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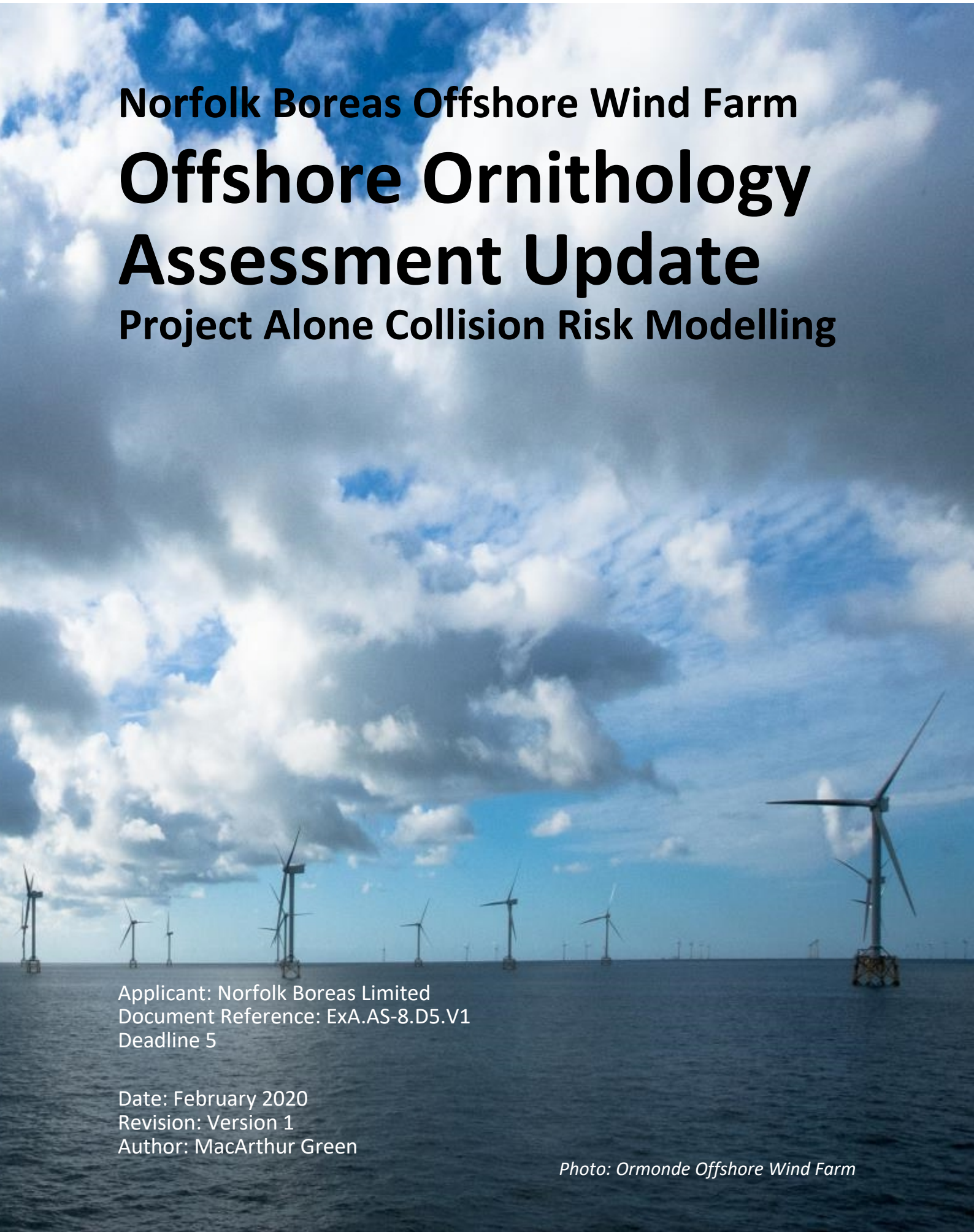

Norfolk Boreas Offshore Wind Farm

Offshore Ornithology Assessment Update

Project Alone Collision Risk Modelling

Applicant: Norfolk Boreas Limited
Document Reference: ExA.AS-8.D5.V1
Deadline 5

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Photo: Ormonde Offshore Wind Farm

Executive Summary

Following requests from the Examining Authority, Natural England and the Royal Society for the Protection of Birds to consider options for raising draught height to mitigate potential ornithological impacts as far as possible, the Applicant has undertaken a detailed review of a range of mitigation options. This review was not limited to raising draught height, but also considered alternative turbine models and the availability of construction vessels. This has led to a commitment to remove smaller capacity turbines (i.e. less than 11.55MW) from the project design envelope and to increase the draught height (defined here as the gap between the lower rotor tip and the sea surface at Mean High Water Spring (MHWS)) as far as possible within the limits imposed by the installation capacity of available construction vessels.

