

Application by Orsted Hornsea Project Three (UK) Ltd for an Order granting Development Consent for the proposed Hornsea Project Three Offshore Wind Farm

The Examining Authority's Written Questions and Requests for Information

Issued on 9 October 2018

The following table sets out the Examining Authority's (ExA's) Written Questions and Requests for Information.

Each question has a unique reference number which starts with Q1, as it is possible that there may be further written questions later in the Examination, then an issue number and a question number. For example, the first question on alternatives and design flexibility is numbered Q1.1.1. When you are answering a question, please start your answer by quoting the unique reference number.

Column 2 of the table indicates to which Interested Parties and Other Persons each question is directed. The ExA would be grateful if all persons named could answer all questions directed to them, either providing a substantive response or indicating why the question is not relevant to them. This does not prevent an answer being provided to a question by a person to whom it is not directed, should the question be relevant to their interests.

If you are responding to a small number of questions, answers in a letter will suffice. If you are answering a larger number of questions, it will assist the ExA if you use a table based on this one to set out your responses. An editable version of this table in Microsoft Word is available on request from the Planning Inspectorate's Project case team: please contact HornseaProjectThree@pins.gsi.gov.uk

Responses are due by **Deadline 1 - Wednesday 7 November 2018**. Please note that if this deadline is missed the ExA is not obliged to take account of your response.

Abbreviations Used

BDC	Broadland District Council
CEA	Cumulative effects assessment
CRM	Collision risk modelling
cSAC	Candidate Special Area of Conservation
dDCO	Draft Development Consent Order
DML	Deemed Marine Licence
ECR	Export cable route
EIFCA	Eastern Inshore Fisheries and Conservation Authority
EMF	Electromagnetic field
EPS	European protected species
ES	Environmental Statement
ExA	Examining Authority
HAT	Highest astronomical tide
HDD	Horizontal directional drilling
HE	Historic England
HGV	Heavy goods vehicle
HVAC	High voltage alternating current
HVDC	High voltage direct current
LAT	Lowest astronomical tide
MCAA	Marine and Coastal Access Act
MCA	Maritime and Coastguard Agency
MDS	Maximum design scenario
MMO	Marine Management Organisation
NAF	Nocturnal activity factor

NCC	Norfolk County Council
NE	Natural England
Neptune	Neptune E&P UK Limited
NGET	National Grid Electricity Transmission
NNDC	North Norfolk District Council
NPA	Neighbourhood Planning Act
NPS	National Policy Statement
NT	National Trust
pMCZ	Proposed Marine Conservation Zone
PRoW	Public right of way
pSPA	Proposed Special Protection Area
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SAR	Search and rescue
SNC	South Norfolk Council
SPA	Special Protection Area
Spirit Energy	Spirit Energy Nederland BV; Spirit Energy North Sea Limited; Spirit Energy Resources Limited
SSSI	Site of Special Scientific Interest
TWT	The Wildlife Trusts
UXO	Unexploded ordnance
VER	Valued ecological receptor
WCS	Worst case scenario
WTG	Wind turbine generator
ZVI	Zone of visual influence

The Examination Library

References in these questions set out in square brackets (eg [APP-010]) are to documents catalogued in the Examination Library. The Examination Library can be accessed via the following link:

<https://infrastructure.planninginspectorate.gov.uk/projects/eastern/hornsea-project-three-offshore-wind-farm/?ipcsection=docs>

It will be updated as the Examination progresses.

2. Ecology – Offshore		
Ref	Question to	Questions
		<i>Ornithology</i>
Q1.2.38	NE, Royal Society for the Protection of Birds (RSPB), MMO	<p>Representations from NE [RR-097], RSPB [RR-113] and the MMO [RR-085] consider that an appropriate site specific baseline has not been established.</p> <p>Why do you consider that two years of survey data is essential to provide an appropriate baseline?</p> <hr/> <p>The RSPB considers that two years of survey data represents the very minimum amount of data that is required to establish a credible ornithological baseline.</p> <p>The aim of the baseline is to account for natural temporal and spatial variability in seabird density which can be influenced by factors such as e.g. weather and marine currents, and their potential impacts upon the distribution of food resources. can, increasing coverage from 10% to 20% be shown by examination of survey data from other proposed developments. For example:</p>



