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[D4_HOW03_Appendix 62_O2.2.34.pdf](#)
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[D4_HOW03_Appendix 64_Dogger Bank.pdf](#)

Dear Kay, K-J

Please find attached the 12th instalment of documents.

Best regards,
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Environment and Consent Manager



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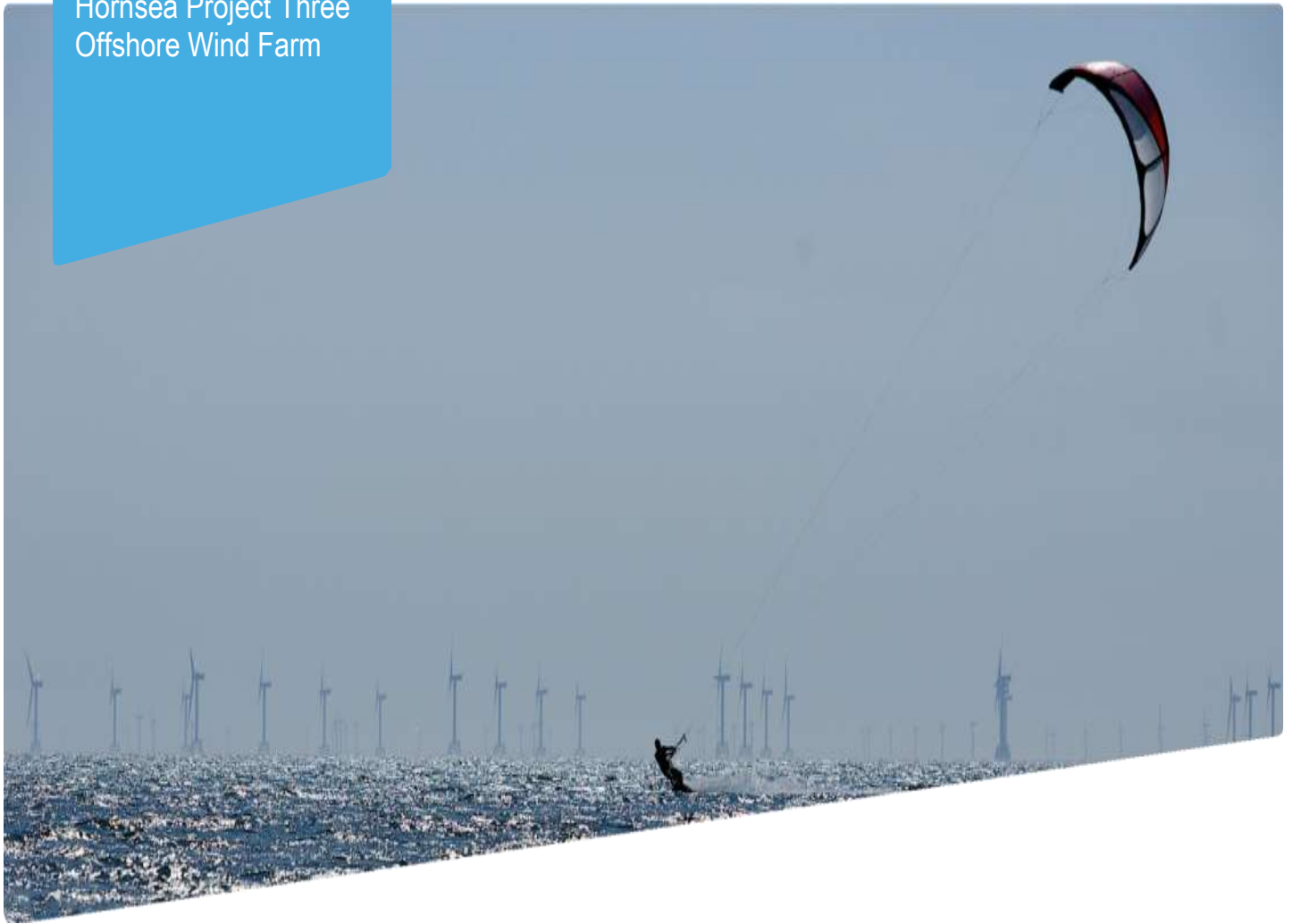
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Hornsea Project Three Offshore Wind Farm

Appendix 62 to Deadline 4 submission - Detailed response
to the ExA Q2.2.34: Additional HRA Screening Information

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1. Introduction

- 1.1 This Appendix provides the Applicant's response to Q2.2.34 of the Examining Authority's second written questions ('SWQ') which is as follows:

No.	Question
2.2.34	<p><i>Article 6(3) of the Habitats Directive states that likely significant effects should be considered "either individually or in combination with other plans or projects". Regulation 63(1)(a) of the Habitats Regulations states that they should be considered "either alone or in combination with other plans or projects". Whilst it is possible to undertake one without the other, NE has pointed out that you have precluded in combination effects for species where likely significant effects have been discounted on an individual basis, i.e. alone.</i></p> <p><i>Given that the underlying intention of the in combination provision is to take account of cumulative effects when individual effects may not be present, please clarify your reasoning as to why there would not be in combination effects on tern species associated with the North Norfolk Coast SPA and Greater Wash SPA as well as non-breeding auk species associated with the Farne Islands SPA, Croquet Island SPA and Forth Islands SPA.</i></p>

- 1.2 Those sites and features for which there is a likely significant effect (LSE), either alone or in-combination with other plans and projects, have been identified through the screening process undertaken for Hornsea Three (see APP-052 and APP-053) and the results are summarised in APP-051 and REP1-187.
- 1.3 SWQ 2.2.34 requested clarification in respect of the consideration of in-combination effects when forming a view on whether there was a likely significant effect (LSE) with respect to the breeding tern interest features of the North Norfolk Coast SPA and Greater Wash SPA and breeding auk interest features of the Farne Islands SPA, Coquet Islands SPA and Forth Islands SPA.
- 1.4 For clarity and to assist the Examining Authority, this document sets out the full screening information for each of these features (both alone and in-combination).

2. Terns

Overview

- 2.1 The foraging areas of little, common, and sandwich tern species are included as part of the designation of the Greater Wash SPA and breed at colonies that form part of the North Norfolk Coast SPA.

2.2 During Hornsea Three Expert Working Group meetings undertaken as part of the Hornsea Three Evidence Plan process it was advised by Natural England that conclusions drawn in relation to the Greater Wash SPA would also apply to the North Norfolk Coast SPA (Consultation Report Annex 1: Evidence Plan). The potential for LSEs on the three tern features of the Greater Wash SPA and the North Norfolk Coast SPA are considered in the following sections, and was provided in RIAA Annex 2: Additional Special Protection Areas Screening Exercise (APP-053) .

Little tern

Likely effect of Hornsea Three alone

2.3 The seaward extent of the Greater Wash SPA was informed by a number of supporting studies including Parsons et al. (2015) which identified usage of the marine environment by little terns around a number of breeding colonies including those that form part of the North Norfolk Coast SPA. The maximum alongshore foraging extents of birds from colonies within the North Norfolk Coast SPA was 7 km east and west and seaward to a maximum distance of 2.13 km (Figure 2.1). This strongly suggests, therefore, no connectivity with the area in which the Hornsea Three export cable is to be located. The activities associated with the installation of export cables are temporary and short-lived and, in any case, little tern is considered to have low vulnerability to disturbance impacts (Wade et al., 2016) arising from such activities.

2.4 On this basis, there is considered to be no potential for LSE on the little tern feature of the Greater Wash SPA as a result of impacts associated with the construction, operation and maintenance or decommissioning of Hornsea Three. Similarly no potential LSE on the little tern feature is considered for the North Norfolk Coast SPA.

Likely effect of Hornsea Three in-combination

2.5 There is no indication that disturbance associated with the installation of the export cable for Hornsea Three would make any material contribution to any in-combination effect on breeding little terns and therefore no LSE was identified. This is identified in the screening matrices provided as part of the Applicant's submission at Deadline 1 (REP1-187). No LSE for little tern was identified in RIAA Annex 2: Additional Special Protection Areas Screening Exercise (APP-053) (see paragraph 1.4.1.2). In addition to this conclusion, and as identified for Sandwich tern in APP-051, there are no projects that may act in-combination with Hornsea Three in relation to those impacts that would be considered for little tern.

2.6 On this basis, there is considered to be no potential for LSE on the little tern feature of the Greater Wash SPA as a result of in-combination impacts. Similarly, there is considered to be no potential LSE on the little tern feature of the North Norfolk Coast SPA.

