

Norfolk Vanguard Offshore Wind Farm

Additional Mitigation

Department for Business, Energy and Industrial
Strategy (BEIS) Request for information



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1 INTRODUCTION

1.1 Purpose of this Document

1. This document describes the additional mitigation proposed by Norfolk Vanguard Limited (the Applicant) in relation to Norfolk Vanguard Offshore Wind Farm (the Project), in response to a request for information from the Department for Business, Energy and Industrial Strategy (BEIS), dated 6 December 2019, which states:

"In relation to in-combination impacts on the qualifying kittiwake feature of the Flamborough and Filey Coast Special Protection Area ("SPA") and the qualifying lesser black-backed gull feature of the Alde-Ore Estuary SPA, the Applicant, in consultation with Natural England as necessary, is invited to provide information on any mitigation, not discussed during the Examination, which could lessen or avoid any adverse effects on the integrity of these sites."

And, in relation to the Haisborough Hammond and Winterton (HHW) Special Area of Conservation (SAC):

"The Applicant, in consultation with the Marine Management Organisation and Natural England as necessary, is invited to provide information on the specific mitigation solutions that would address the potential effects of cable protection on the SAC features."

1.2 Consultation

2. Since the publication of the letter from BEIS, the Applicant has undertaken extensive consultation with stakeholders to discuss the additional mitigation proposed. This is detailed in the Consultation Overview (document reference ExA; Consult; 11.D10.3).

2 MITIGATION IN RELATION TO OFFSHORE ORNITHOLOGY

2.1 Existing mitigation

3. The Environmental Statement (ES), Chapter 13 Offshore Ornithology and the Information to Support Habitats Regulations Assessment (HRA) describes mitigation commitments in relation to offshore ornithology that were made by the Applicant prior to submission of the Development Consent Order (DCO). This included reducing the maximum number of turbines from 257 to 200.
4. During the Norfolk Vanguard Examination, further mitigation commitments were made to reduce seabird collision risk, including:
 - Refined turbine layout between Norfolk Vanguard (NV) East and NV West;
 - Removal of 9MW turbines from the design envelope to further reduce the maximum number of turbines from 200 to 180; and
 - Raising of minimum draught heights of turbines by 5m, from 22m above Mean High Water Springs (MHWS) to 27m from MHWS.

2.2 Further mitigation offered post-Examination

5. In response to Natural England's concerns, following the close of Examination, the Applicant has undertaken a considerable amount of work to investigate options for further refining the design envelope in order to further reduce seabird collision risk. This has included engagement with the supply chain for both turbine manufacturers and construction vessels.

2.2.1 Reduced turbine numbers

6. Following ongoing developments in the supply chain, the Applicant is now committed to removing the 10MW and 11MW turbines from the project design envelope, with the smallest turbine now an 11.55MW turbine. This turbine is one of the largest capacity turbines which is currently available on the market and therefore the limit at which the Project design envelope can be certain to be deliverable.
7. This reduces the maximum total number of turbines to be installed from 180 to 158 which, combined with the other associated turbine parameter changes, results in a 30% reduction in predicted collision risks for the two key species of concern (kittiwake and lesser black backed gull) when compared to those at the close of Examination (based on a 10MW turbine) (note that similar reductions would also be obtained for all species at risk of collision).

2.2.2 Raised draught height

8. Following engagement between the Applicant and the supply chain, it is understood that installation vessels currently available on the market can install turbines with a hub height of up to 145 - 150m. The installation capacity of vessels currently available is therefore a key factor in relation to the maximum draught height increase that can be secured; other factors include rotor diameter and turbine weight. It is also relevant to note that there are various factors which influence draught height including hub height, water depths and potential impacts on radar line of sight.
9. It should also be noted that the Applicant must maintain some flexibility as the availability of these largest vessels at the time of construction of the Project cannot be guaranteed, given the number of other offshore wind farms currently in development.
10. In light of the supply chain review and in line with NE's advice the Applicant has now committed to the following further increase in minimum draught height to further reduce the predicted collision risks:
 - Minimum draught height to 35m (above MHWS¹) for turbine models of up to and including 14.6MW capacity; and
 - Minimum draught height to 30m (above MHWS) for turbine models of 14.7MW and above.
11. As a result of the further mitigation, the Applicant is now progressing a design which is at the limit of current commercial availability both in relation to installation vessel capacity and turbine capacity. The Applicant needs to maintain an option within its envelope that considers current market availability in order to ensure certainty of deliverability.
12. Within the Order, flexibility is being provided in relation to the generating station and linked associated development. In the view of the Applicant this flexibility, which has previously been critical to the development of offshore wind farms in the UK, is fundamental to whether the Order is fit for purpose. The reasons for this principally relate to the need to manage and drive down the cost of offshore wind developments to justify equity investment and access debt funding in a competitive