		<ul style="list-style-type: none">• One year's aerial surveys for the proposed Dounreay Tri development recorded very few puffin in most months' survey, with a maximum of 44 recorded in any month, except June when 1174 were recorded. This difference was so extreme that another survey was commissioned for this month, and only 130 puffin were recorded. Such variability was only over one survey year, and to a large extent within one month.• At the Seagreen Alpha and Bravo sites in the Forth and Tay region of Scotland, two years survey were carried out between 2009 and 2011 and surveys were repeated during the breeding season of 2017. In July 2010 1330 gannet and 546 kittiwake were recorded in both sites combined. In July 2011 237 gannet and 1285 kittiwake were recorded in the same area and in 2017 there were 1290 gannet and 4463 kittiwake recorded. <p>While such variability cannot be directly assumed to occur at Hornsea 3, and it is acknowledged that it occurred at a different time of year than the missing Hornsea survey months (largely autumn and winter, see Table 2.3 – Survey effort in the Hornsea Zone in Year 1 (2011/12) and Year 2 (2012/13), Hornsea Project Two Environmental Statement, Volume 5 – Offshore Annexes, Annex 5.5.1, Ornithology Technical Report Part 1), it is indicative potential scale of variability and why one year's survey data is unacceptable and two years is an absolute minimum.</p> <p>The two year period that is typically requested for a development represents a compromise between the need for clear data to establish a baseline and our appreciation of the commercial requirements of the applicant.</p> <p>It is important to note that the greater the potential impacts of a scheme (influenced, amongst other factors, by the size of the scheme and the duration of its operation) the more important it becomes to have a detailed and sufficiently robust ornithological baseline. Given the size of the Hornsea Three scheme and its 35 year proposed operational period it is possible that the full two years of survey data may prove to be inadequate.</p> <p>Given the potential for the variability in the number and distribution seabirds, what</p>
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		<p>increased confidence would be provided by an additional 8 months of data?</p> <hr/> <p>As highlighted above the additional 8 months of data would provide greater information to enable potential spatial and temporal variations to be identified and addressed during the evaluation of the scheme. Further confidence in the ability of the data to capture spatial variability would also be obtained if data from all four of the camera operating during survey were analysed and presented, increasing coverage from 10% to 20%.</p>
Q1.2.53	NE, RSPB	<p>Paragraph 5.9.2.12 of the ES [APP-065] states that displacement effects along the cable corridor were assessed using seasonal mean population data derived from Lawson and others (2015).</p> <p>Do you agree that this survey data should be used to calculate displacement from the export cable corridor?</p> <hr/> <p>The surveys detailed in Lawson et al., (2016) were carried out between October 2002 and March 2008 and so the most recent survey was carried out more than 10 years ago. The RSPB therefore do not think that these are appropriate data to use for the assessment of displacement from the cable route corridor.</p>
Q1.2.57	Applicant	<p>Paragraph 5.9.3.4 of the ES [APP-065] states that it would be inappropriate to apply lower and upper confidence intervals for all parameters in the CRM.</p> <p>Please explain why, with reference to statistical inference, this would provide unrealistic estimates of the collision risks associated with the proposal.</p> <p>Why were only bird density and flight height selected as the parameters for the upper and lower confidence intervals of the CRM?</p> <hr/> <p>There are potentially high levels of variability in all the input parameters of the Band collision</p>



		<p>risk model, and accompanying guidance to the model recommends that these are taken into account, although it did not provide a statistically robust method for doing so. This variability can be temporal and spatial variability in bird density and variability in flight height, but can also be in flight speed as well as abiotic parameters such as wind speed. Since Masden's (2015) 'proof of concept' stochastic formulation of the Band model, a statistically robust method of carrying out the modelling process incorporating variability in all model parameters had been developed, overseen by a scientific steering group, and published. This is the Marine Scotland Science funded Stochastic Collision Risk model, Mackenzie <i>et al.</i>, (2018), and it should have been presented here.</p>
Q1.2.59	NE	<p>Paragraph 5.2.3 of NE's representation [RR-097] questions the way in which nocturnal activity factors (NAF) have been applied to some species in the CRM.</p> <p>Please explain why you consider that the parameterisation of NAFs is wrong.</p> <p>How do you say it should be improved?</p> <p>Can you refer to any appropriate peer reviewed literature to support your view?</p> <hr/> <p>For kittiwake and large gulls, there is no peer reviewed evidence for a change in the factor that is being used. The current factor is derived from the expert opinion collected by Garthe and Huppopp (2004) and this use is endorsed by Band (2012). A review of seabird vulnerability to offshore wind farms (Furness <i>et al.</i>, 2013) recommended that no changes be made to the nocturnal activity scores for these species, and an update, including the same authors (Wade <i>et al.</i>, 2016) maintained this recommendation. Partial analysis of data from thermal imaging cameras was carried out in the Skov <i>et al.</i>, 2018 ORJIP Bird Collision Avoidance report, but was incomplete and did not fully account for the distinction between the definition of daylight as used in the Band model and with the official concept of 'twilight' and 'night'. This is an issue as the Band (2012) model considers the nocturnal period as between sunset to sunrise and so treats flight activity that occurs at twilight as being within the nocturnal flight period. Evidence</p>

