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Vattenfall Wind Power Ltd

Thanet Extension Offshore Wind Farm

Appendix 39 to Deadline 3 Submission:
Clarification Note on Collision Risk Modelling
Parameters and Thanet Extension's Contribution
to Cumulative and In-Combination Totals

Relevant Examination Deadline: Deadline 3

Submitted by Vattenfall Wind Power Ltd

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Revision B

Drafted By:	APEM Ltd
Approved By:	Daniel Bates
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Draft	Original structure and CRM input parameters discussed with Natural England during of SoCG Meeting on 1st March 2019
Revision A	Post consultation document submitted to the Examining Authority
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N/A	

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1   Introduction

1.1   Collision risk modelling

1   The Band (2012) collision risk model (CRM) has been used to estimate potential seabird mortality rates for all of the offshore wind farm (OWF) applications in English waters whose consent has been considered and granted through the Nationally Significant Infrastructure Project (NSIP) planning process. The Band (2012) CRM is considered best practice and recommended by the statutory nature conservation bodies (SNCBs), albeit with requests to adopt improvements as they came forward (see below).

2   In order to incorporate an element of variation in the CRM input parameters, Masden (2015) developed the Band (2012) model through the creation of the package 'BandModel' in the R statistical program (http://www.r-project.org). The Masden (2015) version of the Band (2012) model included uncertainty in particular CRM parameters in the form of Standard Deviations (SD) around mean values and applied a method of Monte Carlo simulation used by McAdam (2005) to allow for these. In addition, the packaging of the CRM within the R statistical program dealt with an issue identified by stakeholder interviews that the Microsoft Excel version of the Band (2012) model was occasionally difficult to use and error-prone. However, a number of inconsistencies were evident when using the Masden (2015) programme, which led to concern about the reliability and accuracy of the potential collision risk outputs. Following a review funded by Natural England of the Masden (2015) programme, undertaken by MacArthur Green (Trinder, 2017), it was determined that a number of improvements were required before the 'BandModel' R package would be deemed as being the agreed method for CRM for proposed OWF developments.

3   Following the Trinder (2017) review, the advice from SNCBs was to revert to using the Band (2012) spreadsheet with an element of variation to coincide with the Band (2012) guidance (paragraph 14, page 7), which was previously overlooked in applications for OWF developments: "…*it is recommended that 'best estimates' are deployed, and with them an analysis of the uncertainty or variability surrounding each estimate and the range within which the collision risk can be assessed with confidence.*"

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4   Natural England raised the possibility of using the latest Marine Scotland Science R-programme (Marine Scotland, 2018) to undertake further collision risk modelling for Thanet Extension in order to provide a revised set of outputs for assessment (PINS Ref REP1-113/ Written Representation of Natural England). It is understood that at present this collision risk model is a beta version and it comes without assurance that no issues with its operation and outputs might be found in the same manner as when Masden's R-programme (Masden, 2015) was used at the PEIR stage.

5   As the Marine Scotland Science R-programme (Marine Scotland, 2018) remains untested for a Nationally Significant Infrastructure Project (NSIP) the Applicant considered Natural England's request, but instead agreed to provide a further set of collision risk modelling outputs that accounted for variance around parameters in relation to nocturnal activity rates and avoidance rates. These revised outputs were presented in a post-submission CRM note at Deadline I (PINS Ref REP1-023/ Applicant Ref Annex F of Appendix 1 of Responses to Relevant Representations submitted at Deadline 1; Title: Collision Risk Modelling Parameters and Thanet Extension's Contribution to Cumulative and In-Combination Totals), a summary of which is presented in Section 2.2.

6   Ahead of Issue Specific Hearing 3 (ISH3) the Applicant consulted with Natural England in a teleconference on 15th February 2019 in order to gain further responses to a range of matters, including progressing agreement on a number of topics within the Statement of Common Ground (SoCG) from the version submitted at Deadline I (PINS Ref: REP1-039/ Appendix 14 to Deadline 1 Submission: Statement of Common Ground – Natural England Offshore Ornithology). With regard to CRM, the Applicant highlighted additional variation was presented in the Development Application within the CRM Appendix to the ES Chapter (PINS Ref APP-080/ Application Ref 6.4.4.4; Title: ES Vol 6 Chapter 4 Annex 4-4: Collision Risk Modelling Report).

