

Norfolk Vanguard Offshore Wind Farm Habitats Regulations Derogation, Provision of Evidence

Appendix 3 – Haisborough, Hammond and Winterton Special Area of Conservation (SAC) – In Principle Compensation Measures

Applicant: Norfolk Vanguard Limited
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Photo: Kentish Flats Offshore Wind Farm



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1 INTRODUCTION

1.1 Background

1. In response to a letter from the Department for Business, Energy and Industrial Strategy (BEIS) (dated 6 December 2019), which invited Norfolk Vanguard Limited ('the Applicant') to provide information on specific mitigation solutions that would address the potential effects of cable protection on the Haisborough, Hammond and Winterton (HHW) Special Area of Conservation (SAC), the Applicant is proposing to implement additional mitigation from that set out in the Information to Support Habitats Regulations Assessment (HRA) (document 5.3) and in the Outline HHW SAC Site Integrity Plan (SIP) (document 8.20) submitted at Deadline 9 of the North Vanguard Examination.
2. This specific mitigation is described in detail in the Additional Mitigation (document reference ExA; Mit; 11.D10.2), submitted 28 February 2020).
3. As stated during the Development Consent Order (DCO) Examination, and in light of this additional mitigation, the Applicant firmly maintains that an Adverse Effect on the Integrity (AEol) of the HHW SAC will not occur (this is discussed further in the HHW SAC Position Statement (document reference ExA; Pos; 11.D10.1)). However, in accordance with the following component of the BEIS letter, this document outlines in-principle compensatory measures that could be developed should the Secretary of State conclude that AEol on the HHW SAC cannot be ruled out as a result of its Appropriate Assessment:

"In the absence of any identifiable mitigation measures, the Applicant, in consultation with Natural England, may wish to consider the provision of evidence as to:

- *whether there are any feasible alternative solutions to the Norfolk Vanguard project which could avoid or lessen any adverse effects on the integrity of these sites;*
 - *any imperative reasons of overriding public interest for the Norfolk Vanguard project to proceed; and*
 - *any in-principle compensatory measures proposed to ensure that the overall coherence of the network of Natura 2000 sites is protected."*
4. Notwithstanding the Applicant's approach to present in-principle compensatory measures, this should be considered subject to the Applicant's clear and firm position that identifiable and certain mitigation measures are proposed to address AEol on SAC features associated with cable protection, and that these mitigation

measures can be appropriately secured through the DCO and relevant outline plans to be certified.

1.2 Purpose of this Document

1.2.1 Context

5. The Applicant notes that the letter from BEIS requests “*in-principle*” compensatory measures. This document therefore provides a review of a range of potential measures that could be adopted to compensate for the potential effects of cable protection on the HHW SAC features. This range of compensation measures has been discussed with Natural England (NE) and the Marine Management Organisation (MMO) (detailed below) and their feedback incorporated where appropriate.
6. However, it should be noted that the Applicant does not believe that any compensatory measures will need to be progressed due to the delivery of specific mitigation measures committed to by the Applicant which provide certainty that AEoI on the HHW SAC can be avoided. Therefore, the provision of evidence regarding in principle compensation measures is without prejudice to the Applicant’s position that there will be no AEoI on the HHW SAC.
7. In addition, the advantages of, and inherent compensation value which, renewable energy has the potential to provide for the Natura 2000 network should be acknowledged; with climate change representing the key pressure for a wide range of Natura 2000 qualifying features. It is however recognised that this is impossible to quantify and, therefore, these benefits are the focus of the Imperative Reasons of Overriding Public Interest (IROPI) case (discussed in Habitats Regulations Derogation Provision of Evidence, document reference ExA; IROPI; 11.D10.3).

1.2.2 Consultation

8. The Applicant has undertaken extensive consultation with NE and the MMO in response to the BEIS letter, as outlined in the Consultation overview (document reference ExA; Consult; 11.D10.3), as well as consultation with other relevant stakeholders.
9. In relation to compensatory measures, draft in principle compensatory measures were provided to NE and the MMO on 17 January 2020 in order to seek guidance on the effectiveness of the potential compensatory measures identified by the Applicant; in particular whether they would be sufficient to ensure that the overall coherence of the Natura 2000 network is protected.
10. A workshop was held between the Applicant, NE and the MMO on 23 January, which included discussion regarding compensatory measures, in particular:

- Whether an AEoI would in fact arise in practice due to the Project.
 - How to compensate for a conclusion of AEoI based on uncertainty and a highly precautionary assessment.
 - Proposals and timescales for the implementation and establishment of any potential compensation.
11. Written feedback was received from NE on 4 February and this has been taken into account in this document.

1.2.3 This document

12. Following this introduction, Section 2 of this document provides a description of the HHW SAC.
13. Section 3 quantifies the predicted effect of the Project on the HHW SAC.
14. Section 4 considers the guidance on compensation and sets out in principle compensation measures for Norfolk Vanguard and the HHW SAC, including how these measures may be secured and subsequently delivered.

2 HAISBOROUGH, HAMMOND AND WINTERTON SAC

2.1 Overview

15. The HHW SAC is located to the west of Norfolk Vanguard, and the proposed offshore cable corridor will pass through the SAC to make landfall. The SAC is designated for Annex I Sandbanks which are slightly covered by seawater all the time and Annex I Reefs (*Sabellaria spinulosa*).
16. The sandbank ridges consist of sinusoidal banks which have evolved over the last 5,000 years and comprise of Haisborough Sand, Haisborough Tail, Hammond Knoll, Winterton Ridge and Hearty Knoll. Older sandbanks, Hewett Ridge and Smiths Knoll, that have formed over the last 7,000 years are present along the outer site boundary. The more geologically recent sandbanks of Newarp Banks and North and Middle Cross Sands are located in the south west corner of the SAC¹.
17. The Joint Nature Conservation Committee (JNCC) HHW Site Details¹ state that, at the time of designation, *S. spinulosa* reef had been recorded on Haisborough Tail, Haisborough Gat and between Winterton Ridge and Hewett Ridge.

2.2 Conservation Objectives

18. Conservation objectives are set to ensure that, subject to natural change, the integrity of a site is maintained or restored, as appropriate, and that the site contributes to achieving the Favourable Conservation Status of its qualifying features, by maintaining or restoring:
 - the extent and distribution of qualifying natural habitats and habitats of the qualifying species;
 - the structure and function (including typical species) of qualifying natural habitats;
 - the structure and function of the habitats of the qualifying species;
 - the supporting processes on which qualifying natural habitats and habitats of qualifying species rely;
 - the population of qualifying species; and,
 - the distribution of qualifying species within the site.

2.2.1 Favourable condition

19. 'Favourable condition' is the term used in the UK to represent 'Favourable Conservation Status' for the interest features of SACs. For an Annex I habitat,

¹ <http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0030369>

Favourable Conservation Status occurs under the Habitats Directive² when (JNCC and NE, 2013):

- its natural range and the area it covers within that range are stable or increasing;
- the specific structure and functions, which are necessary for its long-term maintenance, exist and are likely to continue to exist for the foreseeable future; and
- the conservation status of its typical species is favourable.

20. Favourable condition of Annex 1 Sandbanks which are slightly covered by seawater all the time and Annex I Reefs is assessed based on the long-term maintenance of the following (JNCC and NE, 2013):

- extent of the habitat (and elevation and patchiness for reef);
- diversity of the habitat;
- community structure of the habitat (population structure of individual species and their contribution to the functioning of the habitat); and
- natural environmental quality (e.g. water quality, suspended sediment levels).

2.2.2 Existing pressures in the HHW SAC

21. The Standard Data form for the HHW SAC³ reports the following pressures on the site:

- Mining and quarrying (low pressure).
- Exploration and extraction of oil or gas (high pressure).
- Utility and service lines (low pressure).
- Shipping lanes, ports, marine constructions (low pressure).
- Fishing (high pressure).
- Marine water pollution (low pressure).

2.2.3 Targets for achieving Favourable condition

2.2.3.1 Annex I *S. spinulosa* reef

22. NE's Supplementary Advice Targets⁴ of relevance to Norfolk Vanguard for Annex I *S. spinulosa* Reef are outlined in Table 2.1.

² Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora.