		<p>from tagging shows that a number of seabirds actively forage at twilight. We therefore do not consider that any change be made in the recommended NAFs.</p> <p>The latest published evidence of a Nocturnal Activity Score for gannet (Furness <i>et al.</i>, 2018), recommends 8% in the breeding season and 3% in the non-breeding season. The value suggested by the applicant in the assessment corresponds to 0% nocturnal activity, and will result in a prediction of fewer collisions. Furthermore, while we welcome the Furness <i>et al.</i> review, we are concerned that the mortalities predicted using revised nocturnal activity rates for gannet (and this is applicable to other species) are potentially underestimated because they do not account for the interaction between survey timing and diurnal behavioural patterns, whereby peaks in foraging activity at first and last light (see Fig. 3 in Furness <i>et al.</i> 2018) will not be accounted for in the assessment if these did not coincide with surveys (the timings of which are currently unknown, but likely to be midday if aerial), and the survey may have been carried out at a time of much lower activity. Thereby the application of the revised nocturnal activity factor recommended by Furness <i>et al.</i>, (2018) could result in inaccurate underestimates of collision risk.</p>
Q1.2.61	NE, RSPB	<p>Appendix B of the ES [APP-109] outlines the approach to CRM that was applied to migratory seabirds.</p> <p>Notwithstanding your concerns about the baseline data and model parameterisation, do you agree with the underlying approach that was used for the CRM for migratory seabirds?</p> <p>If not, why not?</p> <hr/> <p>We agree with the underlying approach.</p>
Q1.2.62	Applicant	<p>Paragraph 1.3.2.2 of the ES [APP-109] states that ongoing research is looking at the avoidance behaviour of seabirds at offshore wind farms.</p>



Please can you provide a summary of any peer reviewed publications or empirical observations that have been published since the application was submitted and highlight any implications that this might have for the CRM parameterisation.

Cook, A. S., Humphreys, E. M., Bennet, F., Masden, E. A., & Burton, N. H. (2018). Quantifying avian avoidance of offshore wind turbines: Current evidence and key knowledge gaps. *Marine environmental research* is a peer reviewed paper based on the Cook *et al.*, (2014) avoidance rate review. It does not suggest any changes to the previous reviews rates, and this remains largely in agreement with the advice of the SNCBs and the RSPB.

Results of the Offshore Renewables Joint Industry Programme (ORJIP) Bird Collision Avoidance project (which the RSPB has been supportive of and in which we have been involved as a member of the Expert Panel) were published before submission of the application, as Skov *et al.*, (2018), although not included in the application and not published in a peer reviewed manner. The study used a number of largely novel technologies to record bird behaviour at and around a small number of turbines at the edge of Thanet wind farm, located 12km off the coast of Margate, Kent, in the UK. Data were collected between July 2014 to April 2016 and the final project report was published on Thursday 19th April 2018. Whilst, as the report acknowledges, there were considerable limitations to the collected data, it did use a novel approach to shed new light on seabird avoidance behaviours in and around offshore wind turbines.

“Avoidance Rate” accounts for the discrepancy between predicted collision mortality and actual collision mortality. Such discrepancy arises because of natural variability and uncertainty in the input parameters, such as flight height and bird density, errors in the modelling process, errors in the model itself as well as any avoidance behaviour of the birds in response to the turbines. As such, “Avoidance Rate” is a misnomer; it is not exclusively related to avoidance behaviour *per se*. A number of studies have shown that Avoidance Rate has a disproportionate influence on the number of mortalities predicted by Collision Risk Modelling and there has



