



THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (ENVIRONMENTAL PROCEDURE RULES)
2010

HORNSEA OFFSHORE WIND FARM PROJECT TWO

**WRITTEN SUBMISSION FOR DEADLINE 3:
APPENDIX 2**

24th September 2015

HRA Collision Impacts on kittiwakes from Flamborough and Filey Coast pSPA (FFC pSPA).

This note sets out Natural England’s position on the collision risk posed to kittiwake at the Flamborough and Filey Coast (FFC) pSPA, and by extension, to the Flamborough Head and Bempton Cliffs SPA. Our analysis draws on data provided by the applicant on kittiwake in support of their submissions for Hornsea project 2.

Table 1. Natural England assessment of likely collision mortality numbers for the FFC pSPA, for Hornsea Project Two alone and in-combination with other plans and projects for kittiwake.

PROJECT ALONE	Basic Band Model Option 2. AR 98.9% ¹ . Adult bird mortalities ² .		
	Lower Confidence Limit	Mean	Upper Confidence Limit
	73	134	231
Likely impact considered by Natural England	For the purposes of assessing colony impacts against the outputs of the population models Natural England has focussed our assessment on the mean collision estimate of 134 adults per annum. However, Natural England considers that potential collisions are in the range 73 to 231 adults per annum based on predicted collisions for the upper and lower 95% confidence limits of the kittiwake density data for the project area ³ . Natural England do not consider this range of potential collisions to be precautionary as it does not factor in additional uncertainty around the avoidance rate (AR) and flight height data, incorporation of which could		

¹ Figures are based on use of Basic Band Model Option 2. AR 98.9% following SNCB (2014) guidance. 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.

² Based on April-July 94.6%, Aug-Dec 5.4% and Jan-March 7.2% of collisions apportioned to FFC pSPA. All figures relate to adult birds. Breeding season apportioning based on the proportion of adults recorded on baseline surveys of Hornsea P2, non-breeding season apportioning based on percentages derived from Furness (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.

³ Confidence limits around densities are the 95% CL presented in SMartWind (2015). Appendix J, Collision Risk Modelling; Addressing Uncertainty Clarification Note Submitted at Deadline I.

	increase the range of potential collisions.
Conclusions on AEOI for FFC pSPA for Project alone impacts	<p>A density independent PVA model⁴ predicts that with an additional annual adult mortality of 150 birds (closest modelled output to predicted 134 adults impact) the population growth rate would fall by 0.19% and the population size at 25 years would be 4.2% lower than an un-impacted population size. Considering a range of impacts from 100-250 adults per annum (closest modelled outputs to the 73-231 predicted range) that factors in variability around numbers of birds in the Project area, the growth rate would fall by 0.17-0.34% and the final population size would be between 3.3% and 6.6% lower than the un-impacted population size at 25 years. A density dependent model would predict smaller declines in growth rate; however there is no clear evidence to support application of any particular form or magnitude of density dependence in the modelling.</p> <p>The density independent PVA model predicts that the population will grow at 3.9% per annum over the next 25 years; however the recent colony trend (1987-2008) is a decline of 4.1% per annum⁵. The FFC pSPA trend matches national trends over the same period (see Figure 1). In England the kittiwake population declined by 51% between 1987-2008 and in Scotland by 63% over the same period (calculated from JNCC population indices, JNCC 2014). There is no evidence to suggest that the future population trend will be significantly different from the current trend, for example productivity at the colony has not been increasing in recent years (see Figure 2). The UK population trend over the period 2000-2013 is a 61% decline⁶.</p> <p>The existing Flamborough Head and Bempton Cliffs SPA (which will be subsumed by the larger FFC pSPA when it is fully classified) was classified in 1993 on the basis of the site supporting an population of black-legged kittiwake of international importance⁷. The citation gives a population of 83,370 pairs, based on a</p>

⁴ SmartWind (2015). Appendix M - MacArthur Green Seabird PVA Report. Submitted Deadline 2a. Outputs from density independent model and demographic rate set 2 used.

⁵ From Seabird Monitoring Programme (SMP) Online Database. Accessed 01 Sept 2015. <http://jncc.defra.gov.uk/smp/Default.aspx>

⁶ JNCC (2014). Seabird Population Trends and Causes of Change: 1986-2013 Report (<http://www.jncc.defra.gov.uk/page-3201>). Joint Nature Conservation Committee. Updated July 2013. Accessed 01 Sept 2015.

⁷ JNCC (1992): Departmental Brief: Flamborough Head & Bempton Cliffs. Proposed Special Protection Area (610A). JNCC Peterborough.

