East Anglia THREE
Offshore Windfarm

East Anglia THREE

Natural England's written submission for deadline 6 of the Hornsea Project 2 Examination

Document Reference – Deadline 2/ First Written Questions/ Natural England Hornsea 2 Submission/ ECO4

www.scottishpowerrenewables.com

SCOTTISHPOWER RENEWABLES

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

HORNSEA OFFSHORE WIND FARM - PROJECT TWO APPLICATION

International Mainstream Renewable Power Limited and Siemens Project Ventures for:

The construction and operation of Hornsea Offshore Wind Farm Project Two, a 1,800 MW with up to 360 turbines wind farm located approximately 89km off the East Riding of Yorkshire coast, and 50km from the median line between UK and Dutch waters.

Planning Inspectorate Reference: EN010053

WRITTEN SUBMISSION FOR DEADLINE 6

Dated 26th November 2015

Contents

INTRODUCTION

1.1 This report consists of 5 parts:

a. Section A - Comments on Offshore Ornithology Clarification Notes

b. Section B – Comments of the Applicant's Written Submission to Deadline 5

c. Section C - Draft Conservation Objectives for the Flamborough and Filey Coast pSPA

d. Appendix 1 – Extract from the Bempton Cliffs Annual Report 1987

e. Appendix 2 – Copy of the draft Conservation Objectives for the Flamborough and Filey Coast pSPA

SECTION A – COMMENTS ON OFFSHORE ORNITHOLOGY CLARIFICATION NOTES

2.1 This note sets out Natural England's response to the Applicant's paper: **Clarification Note Environmental Impact Assessment for offshore ornithological receptors. Appendix CC**, submitted at deadline IV.

2.2 The note covers EIA impact assessment for the following species:

- Gannet – collision and displacement
- Kittiwake – collision
- Lesser black-backed gull (LBBG) – collision
- Great Black-backed gull (GBBG) – collision
- Guillemot – displacement
- Razorbill – displacement
- Puffin – displacement

Overview of Natural England's approach to seabird EIA

2.3 In our Written Representations submitted at Deadline I, Natural England were unable to conclude that the project would not have a significant impact on the species listed above at an EIA population scale. The key reasons for this were:

- The population scales and population sizes used in the assessment of EIA impacts for each species;
- The Applicant's approach to the EIA assessment whereby population impacts were assessed separately for each season, without considering mortality across the whole annual cycle against an appropriate population scale;
- The list of projects included in the cumulative assessments for each species and the collision and/or displacement impacts attributed to the different projects.

2.4 These are set out in more detail in paragraphs 6.5.84 – 6.5.87 of our written representations and paragraphs 111-144 of our relevant representations. In response to Natural England's queries, the Applicant has produced Appendix CC which covers the project alone and cumulative EIA assessment for the species listed above.

2.5 In order to undertake an EIA for the above the species it is necessary to define an appropriate population scale over which to assess predicted impacts. This geographic scale defines the population of individual birds that will be impacted as well as the identity of the plans and projects which have the potential to impact on these individuals. In selecting an appropriate scale to undertake the EIA there is typically a balance between ensuring that the scale for the assessment is biologically meaningful in terms of the birds that it encompasses, and selecting a scale where project impacts can practically be measured. For example, while it might be biologically meaningful to consider a species biogeographical range for assessing impacts, it is not likely to be possible to quantify impacts from all plans and projects at this scale - as for some species this might require consideration of projects over a wide geographic range that includes waters outside of the UK and in many cases outside of Europe.

2.6 Therefore Natural England advises that a biologically meaningful minimum population scale (BDMPS) is defined for each species that represents a spatial scale over which project impacts can be practically quantified and the population size and distribution of the species is known. For the species listed above Natural England consider that this BDMPS scale is broadly defined as the North Sea UK waters (which for some species includes English Channel waters). This geographical scale includes current North Sea UK projects from Beatrice to Thanet and Rampion in the English Channel.

2.7 During the breeding season this population scale broadly encompasses (depending on the species) birds breeding in colonies from Hermaness southwards down the North Sea east coast of the UK. Individuals present in the North Sea BDMPS scale during the breeding season months (and therefore potentially impacted by projects within this scale) will predominantly be birds deriving from these colonies. During the non-breeding season months a proportion of these breeding birds will have moved to waters outside the North Sea BDMPS, but individuals from colonies outside the BDMPS scale will also have moved into the region e.g. from colonies in Russia, Iceland, Norway, Faeroes as well as UK colonies that lie outside of the North Sea BDMPS scale, e.g. on western coasts.

2.8 As a result, assessing non-breeding season impacts at the North Sea BDMPS scale will not account for project impacts on those individuals from North Sea colonies that move outside of the BDMPS during the non-breeding season. Similarly, assessing impacts at the North Sea BDMPS scale will not account for all impacts on birds that breed in colonies located outside of the BDMPS but which may be present in the BDMPS during the non-breeding season. These birds include those breeding in overseas colonies as well as birds breeding in UK colonies, for example, on the west coast.