		<p>been considerable debate around what its actual value should be (it is largely estimated) and how it could be better measured and refined. Improving understanding of the true value of the correction factor termed "Avoidance Rate" would allow us to predict collision mortality with greater confidence in the accuracy of models.</p> <p>In contrast, the Bird Collision Avoidance project calculated what it called Empirical Avoidance Rates in order to distinguish these from the traditional Avoidance Rates as used in Collision Risk Modelling and described above. The project attempted to account for some sources of the variability and uncertainty that influence Avoidance Rates but was unable to quantify all of these. Therefore it is clear that the Empirical Avoidance Rates calculated as part of the BCA project are not yet compatible with those used in the Band CRM and therefore cannot be used in that modelling process.</p> <p>In addition to calculating these Empirical Avoidance Rates, the project report also presented data on some of the other input parameters of the Band CRM, notably flight speed and height, and to a limited extent nocturnal activity, although this later variable was incompletely explored. While all these data have still to be properly peer reviewed, they are informative in discussions around parametrisation of the Band model.</p> <p>One aspect of the BCA project that is of interest is that it facilitated for the first time validation of the Band model itself. At its core the Band model calculates "pColl", that is the probability of birds flying through the rotor swept area of a turbine that will be struck by the rotating blade. For seabirds this is typically 7-12%, that is 7 to 12% of birds passing through the rotor swept area will collide. For the first time at an offshore wind farm actual data of birds passing through a rotor swept area were recorded. There were 15 birds passes through the rotor swept area, of which 6 collided. This gives a probability of 40%. This discrepancy results in a four fold increase in the number of actual collisions from those predicted. As such it suggests that the Band model may be producing a large underestimate of collision mortalities and that predictions derived from it be treated with a sufficient degree of caution.</p>
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Q1.2.64	NE, RSPB	<p>Appendix C of the ES [APP-109] outlines the approach to CRM that was applied to migratory water birds.</p> <p>Notwithstanding your concerns about the baseline data and model parameterisation, do you agree with the underlying approach that was used for the CRM for migratory water birds?</p> <p>If not, why not?</p> <hr/> <p>We agree with the underlying approach.</p>
Q1.2.65	NE, RSPB	<p>Paragraphs 5.11.2.84, 5.11.2.205 and 5.11.2.221 of the ES [APP-065] identify the potential impacts associated with habitat loss, barrier effects and lighting.</p> <p>Notwithstanding your concerns about the baseline data, do you agree with the underlying approach that has been used to assess these impacts and the resulting conclusions?</p> <p>If not, why not?</p> <hr/> <p>We agree with the underlying approach.</p>
Q1.2.66	NE, RSPB	<p>Paragraph 5.13.3.29 of the ES [APP-065] outlines the difficulties of evaluating the cumulative effects on the non-breeding component of the North Sea razorbill population.</p> <p>Do you agree that the complexities of the razorbill population structure preclude attempts to compare predicted displacement effects?</p> <p>If you do not agree, how might such an assessment be undertaken?</p>

		<p>The RSPB acknowledge that there are considerable complexities in the structure and distribution of all non-breeding seabirds and that these complexities lead to uncertainties in the assessment procedure. However, the correct manner in which to deal with uncertainties is through properly a quantified precautionary approach that involves not just acknowledgement but scientific, qualitative evaluation of the degree of uncertainty. Therefore by taking a qualitative approach the applicant is not properly dealing with the uncertainty in the assessment of cumulative effects of non-breeding razorbill.</p>
Q1.2.67	NE, RSPB	<p>Paragraph 5.9.2.9 of the ES [APP-065] highlights guidance that recommends the use of a 4km buffer for divers and sea ducks. Paragraph 5.9.2.10 goes on to state that the displacement analysis for the cable corridor only included a 2km buffer.</p> <p>Do you agree with the choice of buffer zone for the cable corridor given the presence of common scoter and red-throated diver?</p> <p>The RSPB has limited concerns about the likely impacts of the installation and operation of the cable corridor. However, the RSPB is concerned about the potential displacement of birds from the corridor route which will be used by the regular support vessels servicing the turbines during its operational life.</p> <p>We also highlight that increasingly evidence shows that divers can be displaced from a greater distance, not only from operational wind farms but also from the associated boat traffic. (e.g. Mendel, B., Schwemmer, P., Peschko, V., Müller, S., Schwemmer, H., Mercker, M., & Garthe, S. (2019). Operational offshore wind farms and associated ship traffic cause profound changes in distribution patterns of Loons (<i>Gavia spp.</i>). <i>Journal of environmental management</i>, 231, 429-438.) As such we consider that 4km is an absolute minimum and that impacts are possible over an even greater scale.</p>
Q1.2.69	Applicant, NE,	Paragraph 1.3.3.2 of the ES [APP-108] outlines how predicted displacement