7   The range of outputs within the CRM Appendix to the ES Chapter (PINS Ref APP-080/ Application Ref 6.4.4.4) made use of the parameters advocated by Natural England, including standard avoidance rates (JNCC et al., 2014 in response to Cook et al., 2014) along with the upper and lower confidence intervals for seabird flight height values (for seabird flying at Potential Collision Height - PCH) within the generic SOSS-02 flight height distribution data (Johnston *et al.*, 2014). It was agreed with Natural England that this would be through the provision of this Clarification Note on CRM that presents CRM the outputs using Natural England's recommended avoidance rates, nocturnal activity rates and upper confidence intervals around SOSS 02 flight heights.

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2   Summary of Applicant's Deadline 1 CRM Note

2.1   Summary of CRM assessment for Thanet Extension alone

8   With reference to paragraph 5 in this document it was agreed that a summary of the post-submission CRM note (PINS Ref REP1-023/ Applicant Ref Annex F of Appendix 1 of Responses to Relevant Representations submitted at Deadline 1) outputs that used a the range of nocturnal activity rates and avoidance rates would be presented. The parameters used included;

- Nocturnal activity rates corresponding to MacArthur Green's evidence put forward for the East Anglia THREE application (MacArthur Green, 2015: Appendix 7) and those from Garthe & Hüppop (2004), which were presented and compared;

  - o   The findings provided evidence that minimal differences occur in estimated collision mortality rates for Thanet Extension alone when applying a range of nocturnal activity rates for all five seabird species assessed;

- Avoidance rates corresponding to those within the published report contracted by JNCC to the BTO on bird collision avoidance (Bowgen & Cook, 2018) for which Natural England were part of the peer review process and those from the SNCBs review of using avoidance rates to be applied in the Band models (JNCC et al., 2014 in response to Cook et al., 2014), which were presented and compared;

  - o   For gannet and kittiwake the avoidance rates increased from those applied within the Thanet Extension CRM. For large gulls (lesser black-backed gull, herring gull and great black-backed gull) there is no change in the avoidance rate used for all three species to that used in the Thanet Extension ES Chapter; and

- Applying the range of avoidance rates from Bowgen & Cook (2018) reduced CRM outputs by 8 individuals (approx. 60%) for gannet and 2 individuals (approx. 15%) for kittiwake.

  - o   This provided further evidence that the outputs from Thanet Extension collision risk modelling were precautionary in nature.

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2.2 Summary of Applicant's Deadline 1 CRM Note and Revised RIAA for Thanet Extension's Contribution to Cumulative and In-combination Totals

9   Following consultation with Natural England during a SoCG meeting on 23rd November 2018, APEM agreed that the cumulative totals for each of the five seabirds species assessed in the ES Chapter (PINS Ref APP-045/ Application Ref 6.2.4) would be presented from the East Anglia Three (SPR, 2016) and Norfolk Vanguard projects. The aim of this was to provide Natural England with a range of cumulative collision mortality rates for each species in order to demonstrate that Thanet Extension's collision mortality rates will not make any appreciable contribution to the cumulative and in-combination totals.

10   For the purpose of comparing the assessment in the post-submission CRM note (PINS Ref REP1-023/ Applicant Ref Annex F of Appendix 1 of Responses to Relevant Representations submitted at Deadline 1) the results from the range of collision mortality rates from Thanet Extension were presented against and as a contribution to those cumulative estimates for East Anglia Three and Norfolk Vanguard are presented Table 1. The ranges in CRM input parameters included nocturnal activity rates according corresponding to MacArthur Green's evidence put forward for the East Anglia THREE application (MacArthur Green, 2015: Appendix 7) and those from Garthe & Hüppop (2004) as well as a range of avoidance rates using those from Cook et al. (2014) and the SNCBs review of avoidance rates to be applied in the Band models (JNCC et al., 2014 in response to Cook et al., 2014) and those according to Bowgen & Cook (2018).