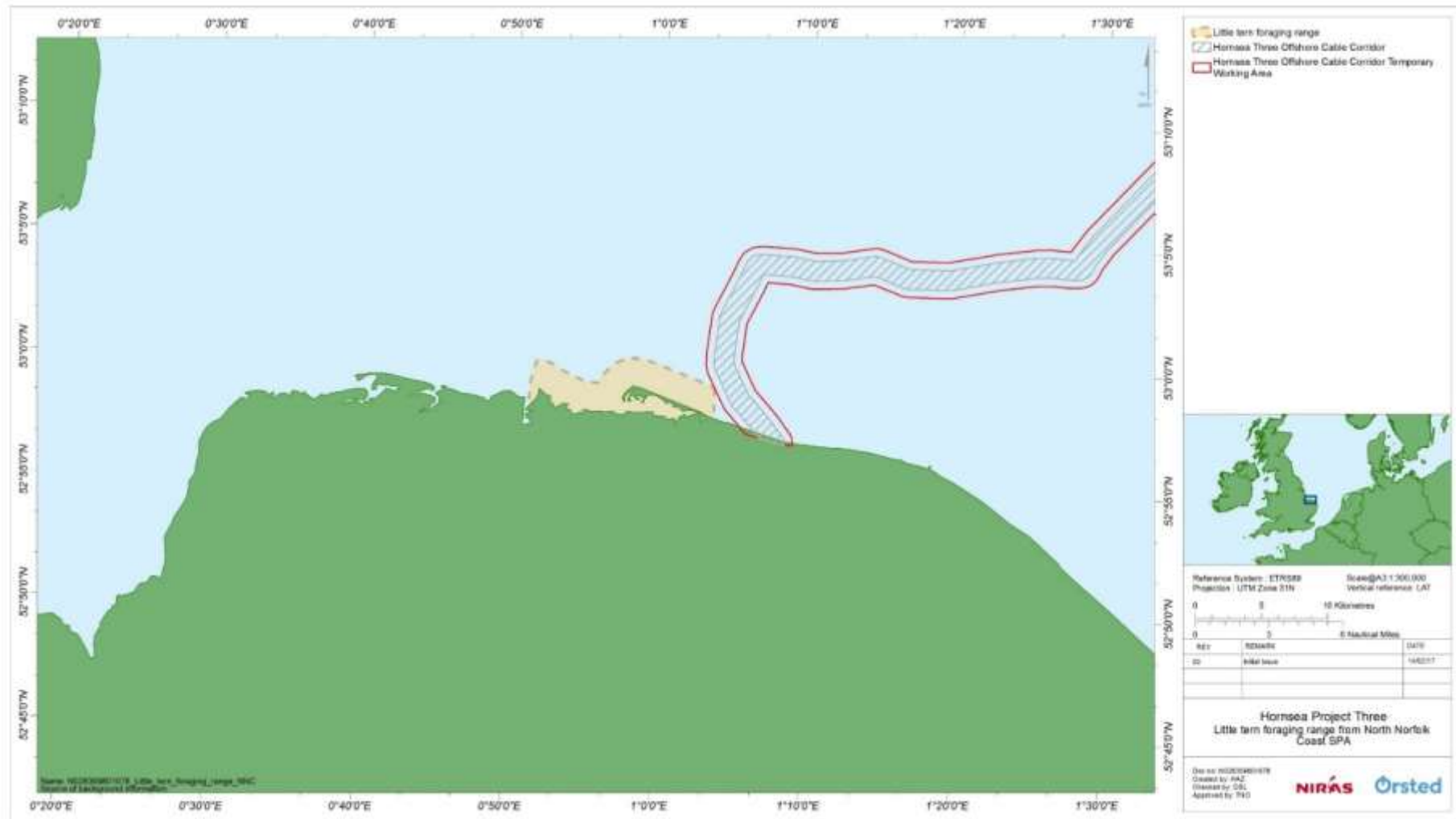


Figure 2.1: Foraging range of little terns from the breeding colony at Blakeney Point based on the values provided in Parsons et al. (2015).

Sandwich tern

Likely effect of Hornsea Three alone

- 2.7 The seaward extent of the Greater Wash SPA was informed by a supporting studies which considered the extent of foraging tern species, including Sandwich tern. Of relevance to Sandwich tern was the report produced by Wilson et al. (2014) which investigated the usage of the marine environment by four species of terns (Arctic, common, roseate and Sandwich terns) around breeding colonies throughout the UK including the North Norfolk Coast SPA. Within the North Norfolk Coast SPA are two breeding colonies located at Scolt Head and Blakeney Point. The predicted usage of offshore areas by Sandwich tern for foraging from these colonies, as quantified by Wilson et al. (2014) is presented in Figure 2.2. These indicate that there is no connectivity between Sandwich tern breeding at Scolt Head and the area of the Greater Wash SPA through which the Hornsea Three export cable will pass and only minimal connectivity between Sandwich terns breeding at Blakeney Point and the Hornsea Three export cable.
- 2.8 Natural England have suggested that features from the Greater Wash SPA should be screened into the RIAA where there is overlap between the Hornsea Three export cable and the foraging areas of Sandwich tern in the Greater Wash SPA. As already discussed, there is overlap between the Hornsea Three export cable and an area of low usage by Sandwich terns. As a result, on a precautionary basis it is been assumed that there is potential for LSE on the Sandwich tern feature of the Greater Wash SPA and the species is taken forward for further assessment in the RIAA.