2.9 As an example, based on the population sizes for colonies given in Furness (2015) there are 2,045,078 guillemot in breeding colonies in the North Sea BDMPS scale. Of these 1,456,479 – 72% - are predicted to occur in North Sea BDMPS waters during the non-breeding season. These are augmented by an estimated 151,826 birds from colonies located outside of the North Sea BDMPS including overseas colonies, giving an estimated total of 1,617,305 birds with connectivity to the North Sea BDMPS in the non-breeding season. The 151,826 birds represent only 8% of the birds from the colonies located outside of the BDMPS. Overall during the non-breeding season 94% of the birds in the North Sea BDMPS are predicted to be birds from UK colonies and 91% of birds are from breeding colonies within the North Sea BDMPS.

2.10 Therefore given that the majority of individuals present in the North Sea across all seasons are predicted to be birds from North Sea BDMPS colonies Natural England considers it is appropriate to assess EIA impacts at this scale, using the largest population size of individuals present in any season. This approach will not account for impacts on the North Sea breeding birds that winter outside of the North Sea BDMPS, but will include impacts for the birds from outside the North Sea BDMPS breeding colonies that may be in North Sea UK waters during the non-breeding season. Additionally, the “population” size used to assess impacts in the population model may underestimate the total number of individuals present in North Sea waters across the whole annual cycle which will result in population models overestimating the effect of a predicted impact, but this will be less of an issue for those species where a smaller proportion of the non-

breeding season numbers are predicted to be birds that breed outside the North Sea scale e.g. gannet and guillemot.

2.11 The table below indicates that for gannet, LBBG, GBBG, guillemot and razorbill a large proportion of the birds from breeding colonies located within the North Sea BDMPS scale are predicted to also be present in UK North Sea waters during at least part of the non-breeding season. Additionally for gannet, guillemot and puffin a large proportion of the non-breeding season population for the largest non-breeding season population comprises individuals from North Sea colonies (i.e. relatively few birds from outside the BDMPS move into the North Sea).

2.12 For kittiwake and puffin a relatively large proportion of the North Sea breeding birds move outside of the North Sea BDMPS scale in the non-breeding season so an EIA assessment needs to consider the possibility that impacts on these birds have not been fully accounted for.

Table 1. Numbers of birds associated with breeding colonies in the North Sea BDMPS scale, and the largest number of birds predicted to be in North Sea UK waters in any non-breeding season[1], along with the percentage of the winter BDMPS population that comprises North Sea breeders and UK birds.

	Population estimate for UK colonies within North Sea BDMPS scale. (A)	Largest non-breeding season population size. (B)	% non-breeding season BDMPS (B) that comprises birds from A	% B that are UK birds (from Furness 2015)	Proportion of individuals from different UK North Sea colonies that will be contributing to B
Gannet	400,326	456,299	79%	90%	80-100%
Kittiwake	839,456	829,937	51%	52%	40-60%
LBBG	51,233	209,007	22%	70%	70-100%
GBBG	25,917	91,399	28%	31%	100%
Guillemot	2,045,078	1,617,306	91%	94%	60-90%
Razorbill	158,031	591,874	25%	27%	90-100%
Puffin	868,689	231,957	69%	70%	2-50%

2.13 Natural England has considered collision and displacement impacts from plans and projects located in the North Sea BDMPS scale, assessed against the largest population of individuals for each species predicted to be in North Sea waters in any season (Table 2). The first stage of the assessment is to determine whether any of the predicted impacts exceed 1% of baseline mortality for the relevant population scale. If 1% of baseline mortality is exceeded then further population modelling is required to further evaluate the population level significance of the predicted impact.

[1] For some species there are multiple non-breeding season periods e.g. spring and autumn so the figure in Table 1 represents the largest population.

Table 2. Largest population size (all birds) associated with the North Sea BDMPS scale for the EIA species. Numbers derived from Furness (2015).

	Largest Population Scale (all birds)	Season that maximum population size relates to	1% baseline mortality (all birds)
Gannet	456,299	Autumn	370
Kittiwake	839,456	Breeding	1,226
LBBG	209,007	Autumn	240
GBBG	91,399	Winter	64
Guillemot	2,045,078	Winter	1,247
Razorbill	591,874	Migration	621
Puffin	868,689	Breeding	817

EIA Collision Risk – Project Alone

2.14 The Applicant has undertaken an annual assessment of collision risk for gannet, kittiwake, lesser black-backed gull and great black-backed gull against a single North Sea population scale, however the EIA conclusions around significance have been assessed separately for the different seasons. The Applicant's North Sea population scale figures differ slightly from Natural England's for two reasons (Table 3). Firstly, Natural England has used the population figures from Furness (2015) whereas while the Applicant has based their figures on Furness (2015) they have made adjustments to the population figures for FFC pSPA. Natural England consider that the figures presented in Furness (2015) should be used as they were derived to ensure comparability in counts used across the different colonies, and so any updates need to consider revising figures across all colonies. Nonetheless, Natural England do not consider that this makes a material difference to the assessment. The second difference is that for kittiwake Natural England has used the population size for all UK breeding colonies that are within the North Sea BDMPS scale as this is the largest of the different seasonal population estimates relevant to the North Sea scale, whereas the Applicant has used the autumn migration BDMPS figure for the North Sea as the population figure to assess impacts against. Again this does not make a material difference to the assessment.