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Table 1: Annual predicted cumulative collision mortality rates from East Anglia Three and Norfolk Vanguard in comparison to Thanet Extension (and its contribution to both)

Species	Cumulative Mortality Rates Agreed by Natural England for East Anglia Three*	Cumulative Mortality Rates Submitted for Norfolk Vanguard (minus Thanet Extension)**	Thanet Extension Mortality Rates Range***	Percentage contribution to EA3 & NV Cumulative Totals	
				EA3	NV
Gannet	2,874.5	2,665.6	6-19	0.2-0.7%	0.2-0.7%
Kittiwake	3,446.9	3,845.1	13-18	0.4-0.5%	0.3-0.5%
Lesser black-backed gull	474.6	520	2-3	0.4-0.6%	0.4-0.6%
Herring gull	701.1	n/a	14-17	2.0-2.4%	n/a
Great black-backed gull	840.4	928.6	22-28	2.6-3.3%	2.4-3.0%
Table Note: *These totals do not include projects since East Anglia Three					
Table Note: **These totals are from an additional submission of data from Vattenfall to PINS in Response to Section 51 Advice from the Planning Inspectorate (Vattenfall, 2018b)					
Table Note: *** The range in mortality predictions results from variation in nocturnal activity factors and avoidance rates being applied in the CRM as explained in paragraph 10.					

11   The contribution of Thanet Extension to the cumulative totals agreed by Natural England for East Anglia Three is between 0.2-0.7% for gannet, 0.4-0.5% for kittiwake, 0.4-0.6% for lesser black-backed gull, 2.0-2.4% for herring gull and 2.6-3.3% for great black-backed gull. This provides further evidence in support of the Thanet Extension ES Chapter (PINS Ref APP-045/ Application Ref 6.2.4) and RIAA (PINS Ref APP-031/ Application Ref 5.2) concluding the collision risk totals estimated as a consequence of Thanet Extension alone will not make any appreciable contribution to the cumulative mortality totals.

12   The contribution of Thanet Extension to the cumulative totals most recently submitted for Norfolk Vanguard is between 0.2-0.7% for gannet, 0.3-0.5% for kittiwake, 0.4-0.6% for lesser black-backed gull and 2.4-3.0% for great black-backed gull. Please note that no cumulative totals were submitted for Norfolk Vanguard up to the point at which this note was prepared. Consideration of these data provides further evidence in support of the Thanet Extension ES Chapter (PINS Ref APP-045/ Application Ref 6.2.4) and RIAA (PINS Ref APP-031/ Application Ref 5.2) concluding the collision risk totals estimated as a consequence of Thanet Extension alone will not make any appreciable contribution to the cumulative mortality totals of any seabird.

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13   In the revised RIAA (REP2-019/ Appendix 21 to Deadline 2 Submission: Report to Inform Appropriate Assessment; Part 2) the maximum likelihood value from the CRM predicted an annual total of 13.55 gannet collisions, consisting of 9.10 in the spring, none in the breeding season and 4.45 in the autumn (there is no winter bio-season for gannet). With no collisions predicted in the breeding season, the assessment considered what proportion of those birds present in the southern North Sea outside the breeding season may be attributed to the Flamborough and Filey Coast SPA population of 16,938 adult birds from amongst the larger population present.

14   Furness (2015) provides the basis on which that apportioning can be made. Seventy percent of the SPA population is present in the North Sea in the spring migration period and all are present in the autumn migration period. This means that in the spring migration period 4.8% of the birds present can be attributed to the SPA (70% of 16,938 divided by spring BDMPS of 248,385) and in the autumn period 3.7% of the birds present can be attributed to the SPA (100% of 16,938 divided by the autumn BDMPS of 456,298). Accordingly, the collision predictions for the proposed Thanet Extension attributed to the SPA are 0.43 in spring and 0.17 in autumn. These predictions represent a 0.013% and 0.005% increase in mortality in spring and autumn respectively relative to the background levels for the project alone, this is a negligible change. Therefore the conclusion is that there is no potential for an adverse effect on the population and hence on the integrity of the SPA from the project alone.