	RSPB	<p>mortality was evaluated when it exceeds a 1% background threshold. Paragraph 5.9.4.1 of the ES [APP-065] sets out the impact assessment criteria.</p> <p>Please can the Applicant explain how these two approaches relate to one another in the determination of the significance of effects in section 5.9.4 of the ES [APP-065].</p> <p>Please can the Applicant explain how the levels of background mortality have been derived and outline any peer-reviewed, empirical evidence that supports the approach.</p> <p>Do NE and RSPB agree with the comparison of predicted mortality against background mortality as a means of determining the significance of any negative effects on bird populations?</p> <p>If NE and/or RSPB do not agree, how might such an assessment be undertaken?</p> <p>Are NE and RSPB satisfied with the way in which the predicted seasonal mortality has been presented in section 1.4 of the ES [APP-108]?</p> <hr/> <p>1% is an arbitrary value which has no biological meaning and therefore cannot be used as a measure of significance of negative effect. The RSPB consider that that any additional mortality on a protected species is significant, and it is a societal rather than scientific decision as to the acceptability of this loss.</p> <p>Furthermore, the results in section 1.4 have been presented using mean seasonal peaks. As the RSPB do not agree with the definitions of season used, we cannot agree with the calculated seasonal peaks. The RSPB preferred definitions of season are based on onsite evidence from staff working at Bempton and are March to September for gannet (although we note that birds are present on the cliffs in October), for kittiwake, March to August and for puffin April to July. The applicant has used April to August, April to July and May to July respectively for these species.</p>
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Q1.2.70	NE, RSPB	<p>Table 5.9 of the ES [APP-065] summarises the assessment criteria for displacement effects and mortality rates for the array area.</p> <p>Do you agree with the displacement and mortality rates and if not, what values would you recommend?</p> <hr/> <p>We agree with the ranges used, although we consider that these are indicative rather than extremes so greater or lower effects could occur.</p> <p>We do not agree with the “evidence based displacement rates”, given the considerable uncertainties and high variability in displacement recorded across studies.</p>
Q1.2.75	Applicant, NE, RSPB	<p>Paragraph 5.7.2.95 of the ES [APP-065] states that the maximum foraging distance for kittiwake was determined from published evidence in Thaxter and others (2012).</p> <p>Could the Applicant explain how these estimates have been derived and to what extent they have been validated by satellite tracking data for the Valued Ornithological Receptors that may be affected by the project?</p> <p>Are NE and RSPB satisfied that the estimated maximum foraging distances are robust?</p> <hr/> <p>The RSPB is not satisfied that the estimated maximum foraging distances are robust.</p> <p>The peer-reviewed analysis of FAME/STAR data presented by Wakefield <i>et al.</i>, (2016) presented a maximum foraging range for kittiwake of 300km. More recent and site specific kittiwake tracking data from Flamborough and Filey Coast pSPA has shown even larger kittiwake foraging ranges, with a maximum of 342 km recorded from a successful nest. (Wischnewski, S., Sansom, A., McCluskie, A. & Wright, L. 2018. Seabirds and Windfarms: New</p>



		Insights from a Kittiwake Case Study. Oral presentation. International Seabird Group Conference, Liverpool, UK.). These increased ranges are likely to be both a function of larger sampling size and longer tagging period.
		HRA
Q1.2.94	Applicant	<p>Paragraphs 5.11.1.50 and 5.11.1.61 of the ES [APP-065] state that the effect of construction disturbance on razorbill and guillemot are currently unclear.</p> <p>How can you rule out adverse effects on the integrity of associated European sites when such impacts are uncertain?</p> <hr/> <p>The RSPB notes that the initial version of the In-Principle Monitoring Plan supplied with the DCO Application does not include any proposals to monitor construction (see Table 3.4: In-principle monitoring – offshore ornithology). The RSPB considers that the statements in paragraphs 5.11.1.50 and 5.1.1.61 of the ES highlighted in this question demonstrate why it is essential that this omission is rectified and that satisfactory monitoring of construction impacts is undertaken.</p>
Q1.2.97	RSPB	<p>The RSPB [RR-113] states that the exclusion of likely significant effects on breeding guillemot and razorbill from Flamborough and Filey Coast pSPA is not supported by survey evidence because the Hornsea Project Three area is utilised by juveniles and non-breeding individuals.</p> <p>Please explain why you consider that the approach set out in the Report to Inform Appropriate Assessment, Annex 2 – Additional SPA Screening Exercise [APP-053] does not justify the exclusion.</p> <hr/> <p>The RSPB acknowledge that razorbill and guillemot present in the Hornsea Project Three area during the breeding season are unlikely to be breeding individuals from the Flamborough and Filey Coast pSPA rather are most likely to be juveniles and non-breeding adults. However such</p>

		<p>individuals will all at some point in their life cycle be associated to a breeding colony and the significant proportion that go on to breed will do so at a colony. Consequently effects on these birds, even when not breeding, will impact on the future breeding at the colony.</p> <p>As the Flamborough and Filey Coast pSPA colony is the largest and closest one to the Hornsea Project Three area, it is probable that a significant proportion of these birds will go on to breed at the pSPA, and therefore have a Likely Significant Effect. Such effect could be easily incorporated into a PVA to understand the potential scale of impact.</p> <p>(There appears to be an error in the question: Report to Inform Appropriate Assessment, Annex 2 – Additional SPA Screening Exercise refers to the Greater Wash SPA. Annex 3 covers the Flamborough and Filey Coast pSPA. Given the context of the question the RSPB have focussed our response on Annex 3 instead. If this is an error we will rectify it as soon as is practicable.)</p>
Q1.2.108	NE	<p>TWT [RR-047] considers that fishing activity should be included in the in-combination assessment rather than in the ES baseline.</p> <p>What is your view on this point?</p> <hr/> <p>The RSPB agree with TWT’s view that fishing activity should be included in the in-combination assessment rather than in the ES baseline. Including fishing as part of the baseline assumes that the pressure is constant and the same in a year-on-year basis. This is untrue, evidenced by the different catch limits which are set each year.</p>
Q1.2.116	RSPB	<p>RSPB [RR-113] does not agree with the apportioning rates used to evaluate the proportion of the guillemot, kittiwake and razorbill populations that have come from the Flamborough and Filey Coast pSPA, as specified in Annex 3 of the Report to Inform the Appropriate Assessment [APP-054].</p>