The previous maximum number of turbines under consideration was 180 x 10MW turbines with a draught height (the minimum gap between the lower rotor tip and the sea surface) of 22m[1]. This design is no longer being considered and is replaced with either 158 x 11.55MW turbines with a draught height of 35m (i.e. an increase of 13m) or 124 x 14.7MW turbines with a draught height of 30m (i.e. an increase of 8m). The 11.55MW turbine represents a guaranteed design option as this model is currently commercially available, while the 14.7MW turbine is expected to be available in the project's construction timeframe.

The change in turbine option alone (i.e. without any increase in draught height) would reduce collision risks by approximately 35%. This is equivalent to the reduction in collisions obtained for 180 x 10MW turbines at 27m (i.e. a 5m increase in draught height). Therefore, from a collision risk perspective, when this is combined with the change in turbines, the overall reduction in collisions is equivalent to an increase in draught height of between 13m (14.7MW) and 18m (11.55MW).

The collision risk estimates for the 14.7MW turbine at 30m are slightly higher than those for the 11.55MW turbine at 35m, and therefore the 14.7MW design is the worst case scenario for collision risk. Comparing the collision predictions for the 14.7MW turbine at 30m draught height with the collision predictions in the DCO application at the point of submission, the collision risk reductions are 74% for gannet, 73% for little gull, 72% for kittiwake, 64% for lesser black-backed gull, and 63% for herring gull and great black-backed gull.

Since Natural England has already agreed with the Applicant that, on the basis of the 10MW and 22m draught height design, there will be no significant impacts (EIA) or adverse effects on the integrity of designated populations (HRA) due to Norfolk Boreas alone (REP4-040), the Applicant considers that the same conclusions apply to the revised project design and therefore no updated impact assessment is required.

[1] This was the worst case scenario for collision risk modelling, CRM, at the time of application submission, June 11, 2019 (APP-226).

Date	Issue No.	Remarks / Reason for Issue	Author	Checked	Approved
17/02/20	01D	First draft for Deadline 5	MT	EV	JL
26/02/20	01F	Final version for Deadline 5 submission	MT	EV	JT

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Glossary of Acronyms

CRM	Collision Risk Modelling
DCO	Development Consent Order
EIA	Environmental Impact Assessment
HAT	Highest Astronomical Tide
HRA	Habitats Regulations Assessment
MHWS	Mean High Water Spring
MSL	Mean Sea Level
MW	Megawatt
SPA	Special Protection Area

1 Introduction

1. This note provides an update of the collision risk modelling (CRM) for the Norfolk Boreas Offshore Wind Farm, reflecting the following project design updates of relevance to the CRM assessment:

    - Removal of the smallest turbine options from the design envelope, specifically the 10MW and 11MW turbines, with the smallest turbine now included in the design having a capacity of 11.55MW (this turbine is included as it is currently available and is therefore a guaranteed design option). For the purposes of CRM a larger capacity turbine (14.7MW) has also been assessed (this turbine is included as it is expected to be available in the project's construction timeframe); and,

    - An increase in draught height (the minimum distance between the lower rotor tip height and the sea surface) to 30m above Mean High Water Springs (MHWS) for the 14.7MW turbine and 35m for the 11.55MW turbine (see section 2 for details).

2. This mitigation has been adopted following requests from the Examining Authority, Natural England and the Royal Society for the Protection of Birds (RSPB) to explore options to minimise impacts as far as possible.

3. The CRM outputs for the 11.55MW and 14.7MW turbines replace that for the previous project design as presented in the original application (APP-201 and APP-226) and at Deadline 2 (REP2-035), which related to the 10MW turbine with a minimum draught height of 22m from MHWS.