¹ It should be noted that in documents reporting on collision risk modelling submitted for Norfolk Vanguard prior to Deadline 8 (AS-049) rotor draught heights were given in relation to Highest Astronomical Tide (HAT) while subsequent ones were given in relation to Mean High Water Springs (MHWS). As was noted in AS-049, this was an error in labelling only, with HAT mistakenly used in place of MHWS. The tidal offset used in the collision risk modelling to adjust to Mean Sea Level (MSL) was the same throughout and should have been stated as relating to MHWS from the outset.

international market. This includes the need to maintain competitive tension in the procurement process driving down costs; the need to take advantage of new technology developments and emerging products in the market for offshore wind turbine generators and other equipment; and the need to drive down the cost of energy for the purposes of tendering for Contracts for Difference.

13. The final design of a wind farm depends on a number of factors which include the size, height and capacity of the chosen turbine type; electrical design; length of cables; areas where development is constrained; the outcomes of site investigations, and ongoing wind monitoring results. All these are considered post-consent at the stage of detailed design and optimisation when the final number and type of turbines and their location will be decided as a function of site constraints and viable layout. This final design will be approved under the provisions of the deemed marine licences.

2.2.3 DCO Condition

2.2.3.1 Reduced turbine numbers

14. The additional mitigation to revise the minimum turbine capacity to 11.55MW and to therefore reduce the maximum number of turbines to 158 is reflected in the following sections of the revised draft DCO submitted on 28 February 2020:
 - Schedule 1, Part 1, Work No. 1(a)
 - Schedule 1, Part 3, Requirement 3(1)
 - Schedules 9 and 10, Part 3, 2(1)(a)(i)
 - Schedules 9 and 10, Part 4, Condition 1(3)
 - Schedules 9 and 10, Part 4, Condition 8(1)(b)

2.2.3.2 Raised draught height

15. In order to secure the additional mitigation, it is proposed to revise Requirement 2(1)(e) of the draft DCO (and the corresponding Deemed Marine Licence (DML) conditions) as follows:

2(1) Subject to paragraph (2), any wind turbine generator forming part of the authorised project must not-

(a)....

(e) have a draught height which is less than the minimum draught height specified for the relevant wind turbine generator capacity in the table below:

Wind Turbine Generator Capacity	Minimum draught height
<i>Up to and including 14.6MW</i>	<i>35m from MHWS</i>
<i>14.7 MW and above</i>	<i>30m from MHWS</i>

2.2.4 Further assessment

16. The worst case collision prediction for the updated design envelope is for the 14.7MW turbine with a minimum draught height of 30m (as this scenario represents the greatest rotor swept area)².
17. The collision predictions for the worst case scenario for kittiwake from the Flamborough and Filey Coast SPA and lesser black-backed gull from the Alde-Ore Estuary SPA are summarised in Table 2.1. Further detail is provided in Appendix 1 (document reference ExA; Mit; 11.D10.2.App1).

Table 2.1. Comparison of worst case annual mortality estimates for the 10MW, 11.55MW and 14.7MW turbines. Values in brackets are 95% confidence intervals derived from seabirds densities. The 10MW turbine is included as a comparison with the assessment at the close of the project examination however this design is no longer part of the project envelope.

Species	Scenario	10MW (@27m above MHWS)	11.55MW (@35m MHWS)	14.7MW (@30m MHWS)
Kittiwake	Annual - no apportioning	115.4 (12.2-300.7)	38.1 (4.0-99.2)	57.5 (6.1-149.7)
	Annual – apportioned to Flamborough and Filey Coast	43.8 (2.0-120.0)	13.9 (1-39.9)	21 (1.2-60.2)

² Note: Modelling has been undertaken for larger turbines within the design envelope and these generate lower collision predictions.