2.15 Based on the project alone impacts the Applicant has concluded that none of the predicted collision impacts from Hornsea Project 2 exceed 1% baseline mortality for any species and therefore require further population modelling. Natural England agrees with this assessment for gannet, kittiwake and LBBG but notes that the upper 95%CIs generated using the range of baseline density data for GBBG exceed the 1% baseline mortality threshold for all versions of the Band Model (see Applicant's Appendix J submitted at Deadline I). This is considered further in the EIA cumulative collision risk section below.

Table 3. Predicted collision impacts considered by Natural England based on Option 2 of the Basic Band Model with 98.9% AR for gannet and kittiwake and 99.5% AR for LBBG and GBBG (following JNCC et al 2014 position). Applicant's impact figure is the maximum predicted mortality from Table 1.3 in Appendix CC.

	Applicant's population size for BDMPS scale	1% baseline mortality	Max impact considered by Applicant	NE population size for BDMPS scale	1% baseline mortality	Project Impact considered by NE. (All birds).
Gannet	411,126	333	102	456,299	370	72 (31-148)[2]
Kittiwake	843,077	1231	230	839,456	1226	231 (120-404)
LBBG	209,007	240	7	209,007	240	7 (1-34)
GBBG	91,399	64	47	91,399	64	38 (11-125)

2.16 **Based on the Project alone impact levels not exceeding 1% of baseline mortality for kittiwake, gannet and lesser black-backed gull, Natural England concludes that the predicted impacts would not be significant in EIA terms. Natural England are also able to conclude that the predicted impacts for great black-backed gull are not significant in EIA terms at a North Sea UK waters scale (the rationale for concluding no significant effect for GBBG is given in the section on cumulative impacts).**

EIA Cumulative Collision Risk

2.17 For the cumulative assessment the Applicant has considered annual collisions for all projects from Beatrice to Thanet for gannet, kittiwake, LBBG and GBBG and presented outputs from both the Extended and Basic Band Model (Tables 1.7 and 1.8 in Appendix CC). Natural England consider that for gannet and LBBG, where the BDMPS includes the English Channel, impacts from Rampion should also be included. Additionally, there is some uncertainty about the collision impact figures presented by the Applicant for the different projects and Natural England notes that the cumulative totals for LBBG and GBBG are lower than the equivalent totals derived by Dogger Bank Teesside A&B for their cumulative assessment (Forewind 2014). However, Natural England also note that these differences do not materially affect the conclusions of the EIA assessment for these species. Following the SNCB position on the use of Band Models and avoidance rates set out in JNCC et al (2014), Natural England have based our assessment on collision outputs from the Basic Band Model with a 98.9% AR for gannet and kittiwake and a 99.5% AR for lesser black-backed gull and great black-backed gull.

[2] Plus up to 88 birds from displacement.

Table 4. Cumulative collision mortality at North Sea Scale.

	Applicant's population scale	1% BM	Max impact considered by Applicant	NE Population Scale	1% BM	Project Impact considered by NE[3]
Gannet	411,126	333	2721	456,299	370	3021
Kittiwake	843,077	1231	3496	839,456	1226	3616
LBBG	209,007	240	475	209,007	240	475
GBBG	91,399	64	679	91,399	64	679

2.18 As all of these cumulative impacts exceed the 1% threshold for baseline mortality further population modelling is required to evaluate the significance of the impact at an EIA scale.

2.19 As stated in Natural England's response to ExA questions at Deadline 1 and our Written Representations at paragraphs 6.5.77 – 6.5.81, Natural England has previously considered PBR outputs for assessing population impacts in cases where up to date PVA models have not been available at an appropriate population scale, as PBR offers a simpler modelling approach that requires the input of less population data in order to assess potential population impacts.

2.20 However, the use of PBR on its own, as the means of assessing population impacts on seabird populations presents a number of issues which were outlined in our response to EOO4 b(iv) at Deadline I. Due to these issues, Natural England advises that wherever possible the population level impacts of predicted mortality from developments should be assessed using PVA models as these allow the effects of factors such as density dependence, population trends and varying demographic parameters to be explicitly investigated in terms of their effect on the population trajectory. PVA models also allow relative comparisons of population level effects with and without the additional mortality to be considered in a way that is not possible with PBR.

2.21 Natural England has based its assessment of impacts for the HRA species on PVA models produced by the Applicant for colonies at FFC pSPA. However, there are currently no suitable PVA models at an appropriate scale for the EIA species considered above, with the exception of gannet where there is a SOSS PVA model for the UK gannet population which can be used to evaluate impacts for the smaller North Sea scale (WWT 2012). Due to the lack of available PVA models at an appropriate scale for kittiwake, LBBG and GBBG, Natural England has considered the results from PBR models in assessing the significance of EIA impacts for these species.

2.22 Potential Biological Removal (PBR) is a simple form of population modelling that calculates the number of additional mortalities that can be "sustained" annually by a population (Wade 1998, Dillingham and Fletcher 2008, Dillingham and Fletcher 2011). The data requirements for calculating PBR are adult survival and age of first breeding (from which maximum annual recruitment (R_{max}) is calculated) and population size (from which a lower N_{min} is calculated based on confidence limits around the estimated

[3] Noting the uncertainty around the cumulative total presented by the Applicant for LBBG and GBBG

population). Finally a recovery factor (F) is specified based on a conservation goal or requirement.

