Hornsea Offshore Wind Farm

Project Two

Response to Natural England's Deadline V submission

Appendix D to the Response submitted for Deadline VI

Application Reference: EN010053

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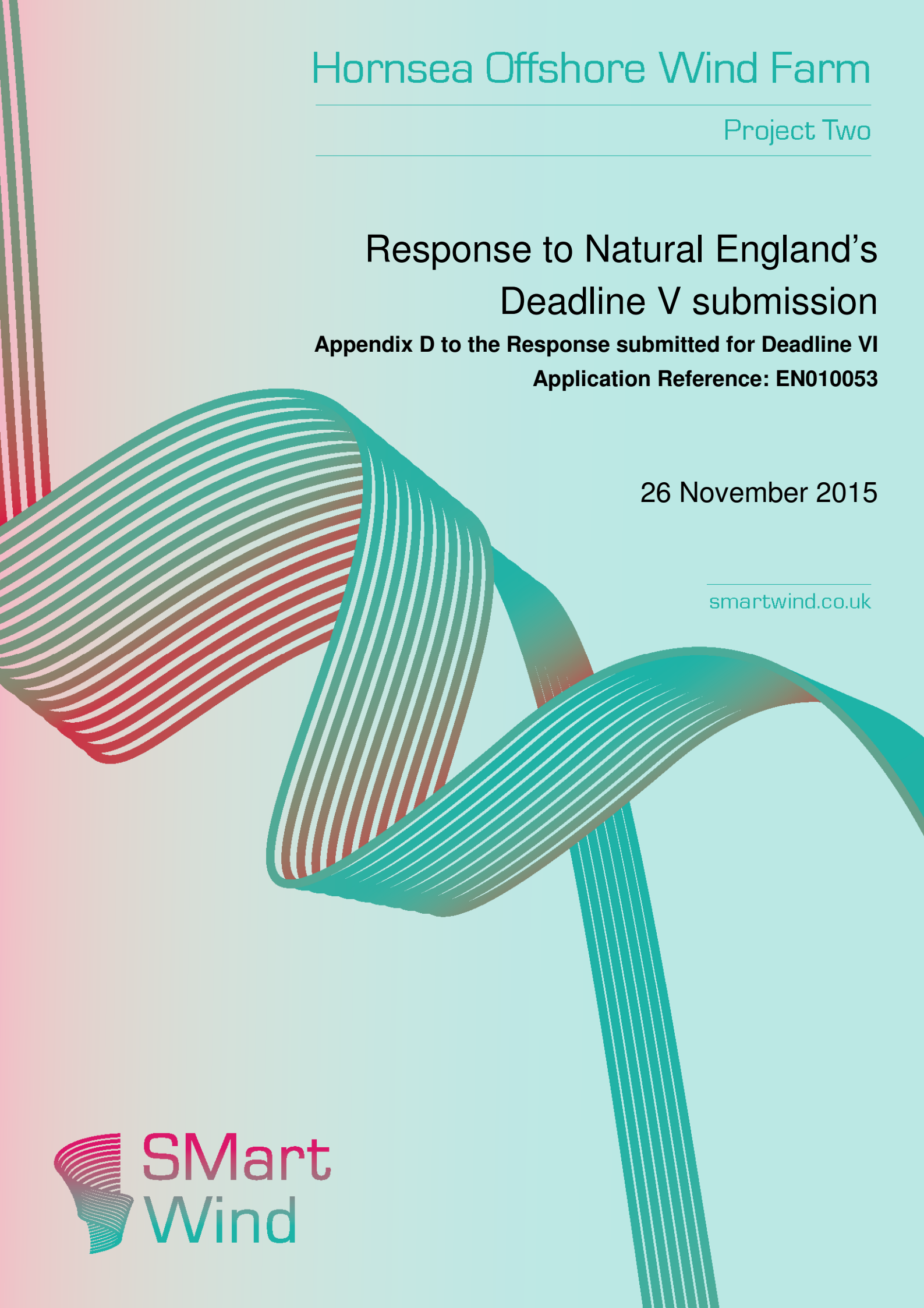

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1 Natural England

1.1 This response focuses on Natural England's submission for Deadline V; specifically Section B entitled '*Comments on the offshore ornithology clarification notes*'. Within Section B, the Applicant notes that Natural England provide an update to their position with respect to Kittiwake collision from Hornsea Project Two alone and state that:

"Natural England concludes that the predicted additional mortality is likely to fall within a range that can be considered as not having an adverse effect on site integrity for the project alone."