Likely effect of Hornsea Three in-combination

- 2.9 An LSE was identified for Sandwich tern and this species was considered for in-combination impacts in the RIAA (APP-051). However, there are no projects that will act in-combination with Hornsea Three, in relation to those impacts considered for Sandwich tern (see paragraph 7.6.1.4 of the RIAA (APP-051)).

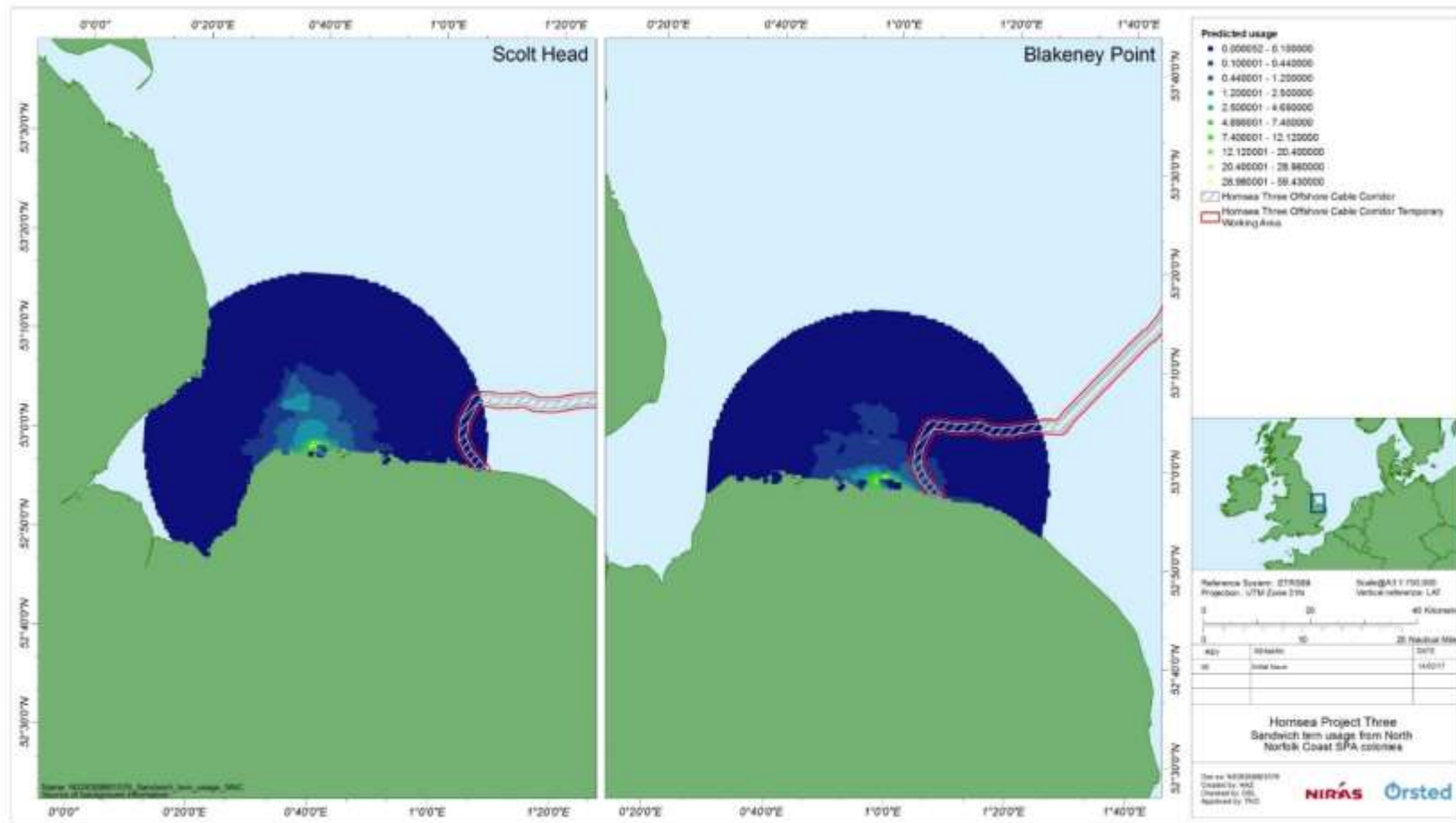


Figure 2.2: Predicted relative usage of the waters around two Sandwich tern breeding colonies that form part of the North Norfolk Coast SPA. Usage values are relative and are categorised based on natural groupings inherent in the data (data from Wilson et al., 2014 provided by JNCC).