	<p>count in 1987. The latest population for the larger FFC pSPA is given as 44,520 pairs based on counts from 2008-2011⁸. The kittiwake feature of the site is, therefore, in unfavourable condition and when the conservation objectives are set for the FFC SPA, should the site be classified, there is likely to be a restore objective for the kittiwake feature. This is in line with the approach Natural England has taken in assessing the condition of the kittiwake feature of the Flamborough Head SSSI, which in March 2015 was assessed as Unfavourable Declining.</p> <p>Natural England consider that if the kittiwake population were to grow at the rate calculated in the applicant's PVA model of 3.9% over the next 25 years, then additional mortality of 134 adults would not be counter to a conservation objective to restore the population, as it would still allow the population to grow with minimal delay in reaching the same population level as the un-impacted population. However, in the context of a population trajectory that is currently declining and may continue to decline (or at best be stable) an additional mortality of 134 adults per annum over 25 years causing a reduction in growth rate of 0.19% would further harm the population and make it more difficult to restore the population to a favourable condition. Natural England is therefore currently unable to conclude beyond reasonable scientific doubt that this level of impact would not be an AEOI⁹.</p>
IN-COMBINATION	<p align="center">Predicted Adult Mortalities. Basic Band Model. Option 1/Option 2. AR 98.9%.</p> <p align="center">503</p>
Likely impact considered by Natural England	<p>Natural England has based our assessment of impacts on an in-combination estimate of 503 adults additional mortality per annum. This is based on using April to July as the breeding season for those projects that the Applicant had apportioned breeding season collisions from (rather than May-July). Non-breeding season apportioning was calculated as per Furness (2015), (see footnote 2). Predicted collisions for Dogger Bank Teesside (A&B) are derived from Forewind (2014) <i>Deadline VI Final HRA Ornithology In-combination</i></p>

⁸ <http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/ourwork/conservation/designations/spa/flamborough-fileypspaconsultation.aspx>

⁹ Natural England and the applicant remain in discussion over this conclusion and the level of impact. At the issue specific hearing on the 16th September Natural England and the Applicant agreed to provide an update on any further agreement to the examining authority at Deadline 4.

	<p><i>Tables</i>, rather than the higher figures presented by the Applicant in <i>Appendix P -Clarification Note - Apportioning of predicted kittiwake mortality to the Flamborough and Filey Coast pSPA population</i> submitted by the Applicant at Deadline 2a. Natural England has used a 45% reduction in collisions for MORL rather than the Applicant's 55.4% reduction based on consent granted for 186 rather than the Rochdale Envelope 339 turbines¹⁰ and have used the Basic Band Model Option 1 figures for East Anglia One rather than Option 2 as the former were used in the assessment for the project.</p> <p>Natural England do not consider 503 birds to be a precautionary assessment of potential in-combination impacts as it does not account for impacts on the 20-30% FFC pSPA kittiwake that are predicted to be in Western and Channel Waters (which include the Irish Sea) in the non-breeding season (Furness 2015), and does not account for uncertainty around baseline densities of birds in project areas, flight height variability and AR variability.</p> <p>Additionally the Applicant has reduced the number of collisions for East Anglia One and MORL on the basis of the consent for these projects being given for fewer turbines than modelled in the original assessments. However, it is not proven that collisions will be reduced by the same percentage as turbine number reductions as generating capacities are not reduced by same amount and therefore turbine parameters will not be the same. Natural England is unclear at present whether the updated collision risk calculations have been made available to allow verification that the 26% reduction in the number of turbines at East Anglia One or 45% (55.4% assumed by Applicant) reductions for MORL would result in the same percentage reduction in predicted collisions.</p> <p>Further the in-combination assessment does not include any predicted mortalities from the East Anglia Three.</p>
Conclusions on	A density independent PVA model predicts that with an additional annual adult mortality of 500 birds the

¹⁰ Telford, Stevenson, MacColl Wind Farms and Associated Transmission Infrastructure Environmental Statement Additional Information: Ornithology Population Viability Analysis Outputs and Review. 2013.

AEoSI for FFC pSPA for Project in-combination impacts	<p>population growth rate would fall by 0.58% and the population size at 25 years would be 13% lower than an un-impacted population size.</p> <p>If the kittiwake population at FFC pSPA were able to grow at 3.9% per annum over the next 25 years the in-combination impact would represent approximately a reduction to ~3.3% growth rate and the delay in the population reaching a target level would be small. However, in the context of a population trajectory that is currently declining and may continue to decline (or at best be stable) an additional mortality of 503 birds causing a reduction in growth rate of 0.6% would further harm the population and make it more difficult to restore the population to a favourable condition. On this basis Natural England is unable to conclude no AEoSI in combination with other plans and projects.</p>
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Figure 1. a) UK population indices for kittiwake 1986-2014 compared to indices for the same period for Seabird Monitoring Programme count units that make up FFC pSPA: (b) Bempton Cliffs count unit, c) Filey Coast 1 count unit, d) Filey Coast 2 count unit and e) Filey Coast 3 count unit) . Data supplied by R.Mavor, JNCC.