³ <http://natura2000.eea.europa.eu/Natura2000/SDF.aspx?site=UK0030369>

⁴

<https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK0030369&SiteName=haisborough&SiteNameDisplay=Haisborough%2c+Hammond+and+Winterton+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAAarea=>

Table 2.1 Supplementary Advice Targets for *S. spinulosa* of Relevance to Norfolk Vanguard

Attribute	Target
Distribution: presence and spatial distribution of biological communities	Restore the presence and spatial distribution of reef communities.
Extent of subtidal biogenic reef	When <i>Sabellaria</i> reef develops within the site, its extent and persistence should not be compromised by human activities, accepting that, due to the naturally dynamic nature of the feature, its extent will fluctuate over time.
	Restore the total extent and spatial distribution and types of reef (and each of its subfeatures).
Structure and function: presence and abundance of key structural and influential species	Maintain OR Recover OR Restore the abundance of listed species, to enable each of them to be a viable component of the habitat.
Structure: non-native species and pathogens	Restrict the introduction and spread of non-native species and pathogens, and their impacts.
Structure: population density	Restore the density of <i>Sabellaria</i> species across the feature.
Structure: species composition of component communities	Restore the species composition of component communities.
	Restore the species composition of the <i>Sabellaria</i> reef community.
Supporting processes: areas with conditions suitable for reef formation	Restore the environmental conditions in those locations that are known, or which become known, to be important for <i>Sabellaria</i> reef formation.
	Maintain the natural rate of sediment deposition.
	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat
	Maintain the natural water flow velocity to the subtidal <i>Sabellaria</i> reefs, to provide high levels of oxygen, sediment supply and food.

2.2.3.2 Annex I Subtidal Sandbanks

23. NE's Supplementary Advice Targets of relevance to Norfolk Vanguard for Annex I Subtidal Sandbanks are outlined in Table 2.1.

Table 2.2 Supplementary Advice Targets for Subtidal Sandbanks of Relevance to Norfolk Vanguard

Attribute	Target
Distribution: presence and spatial distribution of biological communities	Restore the presence and spatial distribution of subtidal sandbank communities.
Extent and distribution	Restore the total extent and spatial distribution of subtidal sandbanks to ensure no loss of integrity, while allowing for natural change and succession.
Structure and function: presence and abundance of key structural and influential species	Maintain OR Recover OR Restore the abundance of listed species, to enable each of them to be a viable component of the habitat.
Structure: non-native species and pathogens	Restrict the introduction and spread of non-native species and pathogens, and their impacts.
Structure: sediment composition and distribution	Restore the distribution of sediment composition across the feature (and each of its sub-features).
Structure: species composition of component communities	Restore the species composition of component communities.
Structure: topography	Maintain the presence of topographic features, while allowing for natural responses to hydrodynamic regime, by preventing erosion or deposition through human-induced activity.
Structure: volume	Maintain the existing (where no previous evidence exists) or best-known (where some evidence exists) volume of sediment in the sandbank, allowing for natural change.
Supporting processes: sediment movement and hydrodynamic regime	Maintain all hydrodynamic and physical conditions such that natural water flow and sediment movement are not significantly altered or prevented from responding to changes in environmental conditions.

3 QUANTIFICATION OF EFFECT ON THE HHW SAC

3.1 Cable Protection Worst Case Scenario

24. The predicted worst case scenario set out below relating to the potential effect of the deployment of cable protection on the HHW SAC incorporates the new further mitigation proposed by the Applicant in response to the BEIS letter. It also takes account of the various mitigation commitments made prior to submission of the DCO application, as well as commitments made during the Norfolk Vanguard Examination and the ongoing Norfolk Boreas Examination (see below).

3.1.1 Mitigation

3.1.1.1 Commitments made in the Environmental Statement and/or during Examination

25. In the Environmental Statement (ES) (document reference 6.1) submitted in support of the DCO application, the Applicant committed to use a High Voltage Direct Current (HVDC) export solution, rather than High Voltage Alternating Current (HVAC), in order to reduce the number of cables and cable protection required by the project. This results in the following mitigating features in relation to cable protection:
- There will be two cable installations instead of six for NV (and the same for Norfolk Boreas).
 - The potential quantity of cable protection required in the unlikely event that cables cannot be buried will be reduced due to the reduction in the number of cables.
 - The number of export cables required to cross existing cables and pipelines and its associated cable protection will be reduced.
 - The space required for cable installation will be reduced, increasing the space available within the cable corridor for micro-siting to increase burial success and avoid constraints such as the presence of *S. spinulosa* reef.
26. An interim survey in 2020 and pre-construction survey within 12 months of any cable installation works will be undertaken. The detailed cable route, including micro-siting, will be determined based on the results of the interim and pre-construction surveys and must be agreed with the MMO, in consultation with NE, before any installation works can commence.
27. Cables will be buried where the substrate allows burial to a depth of at least 1m and appropriate burial tools will be selected, following the preconstruction surveys, in order to maximise cable burial success and minimise the requirement for cable protection.

28. A maximum of 5% of the cable length within the HHW SAC may require cable protection due to inappropriate ground conditions for burial. This has been reduced from 10%, as set out in the DCO application, based on evidence from an interim cable burial study (provided in Appendix 2 of the HHW SAC SIP (document 8.20)).

3.1.1.2 Specific mitigation in response to the BEIS letter

29. In response to the BEIS letter, the Applicant is proposing a new commitment to not use cable protection in the priority areas to be managed as reef within the HHW SAC, unless otherwise agreed with the MMO in consultation with NE. This is explained further within the HHW SAC Position Statement (document reference ExA; Pos; 11.D10.1).
30. This commitment will ensure that no permanent habitat loss occurs in the priority areas that have been identified by NE in order to facilitate the recovery of *Sabellaria* reef to favourable condition.

3.1.2 Footprint of Cable Protection in the HHW SAC

31. The total footprint of cable protection within the HHW SAC could be up to 0.03km² based on the following:
- 0.012km² as a result of up to six crossings for each of the export cable pairs (12 crossings in total) within the HHW SAC.
 - Each crossing could require up to 100m in length and 10m in width of protection.
 - Every effort is being made by the Applicant to reduce the number of crossings by removing disused cables where agreement can be reached with the cable owners. An out of service cable recovery agreement has been discussed with BT Subsea and Appendix 4 of the Additional Mitigation report (document reference ExA; Mit; 11.D10.2.App4) demonstrates the advanced stages of these discussions, with a formal agreement expected to be in place imminently.
 - 0.02km² as a result of up to 5% of the cable length in the SAC (2km of cable protection per cable pair, 4km in total) potentially requiring cable protection in the unlikely event that unsuitable ground conditions are encountered. A 5m width of cable protection could be required. **If required, this would only be deployed outside the priority areas to be managed as reef in the HHW SAC.**

3.2 Quantification of Effects

32. Appendix 2 of the Additional Mitigation document (reference ExA; Mit; 11.D10.2.App2) provides an assessment of the effect of cable protection on the

Annex 1 Sandbank and Annex 1 Reef features of the HHW SAC. This demonstrates the Applicant's position that there will be no AEoI. However, in order to facilitate consideration of an appropriate scale of compensation as a factor in determining the feasibility of deliverability, Table 3.1 provides a summary of the areas of potential habitat loss.

Table 3.1 Quantification of potential habitat loss in the HHW SAC

Feature	Quantification of Habitat Loss
Annex 1 Reef (<i>S. spinulosa</i>)	No cable protection will be deployed in the priority areas to be managed as reef that underpin the Eastern Inshore Fisheries and Conservation Authority (EIFCA) and Department for Environment, Food and Rural Affairs (DEFRA) fisheries management areas (discussed further in the HHW SAC Position Statement, document reference ExA; Pos; 11.D10.1). The extent of Annex 1 reef and the approach to cable routing will be determined by the pre-construction surveys which must be undertaken within 12 months of construction due to the ephemeral nature of <i>S. spinulosa</i> reef. Therefore, it is not possible to quantify the amount of overlap there will be (if any) between cable protection and Annex 1 Reef outside of the priority areas to be managed as reef at this stage. In order to provide a highly precautionary prediction for the purpose of considering in principle compensation proposals, an unrealistic assumption has been made that all of the potential cable protection required in unsuitable ground conditions (5% of the cable length) will be placed on Annex 1 Reef. Where cable protection is required due to pipeline / cable crossings this is not considered to represent a loss of Annex I reef in accordance with NE advice that <i>S. spinulosa</i> reef growing on artificial substrate is not Annex I reef. In summary: a worst-case habitat loss of 0.02km² is considered for the purposes of reviewing in-principle compensation. As explained above, there will be no loss of Annex 1 reef habitat in the priority areas to be managed as reef.
Annex 1 Sandbank	The maximum total habitat loss within the HHW SAC could be 0.03km². This represents 0.002% of the 1468km² area of the SAC and 0.003% of the 678km² area of subtidal sandbanks within the SAC.
Total Annex 1 habitat loss	It should be noted that the worst case scenarios for habitat loss on Annex 1 Reef and Annex 1 Sandbank outlined in the rows above should not be added together. The maximum total habitat loss within the HHW SAC would be 0.03km². This represents 0.002% of the 1468km² area of the SAC. Of this maximum, a proportion (less than 0.02km²) could be on Annex 1 Reef (although this is unlikely) and/or some or all of the cable protection could be on Annex 1 Sandbank.

