrographic Office hosts a database of maintained information on wrecks within Northwest Europe (as well as further afield). This database will be used to identify wreck sites within NNSSR SAC and WNNC SAC, particularly those of more recent wrecks that would not hold archaeological value, given that these may be associated with the presence of marine debris.	The presence of protected wrecks will provide indication of areas to be excluded from site selection, plus areas where debris associated with more recent wrecks may be located.
National Heritage list for England	Historic England's National Heritage list sets out the locations of protected wrecks and other designated heritage sites to avoid. https://historicengland.org.uk/listing/the-list/	The presence of protected wrecks will provide indication of areas to be excluded from site selection

Data source	Information type	Purpose
SAC supporting evidence	There is underpinning evidence presented in the SAC Selection Assessment for NNSSR SAC https://data.jncc.gov.uk/data/5fe94a2a-fc90-4dda-8301-3a381d23252d/NNSSR-SAC-selection-assessment-5.0.pdf.	This will be used to provide information on sandbank habitat extent and physical / biological properties of the SAC.
Crown Estate Marine Data Exchange	The Crown Estate's Marine Data Exchange is a repository for all survey data from marine aggregate and offshore wind farm developments in the UK. Data is publicly available and can be requested directly from the Crown Estate. Any available seabed imagery data from NNSSR SAC and WNNC SAC, including sidescan sonar, multibeam and other geophysical survey data, will be requested from the Crown Estate.	The data will be used to help identify potential 'hotspots' of debris in NNSSR SAC and WNNC SAC, and may also provide information on sandbank habitat extent and physical properties.
Vessel Monitoring System (VMS) data	The MMO hosts Vessel Monitoring System (VMS) data for vessels operating in English waters. While specific elements of this data are confidential, the MMO will be approached regarding the availability of general data that can be used to identify areas of relatively high vessel traffic within NNSSR SAC and WNNC SAC, since high traffic levels would imply high incidence of marine debris. Of particular note would be areas with high fishing vessel traffic, given that this would indicate the greatest potential for ALDFG. If necessary, AIS data can be procured from companies such as Marine Traffic.	The identification of areas of heavy fishing vessel traffic can be used as an indicator of areas of potentially high ALDFG marine debris density. Other areas of high vessel activity may also be considered as potential areas of high densities of marine debris
MMO Marine Activity data	The MMO have a database of marine activity data for the purpose of marine spatial planning in English waters https://explore-marine-plans.marineservices.org.uk/. This database would be used to identify: • Areas of relatively high fishing intensity within NNSSR SAC and WNNC SAC (i.e. areas likely to hold ALDFG); • Areas of relatively high navigation density within the SACs; • Vessel anchorages within the SACs; • Areas regularly dredged (e.g. aggregate areas), given that such areas are unlikely to hold substantial densities of marine debris; and, • Other infrastructure within the marine area. Other data may indicate areas to be excluded when identifying suitable removal locations, for example due to the presence of third-party assets.	Data from the MMO portal would be used in ideintifying potential areas of high marine debris density, as well as the locations of sensitivities that should be excluded.
Global Marine Geocable GIS	Global Marine's GeoCable database provides information on submarine telecoms cables and can be procured to identify telecom cable routes in NNSSR SAC which would be avoided during removal campaigns.	The presence of submarine telecoms cables will provide an indication of areas to be excluded from site selection.
British Geological Survey Seabed Sediment Maps	Characterise the seabed sedimentary system and identification of mobile bed forms.	
Southern North Sea Sediment Transport Study		

Data source	Information type	Purpose
British Geolgocial Survey Technical Reports		
European marine observation and data network	Bathymetry, seabed sediments and physical processes	

3.4 Consultation

28. Consultation will be undertaken with the fishing associations and individual fishing operators who target areas within the WNNC SAC or NNSSR SAC to understand whether there are any 'hot-spots' for marine debris which they tend to either avoid or experience high instances of gear snagging or gear loss on seabed obstructions. Hornsea Three anticipates conducting consultation with nearshore vessels in relation to the WNNC SAC, whereas consultation in relation to NNSSR SAC will extend to include larger boats, including the UK and dutch fleets, which target the NNSSR SAC.

29. In addition to consultation with the fishing operators, other stakeholders holding sources of data will be approached with a request for any information that would be relevant to the identification of areas with high potential for marine debris. As stated in Table 1 above, the following will be consulted with regarding the availability of information in NNSSR SAC and WNNC SAC, in order to facilitate the process of information gathering:

    - MMO;
    - Cefas;
    - JNCC;
    - BEIS;
    - Historic England;
    - UK Hydrographic Office; and,
    - British Geological Survey.

30. While third party assets will not be considered for removal in the campaign, Oil and Gas UK (OGUK) and operators will be approached regarding seabed geophysical data from asset surveys that may be available within the NNSSR SAC. Such operators may also be able to provide information on areas within NNSSR SAC in which they may have noted gathering debris.

31. Given that local diving groups, including organised marine survey groups such as SeaSearch East, may have information on locations where relatively high levels of debris are observed, they will be consulted with as part of the process.

3.5 Conceptual analysis of areas of marine debris accumulation

32. In addition to the data sources outlined above, expert knowledge of the hydrodynamic and sedimentary processes within the NNSSR SAC and WNNC SAC will be used to identify potential locations in which marine debris may accumulate. It will also be used to understand the locations of sandbanks that are of particular importance to wider SAC sediment movements.

3.5.1 Using marine physical processes to identify potential areas of debris accumulation

33. The baseline physical conditions that exist in the marine environment are important to understand as they are the drivers of potential transport and accumulation of marine debris. Various factors are considered here which could individually or cumulatively interact with marine debris. Of particular importance are those combination of factors that can lead to transport, burial or uncovering of marine debris. It is more likely that relatively small and light pieces of marine debris could be transported by the prevailing marine conditions, whereas larger pieces would be static and too large and heavy to be transported, but could be subject to burial and/or exposure due to the surrounding sediment transport processes.

3.5.2 Geology, sediments and bedforms

34. Most of the seabed within the SACs is comprised of mobile sediment of variable thickness overlying older more consolidated glacial sediments. The mobile seabed is typically not uniformly flat but is sculpted into bedforms. They can be classified in terms of scale, morphology, orientation, and their relationship to modern processes. They range in size from small wave- or current-formed ripples on beaches or tidal flats, up to large sand waves and sandbanks located offshore. With respect to the SACs, the typical bedforms are the deeper water, tidally driven larger sand waves and sandbanks.

35. Sand waves are typically transverse features of moderate relief, with heights around 5-10m. They commonly occur in fields of many tens of individual sand waves with a relatively uniform spacing. The asymmetry of sand waves provides an indication of the direction of sediment transport in the area. The migration of sand waves, and hence the direction of the dominant sand transport, is in the direction in which their steeper, lee-slope faces. Sandbanks are longitudinal bedforms parallel or subparallel to the dominant tidal flow and controlled by residual tidal currents. The flanks of sandbanks may be formed into flow-transverse sand waves and megaripples. The presence of sandbanks indicates that substantial volumes of sand are resident in the area.

36. Where there is evidence of a highly mobile seabed, there is a strong likelihood that changes in bed level could occur over time. An item of marine debris could then be subject to burial due to vertical deposition of mobile sediments, uncovering due to vertical erosion of mobile sediments, and cycles of burial, uncovering and re-burial due to vertical deposition-erosion-deposition.

3.5.3 Tidal currents, waves and sediment transport

37. Some of the energy created by waves and tidal currents is transferred to the movement of sediment and potentially the smallest and lightest items of marine debris. If the threshold for motion generated by the physical process is exceeded, then the small debris could be moved by rolling or sliding along the substrate (as bedload). The type and quantity of debris that is moved, and where it is moved to, depends mainly on the size and weight of the debris and the energy of the applied forces and their direction, but also on seabed slope. Relatively heavy but transportable debris would only migrate a short distance at any one time. However, for lighter debris, migration over larger distances is more likely, especially if the seabed slopes significantly. For example, accumulation in the troughs of sand waves is more likely than along their crests due to the effect of gravity. Once the physical forces drop below the threshold for motion, then the sediment and/or debris is deposited. In many offshore areas, the forces acting on the seabed may be insufficient to mobilise and transport debris. In this case, debris may only be transported under storm conditions.

38. By combining the consultation outcomes regarding likely locations for marine debris with the marine physical processes information collated as part of the desktop study, broad areas of seabed within which marine debris could potentially accumulate through sediment transport processes would be identified. This 'landscape-scale' view of potential sites would then be narrowed down to more specific potential sites related to the driving forces and seabed morphology (e.g. bedform geometry and slopes).

39. Buoyant marine debris represents a different case. It may be possible for the debris to break loose of the seabed and drift in the water column with the tidal currents and be deposited a large distance from its original location.

3.6 Identification of sandbanks of key importance to wider SAC sediment movements

40. The NNSSR SAC and WNNC SAC are both located off the coast of Norfolk and present marine features which meet the descriptions for the Annex I habitats 'Sandbanks slightly covered by sea water all the time' and 'Reefs' formed by *Sabellaria spinulosa* (JNCC, 2010)*a*. Information collated on these features and their physical processes will be used to determine the mobility of the sandbanks and associated sand waves and the direction of transport which will help to define those areas of importance to the overall functioning of the SACs and to target areas of potential collection of debris. The bedforms of importance to functioning of the system are those which continually change position, height and form, indicating that they are critical to the connectivity of transport processes across each SAC.

3.6.1 NNSSR SAC

41. The sandbanks that fall within the NNSSR SAC are within the offshore part of a larger sandbank complex that stretches to the northeast Norfolk coast. Although the Annex I qualifying habitat is Sandbanks which are 'slightly' covered by seawater all the time, indicating shallow sandbanks only, those sandbanks in water depths greater than 20m are also considered to fall within the Annex I criteria of the SAC. Much of the seabed within the SAC is sand, but coarser sediments may be present in the deeper areas between the banks (JNCC, 2010).
42. The NNSSR sandbank system is a series of northwest to southeast oriented linear ridge banks (approximately parallel to the coast). They are sedimentary in nature with no underlying bedrock control. The sandbanks consist of Leman, Ower, Inner, Well, Broken, Swarte and four banks collectively called the Indefatigables. The crests of the sandbanks are in water depths shallower than 20m with their flanks extending into water depths up to 40m. This morphology arises through the development of distinct flood and ebb pathways in the tidal streams, with the flood tide current flowing northwest to southeast and the ebb tide current flowing southeast to northwest.
43. The predominant mechanism for the formation and maintenance of the sandbanks in the NNSSR SAC is tidal currents, whilst sediment transport (supply to/loss from) is also important in enabling growth or decay. Seabed dynamics are likely to be dominated by lateral (and possibly longitudinal) movement of the banks, which has taken place over annual to decadal timescales, and will continue into the future. These large-scale morphological changes caused by sediment transport and bedform migration are part of the inherent geomorphological value or function of the SAC.

3.6.2 WNNC SAC

44. The part of the WNNC SAC within The Wash is characterised by a broad intertidal zone and a series of sandbanks separated by tidal channels. Outside The Wash, to the east, the SAC seabed is dominated by the shallow areas of Burnham Flats and Docking Shoal, which are covered at low water by only a few metres of water.
45. The part of the SAC in The Wash can be divided into erosion-dominant and deposition-dominant areas. The deposition-dominant areas are in the inner part of The Wash and include the intertidal areas and sandbanks (Inner Dogs Head, Long Sand, Roger Sand, Gat Sand, Seal Sand, Sunk Sand), some of which are exposed at low water. The sandbanks are typically superimposed with smaller bedforms including sand waves and megaripples with a predominant flood-oriented asymmetry. Although minor modifications have occurred, the intertidal areas and sandbanks are still essentially the same shape and in the same location as they have been over the past few decades and centuries.
46. The erosion-dominant areas lie mainly in the outer tidal channels (The Well, Boston Deep, Lynn Deeps and Seal Deeps) where bedrock and till are exposed at the sea bed. However, even in these areas there may be local deposition in the form of small mobile sand waves. The deepest areas have maximum water depths of 40-50m.
47. In The Wash, both tidal currents and waves are responsible for the distribution of sediment. The tidal currents approaching The Wash from the adjacent offshore area consist of two systems. The first, and strongest, approaches along the north Lincolnshire coast before turning southwest to enter The Wash. The second moves east to west along the north Norfolk coast, also turning southwest to enter The Wash. Within The Wash, the large tidal range produces strong currents in the tidal channels. In the central deeper-water areas, the flood velocities are higher than the ebb, producing residual currents in an onshore direction. The residual tidal currents and bedform asymmetry indicators suggest that the net movement of sediment transport is into The Wash.
48. Annual significant wave heights are greater than 3m across The Wash entrance. They diminish as they travel into The Wash and are attenuated as they propagate across the shallower sandbank and intertidal areas around the margins. The eastern coast of The Wash has a harsher wave climate than the south and west coasts.