Species	Scenario	10MW (@27m above MHWS)	11.55MW (@35m MHWS)	14.7MW (@30m MHWS)
	SPA using Natural England's preferred methods			
	Annual – apportioned to Flamborough and Filey Coast SPA using Norfolk Vanguard's preferred methods	9.6 (1.0-25.0)	3.1 (0.4-7.9)	4.6 (0.5-11.5)
Lesser black-backed gull	Annual - no apportioning	23.0 (0.8-67.4)	9.6 (0.4-29.1)	12.0 (0.5-36.5)
	Annual – apportioned to Alde-Ore Estuary SPA using Natural England's preferred methods	4.8 (0.3-13.0)	2.1 (0.7-5.8)	2.6 (0.1-7.1)
	Annual – apportioned to Alde-Ore Estuary SPA using Norfolk Vanguard's preferred methods	2.9 (0.1-8.5)	1.3 (0.1-3.5)	1.6 (0.1-4.2)

18. The removal of the 10MW turbine at a draught height of 27m as the worst case option, replaced by the 14.7MW turbine at a draught height of 30m, reduces collision risks by 50% for kittiwake and by 46% for lesser black-backed gull compared with the estimates submitted at the close of the Project examination (REP7-062).
19. Using Natural England's preferred parameters (which are based on highly precautionary assumptions, see ExA; Pos; 11.D10.2 for details), the annual kittiwake mortality apportioned to the Flamborough and Filey Coast SPA has been reduced from 42 individuals to 21, while using the Applicant's preferred parameters (which the Applicant considers to be more robust, evidence based parameters), the reduction is from 9.3 to 4.6 individuals.
20. A similar magnitude of reduction is observed for lesser black-backed gull, albeit that the actual values were already very small (4.9 for the Alde-Ore Estuary SPA using Natural England's preferred methods) and therefore the absolute reduction in mortality to 2.6 is also smaller; while using the Applicant's preferred parameters, the reduction is from 2.8 to 1.6 individuals.
21. The overall reduction in the total (North Sea scale) predicted collision risks from the estimates submitted in the original assessment as part of the DCO application to those for the worst case in Table 2.1 (the 14.7MW turbine at 30m draught height) is 82% for kittiwake (from an annual EIA total of 318 to 56) and 70% for lesser black-backed gull (from an annual EIA total of 40 to 12).
22. The Applicant considers that the Project's impacts are now reduced to very small levels and the contributions of the Project to in-combination impacts are also very small. For example, Norfolk Vanguard's predicted mortality of kittiwake from

Flamborough and Filey Coast SPA (using Natural England’s precautionary figure of 21) is lower than those for several consented offshore wind farms including Hornsea Project One (41), Dogger Bank Creyke Beck A and B (84), Dogger Bank Teesside A and B (47) and Triton Knoll (35), and using the Applicant’s evidence based estimate is also lower than those for East Anglia ONE (12), Hornsea Project Two (14) and East Anglia THREE (6.4). Further details are presented in ExA; Pos; 11.D10.2.

23. The Applicant considers that Natural England’s position on in-combination kittiwake collisions given for the consented East Anglia THREE offshore wind farm (and for which the Secretary of State was satisfied there would be no adverse effects on integrity for the project alone or in-combination) is of relevance to the current submission. The East Anglia THREE alone collision estimate for Flamborough and Filey Coast SPA was 10.2 individuals (i.e. only 10 less than for Norfolk Vanguard). Natural England described the contribution that East Anglia THREE made to the in-combination total (of 323) as “...while not de minimis is so small as to not materially alter the significance or the likelihood of an adverse effect on the integrity of the SPA” (BEIS 2017). Given the similarity in estimates the Applicant considers the same description is applicable to Norfolk Vanguard.
24. With respect to lesser black-backed gull, for which the predicted mortality due to Norfolk Vanguard following the additional mitigation is at most 2.6 individuals, the Applicant notes Natural England’s comment (in their letter dated 19th December 2019) that the in-combination total for the Alde-Ore Estuary SPA is lower now (57) than that for the consented Galloper wind farm alone of 119 and considerably lower than the in-combination estimate of 270-357 (Natural England figures; DECC 2013).
25. On this basis, the Applicant firmly maintains the position presented during the Examination, and updated in this submission, that in respect of these designated sites, an adverse effect on integrity can be ruled out beyond reasonable scientific doubt.

2.2.5 Consideration of other collision risk mitigation options

26. Natural England advised the Applicant to consider other possible design mitigations which could reduce collision risks, including reducing the number of turbines to achieve less than 1 individual kittiwake mortality from the Flamborough and Filey Coast SPA and the potential for seasonal turbine operation restrictions.
27. Collision risk modelling assumes there is an equal risk at all turbines, therefore to calculate the number of turbines which equates to a single kittiwake collision, the number of turbines for the worst case is simply divided by the predicted mortality. Or alternatively, the mortality at each turbine is $21/124 = 0.17$. Thus, to achieve an

SPA kittiwake mortality of no more than 1 individual the wind farm would comprise less than 6 turbines. An offshore wind farm of less than 6 turbines is clearly not a viable project, nor would such a development make any meaningful contribution to the de-carbonisation of energy production.