1.2 Broadly following the Applicant's submission at Deadline IV with respect to Kittiwake (Appendix DD), Natural England structure their submission as follows:

1) Accounting for variability;
2) Collision Models;
3) Avoidance Rates;
4) Flight heights and determination of PCH values;
5) Phenology - Definition of the breeding and non-breeding season months for kittiwake at FFC pSPA; and
6) Assessment of the proportion of birds in project areas that are adult birds and apportioning to FFC pSPA in the breeding season.

Accounting for variability

1.3 The Applicant recognises that Natural England have *"considered a number of factors that relate to the uncertainty and variability around the input variables and assumptions*". Appendix DD concisely focused on the assumptions underpinning key parameters informing the collision risk assessment of kittiwake. In addition, the Applicant has, under the request of Natural England, provided extensive and unprecedented detail on data variability (see for example Appendix L of the Applicant's response to Deadline I). Appendix DD focused on key aspects that have and do inform decision making with respect to collision risk of seabirds and can effectively be considered alongside other previous submissions.

1.4 Natural England detail that "*statements by the Applicant that some of Natural England's individual assumptions are very precautionary or likely to be a 'gross overestimate' do not reflect the overall uncertainty and variability in input parameters…*". The Applicant notes that such a statement made in Appendix DD was made only in respect of the breeding season apportioning value applied by Natural England of 94.6%. The Applicant also notes that Natural England has indeed recognised this overestimate and within Section B revised their maximum level of breeding season apportioning to 83%.

Band Collision Models - Basic and Extended Models

1.5 The positions of both Natural England and the Applicant have been stated previously. The Applicant summarises their consideration of the Extended Band (2012) model in Appendix DD and also within Appendix F of its response to Deadline VI.

1.6 It has been argued by the Applicant that there are sufficient survey data to inform a site-specific understanding of the flight height distributions of key species at risk of collision, in particular kittiwake. The combination of the Extended version of the model with site-specific flight height data produces as accurate a prediction of the risk to seabirds as is possible with current information and risk assessment tools. In contrast, the Basic version of the model only approximates collision rates, in a highly precautionary way, because, amongst other things, it fails to fully take account of the way that birds are distributed over the sea surface as detailed in the Band (2012) model guidance. It has been argued by the Applicant that there are sufficient survey data to inform a site-specific understanding of the flight height distributions of key species at risk of collision, in particular kittiwake.

Avoidance rates

1.7 The Applicant presented a review of the Kittiwake avoidance rate applied by Natural England to their advocated Band (2012) Model choice (i.e. the Basic model). The Applicant agrees with the recommendations presented in Cook et al (2014) in that a rate of 99.2% is appropriate for Kittiwake. The Applicant notes that the level of species-specific evidence was similar for the majority of species considered in Cook et al. (2014) and on simple morphological grounds (a statement of fact not countered by Natural England in Section B of their Deadline V response) the rates recommended in the paper are appropriate.

1.8 The Applicant also notes that Natural England state within Section B of their Deadline V response that " *the use of different AR's[1] within the Basic Band model is not relevant to the discussion of the difference between the Applicant's and Natural England's collision figures for kittiwake because the Applicant has used the Extended Band model with an AR of 98%*". While the Applicant is clear on its favoured use of the more sophisticated Extended Model, it rejects the supposition that is not relevant to provide information regarding avoidance rates applied to the Basic Model and it reserves the right to comment on Natural England's position with regards to the Project.

2 Flight heights of Kittiwake

2.1 The Applicant has demonstrated within its Environmental Statement submission (see Ornithology Technical Report; Document Reference 7.2.2.5) and within Appendix DD that its site-specific data set for all key seabird species, is not only appropriate to inform the assessment but is also one of the most comprehensive available.

2.2 Appendix DD provided a review of the implementation of site-specific flight height data to inform Option 1 within the Basic model of Band (2012). The Applicant does of course advocate, with confidence, that the data is used to inform Option 4 of the Extended Band (2012) Model. With regards to Option 1, this relies upon a

[1] Avoidance rate

simple calculation of Potential Collison Height (PCH) i.e. the proportion of birds within risk height; Natural England in addition to not accepting the Extended model, do not accept the application of Option 1 with regards to the Project (although have in other projects with 'narrow' flight bands such as Navitus Bay) .