3.7 Recommending areas of search

49. Once relevant sources of data have been collated as part of the desktop study, the next stage will be to determine priority areas of search which the marine debris removal campaign will target. This will be undertaken using a scoring approach, where locations that fulfil a greater number of criteria will

score more highly than those that fulfil fewer, with priority areas for the removal campaign representing those that score the highest.

50. Following the data review, there is expected to be a collection of spatial information on historic marine debris sightings / reportings, expert judgement of hydrodynamic and sedimentary patterns to predict where mobile marine debris may accumulate, plus information on areas of high vessel usage and other activities within NNSSR SAC and WNNC SAC. The data will be mapped out and overlaid onto the locations of sandbanks within the SACs. Scores will be awarded to 1,000-hectare blocks (approximately 5x2km) set out in a grid on the sandbanks for the NNSSR SAC and 100-hectare blocks (approximately 1x1km) for WNNC SAC (the difference being based on the fact that NNSSR SAC is considerably larger than WNNC SAC, therefore scoring at a resolution of 100-hectare blocks for NNSSR SAC would be impractical). These areas will then be reduced after further identification of the features of interest, potential debris sources and will refect the potential density of marine debris within each block in order to focus the marine debris removal campaign.

51. Selection of areas of search will initially be shortlisted based on the elimination of sites that present ecological or feasibility concerns. i.e. they are within 50 m of a designated feature, heritage feature or known wreck site (based on a standard exclusion zone radius) or within 500 m of a third party asset. Those carried forward in the process will then be scored, with the score determined by the fulfilment by one or more of the the following criteria:

- Within areas identified through consultation with fishing associations and operators as having relatively high levels of ALDFG or other marine debris;
- Overlap with areas of relatively high vessel usage;
- Overlap with nautical anchorages (dependent on likelihood of habitat for potential features of interest);
- Encompass co-ordinates of marine debris reported through BEIS, MMO and / or Cefas;
- Overlap with locations of mobile debris accumulation, as predicted through conceptual analysis of hydrodynamic and sedimentary processes to experience;
- Contain wrecks (excluding those of archaeological value); and
- On sandbanks with active sediment transport processes (i.e. those that contribute the most to sediment processes within the SACs).

52. The weighting for the scoring will be clarified as part of the desktop study once data has been gathered and the confidence in that data source can be further understood. Results of the desktop study will be presented to the Steering Group alongside recommendations of the areas of search which the marine debris removal campaign should target. These areas of search will ultimately be drafted into the SBIPs alongside the proposed scope and implementation schedule for the marine debris removal campaign.

3.7.1 Defining marine debris removal success criteria

53. Hornsea Three acknowledges that consideration must be given to determining the success criteria of the marine debris removal campaign. The recommendations made by the desktop study will aim to define this element of the marine debris removal campaign and will be based upon the data collected as part of the desktop study and the priority areas recommended for the removal campaign to target. It is anticipated that consultation with regard to the definitions of success will be more adequeantly informed following the completion of the desktop study and the potential marine debris target areas and scope of the removal campaign are more defined.

4 Proposed marine debris removal campaign

54. Hornsea Three anticipate the SBIPs to be approved in Q1 2022 which will allow for the marine debris removal campaign to be mobilised from approximately Q2 2022 and anticipated to be completed by Q3/Q4 2022. This is subject to the progress of consultation and contractor and vessel availability. Hornsea Three would secure all necessary marine licenses prior to the commencement of the marine debris removal campaign including ensuring a Method Statement was approved by Historic England. Additionally, the fishing industry would be given advanced notice of the works and asked to remove all live fishing gear from the areas designated for marine debris removal.

55. The debris removal campaign will comprise of three key steps which are outlined in sections 4.1 through 4.3. It should be noted that while the principles outlined in the three sections below – acoustic survey, ground truthing via imaging survey and marine debris removal – will make up the campaign, consultation will be be conducted with the Steering Group and the contractor conducting the removal campaign to further develop these methodologies. The below information is provided to enable Hornsea Three to conduct that initial consultation with the Steering Group.

4.1 Area of search review with geophysical survey methods

56. It is proposed that the most accurate, efficient and environmentally sensitive way to detect marine debris within the NNSSR and WNNC SACs is to use acoustic survey techniques, specifically side-scan sonar would be required to achieve sufficient seabed resolution (identifying targets of greater than approximately 1 m in size) and Hornsea Three would anticipate additionally utilising magnetometer techniques to detect signal from metals.

57. A similar method has been used to locate lost/discarded fishing nets in the Adriatic Sea, Baltic Sea, Brazil and in Chesapeake Bay, Gulf of California and Puget Sound in the USA (Drinkwin, 2018; MARELITT, 2018; WWF, 2015) and an example of the resolution obtained using side-scan sonar is provided in Figure 2. Hornsea Three are confident that this technique could be used to detect ALDFG and other types of marine debris which Hornsea Three are considering for removal and is aligned with the methodology proposed in the Sandbanks Compensation Strategy.

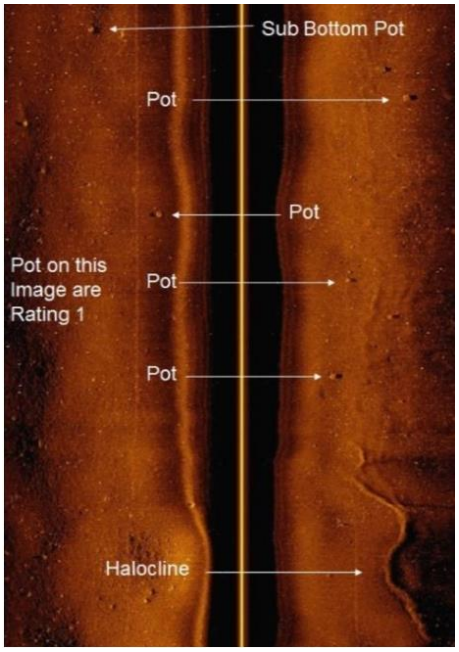


Figure 2: Side scan sonar image of ALDFG fishing gear (pots) (WWF, 2015)

4.2 Groundtruthing using imaging techniques

58. Once a potential marine debris target has been identified using the acoustic survey techniques, the nature of the debris will be further characterised using imaging techniques. While the use of Drop Down Video (DDV) will be considered, Hornsea Three expect employing an ROV to ensure image quality is to a sufficient resolution to determine the target marine debris and confirm whether removal should take

place. An ROV is additionally considered favourable to DDV due to the high currents expected, particularly within the NNSSR SAC. This process of reviewing imagery allows for marine debris to be distinguished from, for example, UXO, archaeological assets or *Sabellaria* reef as the images would be assessed by a UXO technician, archchaeologist and benthic ecologist prior to confirming that the item of marine debris can be removed.

59. Geophysical survey data could be processed rapidly on the vessel to identify potential marine debris targets, confirm their positions (latitude and longitude) and enable them to be targeted by the ROV in short succession. It is anticipated that the acoustic survey and ROV would be launched from the same vessel however this would require confirmation from the contractor with regard to vessel availability and space on deck.

4.3 Marine debris removed

60. Removal methods will be consulted with the Steering Group further alongside engagement with contractors once the areas of search for marine debris are further refined. It is likely that a number of different methods may be applicable.

61. For some items of marine debris identified it may be appropriate to further utilise the ROV which could be enabled with hydraulic arms, cutting tools and be used to manipulate the debris and attach floats to allow for the transport of the debris to the surface for collection by the vessel.

62. Alternatively, it mat be preferrable to remove ALDFG debris items based on those methodologies employed during a Fisheries Science Partnership Survey (undertaken by Cefas and independent consultant Nils-Roar Hareide) in 2015 on the west coast of Scotland. The gear and method of deployment proposed is also the same as that used during annual Norwegian retrieval surveys for lost and discarded Greenland halibut gillnets (Large et al., 2015).

63. Heavy retrieval gear comprising a steel bar with three grappling anchors could be deployed in a localised area that would have been previously delineated by the acoustic and ROV survey to ensure no sensitive habitats were in the vicinity. The gear would be attached to a steel warp and towed along the seabed at an average speed of 1.5 knots, a technique called 'creeping'. The gear would be hauled when the tension meters on the winch showed increased loading, indicating that the grappling anchors may have captured the target debris. An example of this equipment is provided in Figure 3.

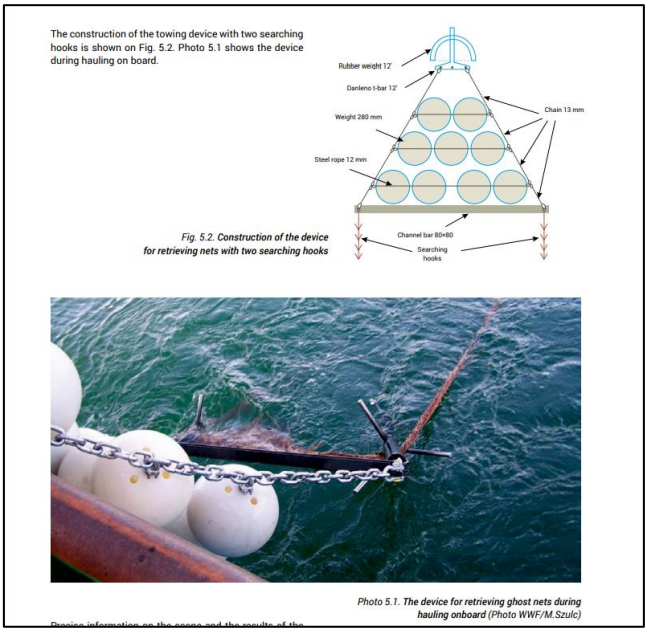


Figure 3: Example of retrieval gear (Macfadyen, 2015)

64. Further investigation is required as to the suitability of this methodology within the NNSSR and WNNC SACs with further consideration required with regard to the likely type of marine debris identified for removal, surrounding habitats and water depth. Hornsea Three anticipate discussing these approaches

with contractors further and developing proposed methodologies which may suitable to the marine debris removal campaign in the WNNC SAC and NNSSR SAC. The acoustic surveys, imaging surveys and removal itself are anticipated to be scheduled within the same survey campaign to account for the highly transient nature of the SACs and minimise the risk as much as possible that an item of marine debris is confirmed for removal and then subsequently moves.

65. It should be noted that Hornsea Three will dispose of all marine debris removed in an appropriate manner. Recycling or re-purposing would be the preferred method for disposal however it may be that marine debris cannot be recycled or re-purposed and therefore appropriate waste disposal methods will be employed. Hornsea Three will consult on these processes, once more refined, with the Steering Group and include the proposed waste disposal process within the SBIPs.