2.23 The recovery factor F is a user-defined parameter which can range from 0 to 1 and is designed to reflect levels of concern about the management of the species in question – lower values being more conservative in terms of allowing a population to recover from a depleted level with a smaller time delay for recovery. Dillingham and Fletcher (2008) link the F value to a species' conservation status. For example, they suggest a value of F = 0.1 for threatened species, F = 0.3 for near-threatened species, and F = 0.5 for all other species due to the potential for bias in population estimates (Dillingham and Fletcher 2011).

2.24 In addition to calculating PBR thresholds based on a selected recovery factor (F value), Natural England in this report have calculated what the recovery factor would be based on a back-calculation from the predicted mortality figures in the project alone and cumulative assessments. This provides a basis for assessing the recoverability of the population to the predicted mortality, which can then be considered against factors such as the conservation status of the population, short term and long term population trends, other impacts which might be operating on the population and the quality of the data to determine if the recovery factor (F) required to support the impact is realistic.

2.25 Natural England has calculated the F value equivalent that relates to the predicted impact for kittiwake, LBBG and GBBG (both for the project alone and cumulative impacts). N_{min} values were derived from the population sizes in Table 4 and survival rates and age of first breeding were taken from Horswill and Robinson (2015).

Table 5. F value equivalent factors calculated for EIA species based on predicted cumulative collision impacts at a North Sea scale.

Species	Scale	Annual collisions (all birds)	F value for predicted impact level
Kittiwake	Cumulative	3,616	0.065
LBBG	Cumulative	475	0.044
GBBG	Project alone	38	0.010
	Cumulative	679	0.173

2.26 Kittiwake is Amber listed as a Bird of Conservation Concern in BOCC 3 (Eaton et al 2009), although as a result of its large range and population size it is classed as "Least Concern" by IUCN. However, given current declines in the populations of North Sea kittiwake colonies an F value of less than 0.5 might be appropriate.

2.27 IUCN class the lesser black-backed gull as 'Least Concern'. The overall population trend across its range is increasing, although has experienced recent declines at a UK level (Balmer et al. 2013) and the species is Amber listed in BOCC 3 (Eaton et al 2009). Given that UK birds represent a high proportion of the total birds in the North Sea population scale NE consider it appropriate to use a PBR threshold with a recovery factor (F) of 0.3.

2.28 Great black-backed gull is classed as 'Least Concern' by IUCN. The overall population trend across its range is stable, although, at a UK level the GBBG population

is in decline and the species is Amber listed in BOCC 3 (Eaton et al 2009). Given that UK SPA birds represent a small proportion of the total birds in the North Sea population scale Natural England considers that it is appropriate to use a PBR threshold with a recovery factor of 0.5 for Great Black backed gull.

2.29 **On the basis of these figures, Natural England is able to conclude that the impacts to kittiwake, lesser black-backed gull and great black-backed gull under EIA at the North Sea population scale when considered cumulatively with other wind farms in the North Sea (and English Channel for LBBG) can be considered unlikely to give rise to a significant effect.**

2.30 For gannet, Natural England calculates the predicted cumulative impact to be 3,021 collisions per annum based on Option 1 or 2 of the Basic Band Model and an AR of 98.9%. The Applicant calculates the predicted annual collision mortality to be between 2,615 and 2,721 birds for the Extended and Basic Band model respectively. The difference between the Applicant's predicted mortality level using the Basic band model and Natural England's figure is largely the result of the Applicant using Option 2 outputs for East Anglia One (whereas Natural England have used the Option 1 figures which were the basis of our assessment for East Anglia One) and omission of impacts from Rampion, in the English Channel in the Applicant's assessment.

2.31 The Applicant concludes that the predicted cumulative mortality would not have a significant impact and states that the SOSS gannet PVA model concludes that:

"*The density-independent model predicted that, on average, gannet numbers will continue to increase with additional gannet mortality due to collisions with offshore wind farms, up to a threshold of approximately 10,000 additional birds killed per year. At this level of additional mortality 50% of simulations would have negative population growth. A much lower level of risk, when 95% of simulations maintain positive population growth (i.e. >1), was achieved with a threshold additional mortality of approximately 3,500 birds per year.*"

2.32 However, the SOSS PVA model relates to the whole UK gannet population (approximately 890,000 birds as a starting population size for the model) and not a North Sea component, which is only around half the size of this UK population level. At Dogger Bank Creyke Beck A&B and Dogger Bank Teesside A&B, Natural England recalculated the 50% and 95% confidence limits for a growth rate of >1 for a North Sea component (based on a slightly higher North Sea population estimate than Furness (2015) gives) of the population as 5,582 and 2,088 annual mortalities respectively (see Natural England's Deadline V submission at Dogger Bank Teesside A & B). On this basis, Natural England concluded at Dogger Bank Teesside that a significant effect on the North Sea population of gannets due to cumulative gannet collision mortality could not be excluded, based on a cumulative total of 2,852 predicted annual collisions of birds of all ages.