2.3 Natural England have consistently quoted unpublished work led by the RSPB (including within Section B of their Deadline V response) that they include as evidence that boat-based survey methods may underestimate the flight altitude of seabirds. Neither the Applicant nor the Examining Authority has been privy to this data and noted that the RSPB confirmed within the first Issue Specific Hearing for Hornsea Project Two that it was incomplete and some way from publication. Therefore, it is considered that no weight can be attached to the inclusion of the 'preliminary findings' within Natural England's position.

2.4 Natural England maintain that the typical methodology for collecting flight height data from boat based surveys is to use broad flight height bands that equate to below, at and above rotor height. This is opposed to the five metre bands applied at Project Two; Appendix DD clearly demonstrated there are no 'typical' flight height bands applied for UK wind farms. Natural England quote Camphuysen *et al.* (2004) as support to their position. Although this 11 year old reference provides an example set of flight height bands that had been used in a terrestrial Dutch study prior to its publication, it gives no guidance as to an appropriate scale of bands.

2.5 Natural England suggest that data from sites where collision risk modelling was not undertaken or where kittiwake was not an important component of the impact assessment should be disregarded. The Applicant rejects this statement as it potentially removes valuable data for many species not just kittiwake. The Applicant has presented a wide range of data in Appendix DD from other projects and speculation that it is not relevant is not warranted. Indeed, all of the projects considered quote the same guidance for survey as currently given by Natural England (i.e. Camphuysen *et al.*, 2004) and there is no reason to suspect that survey standards differ between projects.

2.6 In Appendix DD the Applicant has presented a review of kittiwake PCH values for a range of UK windfarms (Table 1.5 and Figure 1.3) which show that a substantial number of PCH values lie outside of the 95% CLs of the generic data presented in Johnston et al (2014). Natural England noted within Section B of their Deadline V submission that 'several' wind farms were not included in the Table i.e. East Anglia One (PCH 21.3%), Seagreen Alpha (10.6%) and Seagreen Bravo (16.1%). However, the Applicant notes that PCH values were not used within collision risk modelling of the Seagreen projects (generic data from Cook *et al.,* 2012 was applied instead), which of course Natural England suggest should be disregarded within their Deadline V submission. Flight height data for East Anglia One were collected by aerial data only and were therefore omitted from Appendix DD, although the Applicant also notes that this data lies outside of the confidence intervals of Johnston *et al.* (2014) in any case.

2.7 While the Applicant believes that the information presented in Table 1.5 of Appendix DD is comprehensive and representative, the aim of the exercise undertaken by the Applicant was not to provide an exhaustive list of survey methodologies that have been applied. Rather, the aim was to show that the PCH values calculated for the Project were not 'unusual' as suggested by Natural England.

2.8 Natural England also suggest that Hornsea Project Two along with Hornsea Project One rank among the sites with the lowest PCH values across all 21 sites included in Table 1.5 of Appendix DD and that only two sites have lower PCH values – Inch Cape and Kentish Flats Extension. Natural England neglect to mention that the kittiwake PCH value from Teesside Offshore Wind Farm, derived from one of the most extensive data sets available (12,217 individual kittiwake), is virtually identical to that from Project Two. Similarly, large kittiwake data sets from Moray and Neart na Gaoithe also produced low PCH values comparable with Project Two.

2.9 Although Natural England suggest that 'there is no clear ecological reason why the PCH values vary across the different sites..', it is for this very reason why detailed baseline surveys are undertaken to inform the assessment of offshore wind projects. Site conditions are often different and this is of course not restricted to providing variation in results for kittiwake. Natural England also indicate variability within the Project Two kittiwake PCH data in given months, however they do neglect to detail out the number of birds recorded in such months. Kittiwake abundance varies dramatically and for this reason data is merged and a mean value calculated.

2.10 The Applicant strongly reiterates their position made throughout the application and examination of Project Two that flight height data collected is both valuable and applicable to the assessment of collision risk, including kittiwake.

3 Kittiwake phenology

3.1 The Applicant has defined the breeding season for kittiwake as May to July based on the migration free ('core') breeding season for kittiwake in North Sea waters given in Furness (2015). While Natural England's position, based on indirect information from colony managers at Bempton Cliffs RSPB Reserve, is that kittiwake start to return to the colony in mid-March and therefore consider April – July as defining the breeding season.

3.2 The Applicant differs from Natural England in that it considers it more appropriate to define biological seasons for species assessed by likely origin of birds present at a project site not from the presence of a number of adult birds at a single colony. The Applicant refers to the key statement in Furness (2015):

"Apart from the breeding season, two seasonal BDMPS periods are considered to be appropriate for black-legged kittiwake: 'Autumn' (post-breeding) migration BDMPS (August-December); and 'Spring' (pre-breeding) migration BDMPS (January-April)".