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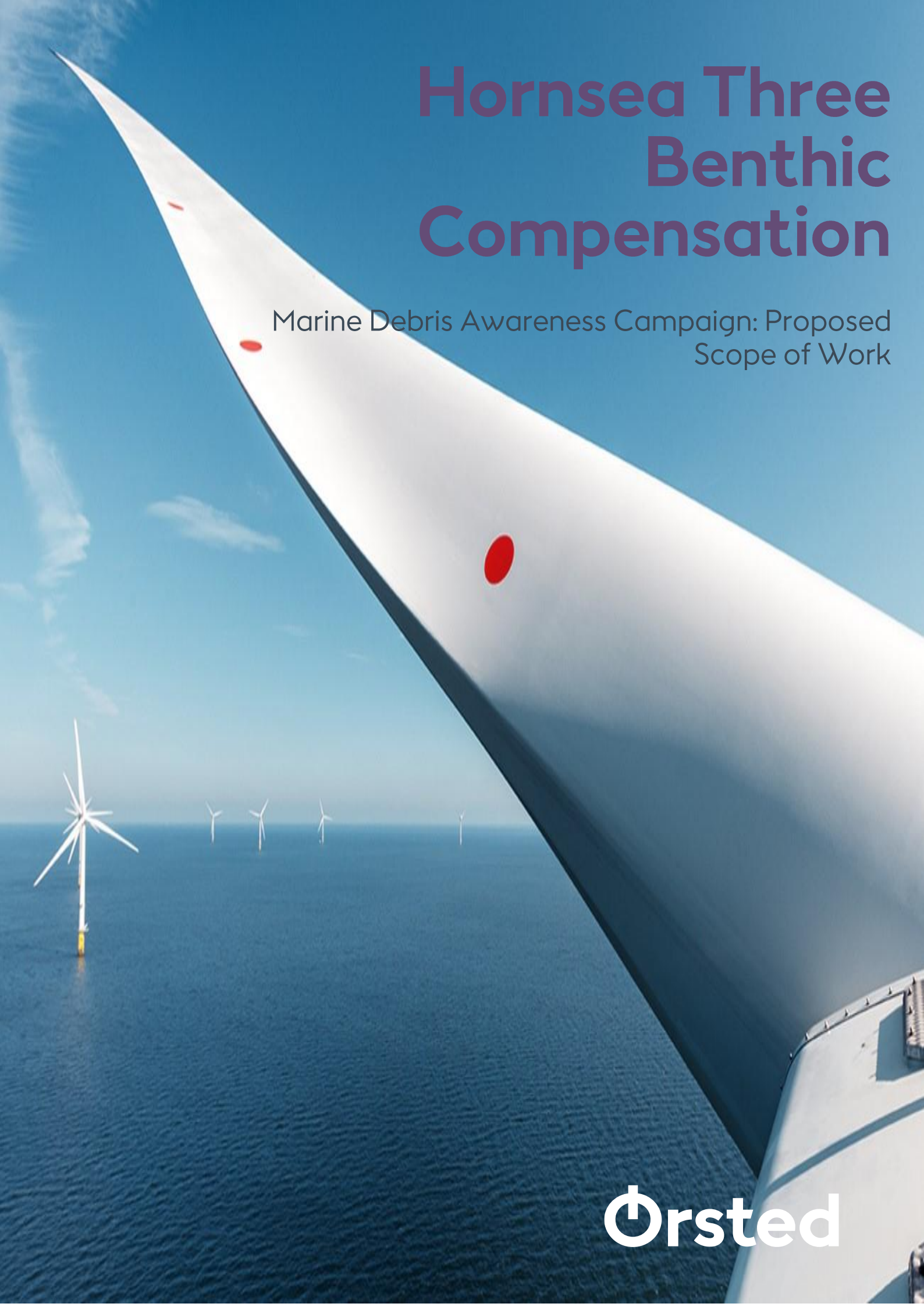

Hornsea Three Benthic Compensation

Marine Debris Awareness Campaign: Proposed Scope of Work

Ørsted

Document Control

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Author	Royal HaskoningDHV
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Version History

Date	Version	Status	Description / Changes
06/04/21	1	Draft	Initial Draft
13/04/21	2	Final	Final for issue to Benthic Compensation Steering Group

Table of contents

Acronyms

Acronym	Definition
ALDFG	Abandoned, lost or otherwise discarded fishing gear
DCO	Development Consent Order
GPS	Global Positioning System
NNSSR	North Norfolk Sandbanks and Saturn Reef
SAC	Special Area of Conservation
WNNC	The Wash and North Norfolk Coast

1 Introduction

1.1 Project background

1. Ørsted's Hornsea Project Three (UK) (Hornsea Three) is the third project to be developed within the Hornsea Zone. Hornsea Three lies approximately 121 km off the Norfolk coast and 160 km off the Yorkshire coast to the east of Hornsea Project One and Two and covers an area of 696 km^2.
2. A Development Consent Order (DCO) was awarded to Hornsea Three on 31st December 2020. Hornsea Three is working towards reaching a final investment decision and taking Hornsea Three through to the construction phase.
3. Hornsea Three is required to implement a package of benthic compensation measures to compensate for impacts, resulting from the deployment of cable protection, to the Annex 1 benthic features 'sandbanks slightly covered by water at all time' in The Wash and North Norfolk Coast (WNNC) SAC and North Norfolk Sandbanks and Saturn Reef (NNSSR) SAC.
4. The Hornsea Three DCO outlines the required benthic compensation measures which must accord with the Sandbanks Compensation Strategy[1] and be drafted into seperate Sandbank Implementation Plans for the NNSSR and the WNNC SAC which will be submitted to the Secretary of State for approval and will include:

(a) details of how all impacts to Annex 1 reef habitats within designated sites will be avoided;

(b) details of the locations for the disposal of dredged material, and evidence that the disposal mechanism will allow sediment to be retained within the sandbank system and avoid impacts to other features, particularly reef habitats;

(c) details of the areas which will be subject to marine debris removal, which should equate to no less than 41.80 ha at NNSSR and 2.77 ha at WNNC;

(d) details of the marine debris awareness events, and measures to facilitate the rapid recovery of lost fishing gear, as detailed in the sandbanks compensation strategy. Such measures should be applied to both NNSSR and WNCC;

(e) an environmental monitoring plan to include: appropriate surveys to assess the effects of cable protection on sediment movement and epifauna assemblages during the operation of the Project, to improve the evidence base for assessing the impacts of offshore windfarm cable installation and rock protection for future projects; and appropriate surveys to monitor the recovery of the areas of the NNSSR and the WNNC impacted by cable protection, post-decommissioning; and

(f) Details of the timetable for implementation of each measure.

1.2 Purpose of this document

5. Hornsea Three is required to consult on the scope and delivery of the benthic compensation measures with a Steering Group of key stakeholders. That Benthic Compensation Steering Group (BCSG) has been formed, with the first meeting held on March 2nd 2021. Consultation on the benthic compensation measures as listed above will be conducted throughout 2021.
6. The third Steering Group meeting will be held on April 27th 2021 and consultation will include discussion of Hornsea Three's proposed scope for the marine debris awareness campaign (condition (d) above). This technical note has been drafted to outline Hornsea Three's proposals with regard to measures which could be progressed to form the scope of the marine debris awareness campaign to inform discussion within the Steering Group forum and facilitate decision as to those proposals which have merit and may be taken forward and implemented as part of the marine debris awareness campaign.
7. Each of the awareness campaign proposals requires further investigations and consultation with either delivery partners or relevant stakeholders and therefore this technical note cannot, at this stage of project development, present the scope of the awareness campaign which will be implemented.

[1] EN010080-003190-HOW03_CON02_Appendix2A_SandbanksCompensationStrategy.pdf (planninginspectorate.gov.uk)

Instead, this technical note presents potential proposals for the awareness campaign which Hornsea Three understands at this stage are able to be implemented and further actions will be undertaken following consultation responses from the Steering Group.

2 Developing the scope of the marine debris awareness campaign

2.1 Aim of the debris awareness campaign

8. Hornsea Three are proposing to implement an awareness campaign which aims to reduce the volume of marine debris entering the WNNC and NNSSR SACs, and the wider marine environment, and thereby provide long term compensation to the Annex 1 sandbank features.
9. The awareness campaign will focus on stakeholder engagement to promote a 'stopping at source' approach to reducing marine debris and aims to target several marine debris sources including lost and abandoned fishing gear, debris from other industries and from onshore sources. This campaign would be implemented on a without prejudice basis and aim to achieve 'buy-in' from those relevant stakeholders and ultimately promote long term change in activities and processes from those groups the awareness campaign will target.
10. It should be noted that while each of these potential marine debris sources is understood to be linked to activities relating to the NNSSR and WNNC SACs, the results would not be soley relevant to the WNNC and NNSSR SACs and, therefore, this component of the measure would have much a wider application and extend to subtidal sandbanks (i.e. the qualifying feature) outside of the SACs. The results would either be within the SACs or within adjacent sandbank habitat within which there is a high degree of connectivity.
11. The awareness campaign will aim to conduct a variety of awareness events and work with various stakeholder groups/industries to launch initiatives, or support ongoing initiatives, to help reduce debris entering the marine environment in the long term. It should be noted that Hornsea Three could undertake elements of the awareness campaign in partnership with relevant organisations such as local councils or community partnerships.

2.2 Target groups in relation to the marine debris awareness campaign

12. There are anticipated to be multiple pathways for marine debris to enter the wider sandbank system and this initial phase of developing the awareness campaign is crucial to ensure that all key groups which should be targeted by the awareness campaign are identified.
13. The current proposals seek to ensure that the following target groups have been included in relation to the awareness campaign:
    - **Fishing operators**: It is anticipated that marine debris within the NNSSR and the WNNC SAC is likely to include lost and/or discarded fishing gear. In the WNNC SAC this is anticipated to be primarily comprised of pots and, to a lesser extent, shrimp nets whereas in the NNSSR SAC this is anticipated to be comprised predominantly of larger nets and pots.
    - **Other industries**: It is anticipated that marine debris may be related to offshore industries such as shipping and oil and gas development, particularly in relation to offshore areas including the NNSSR SAC.
    - **Onshore litter sources**: the WNNC SAC is anticipated to have marine debris deriving from onshore sources, either due to improper disposal or storm and flood events. Inevitably this debris is likely to be washed further offshore if it does not snag on a seabed feature.
14. Once these target groups have been identified and confirmed through consultation with the BCSG and other relevant stakeholders (such as the local councils and industry), appropriate methodologies will be further developed for each target group to develop awareness events and encourage the reduction, and elimination where possible, of further debris entering the marine environment. The methodologies developed will be consulted on within the BCSG forum prior to submission of the SBIPs to the Secretary of State.
15. Hornsea Three continues to learn lessons from other initiatives that have sought to reduce marine debris and raise awareness. The initiatives used by others in the UK and globally will continue to be

reviewed to determine if any of the approaches could offer solutions for reducing marine debris within the SACs and surrounding area.

2.3 Adapting the awareness campaign scope

16. It is anticipated that, where possible, the commencement of the awareness campaign will coincide with the undertaking of the marine debris removal campaign and the awareness campaign will be implemented over the longer term in accordance with the scope approved in the SBIPs.
17. Hornsea Three, however, acknowledge that valuable learnings in relation to the types of marine debris found within the WNNC and NNSSR SACs will be gathered during the marine debris removal campaign. Hornsea Three propose that the marine debris collected during the removal campaign from within the SACs will be analysed to determine the different components and, therefore, the most likely sources of marine debris. This will ensure that the awareness campaign is targeting the correct sources for marine debris, as far as possible. For example, as it is affected by more fluvial and coastal processes, the WNNC SACis likely to have different sources and types of debris than that of the NNSSR SAC. (e.g., onshore derived debris washed into the sea or rivers during storms and flood events). Further offshore there is more likely to be a greater contribution from marine derived sources, such as debris from vessels, anchorage debris and larger soruces of fishing gear.
18. The results of the debris removal campaign will also enable a greater understanding of how the different types of debris could be affecting the Annex 1 features of the SACs and where debris may concentrate within the sandbank system. Hornsea Three proposes building flexibility into the awareness campaign which is approved in the SBIPs to allow for changes in strategy to account for lessons learned during the marine debris removal campaign.

2.4 Monitoring and adapting the awareness campaign

19. As noted in the Sandbanks Compensation Strategy[2], Hornsea Three proposes that the success of the awareness campaign will be defined primarily by the uptake of the proposed measures. For example, the uptake of the rapid retrieval methodologies would be monitored in relation to the number of vessels operating in the relevant area to ensure uptake of the technology was at a sufficient level. Waste disposal facilities could additionally be monitored for use and attendance at workshops and public events would be monitored.
20. It may be that the success of the awareness campaign can additionally be measured through an increase in understanding in relation to the impacts of marine debris and a marked behaviour change in those industries and stakeholders identified as target groups however it should be noted that this is challenging to monitor in a quantitative manner other than attendance at forums and events.
21. The monitoring of the uptake of the awareness campaign would be reported to the Steering Group at a frequency which was appropriate to the measures themselves. It may be that in the initial phases of implementation, annual reporting is required which reduces in frequency as the awareness campaign continues. The duration of each of the components of the awareness campaign would be consulted on with the Steering Group once the proposals were further developed however Hornsea Three anticipating the awareness campaign running, in some format, throughout the operation of Hornsea Three.
22. Hornsea Three would propose that flexibility should be built into the awareness campaign to ensure that lessons learned during the inintial years of the awareness campaign are fed back, both from the Steering Group and the relevant target groups, and the awareness campaign is modified as necessary to ensure its aims are being met.
23. Hornsea Three would not propose that monitoring of marine debris volumes within the WNNC and NNSSR SACs is an appropriate methodology to measure the uptake or results of the awareness campaign due to the multitude of marine debris sources entering the marine environment, the mobility of marine debris throughout the marine environment and the inhernet variability of the marine environment posing a substantial challenge to linking any change in the volumes of marine debris within the SACs directly to the implementation of the awareness campaign with a high confidence.

[2] EN010080-003190-HOW03_CON02_Appendix2A_SandbanksCompensationStrategy.pdf (planninginspectorate.gov.uk)

24. The quantitative uptake of the measures could be used to infer the amount of debris that would have otherwise been discarded into the marine environment, and the potential impact that could have had in terms of its mobility and scouring potential, either within the SACs or with the potential to reach the SACs and included in the reporting to the Steering Group. For example, this could be estimated based on the volume of debris collected in the bins or bags and also through the results from fishermen in terms of the rapid retrieval methodology. A positive change in behaviour would also signal a reduction in the potential for marine debris and this could occur at many levels including through the awareness raising in schools or industries.

