BTO Research Report No. 630

Ornithology Technical Report for the Proposed Dogger Bank Creyke Beck Offshore Wind Farm Projects

Authors

Burton, N.H.K., Thaxter, C.B., Cook, A.S.C.P., Austin, G.E., Humphreys, E.M., Johnston, A., Morrison, C.A., & Wright, L.J.

A report carried out by the British Trust for Ornithology
under contract to Forewind Ltd

March 2013

The British Trust for Ornithology, The Nunnery, Thetford, Norfolk IP24 2PU
Registered Charity No. 216652

ERRATA ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

E1.1 This note provides errata for two parts of Section 4 (the Environmental Impact Assessment Methodology) of the Ornithology Technical Report for the Creyke Beck A and B projects. Amendments are provided below for:

i. Table 4.21 Summary of worst case scenarios used in the impact assessment;

ii. Paragraphs 4.6.11 to 4.6.15 of the Cumulative Impact Assessment Methodology.

Table 4.21 Summary of worst case scenarios used in the impact assessment.

Potential Effect	**Realistic Worst Case**	**Rationale**
Displacement – operation	Results using a range of displacement and mortality rates are presented for each receptor. Realisitic species-specific displacement and mortality rates considered in the assessment reflect species-specific sensitivities to disturbance and habitat loss respectively. A buffer distance of 4km is assumed for divers, 2km for all other species, following guidance from NE/JNCC (NE/JNCC 2012)	The determination of appropriate displacement and mortality rates and buffer distances draws from several recent studies, and follows guidance from NE/JNCC (NE/JNCC 2012)
Displacement – construction/decommissioning of the wind farm	As above, though with displacement estimates halved	The numbers of birds displaced will increase during construction and decrease during decommissioning in relation to the spatial extent of the wind farm. Assuming a linear progression of activities, the numbers of birds displaced are hence taken to be 50% of those during operation
Disturbance – export cable corridor activities	Displacement rates as above for displacement during operation	Maclean *et al.* (2009) recommend that assessment of the effect of disturbance during construction and decommissioning is also undertaken by assuming a worst case scenario that some or all birds are displaced from the area considered. However, as it is planned that the installation of cables would be staged, only one sixth of the populations estimated to occur in the export cable corridor would be affected at any one time

Barrier effects – operation	That the wind farm project poses a barrier to 100% of birds that are estimated to fly through its area at turbine height	Follows the protocol of Maclean *et al.* (2009)
Collision – operation	4MW wind turbines with a hub height of 90m above highest astronomic tide for most receptors; for exceptions, see Appendix 6. Avoidance rate of 98% used for all species; Option 3 of the updated Band (2012) model followed for flight heights for marine bird species	Based on collision risk analyses of nine scenarios, covering a range of wind turbine sizes and heights (see Appendix 6). Option 3 of the updated Band (2012) model allows for a variable collision risk within the rotor swept area and, therefore, a more realistic representation of collision risk. Consideration of the results from use of the other flight height model options, as recommended by Band (2012), is provided in Appendix 7
Habitat loss and change – construction/decommissioning/operation	See Chapter 13 of the ES (Fish and Shellfish Ecology)for summary of worst case scenarios related to Increased Suspended Sediment Concentrations and Sediment Re-deposition, Construction Noise, Electro-magnetic frequencies, Loss of Habitat, Introduction of Hard Substrate, Operational Noise, Changes in Fishing Activity	Effects of habitat loss and change primarily affect birds through impacts on their prey

4.6 Cumulative Impact Assessment Methodology

<u>Cumulative Impacts – Export Cable Corridor and Project Areas</u>

<u>Disturbance/displacement</u>

4.6.11 Guidance on the assessment of disturbance/displacement at the cumulative scale is provided in King *et al.* (2009). In the absence of resource competition, the effect of cumulative displacement would be negligible. However, such an assumption is unlikely to be correct given that many areas for seabirds are likely to be at or near carrying capacity, given their sensitivity to changes in prey availability (Frederiksen *et al* 2004; Wanless 2005; Ashbrook *et al.* 2009). Since there is currently no simple method to determine carrying capacity, King *et al.* (2009) recommend that cumulative displacement should be calculated by summing displacement effects from each of the contributing developments.

4.6.12 In assessing the potential impacts of displacement, estimates are required both of the numbers of birds predicted to be displaced and then of the numbers of these that might be expected to die. Following the overall Forewind Cumulative Impact Assessment strategy, information regarding the potential impacts of displacement was taken from impact assessments or environmental statements where available and no attempt was made to estimate values in other cases.

4.6.13 Estimates of numbers of displaced birds were obtained by reviewing environmental statements for planned offshore wind farms in the North Sea. In some cases, while population estimates may have been provided, specific displacement estimates were not available. Thus the sites for which data were available only represent a subset of those considered in the cumulative assessment in the North Sea region as a whole.

4.6.14 The final cumulative assessment presented here considers only those projects for which estimates were provided of the numbers of displaced birds that might then be expected to die. In many instances, while predictions were provided of the numbers of birds that might be expected to be displaced, no information was provided of the likely mortality rates of these birds (often, as mortality was considered as part of the sensitivity of species to this effect – see Maclean *et al.* 2009). As with displacement rates, mortality rates considered varied between projects, some providing results for a range of rates and carrying through either a worst case or 'realistic' value into the assessment.

4.6.15 Estimates of the numbers of displaced birds that might be expected to die from these projects were added to the numbers predicted for the Creyke Beck A, Creyke Beck B, Teesside A and Teesside B projects, and placed in national and biogeographic contexts. Where estimates were also apportioned to protected sites, these were added to respective apportioned estimates from the Creyke Beck A, Creyke Beck B, Teesside A and Teesside B projects to assess potential impacts at a protected site level.