28. In relation to seasonal turbine operation restrictions, kittiwake collisions apportioned to Flamborough and Filey Coast SPA using Natural England’s preferred rates (7.2% in spring, 86% in the breeding season, 5.4% in autumn) yield the following monthly collision estimates Table 2.2.

Table 2.2. Kittiwake collisions apportioned to Flamborough and Filey Coast SPA. For method details see ExA; Mit; 11.D10.2.App1 and REP6-021³ paragraphs 40-65.

Month	Natural England’s preferred methods	The Applicant’s preferred methods
Jan	0.9	0.9
Feb	0.4	0.4
Mar	7.3	0.6
Apr	3.5	0.3
May	3.3	0.7
Jun	2.5	0.5
Jul	1.1	0.2
Aug	0.9	0.1
Sep	0.0	0.0
Oct	0.1	0.1
Nov	0.5	0.5
Dec	0.3	0.3
Total	21.0	4.6

29. Using Natural England’s methods the highest single monthly total occurs in March (7.3) and accounts for approximately one third of the annual total. As noted above, collisions are assumed to be distributed equally among all turbines, therefore in order to reduce the total SPA collisions by this amount (7.3) it would be necessary to shut down all the turbines for the whole of March, representing a reduction of approximately 8% in the wind farm’s annual generating capacity. On the basis of the Applicant’s methods this same period of shut down would reduce collisions by less than one (0.6).
30. Furthermore, it is highly questionable whether all of the birds recorded in March are from the SPA, since this month, together with April, are also identified in Furness

³ https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010079/EN010079-002764-ExA%3B%20AS%3B%2010.D6.17_Norfolk%20Vanguard%20Offshore%20Wind%20Farm%20Offshore%20Ornithology%20Assessment%20Update%20for%20Deadline%206.pdf

(2015)⁴ as the peak periods of spring migration, with large numbers of kittiwakes from colonies at higher latitudes (where the breeding season starts later) passing the area at that time. Natural England prefers a precautionary approach of assuming that March and April are solely part of the breeding season, with the consequence that the breeding season apportioning rate (Natural England's preferred, precautionary rate of 86%) is applied to the collisions predicted in March and April, rather than the spring migration rate of 7.2%, despite the evidence that this over-estimates apportioning to the SPA. In addition, although no kittiwakes were tracked in March or April, the RSPB tracking work during the core breeding period (Wischnewski et al. 2018)⁵ reported that tagged individuals extended their foraging ranges as the breeding season progressed, with trips as far as Norfolk Vanguard only being observed later in the season (i.e. July and August).

31. If half of the kittiwakes recorded in March are not from the SPA (although even this is likely to be an underestimate) then a complete shutdown in this month would only reduce the mortality apportioned to the SPA by 3 individuals. Furthermore, the Applicant's methods indicate that a total shut down of the wind farm in any month could only reduce the SPA mortality by a maximum of one individual (in December).
32. Therefore, overall it is evident that even using Natural England's precautionary mortality predictions, it would be necessary to shut down all the turbines for several months of the year in order for any meaningful reduction in the mortality of SPA birds to be observed.
33. A shutdown in any other month of the year would make an even smaller contribution to reducing the SPA mortalities as calculated above and therefore is even less justified on the basis of kittiwake impacts.

⁴ Furness, R.W. 2015. Non-breeding season populations of seabirds in UK waters: Population sizes for Biologically Defined Minimum Population Scales (BDMPS). Natural England Commissioned Report Number 164.

⁵ Wischnewski, S., Fox, D.S., McCluskie, A. and Wright, L.J. (2018) Seabird tracking at the Flamborough & Filey Coast: Assessing the impacts of offshore wind turbines. RSPB report to Ørsted.