3 Marine debris awareness campaign proposals

3.1 Minimising lost and abandoned fishing gear

25. Hornsea Three are undertaking consultation with fishing operators which target, or fish within the vicinity of, either the WNNC SAC or NNSSR SAC with a focus on obtaining insight into local knowledge of marine debris within the area and subsequently understanding how gear is lost at sea and what steps are needed to reduce the incidence of lost gear.

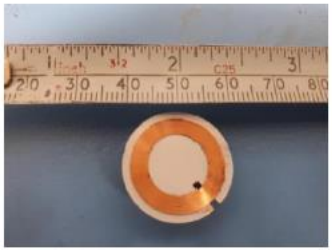
26. It is expected that the key reasons will be snagging on obstacles, severe weather, malfunction of tracking systems, loss of gear markers indicating gear position, and entanglement with other gear. The options for reducing these different issues will be investigated in order to reduce the instances of lost gear and facilitate the retrieval of gear in the eventuality that it is lost. The proposals detailed below will be developed through consultation.

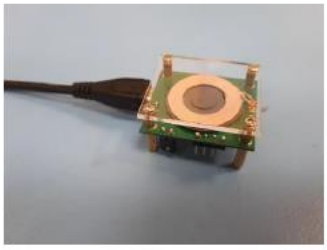
3.1.1 Rapid Retrieval Methodology: Transponders on gear

27. As part of the Sandbanks Compensation Strategy, Hornsea Three proposed implementing suitable measures to facilitate the rapid recovery of lost gear. It is the intention of Hornsea Three to implement a technological solution using transponders on fishing gear. These transponders provide a trackable Global Positioning System (GPS) location which would enable the fishermen to easily locate and retrieve gear from the seabed within a short timeframe of the gear being lost. Newcastle University, as part of the European Union project on marine litter (EASME/EMFF/2017/1.2.1.12/S2/02/S12.789121) have designed the NetTag project - "Tagging fishing gears and enhancing on board best-practices to promote waste free fisheries"[3] – which Hornsea Three consider to be a potential solution.

28. A NetTag is a self-contained acoustic transponder in a low cost housing which can be attached to fishing gear, both nets and static gear (Figure 1). The NetTag transponder device passively listens for an interrogation signal and only transmits signals in response to this interrogation signal, which may be uniquely addressed to each unit in the water by means of an application on a mobile phone. The approach used by the acoustic transponder, as opposed to a pinger which emits signals continuously, presents the following advantages:

- Accurate ranging and 3D position estimate of lost gear;
- Negligible contribution ocean noise pollution (silent until interrogated and then rapidly located); and
- Higher energy efficiency/battery life (NetTag can be deployed for approximately six weeks prior to recharging).





[3] https://www.ncl.ac.uk/press/articles/archive/2019/04/nettag/

Figure 1: NetTag and charging receiver

29. When a net is lost, the fishers or authorities can search for the net by repeatedly sending the interrogation signal until they are within range of the tag and receive a response as illustrated by Figure 2.

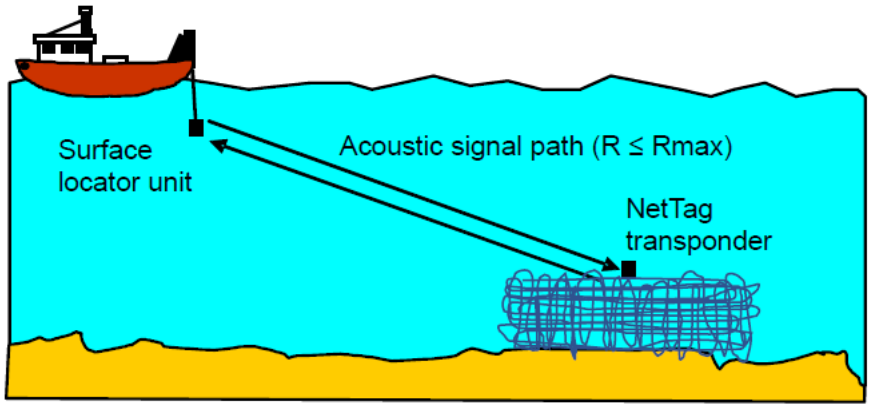


Figure 2: NetTag system concept

30. Hornsea Three has consulted with some fishers with initial positive response to the proposals of using transponders and anticipate trialing the technology with operators this year to test its efficacy in relation to the operators which target the SACs.
31. Rapid /recovery of fishing gear would facilitate fishermen in the retrieval of their gear as well as enable faster location and removal of debris from the seabed, in turn , potentially reducing affected seabed area impacted by drifting lost or derlict gear, all of which could reduce the scale of any effect.
32. The uptake and success of this measure will be monitored through discussion and consultation with the fishermen and recording of the number of transponders in use to determine its ease of use and effectiveness.

3.1.2 Rapid Retrieval Methodology: Marking of lost gear

33. Hornsea Three acknowledges that there may be instances in which fishing operators do not want to use a transponder system either for some or all of their gear. To investigate potential alternatives, Hornsea Three have consulted with SeaSearch[4], a volunteer dive group, whom are considering implementing a process of tagging any lost or discarded gear they encounter on survey dives with surface marker buoys (SMBs) and consulting with fishing operators to achieve 'buy-in' from vessels operating locally that should a SMB be sighted, that vessel will haul in the lost gear and return it to shore for either re-use or disposal, depending on length of time the gear has been submerged.
34. While this proposal requires further development both internally and with SeaSearch, it is a potential option which Hornsea Three would appreciate feedback from the Steering Group on. It should be noted that this measure would only be relevant to WNNC SAC as it would target inshore areas accessible by shore dive or small vessel.
35. The uptake and success of this measure would be monitored through discussion and consultation with the fishermen and recording of the number of gear markers deployed by volunteer divers.

3.1.3 Disposing of fishing gear at end of life

36. Prevention at source is a key aspect to reducing the amount of marine debris within the marine ecosystem. As well as the direct causes of loss of fishing gear (as discussed above, such as snagging and entanglement) there are also indirect causes that result in lost or abandoned gear, including lack of disposal facilities and inaccessible or expensive disposal facilities. In order to encourage the appropriate disposal of end-of-life fishing gear, rather than using gear prone to breaking and becoming

[4] SEASEARCH home

lost, the provision of collection bins in strategic locations would make it easy for fishers to dispose of waste and reduce the marine debris discarded at sea.

37. Therefore, Hornsea Three also propose to investigate the possibility of sponsoring collection points at various wharves for fishermen to dispose of old, broken and otherwise unwanted fishing gear for disposal and or recycling. These bins would be secured in some manner with access only provided to local fishers to ensure they were not used for the disposal of household waste items. This would help to prevent some of the gear from being discarded at sea in the first instance where disposal is not an easy option. The ongoing route for such waste will also be established to ensure that it is re-purposed, recycled or disposed of appropriately.

3.2 Increasing industry awareness

38. Hornsea Three proposes to undertake a series of awareness events and workshops for fisheries stakeholders and those stakeholders directly invoved in other marine industries (e.g., aggregate extraction, dredge disposal, oil and gas, communications).

39. Industry awareness events for the fishing industry would be closely linked to the rapid retrieval campaign, in terms of illustrating success through use of technology or other strategies, but would also focus on disseminating the economic cost and potential loss to catch resulting for marine debris. Workshops would additionally aim to encourage the fishing industry to play an active role in collecting marine debris identified at sea, where practicable, and the workshop format would ensure there was buy-in from local fishing operators. Initial consultation conducted on behalf of Hornsea Three has resulted in positive feedback in relation to the removal and 'stopping at source' of marine debris and Hornsea Three are confident with the sensitive approach local buy-in would be achieved.

40. Industry awareness events would also target other industries operating offshore. The inclusion of other industries in this campaign is of particular benefit to the NNSSR SAC which has a high density of industry (Figure 3). These would likely take the form of industry workshops where attendance from industries could be monitored. Workshops would present the results of the marine debris removal campaign and demonstrate the positive benefits of minimising marine debris entering the marine environment. The awareness campaign could also encourage a policy of removing marine debris identified during asset integrity surveys or decommissioning as far as practicable.

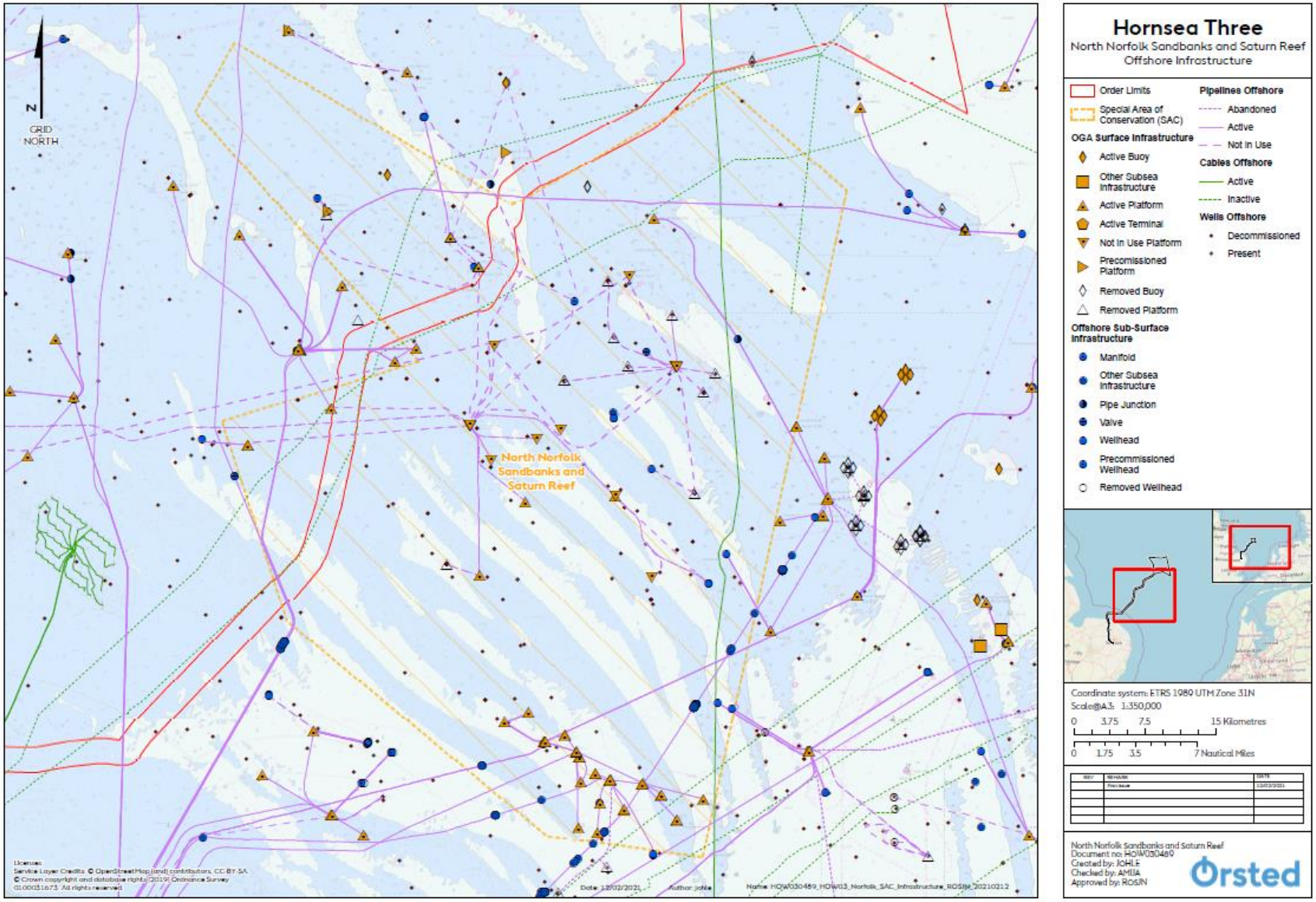


Figure 3: Seabed infrastructure within NNSSR SAC

41. Options for supporting wider initiatives to reduce marine debris and encourage more sustainable solutions for the debris generated would be investigated and lessons learnt disseminated within the workshops through showcasing examples, i.e. where materials are recycled[5] to provide an additional resource for either fishermen or others who can use such materials for crafting purposes.