4 COMPENSATION

4.1 Guidance

33. Following a conclusion by the Competent Authority that, following Appropriate Assessment, an AEoI on a Natura 2000 site(s) cannot be ruled out, that there are no alternative solutions and that there are IROPI, Article 6(4) of the Habitats Directive *“requires that all necessary compensatory measures are taken to ensure the overall coherence of the network of European sites as a whole is protected.”*
34. DEFRA (2012) and EC (2012 and 2018) explain that, for habitats, the overall coherence of the Natura 2000 Network can be maintained by:
 - re-creation of a comparable habitat, which in time can be designated as a Natura 2000 site;
 - site creation or extension of an existing Natura 2000 site on comparable habitat; and/or
 - reduction of pressures on the feature within the affected site or as part of the wider Network.
35. The guidance provides an element of flexibility, recognising that compensation of a ‘like for like’ habitat and/or in the same designated site may not be practicable.
36. Compensation should not be used to address issues that are causing designated habitats or species to be in an unfavourable condition. This is the responsibility of the UK Government. For example, it would not be sufficient for the Applicant to support existing proposals by the EIFCA and DEFRA to designate fisheries closure areas in the HHW SAC in order to restore the condition of the site. However there may be options to expand on these measures (in circumstances where this would not otherwise occur) in order to provide additional project level compensation (discussed further Section 66).
37. Ideally, compensation should be functioning before the effect takes place, although it is recognised that this may not always be possible, as stated in the EC Guidance (2012):

“in principle, the result of implementing compensation has normally to be operational at the time when the damage is effective on the site concerned. Under certain circumstances where this cannot be fully fulfilled, overcompensation would be required for the interim losses.”
38. In line with the guidance, indicative compensation options for the loss of subtidal Annex 1 habitat could include:

- Re-creation of a comparable habitat, such as:
 - Establish a new Annex 1 Reef.
 - Site creation or extension on comparable habitat, such as:
 - Extend the HHW SAC to encompass areas of Annex 1 Reef outside but proximate to the SAC and the introduction of appropriate management.
 - Extend the HHW SAC to encompass areas of Annex 1 Sandbanks outside but proximate to the SAC and the introduction of appropriate management.
 - Establish a new site (and appropriate management) for Annex 1 Reef at a location away from the HHW SAC.
 - Establish a new site (and appropriate management) for Annex 1 Sandbanks at a location away from the HHW SAC.
 - Reduction of pressures on the feature within the affected site or as part of the wider Network, such as:
 - Fisheries management through the reduction in fishing using intrusive methods.
 - Removal of disused anthropogenic infrastructure and marine litter.
39. This note relates to in principle compensation for Norfolk Vanguard alone, however, should compensation be required, the in-combination effects of Norfolk Vanguard and Norfolk Boreas (the 'sister' project to Norfolk Vanguard) would be considered and the potential to deliver overarching compensation for these effects would be taken into account.

4.2 Review of Potential Compensation Measures

4.2.1 Establish a new Reef feature

4.2.1.1 Overview

40. There is little evidence that *S. spinulosa* reef can be replanted successfully, however, compensation through the delivery of another biogenic reef could support increased biodiversity, comparable to the function of *S. spinulosa* reef. This recognises that, under the Habitats Directive, Article 17 reporting relates to Annex 1 Reef as a whole and does not distinguish between different types of reef.
41. Following consultation with NE, the Applicant is aware that establishing a reef feature within the HHW SAC, other than *S. spinulosa*, would not be acceptable to them. Therefore, the area of focus for this potential option would be outside the HHW SAC on appropriate substrate.

42. JNCC⁵ states that, in addition to *S.spinulosa*, the main species which form biogenic reefs in the UK are blue mussels *Mytilus edulis*, horse mussels *Modiolus modiolus*, the serpulid worm *Serpula vermicularis*, and cold-water corals such as *Lophelia pertusa*.
43. There is little evidence that *S.vermicularis*, *M. modiolus*, or *L. pertusa* can be replanted successfully to form reefs or beds, however *M. edulis* is widely farmed and readily colonises exposed surfaces. It is, therefore, possible to plant new *M.edulis* beds or enhance existing beds in areas of suitable habitat.
44. *M.edulis* inhabits hard substrate in the intertidal to shallow subtidal zone. It would not, therefore, be possible to deliver this within the Order limits of Norfolk Vanguard, which is predominantly characterised by soft sediment and in deeper waters. While it is noted that *M.edulis* is likely to colonise sections of the turbine and platform foundations, this would not be on a natural substrate and therefore would not be considered an Annex 1 habitat.
45. Alternatively, *Ostrea edulis* (native oyster beds) also support increased biodiversity, as biogenic reefs do, and a recent study by the Dornoch Environmental Enhancement Project (DEEP) provides evidence of successful planting of native oyster beds (Centre of Expertise for Waters (CREW), 2019). In accordance with NE's Norfolk Vanguard Deadline 1 submission (REP1-088), the southern North Sea was covered by extensive native oyster beds historically. Therefore, native oyster beds could provide a natural biogenic feature and it can be expected that there will be suitable habitat for planting *O. edulis*.
46. While the OSPAR commission (2009) states that "*Oyster beds need to be included in the European Natura 2000 network by Member States, given that they qualify as one of the habitats of the Habitats Directive (reefs)*", currently, oyster beds are not included in the Habitats Directive, are not therefore Annex 1 habitat, and are managed by National legislation.

4.2.1.2 Delivery mechanism

47. In order to deliver the planting of oyster beds, the Applicant would commission an appropriate academic body with experience and expertise in this field to undertake this initiative.
48. Should planting of oyster beds be deemed to be appropriate, commercial fishing in the vicinity of established native oyster beds would need to be limited and/or

⁵ <https://sac.jncc.gov.uk/habitat/H1170/>

restricted, and the mechanism for this would need to be agreed with the MMO, in order for additional planting to be successful.

49. Areas around the wind turbine and/or platform foundations could provide an opportunity for planting native oyster beds in locations that would experience limited fishing activity due to 50m advisory safety zones.

4.2.1.3 Spatial scale

50. Should this measure be deemed to be appropriate, the extent of the area to be planted in comparison to the area lost to cable protection would be agreed with NE.
51. A 2:1 ratio of *O. edulis* to *S. spinulosa* may be appropriate in recognition of the fact that replanting is unlikely to be 100% successful. Based on this, an area of 0.04km² (4ha) would compensate if 0.02km² of cable protection (as a worst case) in the SAC is determined to be required following detailed design, and if this overlaps with Annex 1 Reef. The DEEP project aims to plant a significantly larger area of 40ha of oyster bed within 5 years.
52. Table 4.1 proposes indicative areas of deployment around wind turbine foundations based on a conservative assumption of planting a 20m wide ring around the foundations, on the basis that there is unlikely to be fishing at this proximity to turbines due to navigational safety. In determining the areas of deployment, however, the size of an oyster bed(s) required to deliver a viable, self-sustaining population needs to be taken into consideration and, therefore, the numbers below are indicative at this stage.

Table 4.1 Indicative areas of *O. edulis* deployment around foundations based on a total compensation area of 4ha

Indicative foundation type	Foundation diameter (m)	Area of <i>O.edulis</i> per foundation based on a 20m ring around foundations (m ²)	Number of turbines with <i>O.edulis</i> planting	% of total no. turbines
20MW turbine with gravity base	50	1885	21	23%
11.55MW turbine with gravity base	40	1571	25	16%
20MW turbine with monopiles	15	785	51	57%
11.55MW turbine with monopiles	10	628	64	41%

4.2.1.4 Timescale

53. The initial phase of the DEEP project between 2017 and 2018 demonstrated up to 86% survival.⁶ Based on this, should this measure be deemed to be appropriate, it is likely that planting at a sufficient scale could be undertaken in a relatively short timescale (e.g. approximately one year).
54. However, if the planting is to occur around infrastructure foundations within Norfolk Vanguard, this would have to be delivered post construction. To account for the measure not being in place prior to the effect on the HHW SAC, a proportion of overplanting could be provided, in accordance with the EC (2012) Guidance discussed in Section 4.1.
55. Alternatively, as the Applicant owns a number of other OWFs, an area within an existing OWF could be planted with oyster bed to deliver compensation for Norfolk Vanguard.