15   In the revised RIAA (REP2-019/ Appendix 21 to Deadline 2 Submission: Report to Inform Appropriate Assessment; Part 2) the maximum likelihood value from the CRM predicted an annual total of 14.74 kittiwake collisions, consisting of 9.82 in the spring, 1.48 in the breeding season and 3.43 in the autumn (there is no winter bio-season for kittiwake). Those collisions predicted in the breeding season cannot be attributed to the SPA as Thanet Extension is beyond the mean maximum foraging range of kittiwake and the individuals observed in the survey can be expected to be a combination of immature birds, non-breeding adults and adults from a more local colony that is not part of the European site network. With respect to predicted collisions outside the breeding season the assessment has to consider what proportion of those birds present in the southern North Sea may be attributed to the Flamborough and Filey Coast SPA population of 89,040 adult birds from amongst the larger population present.

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16   Furness (2015) provides the basis on which that apportioning can be made. Sixty percent of the SPA population is present in the North Sea in both the spring and autumn migration periods. This means that in the spring migration period 8.5% of the birds present can be attributed to the SPA (60% of 89,040 divided by spring BDMPS of 627,816) and in the autumn period 6.4% of the birds present can be attributed to the SPA (60% of 89,040 divided by the autumn BDMPS of 829,937). Accordingly, the collision predictions for the proposed Thanet Extension attributed to the SPA are 0.84 in spring and 0.22 in autumn. These predictions represent a 0.006% and 0.002% increase in mortality in spring and autumn respectively relative to the background levels for the project alone, this is a negligible change. There is no potential for an adverse effect on the population and hence on the integrity of the SPA from the project alone.

17   The conclusions in the revised RIAA (REP2-019/ Appendix 21 to Deadline 2 Submission: Report to Inform Appropriate Assessment; Part 2) were, therefore, that there is no potential for adverse effect on integrity (AEoI) to the gannet or kittiwake features of the Flamborough and Filey Coast SPA in relation to collision risk effects from Thanet Extension alone and therefore, subject to natural change, gannet and kittiwake will be maintained as a feature in the long-term with respect to the potential for adverse effects from collision risk.

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3   Consultation Process

3.1   Further consultation with stakeholders and responses to the Deadline 1 submission

18   The Applicant consulted with Natural England in a teleconference on 23rd January 2019 in order to gain responses to a range of matters, including on the post-submission CRM note (PINS Ref REP1-023/ Applicant Ref Annex F of Appendix 1 of Responses to Relevant Representations submitted at Deadline 1) and their Written Representations (REP1-113/ Written Representations of Natural England). With regard to CRM, the comments received from Natural England included the use of different Band (2012) models and the parameters used in the modelling.

19   The responses to the post-submission CRM note (PINS Ref REP1-023/ Applicant Ref Annex F of Appendix 1 of Responses to Relevant Representations submitted at Deadline 1) from Natural England in their Written Representations (REP1-113/ Written Representations of Natural England) relating to the assessment of collision risk modelling are summarised in following bullets;

- Natural England confirmed that the approach to CRM making use of flight heights (and PCHs) for seabirds using the generic SOSS-02 flight height distribution data (Johnston *et al.*, 2014) had previously been agreed in the Evidence Plan process;

- Natural England requested additional CRM through the use of the Marine Scotland Science R-programme (Marine Scotland, 2018);

- The Applicant and Natural England agreed that assessments based on either parties' use of different input parameters for CRM are likely to make no difference to the overall conclusions. Those conclusions being that collision risk from Thanet Extension would be of no significant impact at EIA level and that no adverse effect on the integrity of Flamborough and Filey Coast SPA is predicted from Thanet Extension alone.

- Natural England confirmed that the reason for pursuing additional data on the range of potential CRM outputs, including the more precautionary approach advocated by Natural England, was for the purpose of providing other Developers with data on Thanet Extension's contribution to cumulative and in-combination assessments and not due to Thanet Extension alone being of concern.

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3.2 Further consultation with stakeholders and agreements reached ahead of Issue Specific Hearing 3

20 Ahead of Issue Specific Hearing 3 (ISH3) the Applicant consulted with Natural England in a teleconference on 15th February 2019 in order to gain responses to a range of matters, including progressing agreement on a number of topics within the Statement of Common Ground (SoCG) from the version submitted at Deadline I (PINS Ref: REP1-039/ Appendix 14 to Deadline 1 Submission: Statement of Common Ground – Natural England Offshore Ornithology).