3.3 Minimising marine debris from onshore sources

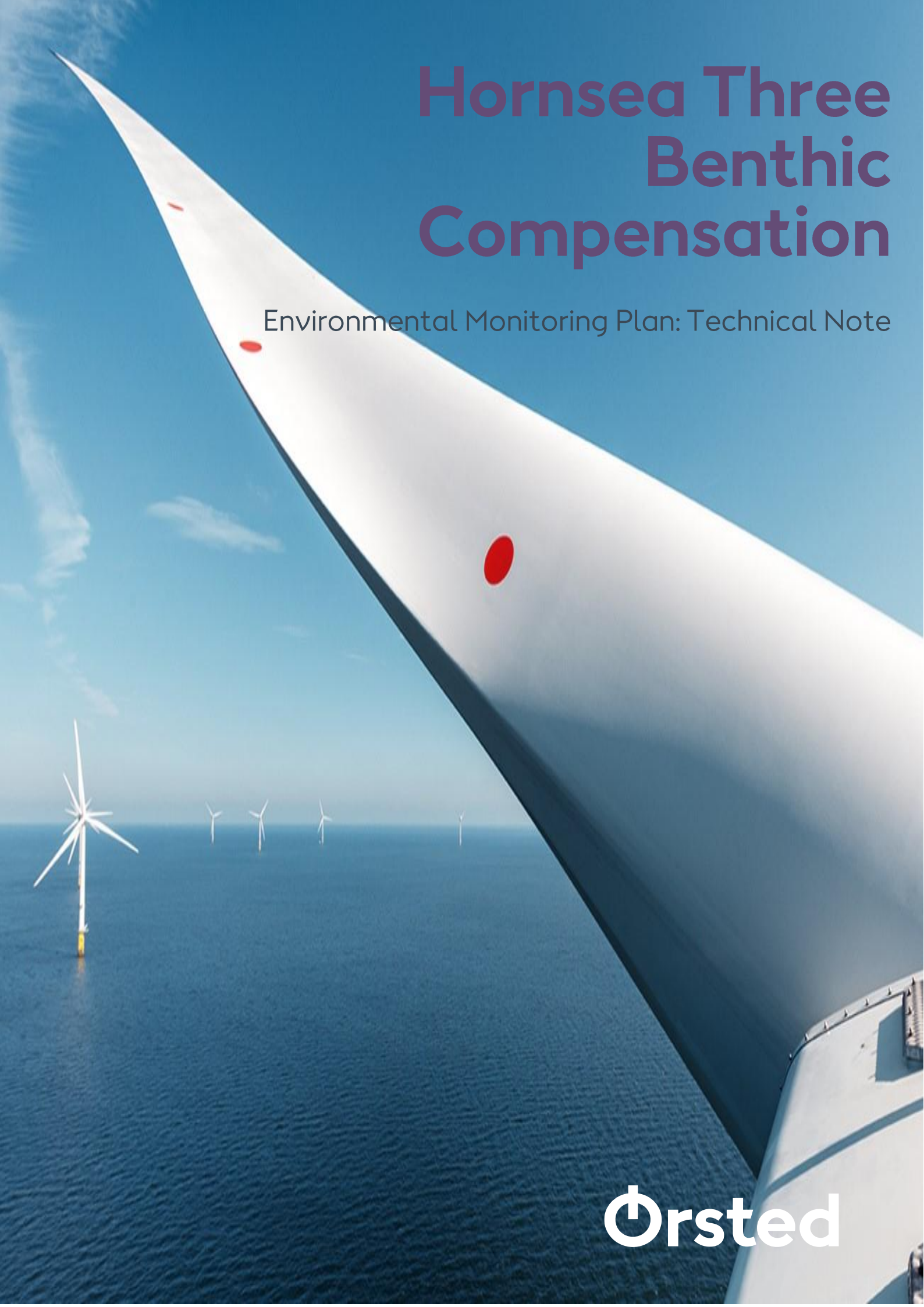
3.3.1 Increasing waste disposal facilities

42. Hornsea Three proposes consulting with the local council in relation to marine debris sources which may be arising from, for example, the local tourism industry and developing solutions such as increased waste facilities in key tourism locations to encourage litter to be discarded.
43. Initial consultation has identified household items, such as refuse bins, snagging fishing gear within the WNNC SAC which are assumed to have entered the environment during storm events. Consultation with the council may identify locations where this is a prevalent occurrence and Hornsea Three could investigate solutions suitable to the relevant locations.

3.3.2 Awareness events for the local public

44. Hornsea Three proposes holding marine debris awareness events, likely during the summer season, to educate the general public, recreational groups and tourists in terms of the impacts of various marine debris types and encourage appropriate disposal of waste.
45. These could take the form of organised beach cleans, commissioning and installation of plastic waste receptacle sculptures, organised talks in schools and local recreational groups and provision of dedicated workshops to bring people together to discuss the issue of marine debris, its impacts on the seabed and marine life and discuss and facilitate alternative methods/options for reducing the instances of marine debris and/or litter.
46. Hornsea Three may propose these measures to be implemented alongside organisations such as the Marine Conservation Society (through their Seasearch programme) to help to promote awareness, education and drive discussion towards a reduction in marine debris. This could also include supporting initiatives which could be implemented within other industries, for example, the 'Fishing for Litter' initiative which provides hardwearing bags to fishermen to take on board their vessels to collect waste during a voyage and return it to the harbour area in a designated location for ongoing disposal.

[5] It should be noted that marine debris will not be able to be recycled in cases where significant fouling has occurred



Hornsea Three Benthic Compensation

Environmental Monitoring Plan: Technical Note

Ørsted

Document Control

Document Properties	
Author	Royal HaskoningDHV
Checked by	Rosalyn Jones
Approved by	Karma Leyland
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Version History

Date	Version	Status	Description / Changes
06/04/21	1	Draft	Initial Draft
12/04/21	2	Draft	Update following Ørsted review
13/04/21	3	Final	Final for issue to Benthic Compensation Steering Group

Table of contents

List of Figures

Acronyms

Acronym	Definition
Cefas	Centre for Environment, Fisheries and Aquaculture
DCO	Development Consent Order
DDV	Drop Down VIdeo
EMP	Environmental Monitoring Plan
MMO	Marine Management Organisation
NE	Natural England
NGO	Non Governmental Organisation
NNSSR	North Norfolk Sandbanks and Saturn Reef
ORJIP	Offshore Renewables Joint Industry Programme
PSA	Particle Size Analysis
SAC	Special Area of Conservation
SBIP	Sandbank Implementation Plan
SMART	Specific, Measurable, Achievable, Realistic and Timely
WNNC	The Wash and North Norfolk Coast

1 Introduction

1.1 Project background

1. Ørsted's Hornsea Project Three (UK) (Hornsea Three) is the third project to be developed within the Hornsea Zone. Hornsea Three lies approximately 120 km off the Norfolk coast and 160 km off the Yorkshire coast to the east of Hornsea Project One and Two and covers an area of 696 km^2.

2. A Development Consent Order (DCO) was awarded to Hornsea Three on 31st December 2020. Hornsea Three is working towards reaching a final investment decision and taking Hornsea Three through the execution and construction phases. As part of the DCO, Hornsea Three is required to implement a package of benthic compensation measures to compensate for impacts, resulting from the deployment of cable protection, to the Annex 1 benthic features 'sandbanks slightly covered by water at all time' in The Wash and North Norfolk Coast (WNNC) Special Area of Conservation (SAC) and North Norfolk Sandbanks and Saturn Reef (NNSSR) SAC.

3. Part 2 of Schedule 14 of the Hornsea Three DCO outlines the required benthic compensation measures which must accord with the Sandbanks Compensation Strategy[1] and be drafted into seperate Sandbank Implementation Plans (SBIPs) for the NNSSR and the WNNC SAC and submitted to the Secretary of State for approval. The SBIPs should include:

   (a) details of how all impacts to Annex 1 reef habitats within designated sites will be avoided;

   (b) details of the locations for the disposal of dredged material, and evidence that the disposal mechanism will allow sediment to be retained within the sandbank system and avoid impacts to other features, particularly reef habitats;

   (c) details of the areas which will be subject to marine debris removal, which should equate to no less than 41.80 ha at NNSSR and 2.77 ha at WNNC;

   (d) details of the marine debris awareness events, and measures to facilitate the rapid recovery of lost fishing gear, as detailed in the sandbanks compensation strategy. Such measures should be applied to both NNSSR and WNNC;

   (e) an environmental monitoring plan to include: appropriate surveys to assess the effects of cable protection on sediment movement and epifauna assemblages during the operation of the Project, to improve the evidence base for assessing the impacts of offshore windfarm cable installation and rock protection for future projects; and appropriate surveys to monitor the recovery of the areas of the NNSSR and the WNNC impacted by cable protection, post-decommissioning; and

   (f) Details of the timetable for implementation of each measure.

1.2 Purpose of this document

4. Hornsea Three is required to consult on the scope and delivery of the benthic compensation measures with a Steering Group of key stakeholders. That Steering Group has been formed, with the first meeting held on March 2nd 2021, and further consultation on the benthic compensation measures as listed above will be conducted throughout 2021.

5. The third Steering Group meeting will be held on April 27th 2021 and consultation will include discussion of Hornsea Three's proposed scope in relation to DCO condition 13(e) of Schedule 14. This technical note has been drafted to outline Hornsea Three's proposals with regard to environmental monitoring of cable protection deployed within WNNC SAC and NNSSR SAC and inform discussion within the Steering Group.

6. This technical note sets out the proposed monitoring that Hornsea Three will undertake to:

   - Assess the effects of cable protection on sediment movement and epifauna assemblages during the operation of Hornsea Three;

[1] EN010080-003190-HOW03_CON02_Appendix2A_SandbanksCompensationStrategy.pdf (planninginspectorate.gov.uk)

- Improve the evidence base (for assessment of future projects); and
- Monitor the recovery of the areas of the NNSSR SAC and the WNNC SAC impacted by cable protection, post-decommissioning.

7. It is recognised that this requirement does not directly compensate for habitat loss resulting from the deployment of cable protection within the WNNC and NNSSR SACs, however the SBIPs are required to include details on all of the requirements as set out in DCO condition 13 of Schedule 14 which includes Environmental Monitoring Plans (EMPs) of the cable protection deployed within the SACs. The EMPs will be submitted with the required information as part of the SBIPs. The EMPs will include the agreed survey methodologies including frequency of surveys and the process for identifying sample locations. Definitive sample locations will not be fully defined in the EMPs as, at that stage in project development, it will not be clear the areas within the NNSSR and WNNC SACs within which cable protection will be deployed.

8. Hornsea Three propose that the EMPs will include a requirement for Hornsea Three to consult with the Steering Group following completion of construction and propose the final sample locations. This reporting of cable protection deployment locations will also be required through the deemed Marine Licenses.

9. Hornsea Three anticipate that the EMPs will identify sample locations using a worst case assumption in terms of cable protection being deployed along 6% of the length of cables within the SACs, as outlined in the maximum design envelope consented in the Hornsea Three DCO[2]. Should Hornsea Three deploy less cable protection during construction, noting that cable protection deployment is not a preferred approach and only required should challenging ground conditions be encountered, the number of sample locations will be proportionately decreased.

10. The survey works cover both marine processes (in relation to potential impacts on sediment movement) and benthic survey requirements (in relation to potential impacts to epifaunal assemblages). However, it is recognised that the two are closely linked.

2 Aims of proposed environmental monitoring

11. One of the aims of the proposed environmental monitoring is to record any physical or biological changes that occur within the two SACs that could be attributed to the deployment of cable protection and could affect the temporary long-term natural distribution, structure and function of the sites as well as the long-term survival of its typical species.

12. This would be achieved through undertaking a suite of appropriate surveys which will allow the acquisition of a robust data set to inform the assessment of the effects of cable protection on sediment movement and epifauna assemblages. The results of the monitoring aims to improve the current evidence base for impact assessment of the deployment of cable protection and inform whether the current approach assessment of cable protection deployment resulting in habitat loss is a proportionate approach. The results will also aim to provide a baseline for monitoring of the recovery of the areas of the NNSSR SAC and the WNNC SAC impacted by cable protection, post-decommissioning.

13. The monitoring methodologies are expected to be the same for both SACs as the aims of the monitoring are the same. It is anticipated that the results would differ due to differences in species composition or abundance and physical characteristics within the two sites but the methodologies outlined are anticipated to meet the required objectives.

2.1 Addressing evidence gaps

14. There have been various research projects undertaken in relation to effects of cable protection, which include: Review of cable installation, protection, mitigation and habitat recoverability (The Crown Estate, 2019); Mapping anthropogenic hard protection in the marine environment (MBIEG, 2020); and, Decommissioning of cable and scour protection and impact of hard protection on sediment MPAs (Natural

[2] SI/SR Template (planninginspectorate.gov.uk)

England *in development*). However, further data is required to address the evidence gaps around environmental impacts.