4.2.1.5 Feasibility

56. As discussed in Section 4.2.1.1, oyster beds are not an Annex 1 habitat and because of this, during consultation between the Applicant and NE, NE stated that oyster beds would not deliver coherence of the Natura 2000 network.
57. Therefore, due to the uncertainty associated with the acceptability and deliverability of this compensatory measure, the Applicant would not propose to progress this option.

4.2.2 Site creation or extension on comparable habitat

4.2.2.1 Overview

58. There are various areas of Annex I habitat (including areas of subtidal sandbanks and reef) outside existing SACs that have been identified by Statutory Nature Conservation Bodies (SNCBs) which could be designated and managed as new SACs in order to deliver compensation.
59. The protection of currently unprotected Annex 1 Reef and/or Annex 1 Sandbank habitat anywhere in the UK could deliver compensation. However, a key opportunity for the HHW SAC would be to extend its boundary to encompass Annex 1 Reef and Sandbanks outside but proximate to the current boundary (see Figure 4.1 and Figure 4.2). This would align with the EC guidance on locating any compensation as close to the point of impact as possible (by contrast to taking action elsewhere). The

<https://nativeoysternetwork.org/portfolio/deep/>

extension could then be covered by the existing Conservation Objectives and management measures for the HHW SAC.

4.2.2.2 Delivery mechanism

60. An extension to the HHW SAC and/or designation of reef or sandbank Annex 1 habitat outside the boundary of the SAC would have to be delivered by NE in consultation with the JNCC, as well as DEFRA. The Applicant could provide support and assistance to this process in order to deliver compensation for the project. Further details on the deliverability of this measure are provided in Section 4.3.
61. Based on consultation undertaken with NE in relation to these compensatory measures (outlined in the Consultation Overview, document reference ExA; Consult; 11.D10.3), the Applicant understands that NE supports this measure in principle.

4.2.2.3 Spatial scale

62. The extent of the area to be designated in comparison to the area lost to cable protection would be agreed with NE.
63. A large 10:1 ratio of designation extension to habitat loss⁷ would recognise the fact that the addition of protection to existing habitat has a lesser value than direct habitat creation. However, Figure 4.1 and Figure 4.2 demonstrate the very small area associated with a 10:1 ratio⁸ in the context of the wider HHW SAC. Therefore, consideration should be given to developing an area of an appropriate scale that could deliver benefits to Annex 1 habitat. An indicative proposed area for extension in this case is discussed in Section 4.3.

4.2.2.4 Timescale

64. The aim of this potential compensation measure would be to designate the site extension prior to the construction of Norfolk Vanguard.
65. Recognising that DECC (2016) states that a notified possible SAC (pSAC) and Site of Community Importance (SCI) should be treated as if it has been formally designated or classified, it would be sufficient for the site to reach pSAC or SCI status prior to cable installation within the HHW SAC. Further details on the expected timescales of this process are provided in Section 4.3.

⁷ That aligns with the compensation ratio provided for Maasflakte 2 (Voordelta SAC) (Schouten *et al.*, 2008).

⁸ A 200,000m² (0.2km²) extension to compensate for a loss of up to 20,000m²

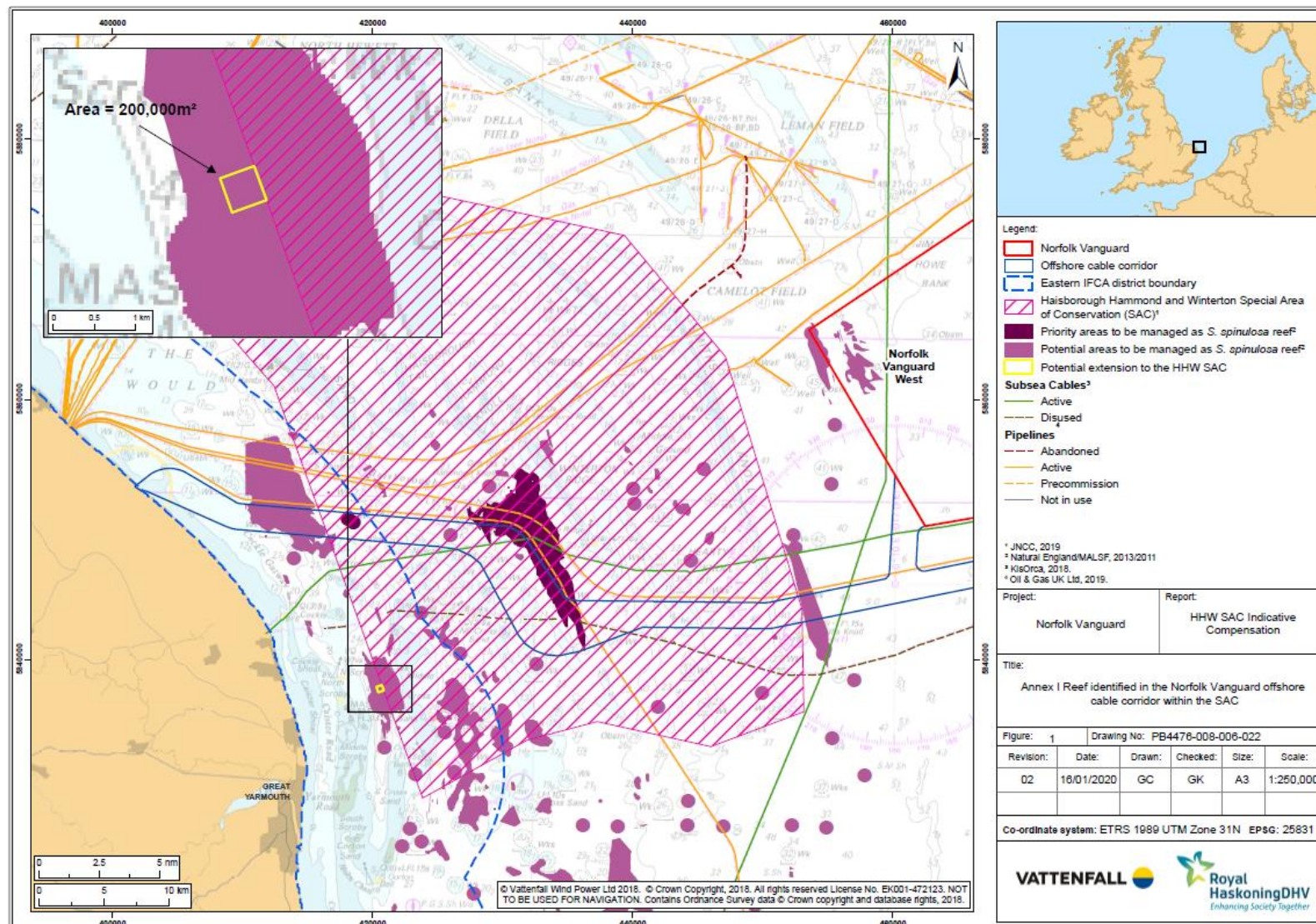


Figure 4.1 In Principle Compensation – Potential extension area to HHW SAC for Annex 1 Reef