4. The CRM has been undertaken using the deterministic Band (2012) model. The turbine parameters for the 11.55MW and 14.7MW turbines have been provided in Table 1 together with the equivalent parameters for the 10MW turbine (as used in the original assessment) for comparison. All the remaining CRM parameters (e.g. seabird densities and dimensions) remain the same as those presented in APP-201 and APP-226.

Table 1. Wind farm and turbine input parameters.

Turbine parameter	Turbine model		
	10MW	11.55MW	14.7MW
Model (MW)	10	11.55	14.7
Number	180	158	124
Rotor radius (m)	95	100	115
Hub height (m from MHWS)	117	135	145
RPM	10	7.5	6
Max. blade width (m)	7.5	5.8	7.5
Blade pitch (°)	15		

Turbine parameter	Turbine model		
	10MW	11.55MW	14.7MW
Tidal offset (m; difference between MSL and MHWS)*	0.8		
Operational period (%)	90		
Latitude (km)	53.03		
Wind Farm width (km)	45.85		

*NB: in previous submissions the offset was erroneously labelled as the difference between Highest Astronomical Tide (HAT) and Mean High Water Spring (MHWS). This was only an error in labelling (corrected here) and the values used in the modelling are unaffected.

5. On the basis of the collision predictions for the 10MW turbine with a 22m draught height, Natural England agreed with the Applicant that Norfolk Boreas alone will not result in any significant impacts at the Environmental Impact Assessment (EIA) level, nor will it result in any Adverse Effects on Integrity of any Special Protection Area (SPA) populations (REP4-040). Consequently, since the collision predictions have decreased following the mitigations discussed in this note, the Applicant considers that the same conclusions will apply and therefore the impact assessment has not been updated.

6. Updated cumulative and in-combination assessment will be submitted at Deadline 6. This will present the revised Norfolk Boreas collision estimates (as provided here), with updated collision estimates for other projects where available (updates are expected for Hornsea Project Three and Norfolk Vanguard) and will also include amended figures for Creyke Beck Dogger Bank A and B, as requested by Natural England (REP4-040).

2 Rationale for proposed mitigation

7. In response to the concerns with respect to collision risk raised by Natural England and the Royal Society for the Protection of Birds, the Applicant has undertaken a considerable amount of work to investigate options for reducing impacts through refinement of the design envelope. This has included engagement with the supply chain for both turbine manufacturers and construction vessels.

8. Following engagement between the Applicant and the supply chain, it is understood that installation vessels currently available on the market can install turbines with a hub height up to 145 - 150m. The installation capacity of vessels currently available is therefore a key factor in relation to the maximum draught height increase that can be secured; other factors include rotor diameter and turbine weight. It is also relevant to note that there are various other factors which influence draught height including hub height, water depths and potential impacts on radar line of sight.

9. It should also be noted that the Applicant must maintain some flexibility as the availability of these largest vessels at the time of construction of the Project cannot

be guaranteed, given the number of other offshore wind farms currently in development.

10. In relation to turbine capacity, the Applicant has further reduced the design envelope to a minimum turbine capacity of 11.55MW; which is one of the biggest currently available on the market.

11. As a result of the further mitigation, the Applicant is now progressing a design which is at the limit of current commercial availability both in relation to installation vessel capacity and turbine capacity. The Applicant needs to maintain an option within its envelope that considers current market availability in order to ensure certainty of deliverability. Furthermore, the Applicant must maintain some flexibility as the availability of the largest vessels at the time of construction of the project cannot be guaranteed, given the number of other offshore wind farms currently in development.

12. Within the proposed project design, flexibility is being provided in relation to the generating station and linked associated development. In the view of the Applicant this flexibility, which has previously been critical to the development of offshore wind farms in the UK, is fundamental to whether the Order is fit for purpose. The reasons for this principally relate to the need to manage and drive down the cost of offshore wind developments to justify equity investment and access debt funding in a competitive international market. This includes the need to maintain competitive tension in the procurement process driving down costs; the need to take advantage of new technology developments and emerging products in the market for offshore wind turbine generators and other equipment; and the need to drive down the cost of energy for the purposes of tendering for Contracts for Difference.