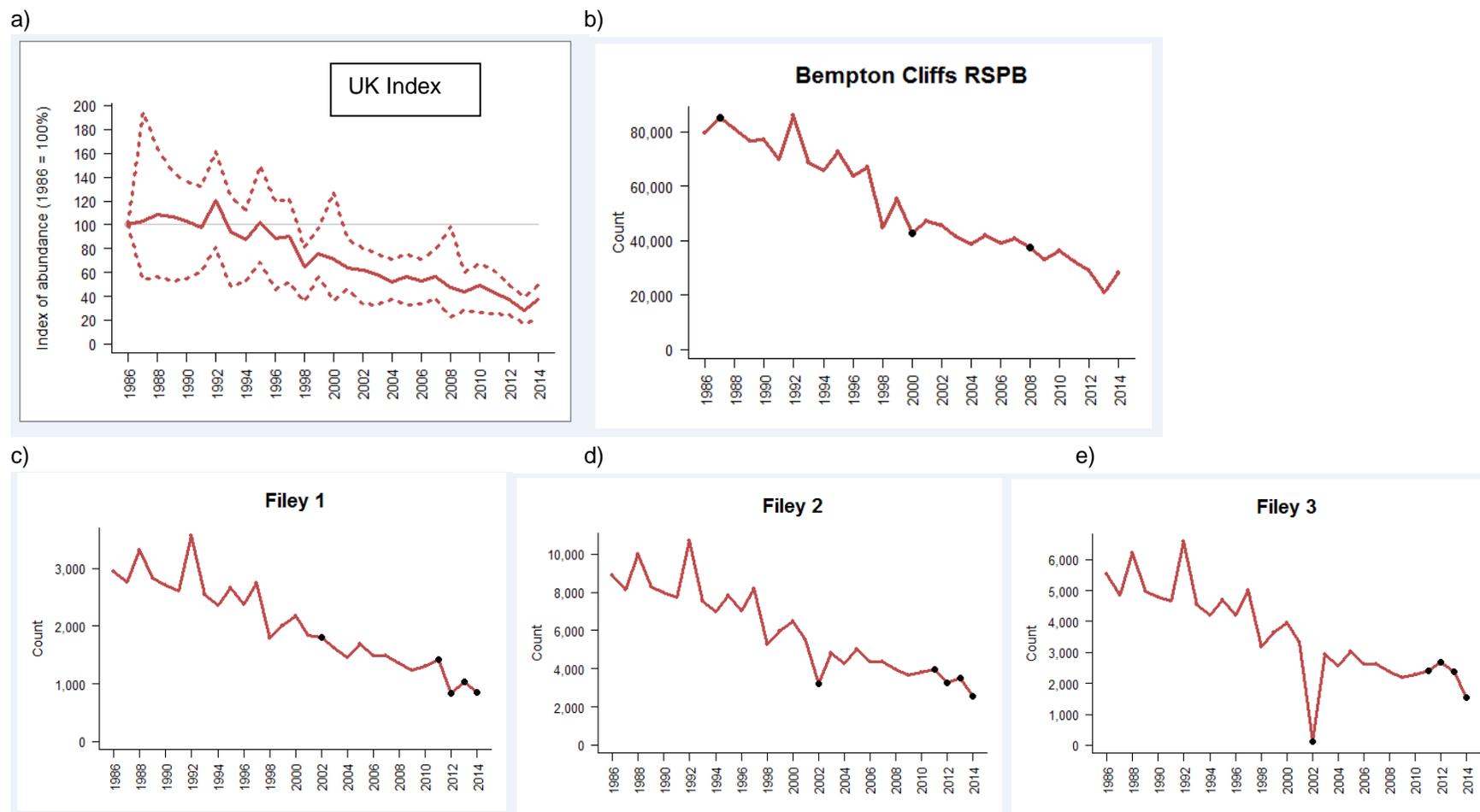
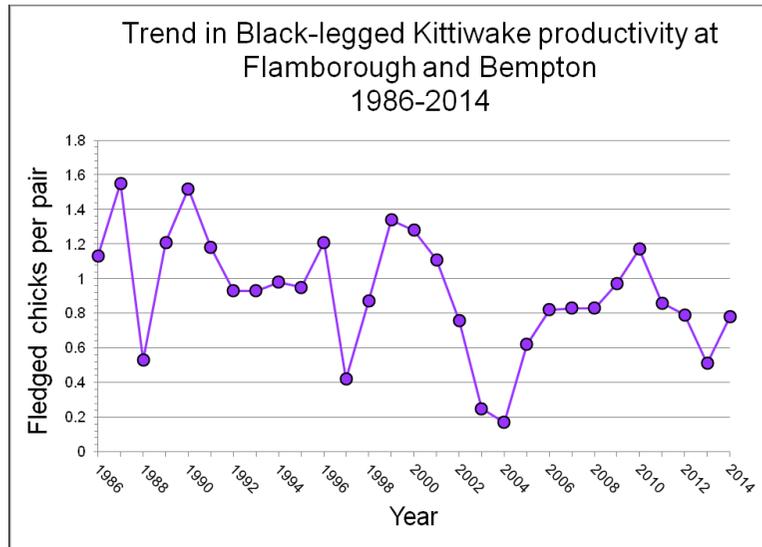


Figure 2. Trend in Kittiwake productivity at Flamborough and Bempton Cliffs 1986-2014. Aitken et al 2015¹¹.



¹¹ David Aitken, Michael Babcock, Keith Clarkson, Ruth Jeavons. 2015. Flamborough Head and Bempton Cliffs SPA Seabird Monitoring Programme 2014 Report