2.33 Natural England consider that the counterfactual of growth rate and the counterfactual of final population size are the most robust PVA metrics to use to assess population impacts. These metrics are not presented in the SOSS gannet PVA report, although from Figure 13 of WWT(2012) it is possible to estimate that the predicted growth rate of the gannet population will fall from 1.28% per annum with no additional mortality to

around 0.9% per annum with 3,000 birds additional mortality. On the basis that gannet is categorised as being a high sensitivity receptor (SMartWind 2015) a cumulative impact that would reduce the regional growth rate of the population by around 30% could be considered a moderate impact - which is significant in EIA terms. However, given that most North Sea gannet colonies have shown population increases over the last decade that are greater than the 1.28% per annum that the SOSS PVA model predicts (JNCC 2015), Natural England notes that the magnitude of the impact could arguably be classed aslower in the context of colony growth rates in excess of 4% per annum, which have been recorded for some of the larger North Sea gannet colonies such as Bass Rock, Hermaness and Bempton Cliffs.

2.34 **Natural England concludes that the impacts to gannet under EIA at the North Sea population scale when considered cumulatively with other wind farms in the North Sea have the potential to give rise to a significant effect.**

Displacement Impacts

2.35 For displacement the Applicant does not consider that it is appropriate to sum seasonal impacts together to generate an annual impact and for their project alone and cumulative assessments has conducted a separate assessment for each season for each species using a different spatial scale for each season.

2.36 The Applicant has assessed that for the Project alone only displacement impacts on razorbill in the breeding season exceed 1% of baseline mortality and therefore require further population modelling. Based on PBR analyses the Applicant concludes that the predicted impact in the breeding season is not significant in EIA terms.

2.37 For the project cumulatively with other plans and projects the Applicant has assessed that that only displacement impacts on guillemot, razorbill and puffin in the breeding season exceed 1% baseline mortality and therefore require further population modelling. Based on PBR analyses the Applicant concludes that none of predicted impacts in the breeding season are significant in EIA terms.

2.38 Natural England does not agree with the Applicant's approach for the following reasons:

- For the breeding season, the Applicant has given population sizes for species which are not defined in Appendix CC, but which Natural England understands to relate to the regional populations defined in Appendices O, R, Q submitted by the Applicant at Deadline IIA . These population scales were defined based on assumptions about the presence and distribution of adult and immature birds from UK and overseas colonies in the North Sea during the non-breeding season and Natural England does not agree with these population figures as applied to the breeding season;
- Given that impacts from projects in the North Sea (including Hornsea Project 2) occur across all seasons of the year and that a large proportion of the birds in the North Sea are likely to have connectivity with the North Sea across multiple

seasons, Natural England consider that impacts across all seasons should be summed and assessed against a biologically meaningful population scale for the whole annual cycle;

- The Applicant has based the assessment on 30% displacement for guillemot and 40% for razorbill and puffin and a 10% mortality rate applied to displaced birds for all three species. While these displacement and mortality rates lie in the range considered by Natural England, we advise that the number of deaths predicted to arise across the full range of potential displacement and mortality levels advocated by Natural England should be taken through to the population modelling and not just a single value. In the face of uncertainty around predicted impacts this enables a judgement to be made regarding the likelihood, that given the range of possible outcomes, mortality arising from displacement could give rise to a significant effect.

2.39 Natural England has therefore considered the range of displacement for guillemot and razorbill to be 30-70% and for puffin from 10-70% (due to lower sensitivity to disturbance rating given in Furness et al. 2013) and the range of mortality of displaced birds to be between 1 and 10%. The figures in Table 6 are the lower and upper figures from these ranges summed across seasons for each species. The population count data for the three species for projects in the North Sea, including Hornsea Project 2 were taken from the Applicant's submissions at Deadline IIA, Appendices O, R and Q.

Table 6. Ranges of predicted impacts from displacement at a North Sea scale across the whole annual cycle.

		NE population size against which assessment is made	1% baseline mortality	Impact range considered by NE (figures relate to birds of all ages)
Guillemot	Project alone	2,045,078	1,247	63-1,463
	Cumulative			515-12,032
Razorbill	Project alone	591,874	621	27-638
	Cumulative			235-5,473
Puffin	Project alone	868,689	817	3-175
	Cumulative			39-2,737

Table 7. F value equivalents calculated using PBR for impacts that exceed 1% baseline mortality (in Table 6).

Species	Scale	Annual displacement range (all birds)	F value for predicted impact level
Guillemot	Project alone	63-1,463	<0.01-0.02
	Cumulative	515-12,032	<0.01-0.163
Razorbill	Project alone	27-638	<0.01-0.022
	Cumulative	235-5,473	<0.01-0.185
Puffin	Cumulative	39-2,737	<0.01-0.066

2.40 For guillemot and razorbill the highest F value equivalent is less than 0.2. As the guillemot population is increasing at a UK level (JNCC 2015), F values greater than this

may be acceptable, although a number of Scottish east coast colonies have experienced declines (JNCC 2015). For razorbill there have also been increases at a UK level in recent years (albeit of a lesser magnitude compared to guillemot), although again, declines are evident at a number of east coast North Sea colonies particularly in Scotland (JNCC 2015). It should be noted that razorbill has recently been reclassified from "Least Concern" to "Near Threatened" on the European Red List by IUCN, as the species has undergone moderate declines in Europe, including very rapid declines in Iceland since 2005. The largest North Sea BDMPS population for razorbill includes 30-40% of Icelandic razorbill therefore an F value of less than 0.5 might be appropriate (e.g. Dillingham and Fletcher 2008 suggest an F value of 0.3 for near threatened species). Both guillemot and razorbill are Amber listed in BoCC 3 (Eaton et al. 2009).