13. The final design of a wind farm depends on a number of factors which include the size, height and capacity of the chosen turbine type; electrical design; length of cables; areas where development is constrained; the outcomes of site investigations, and ongoing wind monitoring results. All these are considered post-consent at the stage of detailed design and optimisation when the final number and type of turbines and their location will be decided as a function of site constraints and viable layout. This final design will be approved under the provisions of the deemed marine licences.

3 Collision Risk Predictions

3.1 Total collisions (EIA)

14. The total annual worst case collision predictions for the six species of concern for collision risk at Norfolk Boreas (gannet, kittiwake, lesser black-backed gull, herring gull, great black-backed gull and little gull) for the previous worst case 10MW turbine

(at 22m from MHWS, provided for comparison purposes only) are presented alongside those for the 11.55MW (at 35m from MHWS) and the 14.7MW (at 30m from MHWS) turbines in Table 2.1.

Table 2.1 Comparison of total annual mortality estimates for the 10MW (now removed from the design and in italics) with those for the 11.55MW and 14.7MW turbines. Draught heights are provided in relation to MHWS.

Species	*10MW @ 22m (now removed from the project design)*	11.55MW @ 35m	14.7MW @ 30m	Percentage reduction for worst case (10MW compared to 14.7MW)
Gannet	*117.6 (32.4-239.6)*	20.3 (5.6-41.4)	30.7 (8.5-62.6)	73.9
Kittiwake	*202.8 (86.2-354.7)*	38.1 (16.2-66.6)	57.5 (24.4-100.5)	71.7
Lesser black-backed gull	*39.8 (4-108.3)*	11.4 (1.1-31)	14.3 (1.4-38.9)	64.1
Herring gull	*18.4 (0-56.2)*	5.7 (0-17.4)	6.9 (0-21.1)	62.6
Great black-backed gull	*93.1 (14.4-201.6)*	29.9 (4.6-64.7)	35.6 (5.5-77.1)	61.8
Little gull	*3.9 (0-13.9)*	0.7 (0-2.5)	1.1 (0-3.9)	72.2

15. The collision estimates for the 124 x 14.7MW turbine are slightly higher than those for the 158 x 11.55MW, and therefore these represent the revised worst case estimates for the project.

16. The turbine and draught height revisions result in substantial reductions in collision risk of between 61.8% (great black-backed gull) and 73.9% (gannet).

17. Monthly estimates for each species, calculated for the previous worst case (10MW at 22m from MHWS) are provided in Table 2.2 and for the updated turbine models (11.55MW at 35m from MHWS, and 14.7MW at 30m from MHWS) are provided in Table 2.3 and Table 2.4.

Table 2.2 Previous worst case collisions for the 10MW turbine with a 22m draught height (from MHWS). The 10MW turbine has been removed from the project design envelope and these figures are provided for comparison purposes only.

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Gannet	0.7 (0-3.3)	1.7 (0-3.9)	2.1 (0-5.6)	0.9 (0-3.5)	3.8 (1-7.8)	1.5 (0-5.9)	1 (0-4)	38.4 (0-91.8)	6.6 (1.6-13.9)	8.4 (0.8-19.9)	40.1 (22-60.9)	12.6 (7.1-19.2)	117.6 (32.4-239.6)
Kittiwake	32.5 (11.1-57.7)	9.6 (3-17.8)	5.2 (0-13)	8.9 (4.4-15.1)	12.4 (5.8-19.3)	6.7 (0-17.2)	10.8 (2-23.4)	2.9 (0-8.5)	3.9 (0-10.4)	10.1 (0-26.9)	30.4 (14.6-49.6)	69.4 (45.3-95.7)	202.8 (86.2-354.7)
Lesser black-backed gull	1.7 (0-4.9)	0.4 (0-2.3)	0.5 (0-2.7)	1.4 (0-6.5)	1 (0-3)	1.5 (0-6)	5.5 (1-13.3)	7.8 (2.9-13.8)	16.6 (0-42.4)	1.3 (0-5.3)	0.8 (0-4)	1.3 (0-4.1)	39.8 (4-108.3)
Herring gull	4.1 (0-12.2)	0 (0-0)	0.5 (0-3.1)	0 (0-0)	0 (0-0)	0 (0-0)	1.2 (0-4.7)	2.2 (0-6.8)	1.1 (0-5.2)	0 (0-0)	3.7 (0-8.4)	5.6 (0-15.7)	18.4 (0-56.2)
Great black-backed gull	18.8 (0-43.7)	4.9 (1-9.9)	3.5 (0-8.1)	2.3 (0-5.9)	3.1 (0-7.8)	0 (0-0)	4.6 (0-10.5)	4.4 (0-10)	22.4 (0-57.7)	1.7 (0-4.5)	11.9 (5.2-19.5)	15.4 (8.2-23.9)	93.1 (14.4-201.6)
Little gull	0 (0-0)	0 (0-0)	0.7 (0-2.4)	0.3 (0-1.5)	0.6 (0-2.8)	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.2 (0-1.3)	2.1 (0-5.8)	0 (0-0)	3.9 (0-13.9)