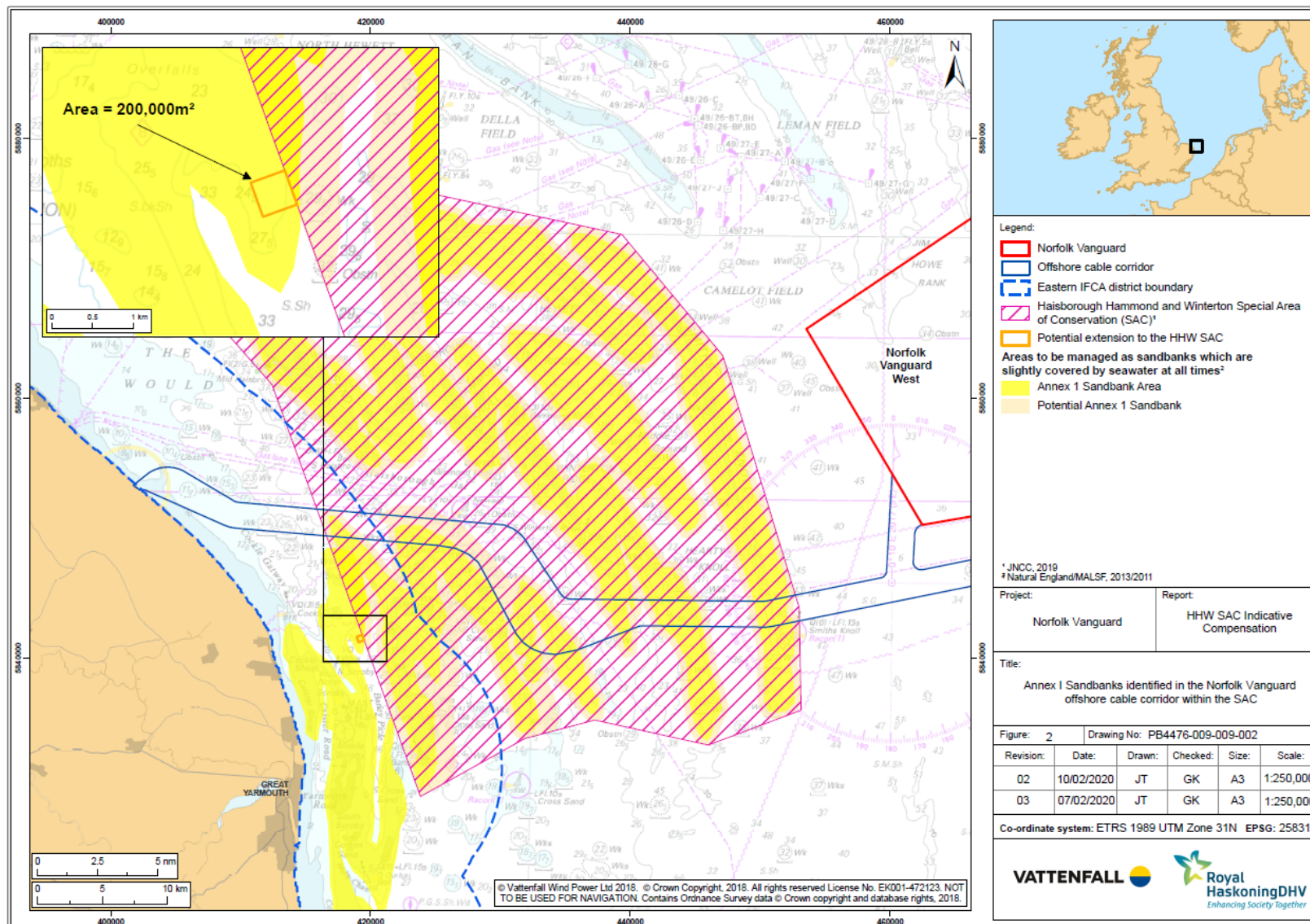


Figure 4.2 In Principle Compensation – Potential extension area to HHW SAC overlaid with Annex 1 Sandbank

66. An advantage of promoting an extension to the HHW SAC over identifying a new site for designation elsewhere, would occur in relation to the timeframe that would be required for site selection of a new SAC. The HHW SAC has clear areas of potential for extension where the Annex 1 Reef and Annex 1 Sandbank extend beyond the existing site boundary.
67. In the unlikely event that the HHW SAC does not achieve pSAC status prior to construction, the large potential spatial scale outlined above could provide a significant level of overcompensation for any interim loss and, as such, this would meet the requirements of the EC (2012) Guidance discussed in Section 4.1.

4.2.2.5 Feasibility

68. The Applicant considers that an extension to the HHW SAC is a feasible measure and further details are provided in Section 4.3.

4.2.3 Fisheries management – reduction of intrusive fishing methods

4.2.3.1 Overview

69. As discussed in Section 2.2.2, fishing represents a key pressure on the HHW SAC. This particularly relates to intrusive fishing methods such as beam trawling which can cause damage to Annex 1 Sandbanks and Annex 1 Reef.
70. As discussed above, the removal of pressures which are already contributing to the unfavourable condition of a Natura 2000 site is the responsibility of the Regulator. Therefore, any proposals for compensation need to go beyond measures which are designed for the recovery of features in unfavourable condition. Recognising that the EIFCA and DEFRA have proposed closures to bottom towed fishing gear in areas within the HHW SAC, the Applicant would need to support the delivery of an additional closure to intrusive fishing methods outside the boundaries of the proposed management areas shown in Figure 4.3 (that would not be otherwise delivered) or facilitate a reduction in intrusive fishing effort through purchasing fishing quotas in relevant areas.

4.2.3.2 Delivery mechanism

71. The Common Fisheries Policy recognises that conservation measures which affect fishing interests may need to be adopted to comply with obligations in relation to environmental legislation⁹. Member States are allowed to adopt measures which do not affect other Member States under their own legislation, e.g. through bylaws under Section 129 (promoted by the MMO) and Section 155 (promoted by Inshore Fisheries Conservation Authorities) of the MCAA 2009. However where conservation

⁹ Articles 11 and 18 of Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy

objectives would affect other Member States which have a direct management interest in the fishery, a joint recommendation must be made to the European Commission (EC) to adopt those measures. In summary, the process for a joint recommendation is as follows:

- a. Informal consultation between Member States;
 - b. Initiating Member State to provide information to other Member States;
 - c. Member States to then submit a joint recommendation to the EC;
 - d. EC to check the recommendation is in line with existing legislation, undertake an assessment of the proposal, and adopt any necessary measures;
 - e. Period for objections; and
 - f. Publication of the joint recommendation in the EU official journal.
72. The UK Government is therefore required to promote the Joint Recommendation as the initiating Member State. The purpose of the joint recommendation process is to meet the obligations under Article 6 of the Habitats Directive. Article 6 requires the establishment of necessary conservation measures (including through management plans) and avoidance of the deterioration of natural habitats. However, EC Guidance¹⁰ states that compensatory measures should be additional to the actions that are considered normal practice under the Habitats and Birds Directives or obligations laid down in EU law, including the standard measures required for designation, protection and management of Natura 2000 sites.
73. At present, no authority has the jurisdiction to deliver fisheries management areas as compensation. An extension to a proposed fisheries management area or a new proposal would need to be facilitated by the UK Government in allocating appropriate powers to a relevant management body and, potentially, through the delivery of legislation to secure the necessary powers.
74. If this measure were to be considered further, baseline surveys would be required to confirm areas of suitable habitat and existing pressures to ensure areas identified for fisheries management have the potential to deliver benefits to Annex 1 habitat.

¹⁰ Managing Natura 2000 sites: The provisions of Article 6 of the Habitats Directive 92/43/EEC – C(2018) 7621