2.41 For guillemot and razorbill the low F values (less than 0.2), even when adopting the worst case scenario of 70% displacement and 10% mortality, suggest that predicted mortality levels are sustainable under all scenarios.

2.42 For puffin the IUCN has recently reclassified its threat status from "Least Concern" to "Vulnerable" on the European Red List, as a result of rapid declines across its European range. This suggests an F value of 0.1 to be appropriate (Dillingham and Fletcher 2008), although it should be noted that a large proportion of the population winters outside of North Sea UK waters. Natural England notes that the F value equivalent for the worst case displacement mortality level is <0.1, which suggests that the predicted mortality level from project cumulatively in UK North Sea waters are sustainable.

2.43 **Therefore at a North Sea EIA scale Natural England are able to conclude no significant effect for guillemot, razorbill and puffin from the project alone and cumulatively with other projects in North Sea UK waters.**

References

Band, W. (2012). Using a collision risk model to assess bird collision risks for offshore wind farms. Report to The Crown Estate Strategic Ornithological Support Services (SOSS), SOSS-02. http://www.bto.org/science/wetland-and-marine/soss/projects

Balmer, D.E., Gillings, S., Caffrey, B.J., Swann, R.L., Downie, I.S. & Fuller, R.J. 2013. Bird Atlas 2007-11: the breeding and wintering birds of Britain and Ireland. BTO Books, Thetford.

Dillingham, P.W. & Fletcher, D. 2008. Estimating the ability of birds to sustain additional human-caused mortalities using a simple decision rule and allometric relationships. Biological Conservation 141, 1783 – 1792.

Dillingham, P.W. & Fletcher, D. 2011. Potential biological removal of albatrosses and petrels with minimal demographic information. Biological Conservation 144 (2011) 1885–1894.

Eaton MA, Brown AF, Noble DG, Musgrove AJ, Hearn R, Aebischer NJ, Gibbons DW, Evans A and Gregory RD (2009) Birds of Conservation Concern 3: the population status

of birds in the United Kingdom, Channel Islands and the Isle of Man. British Birds 102, pp296-341

Forewind 2014. Deadline V Appendix 5. Dogger Bank Teesside A & B. Update to lesser black backed gull and great black backed gull cumulative EIA. F-EXL-DV-002 Appendix 5

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 Reports, Number 164. http://publications.naturalengland.org.uk/publication/6427568802627584

Furness R. W., Wade H. M. and Masden E.A (2013) Assessing vulnerability of marine bird populations to offshore wind farms . Journal of Environmental Management 119 pp 56-66.

Horswill, C & Robinson, R.A. (2015), Review of Seabird Demographic Rates and Density Dependence, JNCC Report 552, ISSN 0963-8901

The IUCN Red List of Threatened Species. Version 2015-4. <www.iucnredlist.org>. Downloaded on 26 November 2015.

JNCC (2015) Seabird Population Trends and Causes of Change: 1986-2014 Report (http://www.jncc.defra.gov.uk/page-3201). Joint Nature Conservation Committee. Updated October 2015. Accessed 26 November 2015.

Joint Nature Conservation Committee (JNCC), Natural England (NE), Natural Resource Wales (NRW), Northern Ireland Environment Agency (NIEA), Scottish Natural Heritage (SNH). (2014). Joint Response from the Statutory Nature Conservation Bodies to the Marine Scotland Science Avoidance Rate Review. 25th November 2014.

SMartWind (2015). Hornsea Offshore Wind Farm Project Two Environmental Statement Volume 2 - Offshore Chapter 5 Ornithology. PINS Document Reference: 7.2.5 APFP Regulation 5(2)(a), January 2015.

Wade, P.R., 1998. Calculating limits to the allowable human-caused mortality ofcetaceans and pinnipeds. Marine Mammal Science 14, 1–37.

WWT (2012). SOSS-04 Gannet Population Viability Analysis: Demographic data, population model and outputs. WWT Consulting, Slimbridge, Glos.

SECTION B – COMMENTS ON THE APPLICANT'S WRITTEN SUBMISSION TO DEADLINE 5

Natural England's response to the Applicant's submission at Deadline 5 regarding question EOO16

3.1 Natural England notes that the Applicant provided further information at Deadline 5 in response to the Examining Authority's written question EOO16, issued during the second set of written question on 29th September 2015.

3.2 The Applicant's Deadline 5 submission presents an analysis of kittiwake count data from Flamborough which cites *'The Kittiwake'* by John Coulson (2011), an excerpt from which is included in Appendix U of that response. It is important to note that the critique presented in Coulson, and set out in the excerpt provided by the Applicant, is largely directed at the 1979 survey and a count attributed to 1986 for Flamborough-Bempton Cliffs. It is widely acknowledged that these surveys were not adequate, hence a full resurvey being carried out in 1987. Neither the 1979 nor the 1986 count is included in the Seabird Monitoring Programme database, and neither were used as evidence to justify the classification of the Flamborough Head & Bempton Cliffs (FHBC) SPA for kittiwake.