3 MITIGATION IN RELATION TO THE HHW SAC

3.1 Existing mitigation

34. Throughout the pre-application stage and Examination, the Applicant has made a significant number of mitigation commitments with regards to the HHW SAC, in response to feedback from Natural England.
35. The HHW SAC control document 8.20⁶ includes a wide range of mitigation measures and commitments. Of particular note, in relation to cable protection in the SAC, are the following measures which are embedded in the Project design and secured in the HHW SAC control document 8.20:
- A reduction in the number of cables required (through a commitment to HVDC technology) and therefore a reduction in the potential amount of cable protection that may be required.
 - A commitment to always attempt to rebury a cable in the HHW SAC before using cable protection, and a requirement to seek a new marine licence for any new areas of cable protection which might be required.
 - A commitment to agree the location, extent, type and quantity of any cable protection with the MMO in consultation with NE prior to deployment.
 - A proposal to employ sandwave levelling (if agreed with NE) to reduce the potential for buried cables to become exposed and therefore to reduce any future requirement for reburial and cable protection (and to dispose of any resultant material in accordance with the principles set out in the HHW SAC control document 8.20).
 - A reduction of the amount of cable protection sought to 5% of the cable length on the reduced HVDC basis (plus cable protection required for cable crossings).
 - A commitment to was made previously to review the feasibility of removing cable protection at the point of decommissioning. This has not been achieved and the commitment is secured in the HHW SAC control document 8.20 (see Section 3.2.2).
36. Of particular note in relation to cable installation are the following
- A commitment to agree the cable route with the MMO in consultation with NE;
 - A commitment to microsite around Annex 1 Reef recorded during the pre-construction survey; and

⁶ Either a Site Integrity Plan (SIP) or Cable Specification, Installation and Monitoring Plan (CSIMP) will be certified document 8.20. This is explained in Section 47.

- A commitment to agree sediment disposal locations and method with the MMO in consultation with NE.

3.2 Further mitigation offered post-Examination

3.2.1 No cable protection in priority areas to be managed as reef

37. In response to the BEIS letter, the Applicant is proposing a new commitment to use no 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.
38. The areas to be managed as reef (shown in Figure 3.1) have been identified by NE as areas where *Sabellaria spinulosa* reef has been recorded in the past and therefore may have potential to recover if pressures are removed. Two of the areas to be managed as reef have been identified as priority areas and these underpin proposed fisheries management measures that are being progressed by the Eastern Inshore Fisheries and Conservation Authority (EIFCA) and Department of Food, Environment and Rural Affairs (DEFRA).
39. This commitment will ensure there is no habitat loss in the priority areas that have been identified in order to facilitate the recovery of the *Sabellaria* reef feature to favourable condition. By committing to avoid cable protection in these priority areas, the Applicant is ensuring that any habitat loss within the SAC (outside of the priority areas to be managed as reef) would not hinder the recovery target for Annex 1 Reef and would have no Adverse Effect on Integrity (AEoI) of the HHW SAC due to the small scale of loss. This is in accordance with the Natural England advice note regarding consideration of small scale habitat loss within Special Areas of Conservation (SACs) in relation to cable protection (submitted at Deadline 4 of the Norfolk Vanguard Examination, REP4-062).
40. To provide confidence that cable protection will not be required in the priority areas to be managed as reef, evidence is provided in Appendix 3 of the HHW SAC control document (document 8.20)⁷ submitted on 28 February 2020 of the most likely areas where cable protection would be required (if required at all). Figure 3.1 (an extract from Appendix 3 of the HHW SAC control document) shows that there is no overlap between the most likely areas where cable protection could be required and the areas to be managed as reef.

⁷ Either a SIP or a CSIMP will be certified document 8.20. This is explained in Section 47.

41. As discussed in Section 3.2.5, this commitment is secured in the HHW SAC control document (in either Section 5.5.4.1 of the Outline HHW SAC SIP or Section 4.5.4.1 of the Outline HHW SAC CSIMP).