Table 2.3 Collision estimates for the 11.55MW turbine with a 35m draught height (from MHWS).

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Gannet	0.1 (0-0.6)	0.3 (0-0.7)	0.4 (0-1)	0.1 (0-0.6)	0.7 (0.2-1.3)	0.3 (0-1)	0.2 (0-0.7)	6.6 (0-15.9)	1.1 (0.3-2.4)	1.4 (0.1-3.4)	6.9 (3.8-10.5)	2.2 (1.2-3.3)	20.3 (5.6-41.4)
Kittiwake	6.1 (2.1-10.8)	1.8 (0.6-3.3)	1 (0-2.4)	1.7 (0.8-2.8)	2.3 (1.1-3.6)	1.3 (0-3.2)	2 (0.4-4.4)	0.5 (0-1.6)	0.7 (0-1.9)	1.9 (0-5.1)	5.7 (2.7-9.3)	13 (8.5-18)	38.1 (16.2-66.6)
Lesser black-backed gull	0.5 (0-1.4)	0.1 (0-0.7)	0.1 (0-0.8)	0.4 (0-1.9)	0.3 (0-0.9)	0.4 (0-1.7)	1.6 (0.3-3.8)	2.2 (0.8-3.9)	4.7 (0-12.1)	0.4 (0-1.5)	0.2 (0-1.2)	0.4 (0-1.2)	11.4 (1.1-31)
Herring gull	1.3 (0-3.8)	0 (0-0)	0.2 (0-1)	0 (0-0)	0 (0-0)	0 (0-0)	0.4 (0-1.5)	0.7 (0-2.1)	0.3 (0-1.6)	0 (0-0)	1.2 (0-2.6)	1.7 (0-4.9)	5.7 (0-17.4)
Great black-backed gull	6 (0-14)	1.6 (0.3-3.2)	1.1 (0-2.6)	0.7 (0-1.9)	1 (0-2.5)	0 (0-0)	1.5 (0-3.4)	1.4 (0-3.2)	7.2 (0-18.5)	0.5 (0-1.4)	3.8 (1.7-6.3)	5 (2.6-7.7)	29.9 (4.6-64.7)
Little gull	0 (0-0)	0 (0-0)	0.1 (0-0.4)	0 (0-0.3)	0.1 (0-0.5)	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0.2)	0.4 (0-1)	0 (0-0)	0.7 (0-2.5)

Table 2.4 Collision estimates for the 14.7MW turbine with a 30m draught height (from MHWS).