21 With regard to CRM, the Applicant highlighted to Natural England that additional variation was presented in the application documents within the CRM Appendix to the ES Chapter (PINS Ref APP-080/ Application Ref 6.4.4.4). The range of outputs within the CRM Appendix to the ES Chapter (PINS Ref APP-080/ Application Ref 6.4.4.4) made use of the parameters advocated by Natural England, including the upper and lower confidence intervals for flight height (PCHs) values within the within the generic SOSS-02 flight height distribution data (Johnston *et al.*, 2014).

22 The responses to the CRM outputs presented in the CRM Appendix to the ES Chapter (PINS Ref APP-080/ Application Ref 6.4.4.4) from Natural England related to the assessment of collision risk modelling are summarised in following bullets;

- Natural England recognised the submission of additional variance in the CRM within the CRM Appendix to the ES Chapter (PINS Ref APP-080/ Application Ref 6.4.4.4), but advocated a more precautionary approach using nocturnal activity rates from Garthe & Hüppop (2004);

- Natural England also recognised the additional variation within the post-submission CRM note (PINS Ref REP1-023/ Applicant Ref Annex F of Appendix 1 of Responses to Relevant Representations submitted at Deadline 1), but advocated a more precautionary approach using avoidance rates from Cook et al. (2014) and the SNCBs review of avoidance rates to be applied in the Band models (JNCC et al., 2014 in response to Cook et al., 2014) and not according to Bowgen & Cook (2018).

23 The Applicant and Natural England agreed that should an additional clarification note be provided (this note), that it included for the provision of a more precautionary approach to CRM input parameters to provide further evidence that Thanet Extension's risk to seabirds from collision mortality is low and will not make any appreciable contribution to the cumulative and in-combination totals.

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4   Alternate CRM (using Natural England's more precautionary approach) for Thanet Extension alone and contribution to cumulative and in-combination totals

24   Following further consultation with Natural England during the SoCG meeting on 15th February 2019, the Applicant agreed that a further set of CRM outputs would be submitted at Deadline 3 to the Examining Authority (ExA) to provide an estimate of Thanet Extension's contribution to the cumulative and in-combination totals following the use of Natural England's more precautionary CRM input parameters.

25   The CRM outputs for Thanet Extension alone for each of the five seabirds species assessed in the ES Chapter (PINS Ref APP-045/ Application Ref 6.2.4) would be presented as a contribution to the cumulative totals from the East Anglia Three (SPR, 2016) and Norfolk Vanguard projects. This would provide Natural England with a range of cumulative collision mortality rates for each species in order to demonstrate that Thanet Extension's collision mortality rates will not make any appreciable contribution to the cumulative totals.

26   A more precautionary collision risk modelling exercise using input parameters that Natural England requested for each of the five seabirds were presented in CRM appendix to the ES Chapter (PINS Ref APP-080/ Application Ref 6.4.4.4) using the upper and lower confidence intervals surrounding multiple variables including; avoidance rates, flight heights (PCHs) and flying bird densities using Band CRM Option 2. The result of which produced 27 different CRM outputs for each of the five seabirds accounting for variance as follows;

- Flight density mean + Lower SOSS CI PCH + avoidance rates (x3);

- Flight density mean + Maximum Likelihood SOSS CI PCH* + avoidance rates (x3);

- Flight density mean + Upper SOSS CI PCH + avoidance rates (x3);

- Flight density mean lower CI + Lower SOSS CI PCH + avoidance rates (x3);

- Flight density mean lower CI + Maximum Likelihood SOSS CI PCH* + avoidance rates (x3);

- Flight density mean lower CI + Upper SOSS CI PCH + avoidance rates (x3);

- Flight density mean upper CI + Lower SOSS CI PCH + avoidance rates (x3);

- Flight density mean upper CI + Maximum Likelihood SOSS CI PCH + avoidance rates (x3); and

- Flight density mean upper CI + Upper SOSS CI PCH + avoidance rates (x3).

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27   The exception in this collision risk modelling exercise to having already prepared what Natural England sought was that the nocturnal activity factor corresponded with MacArthur Green's evidence put forward for the East Anglia THREE application (MacArthur Green, 2015: Appendix 7) in place of those from Garthe & Hüppop (2004), that Natural England continue to advocate as standard.