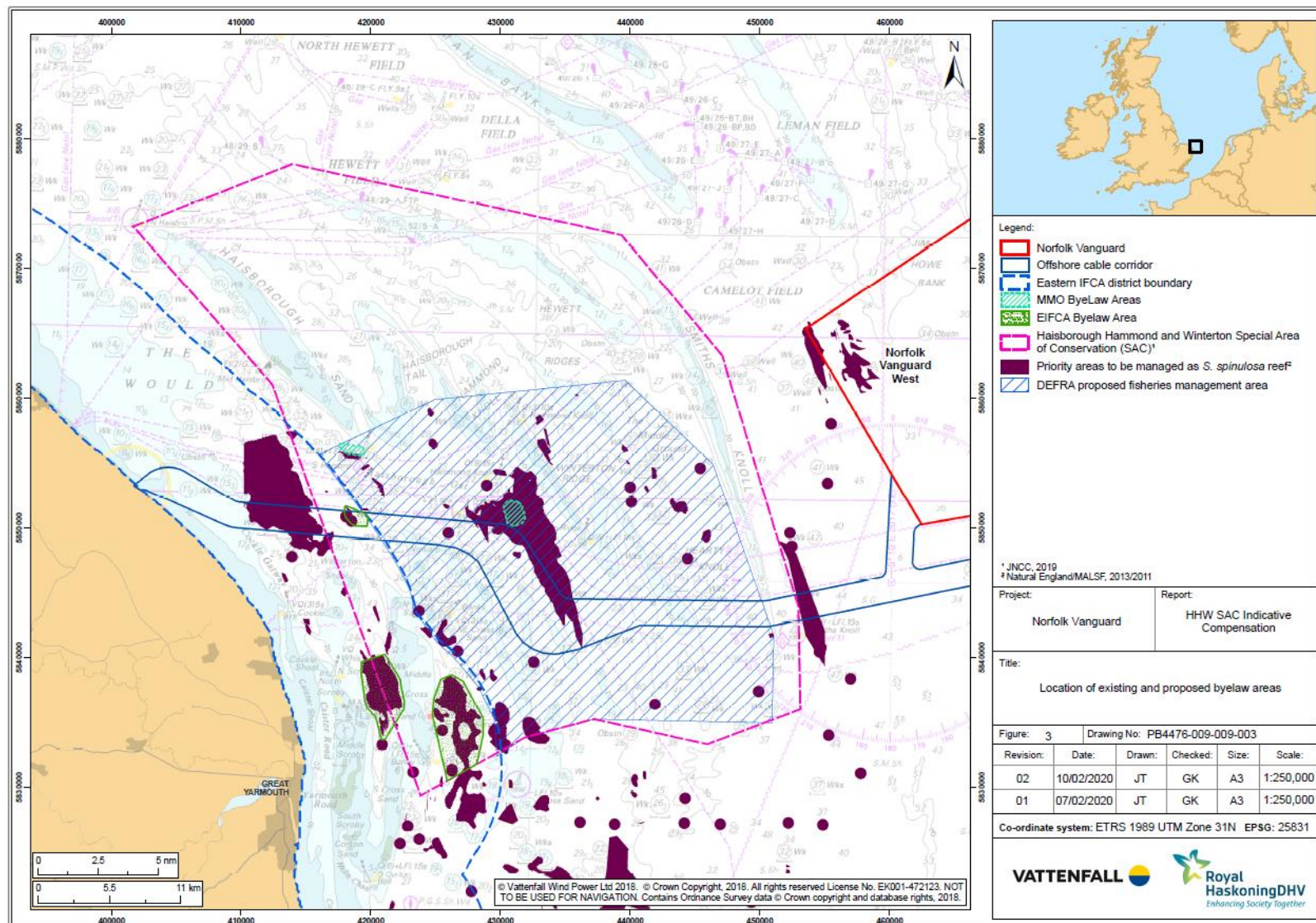


Figure 4.3 Existing and proposed fisheries management areas in the HHW SAC

75. Following the identification of suitable areas, the Applicant would financially support the process of developing a fisheries management measure in order to deliver compensation for the project, subject to the development of an authority having suitable powers to deliver this measure.

4.2.3.3 Spatial scale

76. The extent of the area required to be closed to bottom-towed fishing gear in comparison to the area lost to cable protection would be agreed with NE.
77. A 10:1 ratio may be appropriate, recognising that a closure would not guarantee that the whole area achieves favourable condition. It is notable, however, that NE has high confidence that the EIFCA and DEFRA proposed closure areas will result in recovery of Annex 1 Reef.
78. Based on this ratio, the designation of an area of 200,000m² (0.2km²) would compensate if 20,000m² of cable protection (as a worst case) in the SAC is determined to be required following detailed design, and if this cable protection overlaps with Annex 1 habitat. This is significantly less than the following proposed EIFCA byelaw areas associated with the HHW SAC and consideration would need to be given to developing an area of an appropriate scale that could deliver benefits to Annex 1 habitat:
- Area 36 – 189.8ha (1.9km²)
 - Area 37 – 1401ha (14.0km²)
 - Area 38 – 2237ha (22.4km²).

4.2.3.4 Timescale

79. As discussed above, no authority currently has the jurisdiction to deliver fisheries management areas for the purposes of compensation and, therefore, this measure would require government intervention.
80. Given this, compensation through fisheries management is unlikely to be deliverable prior to construction of Norfolk Vanguard.

4.2.3.5 Feasibility

81. The feasibility of fisheries management measures to deliver compensation would be subject to the presence of Annex 1 habitat or habitat that has potential to become an Annex 1 feature following the removal of fishing pressures. This could include areas within or outside the HHW SAC where intrusive fishing methods are used. As shown in Figure 4.3, areas that have the potential to become Annex 1 Reef ('areas to be managed as reef') have been identified by NE. However, as noted above, at present no authority has the jurisdiction to deliver fisheries management areas as compensation. An extension to a proposed fisheries management area or a new

proposal would need to be facilitated by the UK Government in allocating appropriate rights to a relevant management body and, potentially, through the delivery of legislation to secure the necessary rights. The feasibility of this measure is, therefore, currently uncertain and so the Applicant would not propose to progress this option.

82. The ability of the Applicant to purchase fishing quotas would be dependent on fishermen with appropriate quotas being willing to sell. The feasibility of this measure is, therefore, also uncertain and so the Applicant would not propose to progress this option either.

4.2.4 Removal of disused anthropogenic infrastructure and litter

4.2.4.1 Overview

83. As discussed in Section 2.2.2, oil and gas infrastructure and utility and service lines represent key pressures in the HHW SAC. Based on advice from NE that artificial features hinder the development of Annex 1 habitats, the potential benefits of removing existing disused infrastructure could remove a pressure on the HHW SAC (that otherwise would not occur) in order to provide a compensatory measure.
84. In addition, most other SACs in the UK are likely to include disused anthropogenic features such as cables, pipelines, lost objects and fishing gear. Subject to being able to locate such objects, removal at another SAC could also provide compensation and help to ensure the overall coherence of the Natura 2000 network in the context of Annex 1 habitats.

4.2.4.2 Delivery mechanism

85. Agreement from the owner of the disused infrastructure (where applicable) would need to be secured.
86. The method for removal would need to be agreed with NE to ensure that it did not have a greater impact on an Annex 1 feature. However, relevant removal measures are believed to be available.

4.2.4.3 Spatial scale

87. The extent of the required area of debris removal in comparison to the area lost to cable protection would be agreed with NE.
88. A 1:1 ratio may be appropriate in this case, on the basis that this would be a direct like-for-like removal of infrastructure to compensate for the addition of new infrastructure. Based on this, an area of 20,000m² (0.002km²) would compensate if 20,000m² of cable protection (as a worst case) in the SAC is determined to be

required following detailed design, and if this cable protection overlaps with Annex 1 habitat.

4.2.4.4 Timescale

89. Provided an agreement could be reached with the owners of disused infrastructure and the location of suitable infrastructure identified, this measure could be implemented between consent and construction. However, seabed surveys would first need to be undertaken (based on desk based assessment of likely 'hot spots') and these may need to cover an extensive area.

4.2.4.5 Feasibility

90. Where existing infrastructure within the HHW SAC may be reaching the end of its life (e.g. the gas pipeline), it may be the responsibility of the owner to decommission this infrastructure if possible and therefore consideration would need to be given to whether this measure would provide a compensatory measure for Norfolk Vanguard which is in addition to the existing requirements for the site.
91. In addition, depending on the type of infrastructure proposed for removal, the feasibility of lifting aging infrastructure and potential safety implications would need to be considered.
92. The Applicant is not aware of any known areas of small lost objects in the HHW SAC or surrounding area, such as fishing gear, that could be targeted and therefore there is high uncertainty associated with the practicality of finding and removing such objects. The Applicant has also consulted the EIFCA to confirm that there are no known areas that could be targeted with regards to lost fishing gear in this area. Therefore, this could require a significant level of survey data in terms of extent and resolution in order to locate suitable objects, and with the potential of no suitable finds.
93. Therefore, due to the uncertainty associated with the practicality of finding and removing infrastructure, the Applicant would not propose to progress this option.