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Gannet	0.2 (0-0.9)	0.4 (0-1)	0.5 (0-1.5)	0.2 (0-0.9)	1 (0.3-2)	0.4 (0-1.5)	0.3 (0-1)	10 (0-24)	1.7 (0.4-3.6)	2.2 (0.2-5.2)	10.5 (5.7-15.9)	3.3 (1.9-5)	30.7 (8.5-62.6)
Kittiwake	9.2 (3.1-16.3)	2.7 (0.8-5)	1.5 (0-3.7)	2.5 (1.3-4.3)	3.5 (1.6-5.5)	1.9 (0-4.9)	3.1 (0.6-6.6)	0.8 (0-2.4)	1.1 (0-2.9)	2.9 (0-7.6)	8.6 (4.1-14)	19.7 (12.8-27.1)	57.5 (24.4-100.5)
Lesser black-backed gull	0.6 (0-1.8)	0.1 (0-0.8)	0.2 (0-1)	0.5 (0-2.3)	0.4 (0-1.1)	0.5 (0-2.2)	2 (0.4-4.8)	2.8 (1.1-4.9)	5.9 (0-15.2)	0.5 (0-1.9)	0.3 (0-1.4)	0.5 (0-1.5)	14.3 (1.4-38.9)
Herring gull	1.6 (0-4.6)	0 (0-0)	0.2 (0-1.2)	0 (0-0)	0 (0-0)	0 (0-0)	0.4 (0-1.8)	0.8 (0-2.6)	0.4 (0-1.9)	0 (0-0)	1.4 (0-3.1)	2.1 (0-5.9)	6.9 (0-21.1)
Great black-backed gull	7.2 (0-16.7)	1.9 (0.4-3.8)	1.3 (0-3.1)	0.9 (0-2.3)	1.2 (0-3)	0 (0-0)	1.8 (0-4)	1.7 (0-3.8)	8.6 (0-22.1)	0.6 (0-1.7)	4.6 (2-7.5)	5.9 (3.1-9.1)	35.6 (5.5-77.1)
Little gull	0 (0-0)	0 (0-0)	0.2 (0-0.7)	0.1 (0-0.4)	0.2 (0-0.8)	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.1 (0-0.4)	0.6 (0-1.6)	0 (0-0)	1.1 (0-3.9)

3.2 Collisions apportioned to relevant SPA populations

18. Collisions for those species with predicted connectivity to SPA populations are provided in Table 2.5 (gannet), Table 2.6 (kittiwake) and Table 2.7 (lesser black-backed gull). It should be noted that figures for the 10MW turbine are presented for comparison purposes only.

19. For kittiwake and lesser black-backed gull the predictions are provided using the Applicant's preferred breeding season apportioning rates and those advised by Natural England, while for gannet the Applicant and Natural England use the same breeding season apportioning rate.

Table 2.5 Comparison of gannet mortality apportioned to the Flamborough and Filey Coast SPA populations for the 10MW and 22m draught height (now removed from the design), 11.55MW (35m draught height) and 14.7MW (30m draught height) turbines. The worst case figures for the 14.7MW turbine are shaded.

Turbine	Spring	Breeding	Autumn	Annual
10	*0.1 (0-0.4)*	*54.1 (2.6-132.5)*	*3.8 (1.9-6.2)*	*58 (4.5-139)*
11.55	0 (0-0.1)	9.4 (0.5-22.9)	0.7 (0.3-1.1)	10 (0.8-24)
14.7	0.2 (0.1-0.3)	14.2 (0.7-34.6)	0.8 (0.4-1.3)	15.1 (1.1-36.3)

Table 2.6 Comparison of kittiwake mortality apportioned to the Flamborough and Filey Coast SPA populations for the 10MW and 22m draught height (now removed from the design), 11.55MW (35m draught height) and 14.7MW (30m draught height) turbines. The worst case figures for the 14.7MW turbine are shaded.

Turbine	Method	Spring	Breeding	Autumn	Annual
10	*Applicant*	*3 (1-5.4)*	*12.2 (3.2-25.2)*	*6.1 (3.2-9.9)*	*21.4 (7.4-40.5)*
	Natural England	*3 (1-5.4)*	*40.3 (10.5-83.1)*	*6.1 (3.2-9.9)*	*49.5 (14.7-98.4)*
11.55	Applicant	0.6 (0.2-1)	2.3 (0.6-4.7)	1.2 (0.6-1.9)	4 (1.4-7.6)
	Natural England	0.6 (0.2-1)	7.6 (2-15.6)	1.2 (0.6-1.9)	9.3 (2.8-18.5)
14.7	Applicant	0.9 (0.3-1.5)	3.5 (0.9-7.2)	1.7 (0.9-2.8)	6.1 (2.1-11.5)
	Natural England	0.9 (0.3-1.5)	11.4 (3-23.6)	1.7 (0.9-2.8)	14 (4.2-27.9)

Table 2.7 Comparison of lesser black-backed gull apportioned to the Alde-Ore Estuary SPA populations for the 10MW and 22m draught height (now removed from the design), 11.55MW (35m draught height) and 14.7MW (30m draught height) turbines. The worst case figures for the 14.7MW turbine are shaded.