Common tern

Likely effect of Hornsea Three alone

- 2.10 Wilson et al. (2014) also presents predicted usage maps for common tern from the two breeding colonies (Scolt Head and Blakeney Point) for which the associated foraging areas are included as part of the Greater Wash SPA. Figure 2.3. presents the predicted usage of the offshore environment by common tern from these two breeding colonies in relation to the Hornsea Three export cable route. There is no overlap between the Hornsea Three export cable corridor and the foraging areas of common tern from the Scolt Head breeding colony. The Hornsea Three export cable corridor overlaps with an area that is predicted to have negligible usage by common terns from the Blakeney Point breeding colony. This area is highly unlikely to represent an important foraging area with Wilson et al. (2014) suggesting areas of high usage are located much closer to the colony. Therefore, it is considered that there is no potential for LSE on the common tern feature of the Greater Wash SPA or the North Norfolk Coast SPA as a result of impacts associated with the construction, operation and maintenance or decommissioning of Hornsea Three.
- 2.11 On this basis, there is considered to be no potential for LSE on the common tern feature of the Greater Wash SPA as a result of impacts associated with the construction, operation and maintenance or decommissioning of Hornsea Three. Similarly, there is considered to be no potential LSE on the common tern feature of the North Norfolk Coast SPA.

Likely effect of Hornsea Three in-combination

- 2.12 No LSE was identified for common tern in RIAA Annex 2: Additional Special Protection Areas Screening Exercise (APP-051) (see paragraph 1.4.1.5). As such, Hornsea Three would not materially contribute to any in-combination impact, if one were to occur. This is identified in the screening matrices provided as part of the Applicant's submission at Deadline 1 (REP1-187). In addition to this conclusion, and as identified for Sandwich tern in APP-051, there are no projects that may act in-combination with Hornsea Three in relation to those impacts that would be considered for common tern.
- 2.13 On this basis, there is considered to be no potential for LSE on the common tern feature of the Greater Wash SPA as a result of in-combination impacts. Similarly, there is considered to be no potential LSE on the common tern feature of the North Norfolk Coast SPA.