		<p>Please provide further explanation of your concerns about the apportioning rates that have been used.</p> <p>In your view, how should the apportioning rates have been established?</p> <p>What additional tracking data do you consider should have been taken into account?</p> <hr/> <p>For the apportioning of impacts on kittiwake to the Flamborough and Filey Coast pSPA the applicant has taken a somewhat complex and scientifically unjustified approach. Recent tracking of kittiwake from the pSPA has shown that the Hornsea Project Three area is well within the maximum foraging range of kittiwake, so a higher proportion of the adults present will be associated with the pSPA than is suggested by the applicant. Furthermore the values used in the calculation of apportionment in table 1.6 of Annex 3 are not the most appropriate. For example the survival rates used are from SmartWind (2015) as opposed to the peer-reviewed and widely adopted Horswill and Robinson (2015) the value for percentage of birds assigned as one year olds, 22.5%, is taken from historical boat based survey rather than the recent aerial surveys which provide a much lower figure of 4.7%. The justification for this is scant, using an unproven relationship between distance from colony and numbers of immatures. It would have been preferable to use the most recent data.</p> <p>For the apportioning of guillemot and razorbill the applicant has not included non-breeders and juveniles in the breeding season as components of the pSPA. We disagree with this approach for reasons detailed under question 1.2.97 and consequently do not agree with the apportioning to the pSPA.</p>
Q1.2.117	Applicant, NE	<p>Paragraph 5.2.8 of NE's representation [RR-097] states that the use of population viability assessment from Hornsea Project Two was not suitable to determine the impacts on the Flamborough and Filey Coast pSPA.</p> <p>Please could NE provide further detail on this point and indicate how it considers</p>



		<p>that the long-term effects on bird populations associated with the pSPA should be assessed?</p> <p>Why is the population viability analysis for kittiwake and gannet for 25 years when the project would have a 35 year operational phase?</p> <p>Would the Applicant's approach lead to an underestimate of impact?</p> <hr/> <p>The RSPB acknowledge that the applicant has gone some way to addressing concerns with the manner in which Population Viability Analysis has been carried out, including the operational timespan and the use of matched pair run (see Population Viability Analysis Clarification Note). In order to best make an assessment of population scale impacts the RSPB prefers the use of the counterfactual of population size output metric of density independent model formulation following the advice contained in the peer reviewed papers Green <i>et al.</i>, (2014) and Cook and Robinson (2017). The applicant has included this, but has based their conclusions on whether the projected change will result in the future impacted population being lower than the cited population. This is to entirely miss the rationale behind the use of the counterfactual metric. It is scientifically impossible to make an <i>absolute</i> prediction of a population size 35 years into the future, hence why it is necessary to take the counterfactual approach which makes a <i>relative</i> prediction, which is scientifically robust, as highlighted in the two papers cited above.</p> <p>This misinterpretation of the PVA outputs is further compounded for kittiwake since the PVA used has not used up to date productivity data. Recent census data (see Bempton Seabird Reports 2012-2017, available at http://publications.naturalengland.org.uk/publication/6026131045089280?category=4660672258375680) has shown that kittiwake productivity has declined rapidly at the pSPA and this will have severe impacts on the population growth. Not only does this mean the PVA requires reparametisation but highlights that it is impossible to predict whether the population in 35 years will be below or above the cited population, either with or without the additional mortalities arising from the Hornsea Project Three, alone or in-combination.</p>
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4. Ecology – Onshore		
Ref	Question to	Questions
Q1.4.16	NE	<p>Paragraph 4.3.2.1 of the Outline Ecological Management Plan [APP-180] states that if a district-wide licensing approach for great crested newts is available to the project then this might reduce the requirement for pre-commencement surveys and specific mitigation measures such as exclusion fencing.</p> <p>What are your views on this statement?</p> <hr/> <p>The RSPB considers that the potential efficacy of a district-wide licensing approach for great crested newts would depend upon a number of factors:</p> <ul style="list-style-type: none"> i) It is important to note that there is currently no district-wide licensing scheme which Hornsea Project Three could avail itself of; ii) If a district-wide licensing scheme is introduced it would be essential that the export cable route fell within areas that the licensing scheme specifically covered (it is our understanding that the term “district-wide” in this context is something of a misnomer as it actually only covers areas within the district allocated for development rather than the whole district); iii) Whether the areas affected by the export cable route are ‘green’ (meaning no newts), ‘amber’ (there are newts but it is mitigatable) or ‘red’ (there are significant populations of newts); and iv) Whether the district-wide licensing approach has been in place long enough for there to be sufficient functioning habitats in place to address the scale of impacts in place to address the scale of impacts associated with this development. <p>What is the likelihood that such a license would be granted in this instance?</p> <hr/> <p>The RSPB is unable to comment on this part of the question.</p>