Turbine	Method	Spring	Breeding	Autumn	Midwinter	Annual
10	*Applicant*	*0 (0-0.1)*	*3.6 (0.8-8.9)*	*0.6 (0-1.6)*	*0.1 (0-0.4)*	*4.3 (0.8-11)*
	Natural England	*0 (0-0.1)*	*5.2 (1.2-12.8)*	*0.6 (0-1.6)*	*0.1 (0-0.4)*	*5.9 (1.2-14.8)*
11.55	Applicant	0 (0-0)	1 (0.2-2.6)	0.2 (0-0.5)	0 (0-0.1)	1.2 (0.2-3.2)
	Natural England	0 (0-0)	1.5 (0.3-3.7)	0.2 (0-0.5)	0 (0-0.1)	1.7 (0.3-4.3)
14.7	Applicant	0 (0-0)	1.3 (0.3-3.2)	0.2 (0-0.6)	0 (0-0.1)	1.6 (0.3-3.9)
	Natural England	0 (0-0)	1.9 (0.4-4.6)	0.2 (0-0.6)	0 (0-0.1)	2.1 (0.4-5.3)

20. The estimated annual gannet mortality apportioned to the Flamborough and Filey Coast SPA for the 14.7MW turbine (30m draught height) is 15.1, reduced from the previous estimate of 58.0 for the 10MW turbine (22m draught height), a decline of 73.9%.

21. The estimated annual kittiwake mortality apportioned to the Flamborough and Filey Coast SPA for the 14.7MW turbine (30m draught height) is 14.0 using Natural England's preferred methods, and 6.1 using the Applicant's preferred methods. These compare with the previous estimates of 49.5 and 21.4 respectively, for the 10MW turbine (22m draught height), a decline of 71.7%.

22. The estimated annual lesser black-backed gull mortality apportioned to the Alde-Ore Estuary SPA for the 14.7MW turbine (30m draught height) is 2.1 using Natural England's preferred methods, and 1.6 using the Applicant's preferred methods. These compare with the previous estimates of 5.9 and 4.3 respectively, for the 10MW turbine (22m draught height), a decline of 64.1%.

4 Conclusions

23. As an environmentally responsible developer, and in response to requests from the Examining Authority, Natural England and the Royal Society for the Protection of Birds, the Applicant has undertaken a comprehensive review of the project design in order to explore options for mitigating the potential risks to seabirds. This has resulted in a commitment to remove the smaller turbine models (10MW and 11MW) from the design envelope and to install the turbines as high above the sea surface as construction vessels permit, specifically with minimum draught heights of 35m for the 11.55MW turbine and 30m for the 14.7MW turbine.

24. Together these design revisions (increase in draught height and change of turbine model) substantially reduce collision risks with reductions of 74% for gannet, 72% for little gull, 72% for kittiwake, 64% for lesser black backed gull, 63% for herring gull and 62% for great black backed gull (these are for the 14.7MW turbine at 30m which is the new project worst case option for collision risk) when compared with the previous worst case scenario as presented in the original application (APP-201 and APP-226) and in the ornithology update at Deadline 2 (REP2-035).

25. In order to secure the additional mitigation, it is proposed to revise Requirement 2(1)(e) of the draft DCO (and the corresponding DML conditions) as follows submitted at Deadline 5:

2(1) Subject to paragraph (2), any wind turbine generator forming part of the authorised project must not-

(a)….

(e) have a draught height which is less than the minimum draught height specified for the relevant wind turbine generator capacity in the table below:

Wind Turbine Generator Capacity	***Minimum draught height***
Up to 14.6MW	*35m from MHWS*
14.7 MW and above	*30m from MHWS*

26. This secures the worst case assessed of 14.7MW (and above) at a draught height of 30m from MHWS, and also secures the higher draught height of 35m from MHWS modelled for turbines up to 14.6MW, as presented above.

27. Revised cumulative and in-combination collision assessments will be submitted at Deadline 6, which will include the project alone predictions presented here, together with updates for other wind farms (updates are expected for Hornsea Project Three and Norfolk Vanguard) and will also include amended figures for Creyke Beck Dogger Bank A and B as requested by Natural England at Deadline 4 (REP4-040).