3.3 During the examination of the Hornsea I OWF, Natural England discussed the 1979, 1986 and 1987 counts with the Joint Nature Conservation Committee (JNCC). JNCC confirmed that the kittiwake count data on the citation for the FHBC SPA, based on the 1987 count and not challenged during the classification of the SPA, are correct. Furthermore, the original 1987 count sheets, which formed the evidence underpinning the citation for the FHBC SPA, were provided to John Coulson via email who subsequently confirmed he is content that they are correct.

3.4 A copy of the email is provided below (original email with the count sheets was sent by Roddy Mavor of JNCC to J. Coulson and K. Clarkson from RSPB on 16 October 2012):

> *"John and Keith,*
>
> *Given what is contained in the attached (I hope your inbox has space to accept it) I see no real reason to doubt the Flamborough and Bempton kittiwake count from the SCR years.*
>
> *In the attached there is:-*
>
> - *Clearly defined colony boundaries from sheets, grid refs and maps (pages 1,4,7).*
> - *Condemnation of 1986 count at 'Bempton' as being from earlier (1979) estimate/inferior (pages 2,3,6).*
> - *Re-survey of 'Bempton' in 1987, by 3 observers (RSPB, probably Malcolm Davies, and 2 volunteers) counting sections together and comparing each others*

counts, in co-ordination with surveys of other areas ('North Cliff', 'South Landing') by Mike Higgins.

- *Units clearly stated (e.g. page 6) for all species not just kittiwakes.*
- *Estimation of accuracy of 'Bempton' count given (page 6)*
- *Suitable count dates for 1987 survey (mid-June).etc., etc.*

Accordingly, I'm more than happy to have the 1987 count in our dataset. This would equate to 75,000 ('Bempton') + 8,368 ('North Cliff') + 300 ('South Landing') = 83,668 AON (assuming no other data is missing). This actually isn't too far off the count given in Coulson (1983) for this colony, namely 83,000 AON in 1979, which is maybe accurate after all.

Bear in mind Lloyd, Tasker and Partridge (1991) and Mitchell, Newton, Ratcliffe and Dunn (2004) must have done similar to me and similarly could find no reason to doubt the 1987 data which they subsequently used in their publications.

Roddy."

3.5 As noted above, in subsequent emails in 2012 John Coulson accepts the accuracy of the 1987 counts, but maintains that the apparent doubling then halving of kittiwakes in relatively few years is a real puzzle.

3.6 Following further issues being raised regarding the 1987 Flamborough kittiwake count during the examination of Hornsea I OWF, JNCC carried out further investigations and obtained a photocopy of the 1987 Bempton Cliffs Annual Report (Philips 1987), having previously only held a brief summary. An extract from this report is presented in Appendix 1 of this submission. The report addresses a number of concerns raised about the methodology used:

- <u>Validity of the 1986 count</u> – paragraph 1 of the RSPB report condemns the 1986 count and hence there was a requirement to carry out another survey in 1987.
- <u>Count method: reliance on land-based counts</u> – paragraph 2 states counts were undertaken from both cliff and boat. As the surveys were not solely land based the argument brought forward during the examination of Hornsea I OWF about surveys only seeing ''40-60% of the colony from land'' and the subsequent accuracy of the counts is not considered relevant.
- <u>Count method: accuracy and checking</u> - the summary report also includes an explanation of how the counters attained and checked the accuracy of their counts (see paragraphs 3 and 4). To wit: a) counts of the same sections were undertaken from land by different observers to reach consensus; b) counts of some sections were undertaken from land and sea to derive a correction factor for those sections surveyed only from the sea (counts from boat are generally

less accurate as they are not stable platforms) and c) estimates of accuracy given for the land-based and sea-based counts given these checks.

- Count date – paragraph 2 states kittiwakes were counted from mid-June, the optimum time for counting kittiwakes (addressing the assumption that counts had been done later and were therefore suboptimal).

- Count units – still unequivocally states that 75,000 refers to the number of nests, not individuals.

3.7 Natural England notes that paragraph 1 states that these counts (75,000 AON) are only for the RSPB reserve and that areas outside were this were being surveyed separately (by M. Higgins). Nevertheless all the Seabird Colony Register count sheets contain all relevant details, date, method, units etc.

3.8 According, JNCC maintained, and continues to maintain, that the 1987 count for kittiwake for the whole SPA is 85,395 AON. This is comprised as follows: 75,000 (RSPB reserve) + 8,368 + 300 (both areas south of reserve) + 1727 (area north of reserve).

3.9 Finally, Natural England notes that, in addition to the decline between 1987 and 2000, there was a further 12% decline in numbers of kittiwake between the Seabird 2000 count of 42,659 pairs and the all-colony count in 2008 (37,617 pairs), neither of which count has been questioned. This decline has perhaps been obscured by the figure used in the classification of the Flamborough & Filey Coast (FFC) pSPA. As noted in our Deadline 4 Written Submission (Section B), the citation figure for FFC pSPA comprises the count from Flamborough in 2008 plus an additional 6,903 pairs (mean pairs 2009-2011) counted at the terrestrial extension at Filey. The decline between 2000 and 2008 provides further evidence that the colony has declined, and there is no evidence to suggest that the current trend is not one of further decline or at best stability.