15. General		
Ref	Question to:	Questions
Q1.15.6	Applicant	<p>Paragraph 1.2.1.5 of the Outline Code of Construction Practice [APP-179] states that it would be a 'living document' that would be updated post examination.</p> <p>How would adequate mitigation be delivered and the necessary framework for the production of detailed Codes of Construction Practice be secured if this document is not finalised by the end of the examination?</p> <hr/> <p>This question highlights a source of concern for the RSPB, as it might be possible for mitigation measures to be removed post-consent. We recommend that the Development Consent Order is modified to ensure that the mitigation measures contained within the version of the Outline Code of Construction Practice that is in place at the time that the Examination concludes must be included in the final version of the Code of Construction Practice.</p>
Q1.15.7	Applicant	<p>Paragraph 1.2.1.2 of the Outline Ecological Management Plan [APP-180] states that it is a 'living document' that would be updated as required prior to implementation.</p> <p>How would adequate mitigation be secured if it is not finalised by the end of the examination and then used as the basis for detailed Ecological Management Plans approved pursuant to Requirement 10?</p> <hr/> <p>As with Q1.15.6 above relating to the Outline Code of Construction Practice this question highlights a source of concern for the RSPB. As with our response to Q1.15.6 we recommend that the Development Consent Order is modified to ensure that the mitigation measures contained within the version of the Outline Ecological Management Plan that is in place at the time that the Examination concludes must be included in the final version of the Ecological Management Plan.</p>



<p>Q1.15.8</p>	<p>Natural England (NE), Environment Agency (EA), Royal Society for the Protection of Birds (RSPB), Norfolk Wildlife Trust (NWT), Broadland District Council (BDC), North Norfolk District Council (NNDC), South Norfolk Council (SNC)</p>	<p>Please comment on the Outline Code of Construction Practice [APP-179] and comment on any potential amendments that may, in your view, be required in order the secure appropriate environmental outcomes and regulatory compliance.</p> <hr/> <p>The RSPB wishes to see an amendment to the Outline Code of Construction Practice (OCOCP) to ensure that the pink-footed geese population is not disturbed by the construction works associated with the onshore cable corridor. The relevant provision is set out under the heading “Wintering birds” at paragraph A.1.1.1 on page 18 of the OCOCP.</p> <p>Our comments on this issue are complicated by the inter-relationship between multiple documents. We set out the details of that relationship, along with a way to potentially simplify the situation, below in our response to Q1.5.11 on the Outline Ecological Management Plan (OEMP).</p> <p>Key ecological facts for pink-footed geese</p> <p>For ease of reference we have drawn together the key ecological facts which have a bearing on the design of this mitigation scheme. The wintering pink-footed goose population that has been surveyed in or near the cable corridor area is up to 10,000 birds, which represents 42% of the North Norfolk Coast SPA population (23,802 birds) (Report to Inform Appropriate Assessment, paragraph 8.7.2.6).</p> <p>11 of the 13 fields where pink-footed geese were observed during the winter 2016/17 and 2017/18 surveys were sugar beet crops (paragraph 3.1.1.1 and 3.1.1.4 respectively, ES, Annex 3.9 – Onshore Ecology – Wintering and Migratory Birds), showing a clear preference for this crop by the geese (“almost all fields that held sugar beet crop were being utilized at some point in the period” (paragraph 8.7.2.5, Report to Inform Appropriate Assessment). This is as expected based on surveys and assessments of pink-footed goose foraging preferences adjacent to the North Norfolk Coast SPA. Given the proportion of the North Norfolk Coast SPA population that has been surveyed in or near the cable corridor area, the applicants have appropriately concluded that the</p>
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		<p>sugar beet fields in this area are functionally linked habitat (paragraph 8.7.2.7, Report to Inform Appropriate Assessment).</p> <p>Figures 3.1 and 3.2 of the Wintering and Migratory Birds Report (ES, Annex 3.9 – Onshore Ecology – Wintering and Migratory Birds) clearly illustrate the distribution of the birds on the cable corridor. These show that the distribution of the birds is clearly influenced by the cropping patterns within the cable corridor as far fewer birds were found in the cable corridor in the winter of 2016/17 (figure 3.1) when far fewer fields were planted with sugar beet crop than in the winter of 2017/18 (figure 3.2). It is also important to note that the sugar beet fields only become functionally linked following the harvesting of sugar beet (paragraph 8.7.2.5, Report to Inform Appropriate Assessment). The RSPB consider that if sugar beet crops are grown within the cable corridor during the cable installation works it is inevitable that there will be a conflict between the geese and the construction works when those crops are harvested. This is likely to manifest itself in the form of disturbance to the birds, with associated energetic costs from flights at times that they should have been feeding. Given the proportion of the North Norfolk Coast SPA that utilises these fields the RSPB consider that it is not possible to exclude the risk of an adverse effect on the integrity of the SPA, and that consequently mitigation measures will be necessary.</p> <p>Mitigation measures</p> <p>The mitigation measures proposed would involve providing alternative foraging habitat “if required” (second bullet point, paragraph A.1.1.1, OCOCP, and second bullet point, paragraph 5.4.3.1, OEMP). Given the information in the paragraph above, the RSPB considers that alternative foraging habitat in the form of coordinated sugar beet cropping will be required to ensure that the pink-footed geese population is not disturbed by the construction works. To achieve optimum effects for the applicant this would take the form of both avoiding planting of sugar beet crops in the fields through which the cable corridor will pass during the years in which it will be constructed and either the planting of sugar beet crops in fields away from the cable corridor, or retention of sugar beet residues for a 30-day period (i.e. not simply ploughing in residues immediately after harvest to ensure food resource remains available). These measures would aim to attract the pink-footed geese away from the construction works and consequently</p>
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away from the risk of disturbance and ensure that an equivalent food resource was retained during the construction period. If the applicant relies upon the timing of the sugar beet crop harvesting there would be disruption of construction works on the cable corridor if the construction and harvesting overlap as it would be necessary to stop works in the sugar beet fields to allow the pink-footed geese to graze.