15. This includes better knowledge around the timescales of recovery (i.e. how fast does it occur and how long does it take) and also the nature of epifaunal assemblage change, both as a result of the deployment of cable protection and then it's subsequent removal post-decommissioning (and how this could impact on the areas within the SACs relevant to Hornsea Three). Currently, assessment assumes total loss of habitat beneath cable protection, however there is uncertainty as to whether ecological function can continue for some cable protection measures (such as infilling or rock protection) and whether different cable protection measures have different levels of effect. Hornsea Three have committed to the use of ecologivally sensitive rock protection (i.e. rock sizes most facilitative for a degree of re-colonisation) (Hornsea Three, 2018[3]) and by monitoring the impacts and changes of the cable protection deployed, Hornsea Three could help to close this data gap.

3 Proposed monitoring of cable protection deployed within WNNC and NNSSR SACs

3.1 Pre-construction monitoring

16. Pre-construction monitoring will be undertaken by Hornsea Three to provide a baseline against which monitoring will be undertaken post-construction. These pre-construction monitoring requirements are secured in the Hornsea Three deemed Marine Licenses and Hornsea Three anticipate submitting pre-construction monitoring plans to MMO for approval in 2022. Hornsea Three note that monitoring of transects of cable protection to inform the baseline of the monitoring discussed in this technical note are not required under the deemed Marine Licenses, and are also not explicitly required under requirement 13 (e), Schedule 14 of the Hornsea Three DCO. Hornsea Three anticipate including the pre-construction monitoring detailed in this section which relates to formulating a baseline for the monitoring of cable protection deployed within the SACs within the EMPs and propose conducting that pre-construction monitoring simultaneously with other pre-construction monitoring requirements.

17. Pre-construction monitoring will inform the seabed ground model, cable micro-siting for sensitive habitats (Annex 1 biogenic reef) and cable burial risk assessments, however, it is not possible to determine the exact locations of cable protection deployment pre-construction. The deployment of cable protection will only occur in areas where the cable cannot be buried for example, due to encountering unexpected harder substrate. Although the ground model will inform these areas to a certain extent, it is not possible to confirm exact locations of cable protection deployment until construction has been completed.

18. The locations for baseline survey sites cannot therefore be fully determined during the pre-construction phase. For the pre-construction baseline it is therefore proposed that transects are undertaken within the SACs at regular intervals along the proposed cable corridor to establish a baseline for the wider area. The intervals will be based on a review of data from geophysical information taken along the proposed cable corridor to determine the homogeneity of the corridor in terms of the physical features. Where there is greater variability there will be more frequent transects. The regularity would also be determined with the aim of providing sites where change could occur and also providing control areas where cable protection would not be required against which results can be compared to test the hypothesis of change. The transects would commence 100m from the edge (at right angles from the cable route) of the proposed cable protection boundary and would cross the area where the cable protection is planned and continue 100m away from the boundary of the cable protection on the opposite side. This would enable a gradient affect to be established from the cable protection. Additional transects of 50m in length would be taken along the cable protection, crossing the longer transects at right angles, in order to monitor the colonisation of the cable protection. These would be surveyed using the DDV at the same frequency as the other DDV monitoring (**Figure 1**).

[3] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010080/EN010080-001136-DI_HOW03_Appendix%206.pdf

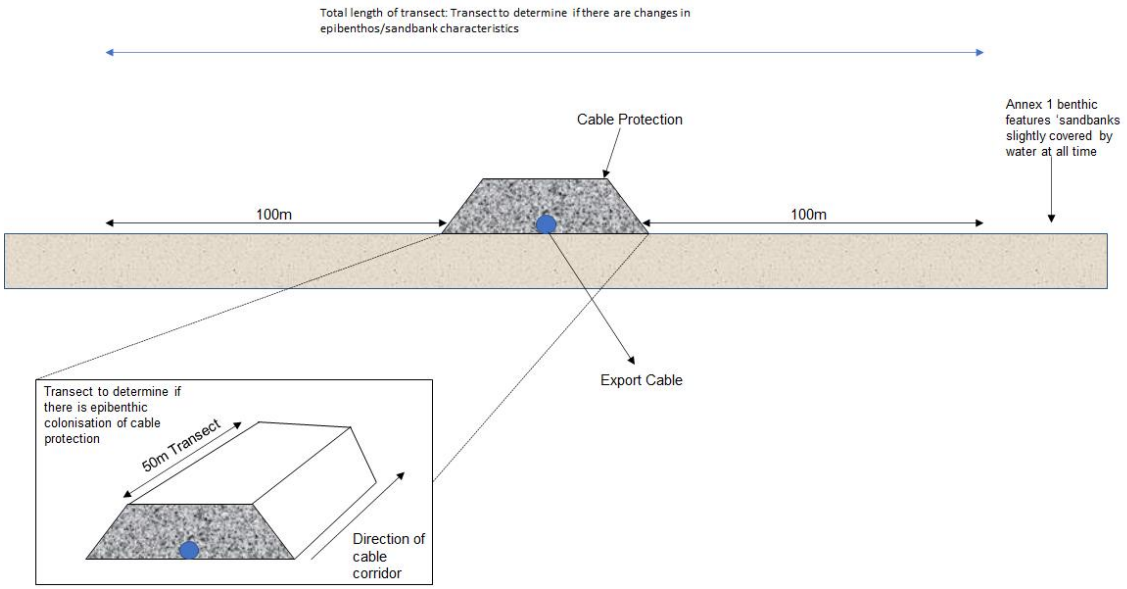

Figure 1: Indicative Transect Design.

19. The transects would involve characterisation for seabed physical characteristics through multi-beam echo sounder and side-scan sonar survey to identify potential macro changes (from scour etc). In order to characterise the seabed to determine and monitor any changes in sediment composition in time over the area surrounding the cable protection, grab samples (of roughly 0.1m^3, example shown in **Figure 2**) may be proposed to be undertaken at intervals along the transect (following the drop-down video survey to ensure no damage to any sensitive features along the transects). The use of grab sampling will be further confirmed as the development of the EMPs progresses.

20. The targetted areas for grab sampling along the transects could be a variety of seabed types and features identified by the multibeam echosounder and side-scan sonar survey, with the potential minimum requirement of one sample per type. Sampling sites could be selected to provide good spatial coverage over the affected areas whilst also providing coverage of different seabed types identified by the geophysical survey.

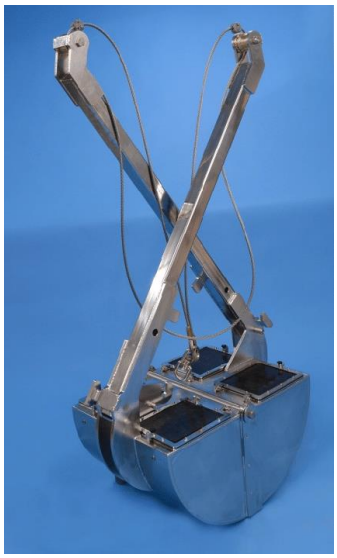

Figure 2: Representative Grab Sampler (Van Veen Grab)

21. For the benthic characterisation, the surveys would involve drop-down video (DDV) along the same transects as for the geophysical surveys. The DDV would be used to record any epibenthos along the transect and would also inform any gross changes in sediment distribution (**Figure 3**). The data from the grab sampling (as identified above for the geophysical survey) could be used to provide a quantitative

record of any changes in habitat that could occur and would be used to determine the likelihood of change for epibenthos based on sediment type.

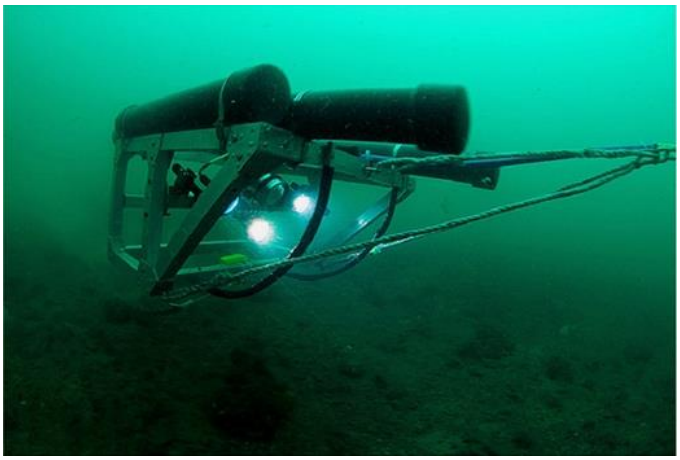

Figure 3: Drop Down Video (DDV) recording epibenthos (Sheehan *et al.*, 2013)

3.2 Operational monitoring

22. Monitoring surveys will be carried out over the operational life time of Hornsea Three to track the potential impacts and changes to the affected areas as a result of the cable protection. All operational monitoring surveys will follow the same methodology as those carried out to inform the baseline pre-construction, as set out in Section 3.2 above. I

23. Given that parts of the export cables may be protected at the seabed during operation, there is the potential to effect sediment transport within the NNSSR and WNNC SACs during both phases. Hence, marine processes monitoring is considered a requirement to support an assessment of the areas of the SACs that may be impacted. Also, an understanding of marine sediment transport processes is important to support other elements of Hornsea Three including engineering and design, and the potential to indirectly impact other receptors such as benthic ecology. Monitoring of marine processes will utilise geophysical surveys including multibeam echosounder and side-scan sonar. Where macro changes in sediment composition are identified using geophysical survey techniques (such as scour), geotechnical surveys may be utilised including seabed sediment grabs to identify changes in sediment composition.

24. Multibeam echosounder and side-scan sonar surveys would be initially completed in year 1 (timings would ensure that surveys are repeated at the same time of year as the baseline) of operation, year 3, year 5 and then year 10 to measure any changes in seabed morphology induced by the cable protection in the corridors and buffers defined for the pre-construction survey. It is proposed that the monitoring surveys are carried out on this basis to explore longer-term trends, however based on the results from the initial post-construction survey campaigns and in consultation with stakeholder the frequency of surveys will be reviewed. If recovery is relatively rapid (when compared to control sites), then a lower frequency of future monitoring would be necessary (and could potentially be abandoned altogether if seabed level changes are interpreted to be driven by natural processes). If recovery is slower and a return to SAC functionality (as compared to baseline and control sites) is not being achieved, then the frequency of monitoring could be increased.

25. Changes in seabed sediment particle size distribution would be monitored in order to meet the requirements of characterising the seabed sediments.

26. The marine processes monitoring data would provide observations on the early stages of post-cable protection sediment movement and recovery. A comparison of the bathymetry images would provide a sufficient basis for a quantitative and statistically robust assessment of geometrical changes that have occurred as a result of the protection and any subsequent recovery. This analysis would include:

- Characteristics of seabed morphology and bedforms, including their approximate size, shape and orientation;

- The nature and dimensions of the cable protection footprints;
- The nature and magnitude of any changes to seabed and sandwave morphology; and
- An interpretation of the nature and magnitude of change contributing to sediment types and movement.

27. The benthic monitoring surveys will follow the same scope as agreed for the pre-construction surveys, including repetition of survey locations where cable protection has been deployed. Benthic monitoring (to inform potential impacts on epifaunal assemblages) will need to pick up changes to the physical characteristics which could affect the structure and function of the sandbanks themselves and also that could affect the species associated with the sandbank habitats. The first change would be picked up through the geophysical monitoring and the second through predictions based on habitat type and mobility and through direct observation and comparison of epifaunal communities with surrounding areas via DDV. The recovery potential of epifauna in the affected areas will be dependent on a number of characteristics including the sediment type and mobility. The degree of change in these attributes would largely be derived from the review of the physical processes data (including the bathymetry, acoustic profiles and particle size distribution).

28. The survey area for monitoring recovery (and colonisation) within disturbed areas would cover areas affected directly and indirectly together with a buffer for any unexpected effects. The potential indirect impacts due to the generation and settlement of sediment plumes resulting from cable placement activities would be included as this recognises that *Sabellaria* reefs rely on a supply of sand to enable construction of the reef but could be adversely affected depending on the rate of sedimentation. This would draw on information on sediment type and sediment dynamics in the area to determine where any plumes may distribute.

29. The control areas would also be used to enable natural changes to be established and compared against observed changes in potentially affected areas to assist in the attribution of potential causes of change. If control areas are not feasible (i.e. no similar areas are identifiedfrom a review of the baseline data in comparison to the data available on the wider SAC) then a gradient effect would be relied upon in order to monitor change at given distances away from the source of impact. This will depend on the extent and type of feature being monitored and the source of impact. Justification for each task of the monitoring will be provided to ensure that all monitoring is required and fit for purpose and meets SMART objectives.