4 Breeding season apportioning

4.1 Contrary to assertions in Section B of Natural England's submission at Deadline V, the Applicant's position with regards to breeding season apportioning is set out in their submission for Deadline IIa (Appendix P) rather than Deadline IV (Appendix DD). This defines a 38% apportioning value based on information in Furness (2015).

4.2 The Applicant does however note that Natural England have adjusted their advocated breeding season apportioning from 94.6% to a maximum of 83% based on information presented by the Applicant in Appendix DD. The Applicant detailed several reasons why 83% is over precautionary:

- Does not account for adults in the population not breeding in a given year (paragraph 1.5.6) – this could account for a further reduction of c5%;
- A likelihood of a greater proportion of older age classes of immature birds showing affinity with the colony ;
- FAME data indicates that the majority of foraging flights are close to the colony and data given by BirdLife[4] suggests that only up to 5% of birds are likely to travel as far as the Project; and
- Immature birds are not likely to be evenly distributed within the North Sea and will show aggregations near to foraging resources. If the area within which the Project lies is seen to be notable for kittiwake foraging; immatures will be present in number.

5 In combination assessment

5.1 Natural England advised the Applicant, during Section 42, on the suite of projects to be considered in combination with the Project and also highlighted what they considered apportioning values in the defined kittiwake seasons. With the notable exception of Dogger Bank Teesside (which was noted as being outside of all recorded mean-maximum foraging ranges with limited no connectivity highlighted by FAME data) this advice was followed in the HRA submission by the Applicant.

5.2 Contrary to previous Projects, no significant weight was attached to a tiering process in the Project Two submission, as only one proposed project was behind it in the planning process. This refers to East Anglia Three, from which no collision risk data was available to include within a in combination assessment.

5.3 In response to the multiple shifts in position from Natural England on their advocated screening methodology for plans or projects to be considered in combination (through both the application and examination phases), the Applicant presented a tiering process within Appendix DD submitted at Deadline IV. Rather than focus on status in the planning process, this exercise detailed the proposed confidence that can be drawn in the proposed 'connectivity' between kittiwake occurrence and the pSPA.

5.4 Although the Applicant takes issue with Natural England's assertion in Section B, that their in-combination figures were derived as stated at Deadline II (Thaxter *et al.,* 2012 was not referenced at this point for example) it acknowledges that

Natural England have found value in some of the recommendations put forward by the Applicant in Appendix DD.

5.5 Whilst Natural England have not provided their interpretation of a tiering system, it does agree with the Applicant that there are sufficient grounds to remove Teesside and Blyth Demonstration Project as contributing to pSPA mortality in the breeding season. Natural England have also agreed with the Applicant that the maximum breeding season apportioning can be said to be 67% (although the Applicant considers this over precautionary for the reasons set out for Project Two – paragraph 4.2).

5.5.1 The Applicant disagrees with Natural England with respect to the treatment of Projects in Tier 3. Specifically, 100% apportioning (as applied to Triton Knoll and Race Bank) appears to be a significant over estimate of likely connectivity as indicated by FAME data. With regards to Dogger Bank Creyke Beck, the Applicant applies a 13.9% breeding season apportioning value as described in the SoS HRA for this project rather than the 19.3% advocated by Natural England. This is notwithstanding the fact that it is debatable whether this project should be considered at all in the breeding season – Forewind (2014) indicate in its Application for these projects that with respect to kittiwake:

"…there are not expected to be any breeding adults present on the wind farms during the breeding season. Birds recorded at this time are therefore assumed to be failed or non-breeders (including immature birds)."

5.6 As detailed previously (see Appendix DD), the Applicant also considers it inappropriate to consider Dogger Bank Teesside (Tier 4) as contributing to the in combination assessment of the kittiwake feature of FFC pSPA in the breeding season.

5.7 The Applicant has reviewed the in-combination figures presented in Natural England's Deadline V response and have identified potential inconsistencies (via double counting of collision risk in the month of April) for the majority of projects considered in non-breeding seasons only, including:

- Aberdeen European Offshore Wind Development Centre;
- Beatrice;
- Beatrice Demonstrator;
- Galloper;
- Greater Gabbard;
- Inch Cape;
- Kentish Flats;
- London Array;
- Moray Firth Project One (MORL);
- Neart na Gaoithe;
- Seagreen Alpha
- Seagreen Bravo; and
- Thanet.

5.8 While these potential errors may make a small change to Natural England's position on kittiwake in combination mortality it does require attention.

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