SECTION C – DRAFT CONSERVATION OBJECTIVES FOR THE FLAMBOROUGH AND FILEY COAST pSPA

4.1 Natural England has recently published draft Conservation Objectives for the Flamborough and Filey Coast pSPA[4]. These objectives are high level and follow a standard format used by Natural England for European site conservation objectives. These can be found in Appendix 2.

4.2 These Conservation Objectives are those referred to in the Conservation of Habitats and Species Regulations 2010 (the "Habitats Regulations") and Article 6(3) of the Habitats Directive. They must be considered when a competent authority is required to make a 'Habitats Regulations Assessment' including an Appropriate Assessment, under the relevant parts of this legislation.

4.3 The Supplementary Advice and Conservation Advice required under Regulation 35 of the Habitats Regulations (2010) is currently not available for this site. These will become available as soon as possible following classification of the Flamborough and Filey Coast pSPA.

4.4 Natural England notes that the draft conservation objectives for the pSPA support the approach taken by DECC to the pSPA in recent OWF Habitats Regulations Assessment, namely extrapolating the conservation objectives for the existing Flamborough Head & Bempton Cliffs SPA to the additional features of the pSPA,

[4] http://publications.naturalengland.org.uk/publication/5511099672690688?category=5758332488908800

APPENDIX 1 – EXTRACT FROM THE BEMPTON CLIFFS ANNUAL REPORT 1987 (Philips, 1987)

Extract from
BEMPTON CLIFFS ANNUAL REPORT 1987 - Peter Philps.

2.3 Seabird colony register

The 1986 annual report indicates that the counts conducted for the 'seabird colony register' were less than adequate. I therefore determined to repeat the counts in an attempt to acheive greater precision. The counts were limited to the reserve recording area - Speeton Heights to Gull Nook - as the area outside of this was being counted by Mike Higgins of the Bridlington members group.

Counts were made from both the clifftops and from boats. The clifftop counts stare in late May and continued until mid-July. The aok species being counted first (in order that Guillemots and Razorbills were counted during their optimum counting period.). These were followed by the Kittiwakes from mid-June; Fulmar, Herring Gul and Shag during late June and early July; and Gannet through to mid-July. Addition counts of total Puffin numbers in late July yielded a maximum count of 6,050 on 27 whilst a count of Gannet chicks in mid-August showed about 660 to be present.

I enlisted to help of two competent volunteers to assist with the clifftop counts. each counted a section of cliff, then swapped over, so that each section was count at least twice by independant observers. Where our results differed by greater tha 5% the section were recounted together. This proved quite acceptable (with only a few sections having to be recounted), except in the case of the Puffin where the apparent numbers on the cliff could change substantialy in less than an hour.

Five boat based counts were undertaken, two concentrating on the Gannets whilst th other three concentrated on the remaining species. Assistance was recieved on two of these boat based counts. The counting of the Gannets and Shags was relatively easy from the boats. The remaining species being somewhat more difficult with Fulm and Herring Gull proving virtually impossible. The Kittiwake and auk counts proved acceptable but yielded up to 20% lower figures than the clifftop counts. This was taken into consideration when estimating the number on the sections of the cliff which could not be counted from the clifftops.

@	Kittiwake.....(occupied nests).....	75,000
@	Guillemot.....(individuals).....	29,300
@	Razorbill.....(individuals).....	7,350
*	Puffin.....(individuals - max, late July).	6,050
@	Fulmar.....(occupied nests).....	700
@	Herring Gull.....(occupied nests).....	950
£	Shag.....(occupied nests).....	16
£	Gannet.....(occupied nests).....	780

@ = An accuracy of the order of 10% is believed to have been achieved. The accuracy of the clifftop counts were of the order of 5% but the boat based counts would have reduced this accuracy.

* = An accuracy of the order 20% is believed to have been acheived.

£ = An accuracy of the order 5% is believed to have been acheived.

(x% = + or - x%)

APPENDIX 2 – COPY OF THE DRAFT CONSERVATION OBJECTIVES FOR THE FLAMBOROUGH AND FILEY COAST pSPA

European Site Draft Conservation Objectives for Flamborough and Filey Coast potential Special Protection Area Site Code: UK9006101

With regard to the potential SPA and the individual species and/or assemblage of species for which the site may be classified (the 'Qualifying Features' listed below), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- **The extent and distribution of the habitats of the qualifying features**
- **The structure and function of the habitats of the qualifying features**
- **The supporting processes on which the habitats of the qualifying features rely**
- **The population of each of the qualifying features, and,**
- **The distribution of the qualifying features within the site.**

Qualifying Features:

A016 *Morus bassanus*; Northern gannet (Breeding)
A188 *Rissa tridactyla*; Black-legged kittiwake (Breeding)
A199 *Uria aalge*; Common guillemot (Breeding)
A200 *Alca torda;* Razorbill (Breeding)
Seabird assemblage