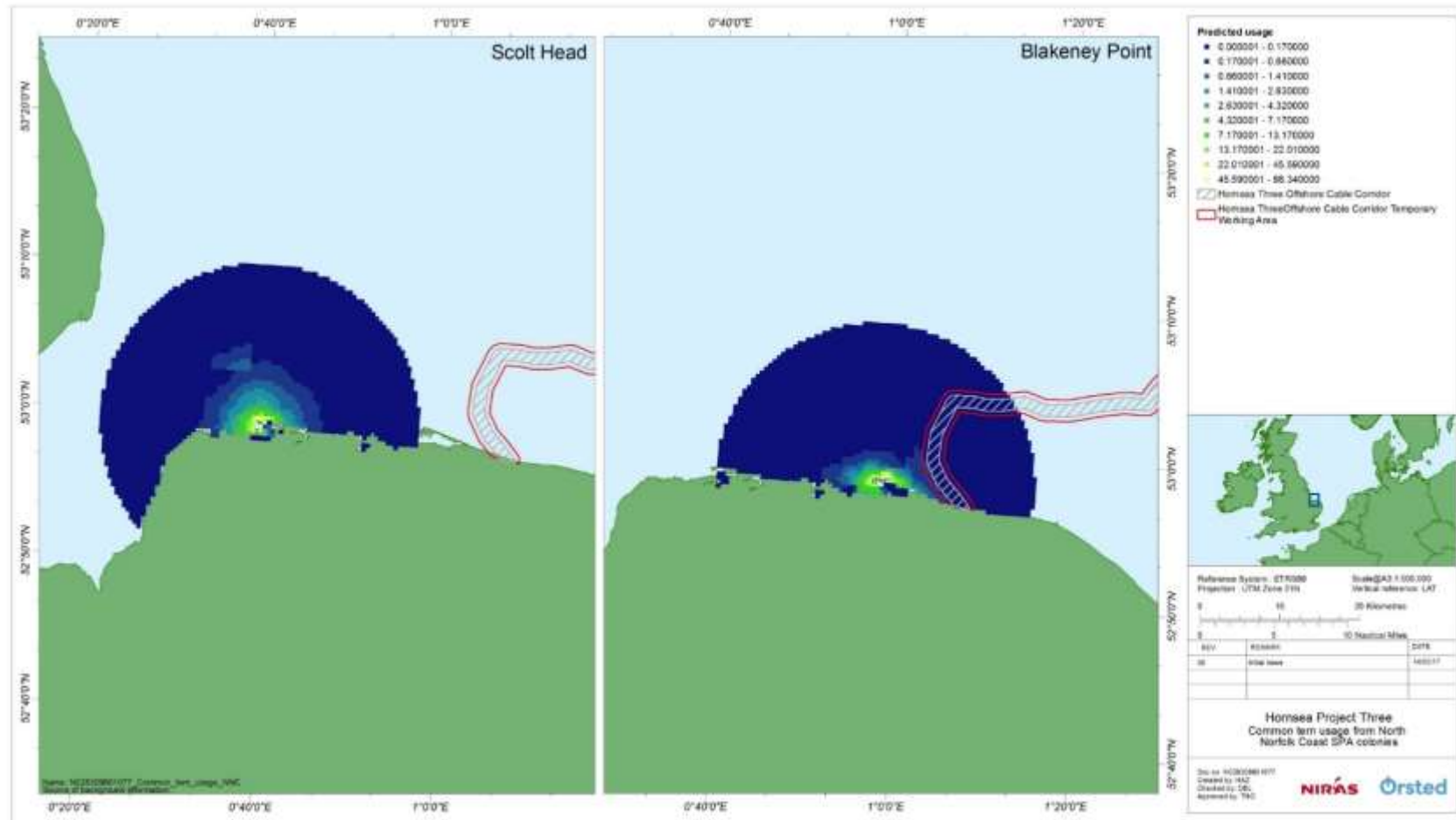


Figure 2.3: Predicted relative usage of the waters around two common tern breeding colonies that form part of the North Norfolk Coast SPA. Usage values are relative and are categorised based on natural groupings inherent in the data (data from Wilson et al., 2014 provided by JNCC).

3. Auk species

Overview

- 3.1 Hornsea Three lies beyond the foraging distance of each of the breeding auk species associated with the Farne Islands SPA, Coquet Island SPA and Forth Islands SPA. Any potential effect on these features arises only during the non-breeding season.
- 3.2 The approach taken to screening for non-breeding auk species follows guidance from Natural England (JNCC and Natural England, 2013) with this approach having been accepted as part of the applications or examinations for the Burbo Bank Extension, Walney Extension, Atlantic Array and Hornsea Project Two offshore wind farms. The approach apportions predicted impacts to SPA populations based on the contribution of each population to the total population present within the defined Biologically Defined Minimum Population Scales (BDMPS) in Furness (2015). The potential for LSE is then considered by comparing the predicted apportioned mortality for each SPA to the 1% baseline mortality of each SPA population.
- 3.3 The potential displacement impacts on guillemot, razorbill and puffin populations during the non-breeding season have been assessed in detail, using reasonable assumptions about the likely magnitude of displacement effects and resulting mortality (see APP-108 and Section 7.3.2 in APP-051). These impacts are then apportioned to the qualifying populations in proportion to the contribution those populations make to the relevant BDMPS for each species.
- 3.4 Potential in-combination effects on all species that are features of those SPAs considered in the screening process for Hornsea Three are included in the screening and integrity matrices submitted as Appendix 1 to the Applicant's submission at Deadline 1 (REP1-187).

Guillemot

Likely effect of Hornsea Three alone

- 3.5 The magnitude of displacement impacts predicted to arise from Hornsea Three has been calculated and apportioned to each of the SPAs.
- 3.6 The total mortality of guillemot during the non-breeding season is predicted to be 89 individuals (paragraph 5.11.2.78 of APP-065). This is set against the BDMPS population for guillemot of 1,617,306 individuals, which is assumed to include the non-breeding populations of each of the SPAs considered. The potential impact represents 0.006% of the BDMPS and approximately 0.09% of the existing baseline mortality within that population. As the component breeding populations are assumed to be fully inter-mixed in this BDMPS, the proportional effect on each qualifying population will be the same.

3.7 The magnitude of displacement impacts predicted to arise from Hornsea Three alone has been calculated and apportioned to each of the SPAs. The results of this are summarised in Table 3.1.

Table 3.1: Predicted effects of Hornsea Three alone on qualifying guillemot populations

Site	BDMPS (no. of individuals)	Total impact attributable to BDMPS population	SPA population (no. of breeding individuals)	Apportioned impact	Scale of impact (% of baseline mortality)
Farne Islands	1,617,306	89	65,571	4	0.09
Forth Islands			32,000	2	0.09

3.8 The predicted impact in each case represents a very small proportion of the qualifying SPA population and significantly less than a value equivalent to 1% of the baseline mortality in that population. On this basis there is no indication of an LSE arising from Hornsea Three alone for any of the sites for which guillemot is an interest feature.

Likely effect of Hornsea Three in-combination

3.9 The magnitude of displacement impacts predicted to arise from Hornsea Three together with other relevant plans and projects has been calculated and apportioned to each of the SPAs.