28   The more precautionary CRM input parameters advocated by Natural England, and agreed to be presented in this note by the Applicant to further demonstrate Thanet Extension being of low risk to seabirds from collision risk, are presented in Table 2.

Table 2: Natural England's more precautionary CRM input parameters

Species	Nocturnal Activity Factor	Avoidance Rate	Upper and Lower PCH Values
Gannet	2	98.9%	17.25% - 4.66%
Kittiwake	3	98.9%	14.72% - 9.33%
Lesser black-backed gull	3	99.5%	40.82% - 17.14%
Herring gull	3	99.5%	39.91% - 21.61%
Great black-backed gull	3	99.5%	41.75% - 24.69%

29   The results of assessing the more precautionary new range of collision mortality rates using CRM input parameters advocated by Natural England for Thanet Extension against those cumulative estimates for East Anglia Three and Norfolk Vanguard are presented in Table 3.

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Table 3: Alternate annual predicted cumulative collision mortality rates from East Anglia Three and Norfolk Vanguard in comparison to Thanet Extension (and its contribution to both) using more precautionary NE parameters

Species	Cumulative Mortality Rates Agreed by Natural England for East Anglia Three*	Cumulative Mortality Rates Submitted for Norfolk Vanguard(minus Thanet Extension)**	Thanet Extension Mortality Rates Range***	Percentage contribution to EA3 & NV Cumulative Totals	
				EA3	NV
Gannet	2,874.5	2,665.6	8-34	0.3-1.2%	0.3-1.3%
Kittiwake	3,446.9	3,845.1	13-23	0.4-0.7%	0.3-0.6%
Lesser black-backed gull	474.6	520	2-5	0.4-1.1%	0.4-1.0%
Herring gull	701.1	n/a	12-25	1.7-3.6%	n/a
Great black-backed gull	840.4	928.6	23-42	2.7-5.0%	2.5-4.5%
Table Note: *These totals do not include projects since East Anglia Three					
Table Note: **These totals are from an additional submission of data from Vattenfall to PINS in Response to Section 51 Advice from the Planning Inspectorate (Vattenfall, 2018b)					
Table Note: *** The upper end of these CRM outputs are in line with Natural England's preferred CRM input parameters. The range in mortality predictions results from variation in upper and lower confidence intervals in the PCH from SOSS 02 flight height data.					

30　　The contribution of Thanet Extension to the cumulative totals agreed by Natural England for East Anglia Three is between 0.3-1.2% for gannet, 0.4-0.7% for kittiwake, 0.4-1.1% for lesser black-backed gull, 1.7-3.6% for herring gull and 2.7-5.0% for great black-backed gull. This provides further evidence in support of the Thanet Extension ES Chapter (PINS Ref APP-045/ Application Ref 6.2.4) and RIAA (PINS Ref APP-031/ Application Ref 5.2) concluding the collision risk totals estimated as a consequence of Thanet Extension alone will not make any appreciable contribution to the cumulative and in-combination totals.

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31   The contribution of Thanet Extension to the cumulative totals most recently submitted for Norfolk Vanguard is between 0.3-1.3% for gannet, 0.3-0.6% for kittiwake, 0.4-1.0% for lesser black-backed gull and 2.5-4.5% for great black-backed gull. Please note that no cumulative totals were submitted for Norfolk Vanguard up to the point at which this note was prepared. Consideration of these data provides further evidence in support of the Thanet Extension ES Chapter (PINS Ref APP-045/ Application Ref 6.2.4) and RIAA (PINS Ref APP-031/ Application Ref 5.2) concluding the collision risk totals estimated as a consequence of Thanet Extension alone will not make any appreciable contribution to the cumulative and in-combination totals.

32   If the more precautionary CRM outputs in Table 3 were to be attributed to the Flamborough and Filey Coast SPA population of gannet then the predicted annual total to consider would be 34 gannet collisions, consisting of 22.15 in the spring, none in the breeding season and 11.48 in the autumn (there is no winter bio-season for gannet). With no collisions predicted in the breeding season, the assessment considered what proportion of those birds present in the southern North Sea outside the breeding season may be attributed to the Flamborough and Filey Coast SPA population of 16,938 adult birds from amongst the larger population present.