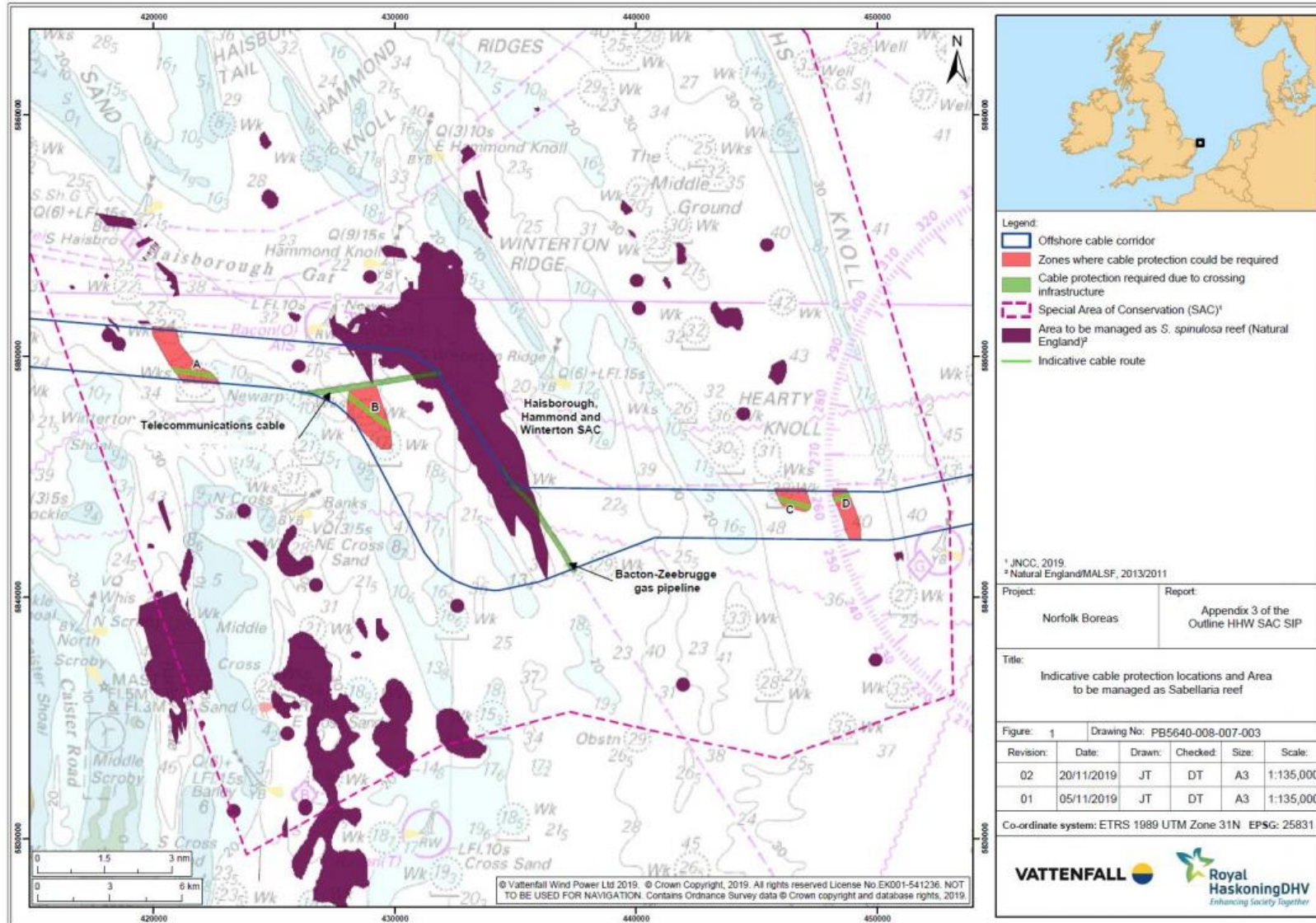


Figure 3.1 Cable protection locations to be assessed in the assessment of effects of habitat loss on Annex 1 Reef

3.2.2 Decommissioning of cable protection

42. Following a review of the supply chain, the Applicant has made a further commitment to decommission cable protection at the end of the Norfolk Vanguard project life where it is associated with unburied cables due to ground conditions (where required for crossings this will be left *in situ*).
43. Further detail on the methods for decommissioning is provided in Appendix 3 of the Additional Mitigation document (document reference ExA; Mit; 11.D10.2.App3).
44. This commitment ensures that there will be no habitat loss as a result of cable protection and further contributes to the ability to conclude no AEoI of the HHW SAC. This is discussed further in Appendix 2 of the Additional Mitigation document (document reference ExA; Mit; 11.D10.2.App2).
45. As discussed in Section 3.2.5, this commitment is secured in the HHW SAC control document (in either Section 5.5.4.2 of the Outline HHW SAC SIP or Section 4.5.4.2 of the Outline HHW SAC CSIMP).

3.2.3 Removal of disused cables

46. 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 who own a number of out of service assets within the HHW SAC. Appendix 4 (document reference ExA; Mit; 11.D10.2.App4) demonstrates the advanced stages of these discussions.
47. While it is recognised that this does not represent mitigation at this stage, it is likely that this will reduce the number of crossings from six to two per cable and will therefore reduce the volume of cable protection associated with cable crossings. The locations of the disused BT Subsea cables are shown in Figures 1 and 2 of Appendix 4.

3.2.4 Further Assessment

48. An assessment was provided to Natural England to demonstrate the effects of cable protection in the HHW SAC in light of the additional commitment that no cable protection will be deployed in the priority areas to be managed as reef unless agreed with the MMO in consultation with Natural England.