3.10 The total mortality of guillemot during the non-breeding season is predicted to be 411 individuals (Table 5.42 in APP-065). This is set against the BDMPS population for guillemot of 1,617,306 individuals, which is assumed to include the non-breeding populations of each of the SPAs considered. The potential impact represents 0.025% of the BDMPS and approximately 0.42% of the existing baseline mortality within that population. As the component breeding populations area assumed to be fully inter-mixed in this BDMPS, the proportional effect on each qualifying population will be the same. The results of this are summarised in Table 3.2.

Table 3.2: Predicted in-combination effects on qualifying guillemot populations

Site	BDMPS (no. of individuals)	Total impact attributable to BDMPS population	SPA population (no. of breeding individuals)	Apportioned impact	Scale of impact (% of baseline mortality)
Farne Islands	1,617,306	411	65,571	17	0.42
Forth Islands			32,000	8	0.42

3.11 The predicted impact in each case represents a very small proportion of the qualifying SPA population and significantly less than a value equivalent to 1% of the baseline mortality in that population. On this basis there is no indication of an LSE arising from Hornsea Three alone or in combination for any of the sites for which guillemot is an interest feature.

Razorbill

Likely effect of Hornsea Three alone

3.12 The magnitude of displacement impacts predicted to arise from Hornsea Three has been calculated and apportioned to each of the SPAs.

3.13 The total mortality of razorbill during the post-, non- and pre-breeding seasons is predicted to be 16, 15 and 10 individuals, respectively. This is set against BDMPS populations for razorbill of 591,874 (post and pre-breeding seasons) and 218,622 (non-breeding season) individuals, which is assumed to include the relevant populations of each of the SPAs considered. The potential impact in the post-breeding season represents 0.003% of the BDMPS population and approximately 0.03% of the existing baseline mortality within that population. In the non-breeding season the impact represents 0.007% of the BDMPS population and 0.07% of the existing baseline mortality within that population. The impact in the pre-breeding season represents 0.002% of the BDMPS population and 0.02% of the existing baseline mortality within that population. As the component breeding populations are assumed to be fully inter-mixed in each BDMPS population, the proportional effect on each qualifying population will be the same.

3.14 The magnitude of displacement impacts predicted to arise from Hornsea Three alone has been calculated and apportioned to each of the SPAs. The results of this are summarised in Table 3.3.

Table 3.3: Predicted effects of Hornsea Three alone on qualifying razorbill populations

Site	Season	BDMPS (no. of individuals)	Total impact attributable to BDMPS population	SPA population (no. of breeding individuals)	Apportioned impact	Scale of impact (% of baseline mortality)
Forth Islands	Post-breeding	591,874	16	2,800	<1	0.03
	Non-breeding	218,622	15	2,800	<1	0.07
	Pre-breeding	591,874	10	2,800	<1	0.02

3.15 The predicted impact in each case represents a very small proportion of the qualifying SPA population and significantly less than a value equivalent to 1% of the baseline mortality in that population. On this basis there is no indication of an LSE arising from Hornsea Three alone for any of the sites for which razorbill is an interest feature.

Likely effect of Hornsea Three in-combination

3.16 Due to the negligible proportion of the SPAs for razorbill effected by Hornsea Three there is considered to be no material contribution of Hornsea Three to the in-combination impacts on razorbill at any of the SPAs considered and a conclusion of no LSE for each SPA considered here for razorbill was included in REP1-187.

3.17 The magnitude of displacement impacts predicted to arise from Hornsea Three together with other relevant plans and projects has, however, been calculated and apportioned to each of the SPAs.

3.18 The total mortality of razorbill during the post-, non- and pre-breeding seasons is predicted to be 232, 71 and 185 individuals respectively. This is set against BDMPS populations for razorbill of 591,874 (post and pre-breeding seasons) and 218,622 (non-breeding season) individuals, which is assumed to include the relevant populations of each of the SPAs considered. The potential impact in the post-breeding season represents 0.04% of the BDMPS population and approximately 0.37% of the existing baseline mortality within that population. In the non-breeding season the impact represents 0.003% of the BDMPS population and 0.31% of the existing baseline mortality within that population. The impact in the pre-breeding season represents 0.03% of the BDMPS population and 0.30% of the existing baseline mortality within that population. As the component breeding populations are assumed to be fully inter-mixed in each BDMPS population, the proportional effect on each qualifying population will be the same. The results of this are summarised in Table 3.4.

Table 3.4: Predicted in-combination effects of Hornsea Three on qualifying razorbill populations

Site	Season	BDMPS (no. of individuals)	Total impact attributable to BDMPS population	SPA population (no. of breeding individuals)	Apportioned impact	Scale of impact (% of baseline mortality)
Forth Islands	Post-breeding	591,874	232	2,800	1	0.03
	Non-breeding	218,622	71	2,800	1	0.07
	Pre-breeding	591,874	185	2,800	1	0.02

3.19 The predicted impact in each case represents a very small proportion of the qualifying SPA population and significantly less than a value equivalent to 1% of the baseline mortality in that population. On this basis there is no indication of an LSE arising from Hornsea Three alone or in combination for any of the sites for which razorbill is an interest feature.