4.3 Proposed Approach to Delivery of Compensation (if required)

94. If compensation is deemed to be required following the Appropriate Assessment, the Applicant proposes that an extension to the HHW SAC would be the most appropriate measure to deliver compensation for both Annex 1 Reef and Annex 1 Sandbank prior to the construction of Norfolk Vanguard.
95. The measures which would be undertaken by the Applicant to promote an extension to the HHW SAC are as follows:

- Agreement of the proposal to deliver an extension to the HHW SAC with NE, the JNCC and the DEFRA.
 - Provision of assistance in the development of an Area of Search in accordance with the JNCC Marine SAC Selection Process and Guidance¹¹. This may be undertaken either by the Applicant or by a third party (e.g. NE) with financial support from the Applicant.
 - Provision of ongoing support to NE (and JNCC as required) to progress agreement of an extension boundary (including confirmation of the size of the extension) which can be submitted to the UK Government as a draft SAC (dSAC).
 - Once the proposal is accepted and progressed to a pSAC by the UK Government, the compensation would be deemed to be effective for the Project. However, the Applicant would provide ongoing support to progress the formal public consultation required for the site to reach SAC status. This is likely to take the form of funding for an appropriate person in NE or JNCC for approximately three to four years.
96. The aim of this potential compensation measure would be to designate the site extension prior to the construction of Norfolk Vanguard. As discussed above, pSAC status would deliver compensation and the Applicant could commence its support of this process immediately post consent.
97. This compensation would be secured through the approval of a strategy by the Secretary of State, in consultation with the MMO and NE (see Section 4.3.1.2). The strategy would need to be submitted to the Secretary of State for approval no later than 12 months prior to the commencement of any offshore works, and approved by the Secretary of State prior to the commencement of any offshore works. The strategy would include timescales for the measures to be delivered as well as proposals for monitoring and reporting on the effectiveness of the measures. Results from the monitoring scheme would need to be submitted to the Secretary of State and NE, along with any proposals to address the effectiveness of the measures, which must thereafter be implemented as approved by the Secretary of State.
98. The precise size and location of the extension would be approved by the Secretary of State, in consultation with the MMO, NE, JNCC and DEFRA and would depend on the conclusions of the Appropriate Assessment regarding the area of any adverse effect, as well as confirmation of an appropriate scale of extension.
99. Given the known area of Annex 1 Sandbank and Annex 1 Reef that extends beyond the boundary of the HHW SAC, it is anticipated that the size of the extension could be in the order of 120km² if required (shown in Figure 4.4). As discussed above, in

¹¹ archive.jncc.gov.uk/default.aspx?page=4165

the unlikely event that the HHW SAC does not achieve pSAC status prior to construction, this large potential spatial scale would provide a significant level of overcompensation and, as such, this would meet the requirements of the EC (2012) Guidance discussed in Section 4.1.

100. Given the requirement for formal consultation following designation to pSAC status, the Applicant acknowledges that there could be uncertainty as to whether the site would progress to full SAC status. As discussed above, classification as a pSAC would deliver compensation in the short term, however, if the consultation feedback is such that it is deemed unlikely that this measure would be secured in the long term, the Applicant would be responsible for identifying an alternative measure(s) which could include one or more of the measures discussed in Sections 4.2.1, 66 and 4.2.4.

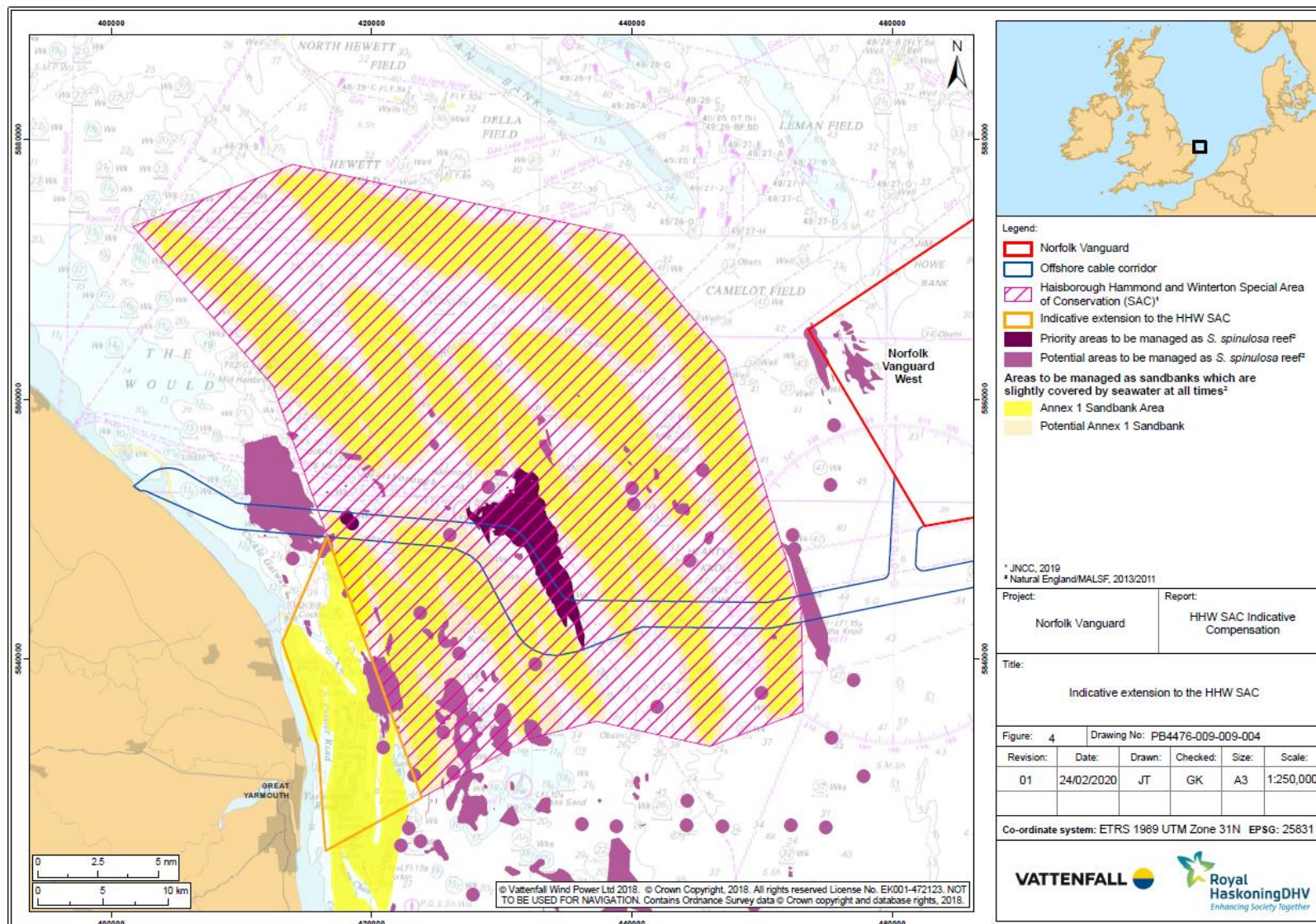


Figure 4.4 Indicative HHW SAC Extension area

4.3.1.1 Monitoring

101. An advantage of this compensation measure is that, once designated, management of the extension could be aligned with the existing management of the SAC; providing long term efficiency. The Applicant could therefore provide funding for a proportion of the Common Standards Monitoring and/or initiatives to achieve favourable condition, proportionate to the size of area of habitat loss in comparison to the existing HHW SAC area.
102. Alternatively, the Applicant could extend the proposed post construction monitoring (outlined in the SIP/HHW SAC Cable Specification, Installation and Monitoring Plan, document 8.20) to encompass the extension area (see Table 4.2).

Table 4.2 Potential monitoring of extension in line with in principle post construction monitoring within the HHW SAC

Receptor/s	Potential Monitoring
Sandbanks	A single survey within the Extension area using full sea floor coverage swath-bathymetric surveys undertaken to IHO S44ed5 Order 1a standard and side scan sonar surveys.
<i>S. spinulosa</i> reef	Where potential areas of <i>S. spinulosa</i> reef are identified during geophysical surveys, a single survey, specifically targeting those reefs identified would be undertaken using drop down video to confirm presence, extent and elevation. The duration over which monitoring of the Extension would occur would be aligned with the duration for post construction monitoring; the latter must be agreed with the MMO following review of the post-construction survey data.

4.3.1.2 DCO Condition

103. Schedule 17 of the draft DCO submitted on 28 February 2018 includes the following proposed condition to secure an extension to the HHW SAC as a compensatory measure if the Secretary of State is minded to conclude an AEoI on the HHW SAC:

100 (1) No later than 12 months prior to the commencement of any offshore works, a strategy to promote an extension to the Haisborough, Hammond and Winterton Special Area of Conservation must be submitted to the Secretary of State for approval, in consultation with the MMO and the relevant statutory nature conservation body.

(2) The strategy must be approved in writing by the Secretary of State prior to the commencement of the offshore works and must:

(a) accord with the principles contained in Section 4 of the Haisborough, Hammond and Winterton Special Area of Conservation (SAC) – In Principle Compensation Measures;

(b) include proposals for monitoring and reporting on the effectiveness of the measures; and

(c) include timescales for the measures to be delivered.