49. Since submission of the assessment to Natural England, the Applicant has made a further commitment to decommission cable protection at the end of the Norfolk Vanguard project life where it is associated with unburied cables due to ground conditions (where required for crossings this will be left *in situ*).
50. The assessment of effects on the HHW SAC, in light of each of the additional mitigation commitments made by the Applicant is provided in Appendix 2 (document reference ExA; Mit; 11.D10.2.App2). This concludes there would be no AEoI on the HHW SAC as a result of cable protection.

3.2.5 HHW SAC Control Document 8.20

51. The additional mitigation is secured in the HHW SAC control document 8.20. This control document could be either an HHW SAC Site Integrity Plan (SIP) or an HHW SAC Cable Specification, Installation and Monitoring Plan (CSIMP), as explained in the sections below.

3.2.5.1 Updated HHW SAC SIP

52. The HHW SAC SIP was proposed by the Applicant during the Norfolk Vanguard Examination with the aim of providing confidence to Natural England that there would be no AEoI of the HHW SAC due to the ephemeral nature of *Sabellaria spinulosa* reef and its potential for recovery within the HHW SAC before cable installation.
53. It should be noted that a number of updates have been made to the Outline HHW SAC SIP (document 8.20) submitted at Deadline 9 of the Norfolk Vanguard Examination and these are shown in the clean and track changed versions of this document submitted on 28 February 2020.
54. As stated in the control document, the Applicant is committed to developing compatible mitigation solutions for Norfolk Vanguard and Norfolk Boreas. As such, the Norfolk Vanguard HHW SAC SIP has been updated to reflect additional commitments made for Norfolk Boreas since the close of the Norfolk Vanguard Examination, as well as reflecting the new additional proposed mitigation measures which will apply to Norfolk Vanguard and Norfolk Boreas.

3.2.5.2 HHW SAC CSIMP

55. The MMO and NE have concerns with the Grampian condition associated with the HHW SAC SIP which requires the Applicant to demonstrate that there will be no AEoI on the HHW SAC post consent to the satisfaction of the MMO in consultation with Natural England.

56. As the Applicant is not reliant on the Grampian condition to conclude no AEoI (and given it was only introduced to address Natural England's concerns that *Sabellaria spinulosa* may re-establish within the cable corridor between grant of consent and cable installation to such an extent that micrositing may not be possible) the Applicant is proposing an alternative approach to securing the mitigation for cable installation and cable protection in the HHW SAC as requested by Natural England and the MMO. This alternative condition requires a CSIMP for the HHW SAC to be submitted to the MMO (in consultation with NE) in advance of commencement of licensed activities.
57. The HHW SAC CSIMP contains all the mitigation contained within the outline SIP for the HHW SAC, save that references have been deleted to the requirement for the MMO to be satisfied that the mitigation continues to avoid AEoI post consent.
58. The Applicant is content to offer this alternative condition because the Applicant is confident that the mitigation secured will enable the Secretary of State to rule out AEoI at the consent decision stage.
59. In addition, placeholders have been added to the CSIMP to deal with the matters usually contained in a cable specification, installation and monitoring plan post consent (as identified in condition 9(1)(g)(i) to (iv) of the DMLs). An outline HHW SAC CSIMP is provided with the Applicant's submission on the 28 February 2020.
60. In the event that the Secretary of State accepts the alternative approach and adopts the amendment to condition 9(1)(m) as set out in Section 3.2.6.2, an amendment to condition 9(1)(g) is proposed to clarify that the Cable Specification, Installation and Monitoring Plan referred to in condition 9(1)(g) applies outside of the HHW SAC only. This proposed amendment is also included in Section 3.2.6.2.

3.2.6 DCO Conditions

3.2.6.1 Condition associated with the HHW SAC SIP

61. The condition securing the HHW SAC SIP is contained in Schedules 11 and 12, Part 4, Condition 9(1)(m) of the draft DCO submitted at Deadline 9 of the Norfolk Vanguard Examination:

“The licensed activities, or any phase of those activities must not commence until a site integrity plan which accords with the principles set out in the outline Norfolk Vanguard Haisborough, Hammond and Winterton Special Area of Conservation Site Integrity Plan has been submitted to the MMO and the MMO (in consultation with the relevant statutory nature conservation body) is satisfied that the plan provides such mitigation as is necessary to avoid adversely affecting the integrity (within the

meaning of the 2017 Regulations) of a relevant site, to the extent that sandbanks and Sabellaria spinulosa reefs are a protected feature of that site.”