33   Furness (2015) provides the basis on which that apportioning can be made. Seventy percent of the SPA population is present in the North Sea in the spring migration period and all are present in the autumn migration period. This means that in the spring migration period 4.8% of the birds present can be attributed to the SPA (70% of 16,938 divided by spring BDMPS of 248,385) and in the autumn period 3.7% of the birds present can be attributed to the SPA (100% of 16,938 divided by the autumn BDMPS of 456,298). Accordingly, the collision predictions using the more precautionary CRM outputs for the proposed Thanet Extension attributed to the SPA are 1.063 in spring and 0.425 in autumn. These predictions represent a 0.033 % and 0.013% increase in mortality in spring and autumn respectively relative to the background levels for the project alone, this is a negligible change. Therefore the conclusion is that there is no potential for an adverse effect on the population and hence on the integrity of the SPA from the project alone.

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34   If the more precautionary CRM outputs in Table 3 were to be attributed to the Flamborough and Filey Coast SPA population of kittiwake then the predicted annual total to consider would be 23 kittiwake collisions, consisting of 15.10 in the spring, 2.02 in the breeding season and 5.42 in the autumn (there is no winter bio-season for kittiwake). Those collisions predicted in the breeding season cannot be attributed to the SPA as Thanet Extension is beyond the mean maximum foraging range of kittiwake and the individuals observed in the survey can be expected to be a combination of immature birds, non-breeding adults and adults from a more local colony that is not part of the European site network. With respect to predicted collisions outside the breeding season the assessment has to consider what proportion of those birds present in the southern North Sea may be attributed to the Flamborough and Filey Coast SPA population of 89,040 adult birds from amongst the larger population present.

35   Furness (2015) provides the basis on which that apportioning can be made. Sixty percent of the SPA population is present in the North Sea in both the spring and autumn migration periods. This means that in the spring migration period 8.5% of the birds present can be attributed to the SPA (60% of 89,040 divided by spring BDMPS of 627,816) and in the autumn period 6.4% of the birds present can be attributed to the SPA (60% of 89,040 divided by the autumn BDMPS of 829,937). Accordingly, the collision predictions for the proposed Thanet Extension attributed to the SPA are 1.28 in spring and 0.35 in autumn. These predictions represent a 0.009% and 0.003% increase in mortality in spring and autumn respectively relative to the background levels for the project alone, this is a negligible change. There is no potential for an adverse effect on the population and hence on the integrity of the SPA from the project alone.

36   Should Natural England consider the outcomes from this more precautionary CRM assessment the conclusions would not change in the revised RIAA (REP2-019/ Appendix 21 to Deadline 2 Submission: Report to Inform Appropriate Assessment; Part 2). The conclusions being that there is no potential for AEoI to the gannet or kittiwake features of the Flamborough and Filey Coast SPA in relation to collision risk effects from Thanet Extension alone and therefore, subject to natural change, gannet and kittiwake will be maintained as a feature in the long-term with respect to the potential for adverse effects from collision risk.

37   The Applicant seeks to agree with Natural England that after accounting for the further layer of precaution provided by the collision risk predictions set out in this clarification note that;

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- The Applicant seeks agreement that there is no adverse effect on the integrity on the gannet population of Flamborough and Filey Coast SPA predicted from Thanet Extension alone or in-combination with other plans or projects.

- The Applicant recognises that it is not possible to rule out the potential of an adverse effect on the integrity on the kittiwake population of the Flamborough and Filey Coast SPA from other plans and projects. However;

- It is acknowledged that the relevant in-combination projects are other plans and projects, including projects which have been approved by the Secretary of State on the basis that there would be no adverse in-combination effects on the integrity of the SPA when these plans and projects are considered in combination;

- Thanet Extension would not cause any appreciable effect on the wider in-combination effects relating to the mortality of gannet or kittiwake which arise from other plans and projects in-combination;

- Thanet Extension would not cause an adverse effect on integrity to arise as a result of this project being included as part of a in-combination assessments for kittiwake and gannet; and

- Natural England does not advise that the result of the appropriate assessment relating to these proposals should be negative in relation to this effect on the SPA, having regard to the precautionary principle to be applied under the Habitats Directive and Regulations.

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5 References

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