(3) The strategy must be carried out as approved, unless otherwise agreed in writing by the Secretary of State.

(4) Results from the monitoring scheme required under sub-paragraph (2)(b) including any proposals to address the effectiveness of the measures must be submitted to the Secretary of State and the relevant statutory nature conservation body, and any proposals to address effectiveness must thereafter be implemented by the undertaker as approved in writing by the Secretary of State.

4.4 Summary

104. The Applicant's maintains the position that Article 6(4) is not required in relation to the HHW SAC as a result of Norfolk Vanguard, as an AEoI can be ruled out. This is discussed further in the HHW SAC Position Statement (ExA; Pos; 11.D10.1).
105. Should the Secretary of State be minded to disagree with this position and conclude an AEoI following the Appropriate Assessment, the evidence presented in this document shows that there is at least one deliverable compensation measure.
106. Table 4.3 provides a summary of the compensatory measures that have been reviewed by the Applicant in consultation with NE and the MMO.
107. While there are a range of potential measures to compensate habitat loss, the Applicant proposes that an extension to the HHW SAC is the most deliverable within the timescales required for Norfolk Vanguard. The Applicant has set out how this compensatory measure could be secured within Schedule 17 of the draft DCO submitted on 28 February 2020.

Table 4.3 Summary of In Principle Compensation Measures

Indicative Measure	Benefits	Delivery mechanism	Spatial scale	Timescale	Potential feasibility	Annex 1 Habitat Compensated by Measure		Measure taken forward as compensation for Norfolk Vanguard
						Sandbank	Reef	
Establish an Annex 1 Reef at a location outside the HHW SAC	<i>O. edulis</i> or <i>M. edulis</i> beds would support increased biodiversity, comparable to the function of <i>S. spinulosa</i> reef. <i>O. edulis</i> and <i>M. edulis</i> beds are natural and native to the North Sea.	✓ In order to deliver the planting of biogenic reef/beds, the developer would commission an appropriate academic body with experience and expertise in this field. Need to ensure beds are not damaged by commercial fisheries.	✓ The scale would be agreed with NE. Need to plant areas which are of suitable size to become self-sustaining. A 2:1 ratio may be appropriate to recognise that replanting would not be 100% successful. Based on this, a maximum area of 0.04km ² could be required. The DEEP project aims to plant a significantly larger area of 0.4km ² of <i>O. edulis</i> bed within 5 years.	✓ If <i>O. edulis</i> beds were to be located within Norfolk Vanguard this would be delivered post consent with a proportion of overplanting to compensate for not being in place at the time of the effect in accordance with EC (2012) and DEFRA (2013) Guidance. Alternatively, as the Applicant owns a number of other OWFs, an area within an existing OWF could be planted with oyster bed to deliver compensation for Norfolk Vanguard. <i>M. edulis</i> translocation would not be feasible within the order limits of Norfolk Vanguard, therefore the timescale for site selection is likely to be challenging.	? Technically feasible that <i>O. edulis</i> and <i>M. edulis</i> can be translocated based on existing evidence. <i>However, O. edulis</i> is not deemed to be an acceptable measure by NE and <i>M. edulis</i> translocation would not be feasible within the Order limits of Norfolk Vanguard, therefore the deliverability of this as compensation for Norfolk Vanguard would be uncertain.	x	✓	x
Extend the HHW SAC to encompass areas of Annex 1 habitat outside the SAC	Only a very small extension required relative to the scale of the HHW SAC. Once designated, management of the extension could be aligned with the existing management of the SAC providing long term efficiency.	✓ Technical input and/or financial support to SNCB to progress agreement of a designation boundary extension by the UK Government. The Applicant would provide ongoing support to progress the formal consultation towards the site reaching SAC status.	✓ The precise size of the extension would be approved by the Secretary of State, in consultation with the MMO and NE, and would depend on the conclusions of the Appropriate Assessment regarding the area of any adverse effect. However, it is anticipated that the size of the extension could be up to 120km ² based on the known area of Annex 1 Sandbank and Annex 1 Reef that extends beyond the boundary of the HHW SAC.	✓ It is policy to consider early designations (including pSAC and SCI) as SACs in decision making. Therefore, it would be sufficient for the site to reach pSAC or SCI status in order for compensation to be in place. The Applicant could begin support for this process immediately post consent and it is expected that pSAC status could be achieved within 1 or 2 years of consent. The timescale to reach full SAC status and therefore the ongoing contribution from the Applicant is expected to be approximately 3 to 4 years.	✓ Existing mapping by NE shows areas of Annex 1 habitat beyond the HHW SAC that could be protected, therefore this measure is expected to be feasible.	✓ Annex 1 Sandbank extends beyond the boundary of the SAC	✓ Annex 1 Reef extends beyond the boundary of the SAC	✓
Fisheries management – Reduction in intrusive fishing methods such as bottom-towed trawling	Would represent a relatively small additional area further to existing proposals for fisheries management areas in the SAC.	✓ Financial contribution from the Applicant if this measure were adopted, calculated by reference to spatial scale of impact.	✓ The scale would be agreed with NE. For example, a 10:1 ratio may be appropriate – e.g. 0.02km ² of habitat loss compensated by 0.2km ² of extension to, or	? Long term/uncertain due to the absence of existing powers for an authority to deliver fisheries management areas for the purposes of compensation	? Currently no authority has the jurisdiction to deliver fisheries management areas for the purposes of compensation. The feasibility of this measure	✓ Fisheries represent a key pressure on Annex 1 Sandbank in the SAC.	✓ Fisheries represent a key pressure on Annex 1 Reef in the SAC.	x

Indicative Measure	Benefits	Delivery mechanism	Spatial scale	Timescale	Potential feasibility	Annex 1 Habitat Compensated by Measure		Measure taken forward as compensation for Norfolk Vanguard
						Sandbank	Reef	
	Approach for project compensation could be aligned with existing proposals for efficiency.	Requires strategic input from the UK Government to develop legislation and a strategic fund to facilitate delivery of fisheries management.	new fisheries management areas.		therefore requires government intervention			
Removal of disused anthropogenic features	Direct like for like removal of pressure comparable to the pressure being added to the SAC. Deliverable by the developer with minimal input from Regulator/SNCBs (compared with designating a SAC or fisheries management area)	? Agreement with owners of disused infrastructure. Survey to locate infrastructure. Agreement of method for removal with NE. Commissioning of removal.	✓ The scale would be agreed with NE. For example, a 1:1 ratio may be appropriate in this case, on the basis that this is a direct like-for-like removal of infrastructure to compensate the addition of new infrastructure.	✓ Provided an agreement can be reached with the owners of disused infrastructure and the location of suitable infrastructure identified, this measure could be implemented between consent and construction.	? Need to agree removal with owners of the disused infrastructure. Need to confirm feasibility, environmental consequences and safety of lifting aging infrastructure.	✓ Subject to the habitat type the infrastructure is located on	✓ Subject to the habitat type the infrastructure is located on	x

5 REFERENCES

- CREW (2019). Towards an Economic Value of Native Oyster Restoration in Scotland: Provisioning, Regulating and Cultural Ecosystem Services. Available at: https://www.crew.ac.uk/sites/www.crew.ac.uk/files/sites/default/files/publication/CREW_Towards%20an%20Economic%20Value%20of%20Native%20Oyster%20Restoration%20in%20Scotland%2019_22_Oct%20v2.pdf
- DECC (2016). Guidance on when new marine Natura 2000 sites should be taken into account in offshore renewable energy consents and licences. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/525765/Final-Guidance_on_when_new_marine_Natura_2000_sites_should_be_taken_into_account_in_offshore_renewable_energy_consents_and_licences.pdf
- DEFRA (2012): Habitats and Wild Birds Directives: guidance on the application of article 6(4) Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69622/pb13840-habitats-iropi-guide-20121211.pdf.
- EC (2012) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC Clarification of the Concepts of: Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence, Opinion of the Commission. https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/new_guidance_art6_4_en.pdf
- EC (2018). Managing Natura 2000 sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. Brussels, 21.11.2018 C(2018) 7621 final.
- Schouten P., Jennings K., McMullon C., Paterak B., Smit C. and Verbeek, H. (2008). Natura 2000 and development in estuarine areas. Mitigation and Compensation issues: Results of the first EU peer-exchange Natura 2000 estuaries group.
- OSPAR (2009) Background document for *Ostrea edulis* and *Ostrea edulis* beds