Puffin

Likely effect of Hornsea Three alone

3.20 The magnitude of displacement impacts predicted to arise from Hornsea Three has been calculated and apportioned to each of the SPAs.

3.21 The total mortality of puffin during the non-breeding season is predicted to be one individual. This is set against the BDMPS population for puffin of 231,957 individuals, which is assumed to include the non-breeding populations of each of the SPAs considered. The potential impact represents less than 0.001% of the BDMPS and approximately 0.005% of the existing baseline mortality within that population. As the component breeding populations area assumed to be fully inter-mixed in this BDMPS, the proportional effect on each qualifying population will be the same.

3.22 The magnitude of displacement impacts predicted to arise from Hornsea Three alone has been calculated and apportioned to each of the SPAs. The results of this are summarised in Table 3.5.

Table 3.5: Predicted effects of Hornsea Three alone on qualifying puffin populations

Site	BDMPS (no. of individuals)	Total impact attributable to BDMPS population	SPA population (no. of breeding individuals)	Apportioned impact	Scale of impact (% of baseline mortality)
Coquet Island	231,957	1	31,686	<1	0.03
Farne Islands			76,798	<1	0.07
Forth Islands			28,000	<1	0.02

3.23 The predicted impact in each case represents a very small proportion of the qualifying SPA population and significantly less than a value equivalent to 1% of the baseline mortality in that population. On this basis there is no indication of an LSE arising from Hornsea Three alone for any of the sites for which puffin is an interest feature.

Likely effect of Hornsea Three in-combination

- 3.24 Due to the negligible proportion of the SPAs for puffin effected by Hornsea Three there is considered to be no material contribution of Hornsea Three to the in-combination impacts on puffin at any of the SPAs considered and a conclusion of no LSE for each SPA considered here for puffin was included in REP1-187.
- 3.25 The magnitude of displacement impacts predicted to arise from Hornsea Three together with other relevant plans and projects has, however, been calculated and apportioned to each of the SPAs.
- 3.26 The total mortality of puffin during the non-breeding season is predicted to be 22 individuals. This is set against the BDMPS population for puffin of 231,957 individuals, which is assumed to include the non-breeding populations of each of the SPAs considered. The potential impact represents 0.009% of the BDMPS and approximately 0.1% of the existing baseline mortality within that population. As the component breeding populations area assumed to be fully inter-mixed in this BDMPS, the proportional effect on each qualifying population will be the same. The results of this are summarised in Table 3.6.

Table 3.6: Predicted in-combination effects of Hornsea Three on qualifying puffin populations

Site	BDMPS (no. of individuals)	Total impact attributable to BDMPS population	SPA population (no. of breeding individuals)	Apportioned impact	Scale of impact (% of baseline mortality)
Coquet Island	231,957	22	31,686	3	0.1
Farne Islands			76,798	7	0.1
Forth Islands			28,000	3	0.1

- 3.27 The predicted impact in each case represents a very small proportion of the qualifying SPA population and significantly less than a value equivalent to 1% of the baseline mortality in that population. On this basis there is no indication of an LSE arising from Hornsea Three alone or in-combination for any of the sites for which puffin is an interest feature.

4. Conclusions

4.1 The review of the three tern species (little, common, sandwich), which are qualifying features of the Great Wash and North Norfolk SPA, together with the auk species featured in Coquet Islands, Farne Islands, and Forth Islands SPAs are summarised below in Table 4.1. There are no potential LSE considered to occur to any of the qualifying features in –combination with Hornsea Three.

Table 4.1: Conclusion of potential Likely Significant Effect (LSE) of Hornsea Three on SPA qualifying features.

Site	Qualifying Feature	Alone	In-combination	Overall
Greater Wash SPA	Little Tern	No LSE	No LSE	No LSE
	Common Tern	No LSE	No LSE	No LSE
	Sandwich Tern	Potential for LSE	Potential for LSE	Potential for LSE
North Norfolk SPA	Little Tern	No LSE	No LSE	No LSE
	Common Tern	No LSE	No LSE	No LSE
	Sandwich Tern	Potential for LSE	Potential for LSE	Potential for LSE
Coquet Island	Puffin	No LSE	No LSE	No LSE
Farne Islands	Guillemot	No LSE	No LSE	No LSE
	Puffin	No LSE	No LSE	No LSE
Forth Islands	Guillemot	No LSE	No LSE	No LSE
	Razorbill	No LSE	No LSE	No LSE
	Puffin	No LSE	No LSE	No LSE

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