3.2.6.2 Condition associated with the HHW SAC CSIMP

62. If considered appropriate by the Secretary of State, the alternative condition to secure the HHW SAC CSIMP is proposed as follows:

“9(1) The licensed activities or any part of those activities must not commence until the following (as relevant to that part) have been submitted to and approved in writing by the MMO

(m) A cable specification, installation and monitoring plan for the installation and protection of cables within the Haisborough, Hammond and Winterton Special Area of Conservation which accords with the principles set out in the outline Norfolk Vanguard Haisborough, Hammond and Winterton Special Area of Conservation Cable Specification, Installation and Monitoring Plan such plan to be submitted to the MMO (in consultation with the relevant statutory nature conservation body) at least six months prior to commencement of licensed activities.”

63. In the event that the Secretary of State accepts the alternative approach and adopts the alternative condition 9(1)(m) as set out in Section 3.2.6.2, the following amendment to condition 9(1)(g) is proposed to clarify that the Cable Specification, Installation and Monitoring Plan referred to in condition 9(1)(g) applies outside of the HHW SAC only:

“9(1) The licensed activities or any part of those activities must not commence until the following (as relevant to that part) have been submitted to and approved in writing by the MMO

(g) A cable specification, installation and monitoring plan for the installation and protection of cables outside of the Haisborough, Hammond and Winterton Special Area of Conservation, to include

[(i) to (iv) to remain as currently drafted]”

4 CONCLUSIONS

4.1 Offshore Ornithology

64. Following the close of Examination for Norfolk Vanguard, the Applicant has undertaken a considerable amount of work to investigate options for further refining the design envelope and the Applicant has now committed to a further increase in minimum draught height to 35m (above MHWS) for turbine models up to and including 14.6MW capacity, and to 30m above MHWS for turbine models of 14.7MW and above. This is in addition to the previous commitment to remove the worst case 10MW and 11MW turbines from the project design, with the smallest turbine within the project design envelope now an 11.55W turbine.
65. Using Natural England's preferred parameters, the annual kittiwake mortality apportioned to the Flamborough and Filey Coast SPA has been reduced from 44 individuals to 21, while using the Applicant's preferred parameters, the reduction is from 10 to 4.6 individuals.
66. The predicted kittiwake impacts for Norfolk Vanguard are now at a level which is lower than most projects consented since 2014 (see ExA; Pos; 11.D10.2). Furthermore, the impacts from the Project are more than offset by the reductions in in-combination totals currently locked up in the headroom between consented and built wind farm designs (see ExA; Pos; 11.D10.2).
67. For lesser black-backed gull, the annual mortality apportioned to the Alde-Ore Estuary SPA has been reduced to 2.6; while using the Applicant's preferred parameters, the reduction is from 3 to 1.6 individuals. Mortality at this level would be undetectable on the population, and is substantially smaller than that estimated for the consented Galloper wind farm of 119 (Natural England's figure in the project's Appropriate Assessment; DECC 2013) and for which the in-combination estimate was 270-357.
68. The overall reduction in the predicted collision risks from the estimates submitted in the original assessment as part of the DCO application is 82% for kittiwake and 70% for lesser black-backed gull.
69. This additional commitment will be secured through Requirement 2(1)(e) of the draft DCO (and the corresponding DML conditions).
70. **These further commitments reinforce yet further the Applicant's position presented during the Examination that there would not be an AEoI in respect of in combination impacts on the qualifying kittiwake feature of the Flamborough and**

Filey Coast SPA or in respect of the qualifying lesser black backed gull feature of the Alde Ore Estuary SPA.

4.2 HHW SAC

71. The additional commitments will ensure there is no habitat loss in the priority areas that have been identified in order to facilitate the recovery of the *Sabellaria* reef feature to favourable condition.
72. By committing to avoid cable protection in these priority areas, the Applicant is ensuring that any habitat loss within the SAC (outside the priority areas to be managed as reef) would not hinder the recovery target for Annex 1 Reef and by committing to decommissioning the Applicant is ensuring that any loss of Annex 1 habitat will not be permanent.
73. **Due to the small scale of loss, in accordance with the Natural England advice note regarding consideration of small scale habitat loss within SACs in relation to cable protection (submitted at Deadline 4 of the Norfolk Vanguard Examination) and in light of these further commitments, the Applicant maintains the position presented during the Examination that there would not be an AEoI on the HHW SAC.**
74. The additional mitigation is secured in Schedules 11 and 12, Part 4, Condition 9(1)(m) of the DCO, through the HHW SAC control document 8.20 (either an HHW SAC SIP or HHW SAC CSIMP).
75. The HHW SAC CSIMP and the HHW SAC SIP both provide the same suite of mitigation measures which will be agreed with the MMO in consultation with NE post consent in accordance with the Outline documents submitted on 28 February 2020.