30. To determine how physical changes can affect epibenthos, Hornsea Three propose that there may be benefit in utilising the predictive methods developed by Cefas (accepted by MMO and supporting NGOs) that use particle size analysis (PSA) to set limits for acceptable change in sediment composition and its relationship/effect on benthic communities may also be used to determine change and recovery potential outside of the cable protection areas. Distinct macrofaunal assemblages (as identified around the UK coastline) are associated with different sediment types and there is a statistical link between changes in sediment type and changes in benthic species. The OneBenthic tool was developed out of the requirement for regional monitoring within the marine aggregate industry but draws on survey data (both PSA and benthic grabs) from all marine industry as a baseline and can be used in any situation where benthic analysis is required, including demonstrating no change/no effect (the main requirement for the marine aggregate industry).

31. The DDV monitoring would also record any colonisation of the cable protection and how the presence of the cable protection affects the surrounding epifaunal communities. It is proposed that surveys will be carried out in year 1 (timings would ensure that surveys are repeated at the same time of year as the baseline) of operation, year 3, year 5 and then year 10 to capture any initial changes and immediate impacts and then monitor any further changes over time. It is expected that colonisation and recovery would begin rapidly following construction works. Surveys at shorter intervals immediately following construction would therefore be needed in order to pick up the initial colonisation rates where successional changes influence the faunal assemblage relatively rapidly. Following these initial changes (which could potentially occur in the first two to three years) the survey frequency could reduce as the rate of change in community distribution is expected to reduce.

3.3 Post-decommissioning monitoring

32. Hornse Three is required to remove cable protection from within the SACs as part of decommissioning and monitoring will be included in the EMPs which will assess the recoverability of the habitat post-decommissioning. It is intended that the monitoring surveys (using the same methodology as set out in Section 3.3) will be carried out in year 1 (post-decommissioning/removal of cable protection), year 3 and year 5. These frequencies allow for a sufficient window of time for recovery to occur. A year 10 may also be required to monitor recovery of impacted areas however it is anticipated that the requirement for this would be confirmed with stakeholders following the Year 5 survey.

4 Reporting monitoring results

33. All monitoring will be developed as an adaptive monitoring and management strategy and will have clear objectives (including the hypotheses to be tested by the monitoring), methodologies, reporting strategies and review procedures to ensure that it is fit for purpose over the lifetime of the project. The results of monitoring will be provided in detailed reports outlining the survey methodologies, results (summarised and raw data provided) and findings and conclusions and will be shared with Steering Group members and reviewed to inform discussions on the results and the need for any changes to the monitoring strategy.

4.1 Adapting monitoring according to results

34. It is acknowledged that the monitoring needs to be flexible to take account of developments as the project progresses and that individual monitoring programmes may need to be amended if the evidence indicates the existing monitoring programme is not fit for purpose and/or impacts are not as predicted. Equally the programmes could be required to be altered if the results show less impacts than anticipated and if recovery post-decommissioning is faster than excepted. This approach will allow for a monitoring programme that is adaptable and fit for purpose, providing the best data to inform the evidence base as the monitoring progresses. As stated above, all proposed changes will be discussed with the relevant stakeholders and Steering Group members before being actioned.

5 Supporting industry evidence base

35. To further increase the evidence base, all monitoring data and reports will be shared with the wider industry through the Crown Estate's Marine Data Exchange (Marine Data Exchange || Home) once they have been deemed to not be of any commercial sensitivity.

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Hornsea Three Benthic Compensation

Steering Group Meeting #4 Supporting Document

Ørsted

Document Control

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Table of contents

Acronyms

Acronym	Definition
DCO	Development Consent Order
MMO	Marine Management Organisation
NNSSR	North Norfolk Sandbanks and Saturn Reef
SAC	Special Area of Conservation
SBIP	Sandbank Implementation Plan
WNNC	The Wash and North Norfolk Coast

1 Introduction

1.1 Project background

1. Ørsted's Hornsea Project Three is the third project to be developed within the Hornsea Zone. Hornsea Three lies approximately 120 km off the Norfolk coast and 160 km off the Yorkshire coast to the east of Hornsea Project One and Two and covers an area of 696 km^2.
2. A Development Consent Order (DCO) was awarded to Hornsea Project Three (UK) Limited (Hornsea Three) on 31st December 2020 ("the DCO"). Hornsea Three is working towards reaching a final investment decision and taking Hornsea Project Three through the execution and construction phases. As part of the DCO, Hornsea Three is required to implement a package of benthic compensation measures, to compensate for impacts resulting from the deployment of cable protection, to the Annex 1 benthic features 'sandbanks slightly covered by water at all time' in The Wash and North Norfolk Coast (WNNC) Special Area of Conservation (SAC) and North Norfolk Sandbanks and Saturn Reef (NNSSR) SAC.

1.2 Purpose of this document

3. Hornsea Three is required to consult on the scope and delivery of the benthic compensation measures with a Steering Group of key stakeholders (Schedule 14, Part 2, paragraph 11). The Steering Group has been formed, with three meetings having been held and consultation commenced on Hornsea Three proposals in relation to implementing the benthic compensation measures as listed in the DCO.
4. This supporting document addresses some key questions raised by members of the Steering Group during those initial meetings[1], and in subsequent written feedback, and aims to facilitate discussion at the next Steering Group meeting held June 8th 2021.
5. This supporting document outlines further information in relation to:
   - The implementation (which complies with the DCO requirements), monitoring and adaptive management of the marine debris removal campaign; and
   - The implementation (which complies with the DCO requirements), monitoring and adaptive management of the debris reduction awareness campaign.
6. Consultation responses, received and minuted during the Steering Group, and written feedback following the Steering Group on these specific components will shape the delivery of the package of compensation measures and inform the first drafts of the Sandbank Implementation Plans (SBIPs).

2 Compensation measures

2.1 Overview

7. The DCO requires the following information to be drafted into SBIPs:

Each SIP must accord with the principles set out in the Sandbanks Compensation Strategy relating to the protected feature "sandbanks slightly covered by water all the time" and must include the following:

> *(a) details of how all impacts to Annex 1 reef habitats within designated sites will be avoided;*
>
> *(b) details of the locations for the disposal of dredged material, and evidence that the disposal mechanism will allow sediment to be retained within the sandbank system and avoid impacts to other features, particularly reef habitats;*
>
> *(c) details of the areas which will be subject to marine debris removal, which should equate to no less than 41.80 ha at NNSSR and 2.77 ha at WNNC;*
>
> *(d) details of the marine debris awareness events, and measures to facilitate the rapid recovery of lost fishing gear, as detailed in the sandbanks compensation strategy. Such measures should be applied to both NNSSR and WNCC;*

[1] Consultation log references MDRC 1.3, MDRC 1.8 in particular.

> *(e) an environmental monitoring plan to include: appropriate surveys to assess the effects of cable protection on sediment movement and epifauna assemblages during the operation of the Project, to improve the evidence base for assessing the impacts of offshore windfarm cable installation and rock protection for future projects; and appropriate surveys to monitor the recovery of the areas of the NNSSR and the WNNC impacted by cable protection, post-decommissioning; and*
>
> *(f) Details of the timetable for implementation of each measure.*

8. It is the position of Hornsea Three that condition (c) comprises the compensation measure requiring implementation prior to the commencement of offshore construction, and requirement (d) comprises the measure which will be maintained in some form throughout the operation of Hornsea Three and provides a longer term solution to reduce the level of pressure on the sandbank features both within the SACs and in adjacent supporting habitat.
9. For clarity, Hornsea Three propose to address (a), (b), (e) and (f) as outlined below:
   - (a) Summary of commitments made within the Hornsea Three consent application will be provided in SBIPs submitted to the Secretary of State, and further information will be provided following further refinements to the ground model and appointment of the installation contractor to the timetable outlined in the SBIPs.
   - (b) Summary of commitments made within the Hornsea Three consent application will be provided in SBIPs submitted to the Secretary of State, and further information will be provided following further refinements to the ground model and appointment of the installation contractor to the timetable outlined in the SBIPs.
   - (e) Requirement is integral to improving evidence base. Details of environmental monitoring will be submitted with the SBIPs submitted to the Secretary of State, and the draft SBIPs consulted on with the Steering Group.
   - (f) Hornsea Three will include a timetable for implementation in the SBIPs submitted to the Secretary of State, and the draft SBIPs consulted on with the Steering Group.
10. This supporting document presents Hornsea Three's position on the delivery of conditions (c) and (d).

2.2 Scale of impact

11. The compensation, as outlined in the DCO, has been based upon a worst case assumption of cable protection being deployed along 6% of the length of cables within the WNNC and NNSSR SACs, as outlined in the maximum design envelope consented in the DCO[2].
12. Hornsea Three continue to work towards deploying as low volume of cable protection as ground conditions allow and are keen to re-iterate that cable protection deployment is not a preferred approach and is only required should unforseen challenging ground conditions or complications during cable installation be encountered. Therefore, the scale of the habitat loss impact from cable protection (if one occurs at all) on the WNNC and NNSSR SACs will not be fully understood until completion of construction.
13. Hornsea Three acknowledge the written comments provided by SNCBs in relation to the sufficiency of the package of compensation measures required by the Secretary of State, however note that Hornsea Three will meet the requirements for compensation as set out by the Secretary of State in the DCO and have proposed adaptive management measures which go beyond that required. The package of compensation measures Hornsea Three will implement increase the extent of the subtidal sandbanks feature, both directly through the search and removal of anthropogenic material, and indirectly through the prevention of future debris.

3 Marine debris removal campaign

3.1 Compliance

14. The compliance requirement within the DCO is to carry out debris removal within an area of search equating to a minimum of 41.80 ha of the NNSSR SAC and 2.77 ha of the WNNC SAC.

[2] SI/SR Template (planninginspectorate.gov.uk)

15. Hornsea Three proposes that the marine debris removal campaign conducted pre-construction (anticipated in Q2/Q3 2022) reports to the Steering Group through evidence of undertaking the search of the required area as defined in the DCO (41.80 ha of the NNSSR SAC and 2.77 ha of the WNNC SAC) and logging and reporting the removal of any marine debris of the type and size to be approved for removal in the SBIPs (and outlined in the Debris Removal Scope of Works Report which was submitted to the Steering Group 12th April 2021).
16. As discussed during Steering Group #2[3], Hornsea Three is currently undertaking a desk based assessment to inform the most appropriate 41.80 ha of the NNSSR SAC and 2.77 ha of the WNNC SAC within which to target the debris search and removal campaign. Hornsea Three note JNCC advice (received as written feedback to Steering Group #2) that '*We note that the developer has been asked to search for debris over an area of 41.8ha in NNSSR. However, searching this area may result in only small amounts of debris to remove.*' and Horsea Three are conducting the desktop assessment to assist in identifying the most appropriate target areas within the SACs with the aim of maximising the potential for finding debris.
17. However, Hornsea Three acknowledge that there is likely to be varying confidence in the data sources gathered and the expected type and volume of marine debris within the SACs may remain largely unclear until the search and removal campaign is underway. In the instance that the desktop assessment cannot identify 41.80 ha of the NNSSR SAC and 2.77 ha of the WNNC SAC that have a relatively high likelihood of containing marine debris, Hornsea Three may propose that a search of a wider area is conducted (the search being undertaken by the geophysical survey) and that the removal (ROV/DDV imaging of the debris and subsequent removal) is undertaken within the most appropriate 41.80 ha of the NNSSR SAC and 2.77 ha of the WNNC SAC targetted by the wider geophysical survey. Should the desktop assessment fail to identify sufficient area of high likelihood of marine debris (based upon the results of the desktop data sources gathered and the consultation conducted), Hornsea Three may propose that the area of search would be double what is required to comply with the DCO (83.6 ha of NNSSR, 5.54 ha of WNNC) [4].
18. The removal of marine debris from the 41.80 ha of the NNSSR SAC and 2.77 ha of the WNNC SAC will remove any existing non-natural obstacles from the sandbank system (where it is practically, safely and commercially feasible to do so and within the remit outlined in the Scope of Works Report (with regard to proximity to conservation features, protected wrecks, UXO etc.)) that are having an impact on the features of the site and therefore contributing to its current unfavourable conservation status classification. A process that will thereby remove a level of existing pressure on the SACs and enable the seabed in the impacted area to return to a more natural state that would otherwise have been subject to pressure from anthropogenic marine debris.
19. Hornsea Three acknowledge JNCC advice (received as written feedback to Steering Group #2) that '*..suggest that removal of at least 50m³ of litter would likely be necessary to allow the litter removal to provide any potential impact on the conservation objectives*', however Hornsea Three reiterate the purpose of the compensation is to compensate for the adverse impact of Hornsea Project Three as opposed to impact on the conservaton objectives of the relevant SACs. Hornsea Three acknowledge the difficulty in measuring the footprint of the direct and indirect impact within the SACs over time. Therefore, Hornsea Three does not consider it appropriate to measure compliance with the DCO in relation to a specific number of items or volume of marine debris removed during the offshore campaign and will report compliance in line with the DCO requirement outlined in paragraphs 14 and 15.

3.2 Monitoring

20. Hornsea Three propose that monitoring of the marine debris removal campaign would be carried out at various stages of the removal campaign. Hornsea Three note that monitoring is required to meet two aims: (1) to log and record the outcomes of the marine debris removal campaign and (2) to ensure that the removal campaign is undertaken in a manner which avoids impacts to sensitive features such as established *Sabellaria* reef and features of archaeological importance. Hornsea Three propose that this monitoring will be secured in the SBIPs and the objectives of logging outcomes of the debris removal campaign and avoiding sensitive features can be achieved through the monitoring outlined in the sections below.

[3] Supporting document to be uploaded to file sharing site (DECA) for reference
[4] Hornsea Three anticipate having the desktop assessment concluded and available for consultation with the Steering Group alongside the first draft of the SBIPs which will be distributed in July 2021.

3.2.1 Confirmation of debris for removal

21. The search of the 41.80 ha of the NNSSR SAC and 2.77 ha of the WNNC SAC[5] would be undertaken using a geophysical survey as outlined in the Debris Removal Scope of Works Report which was submitted to the Steering Group 12th April 2021, specifically side-scan sonar, and the resolution would allow for targets of greater than approximately 1 m in size to be identified for removal. The aim of the geophysical survey is to locate any potential marine debris targets within the relevant areas of the SACs which will be further investigated as to their suitability for removal.

22. The geophysical survey will additionally provide information with regard to sensitive features which the following steps of the removal campaign should avoid and consider as exclusion zones. In particular the geophysical survey will provide a greater understanding of areas of biogenic reef which Hornsea Three will avoid and apply a suitable buffer (which will be agreed with Natural England and JNCC during consultation on the draft SBIPs) and those areas will be excluded from further investigation. Hornsea Three note that the avoidance requirement for established *Sabellaria* reef which is anticipated to be requested by SNCBs is highly likely to result in marine debris targets being identified but excluded from either further investigation or removal.

23. Hornsea Three would be pleased to provide the geophysical survey report to SNCBs to further understanding of the distribution of established *Sabellaria* reef within the areas of search of NNSSR and WNNC SACs. Further, should a relationship between artificial hard substrate and *Sabellaria* reef be noted Hornsea Three would be open to discussing utilising the data collected and conducting further analysis to increase evidence base supporting the conservation objectives of WNNC and NNSSR SACs.

3.2.2 Marine debris removal

24. Following completion of the geophysical survey, Hornsea Three will have a list of marine debris targets which require further investigation to confirm they are suitable for removal (and the established exclusion zones discussed in Section 3.2.1). Each potential debris target would be further investigated using ROV or DDV. This step would be undertaken in short succession (at this stage understood to be approximately 1 – 2 months) to the geophysical survey to minimise the risk that marine debris either moves or becomes further buried in sediment.

25. The ROV or DDV survey would confirm whether the target is marine debris which could be removed or whether the target was in fact a sensitive feature which should remain in *situ*. Sensitive features were outlined in Debris Removal Scope of Works Report which was submitted to the Steering Group 12th April 2021 and include *Sabellaria* reef, archaeology and unexploded ordnance[6]. Hornsea Three propose that benthic ecologists, archaeologists and UXO specialists would review each set of ROV/DDV imaging to confirm that sensitive features were suitably excluded and Hornsea Three propose that this workflow would be outlined in the SBIPs.

26. Following confirmation that a marine debris target is suitable for removal (completed using the screening criteria which will be approved in the SBIPs) the removal itself will be logged and evidenced via ROV/DDV footage. The log of debris removed and evidence of the removal would be provided in a summary report for the NNSSR SAC and a summary report for WNNC SAC submitted to the Steering Group following completion of the campaign (submitted approximately Q4 2022 / Q1 2023). The report submitted would include photographs of the debris following removal, a categorisation of the type of debris, a figure showing the locations of each item of marine debris and where possibe information on habitat type inferred from ROV/DDV data would be provided to evidence the reinstatement of the natural habitat that was underneath the debris.

27. Once the debris has been removed, the impact has been removed, and the area can recolonise naturally when subjected to natural processes. It is not considered that ongoing monitoring following completion of the debris removal campaign would be needed to provide any further evidence of habitat restoration following removal of the debris, as outlined in the Sandbanks Compensation Strategy submitted as part of the Hornsea Three derogation[7]. Hornsea Three additionally consider that there would be little value in monitoring a removal location as the recovery of the sediment following debris removal is anticipated to

[5] Or larger agreed area based upon approach outlined in section 3.1
[6] Hornsea Three acknowledge Natural England concerns that any UXO identified would require clearance however Hornsea Three are confident that this is not the industry approach and further information will be provided with the removal methodology in the draft SBIPs.
[7] EN010080-003190-HOW03_CON02_Appendix2A_SandbanksCompensationStrategy.pdf (planninginspectorate.gov.uk)

be rapid and reflective of the highly mobile nature of the sandbank features and therefore linking recovery of aspects such as sediment availability to a specific location in any meaningful way is unlikely to be achieved via further monitoring.

3.3 Adaptive management

28. The marine debris removal campaign is required to conduct a search of a minimum of 41.80 ha of the NNSSR SAC and 2.77 ha of the WNNC SAC and remove any suitable marine debris identified within those areas to discharge the requirement in the DCO.
29. Section 3.1 outlines the adaptive approach Hornsea Three will implement by increasing the area of search within the SACs and Hornsea Three's preference is to remove as many items of marine debris as feasibly possible from within the required 41.80 ha of the NNSSR SAC and 2.77 ha of the WNNC SAC. However, Hornsea Three note that adaptive management may be required should marine debris not be identified within the 41.80 ha of the NNSSR SAC and 2.77 ha of the WNNC SAC. Potential adaptive management approaches are outlined in Table 1 below.
30. Hornsea Three will not expand the marine debris removal campaign further than the proposed measures outlined in Table 1 as the compensation measure will have been comprehensively implemented to its fullest extent and any further adaptive management which could be implemented in relation to the marine debris removal campaign is unclear. However, Hornsea Three would consider a corresponding increase in the scope of the awareness campaign should the marine debris removal not achieve its aims. This approach is in line with the adaptive management approach outlined in Section 4.3.

Table 1: Potential adaptive management for the marine debris removal campaign

Potential adaptive management approach	Further detail
Proportionate increase of the area of marine debris removal from one of the two SACs	In the eventuality that the approach outlined in Section 3.1 is required and a search of 83.6 ha of NNSSR and 5.54 ha of WNNC is undertaken, it may be that greater marine debris targets are identified within the extended area of one of the SACs than the other. In that instance, Hornsea Three will remove any marine debris identified within the minimum required area (41.8 ha of NNSSR and 2.77 ha of WNNC) but Hornsea Three may extend the removal to within the extended area of the SAC within which greater debris is identified, should minimal marine debris be identified in the required area of the other SAC. This adaption in approach would be communicated to the Steering Group and further detailed in the summary reports submitted to the Steering Group following completion of the offshore campaign.
Debris removal from sandbank habitat adjacent to SACs	Hornsea Three acknowledge that the Hornsea Three DCO requires areas of search to be identified within the boundaries of the NNSSR and WNNC. Hornsea Three note that debris removal on adjacent sandbank habitat, outside of the SACs, with high levels of connectivity may be an appropriate adaptive management approach and would be keen to understand from core Steering Group members whether specific areas of search targeting sandbank habitat outside of the SACs may be appropriate to include as target locations as an adaptive management measure. Such areas may provide pathways for marine debris that would subsequently enter the SACs and Hornsea Three could develop an appropriate buffer surrounding the SACs which provides a high level of connectivity.
Debris removal from habitat adjacent to sandbanks (within or out with SACs)	Hornsea Three would request consideration from core Steering Group members of the likely higher instances of marine debris being snagged on hard substrate which does not comprise sandbank habitat, such as rocky outcrops or chalk reef, and whether targeting those areas within or in close proximity to the SACs would be an appropriate adaptive management approach as such areas may provide pathways for marine debris that would subsequently enter the sandbank habitat.

4 Awareness campaign

31. Debris reduction via an awareness campaign is a long term compensation measure which will be implemented throughout the operation of Hornsea Three.

4.1 Compliance

32. As noted in the Sandbanks Compensation Strategy[8], Hornsea Three proposes that the compliance of the awareness campaign will be defined primarily by the provision of the proposed measures and that monitoring of the measures will be reported in relation to uptake.
33. The specific components of the awareness campaign are at this stage being developed in consultation with the Steering Group and therefore Table 2 provides some initial concepts that could be used to demonstrate compliance.
34. The awareness campaign measures would begin implementation activities following approval of the SBIPs and provision of the awareness campaign measures would be required no less than four months prior to the deployment of cable protection. Reporting on compliance would be based around evidencing that the required initiatives are implemented and the required provisions are in place. Reporting on compliance would be provided alongside monitoring of uptake as outlined in Section 4.2.

Table 1: Examples of compliance measure

Potential awareness campaign measure	Compliance measure	Monitoring
NetTag transponder	Provision of NetTag technology and supporting its use (or other similar rapid retrieval technology) to vessels which operate within the SACs	Monitoring would report the uptake of the NetTag technology and reporting of lost gear retrieved through use of the technology
Partnership with initiative such as Fishing for Litter (FfL)	Provision of FfL scheme within the relevant ports and habours in relation to the SACs	Monitoring would report the uptake of the FfL scheme and would make reference to the volume of marine litter removed from the environment[9]
Industry events providing education on the impacts of marine debris	Provision of educational events and industry forums	Attendance at the provided events and industry forums would be monitored
Gear disposal facility	Provision of a framework which enables relevant vessels to dispose of end of life fishing gear	Uptake monitored via use of the framework and volume of gear disposed

4.2 Monitoring

35. Hornsea Three propose that monitoring of the awareness campaign would be conducted in relation to the uptake of the awareness campaign measures as illustrated by the examples which are outlined in Table 2.
36. Monitoring of uptake would be provided to Steering Group members at a frequency agreed with the Steering Group, however, Hornsea Three propose that during construction annual reporting would be provided to the Steering Group and following completion of construction, whereby awareness campaign measures are likely to be fully embedded within local communities and local stakeholders, the frequency of monitoring may be reduced as appropriate and agreed with the Steering Group.
37. Alongside monitoring of uptake, it may be that the awareness campaign can additionally report in relation to an increase in stakeholder understanding in relation to the impacts of marine debris, any marked behaviour change in those industries and stakeholders identified as target groups, and the quantitative uptake of the measure could be used to infer the amount of debris that would have otherwise been discarded into the marine environment. Hornsea Three will also maintain regular liaison with the relevant

[8] EN010080-003190-HOW03_CON02_Appendix2A_SandbanksCompensationStrategy.pdf (planninginspectorate.gov.uk)
[9] For example, the Yorkshire FfL project removed 27 tonnes of marine litter last year (figure provided from FfL)

fisheries associations and organisations. However, Hornsea Three do not consider these a required component of monitoring and would propose the inclusion of these elements as much as practicable to enable lessons learning within and between industries.

38. As noted in the technical note submitted in relation to Steering Group Meeting #3, Hornsea Three do not consider that monitoring of marine debris volumes *in situ* within the WNNC and NNSSR SACs is an appropriate methodology to measure the uptake or results of the awareness campaign due to the multitude of marine debris sources entering the marine environment, the mobility of marine debris throughout the marine environment and the inhernet variability of the marine environment posing a substantial challenge to linking any change in the volumes of marine debris within the SACs directly to the implementation of the awareness campaign with a high confidence.

4.3 Adaptive management

39. Hornsea Three would propose that the awareness campaign should be iterative and adaptive management be built in, to ensure that lessons learned during the initial years of the awareness campaign are fed back, both from the Steering Group and other relevant stakeholders, and the awareness campaign is modified as necessary to ensure its aims are being met. Additionally, aaptive management will enable the awareness campaign to change scope if required in relation to the results of the marine debris removal campaign.
40. Should adaptive management be required, Hornsea Three will consult with the Steering Group and the most appropriate next steps will be thoroughly discussed and explored with relevant stakeholders as part of the Steering Group prior to the implementation of any option.
41. Should adaptive management be required because one of the awareness campaign measures is no longer viable, for example transponder technology is superseded by an alternative and more favourable solution to rapid retrieval, the first step Hornsea Three will consider is increased provision of an existing awareness campaign measure. Should increased provision of existing awareness campaign measures not be deemed a reasonable strategy, Hornsea Three may consider, in a proportionate manner, adopting new measures as part of the awareness campaign.