The RSPB consider that the proposal within the OCOCP to formulate a pink-footed goose mitigation plan 12 months prior to construction will leave the preparation of this important mitigation measure too late to ensure that it can be properly secured. This is important given the need to discuss and secure options with landowners, which will involve managing crop rotations and provision of suitable payments to secure the mitigation. Via the Onshore Ecology Expert Working Group the RSPB recommended that Hornsea Project Three secured agreements with the landowners to ensure that sugar beet crops are grown in a pattern that avoids the risk of potential disturbance of pink-footed geese by the construction works. The applicant's own ecological information (set out above) highlights this, as well as the limited area for which such a scheme would need to be implemented. We suggested that early agreement would be likely to help keep the costs of such mitigation measures down. The RSPB note that an effective pink-footed geese refuge scheme is being implemented for the Jack's Lane wind farm in west Norfolk to replace lost foraging habitat and reduce goose use of the turbine area. This scheme is based on payments to land owners to retain sugar beet residues after harvest rather than ploughing them in immediately. We consider that this scheme may offer a suitable option for the Hornsea Three onshore cable corridor for a relatively small cost.

We note that if our proposed approach is considered unduly onerous that an alternative approach is highlighted in paragraph 8.7.2.17 of the Report to Inform the Appropriate Assessment which acknowledges that ensuring construction works take place outside of November to January inclusive there will be no adverse effect on site integrity. As this would lead to a significant loss of flexibility for the applicant we consider that the approach we suggest represents a better solution.



		<p>The RSPB note from relevant representations by other parties that various farmers appear to have expressed concern about the potential impacts upon their farming that may be caused by the current uncertainties associated with the timing of the cable corridor works. Consequently, we recommend that the ExA establishes whether the affected farmers would welcome the greater certainty in planning their crops that such a measure would achieve.</p> <p>Consequently, the RSPB recommends that this measure is included within the Outline Code of Construction Practice and that the Development Consent Order is modified, as highlighted in our response to Q1.15.6 above, to ensure that the final version of the Code of Construction Practice retains this measure.</p>
Q1.15.11	NE, EA, RSPB , NWT	<p>Please comment on the Outline Ecological Management Plan [APP-180] and comment on any potential amendments may, in your view, be required in order to secure appropriate environmental outcomes and regulatory compliance.</p> <hr/> <p>The RSPB has highlighted in its response to Q1.15.8 above that it considers that measures that extend beyond those proposed in the Outline Code of Construction Practice (OCOCP) are required to ensure the provision of effective mitigation measures for pink-footed geese on the onshore cable corridor. There is a substantial overlap between the requirements of the OCOCP and the Outline Ecological Management Plan (OEMP) in terms of the provision of this mitigation measure – paragraph 5.4.3.1 of the OEMP is identical to paragraph A.1.1.1 of the OCOCP.</p> <p>The RSPB will not repeat the ecological information set out under the heading “Key ecological facts on pink-footed geese” or our suggested mitigation measures in our response to Q1.15.8 above, but we rely upon those in this answer.</p> <p>The OEMP notes (at paragraph 2.2.3.2) that pink-footed geese have been recorded utilising sugar beet fields at the north end of the onshore cable corridor. It then states (at paragraph 4.3.4.1) that if construction works are undertaken on functionally linked sugar beet fields between November and January inclusive a pink-footed goose mitigation plan will be formulated</p>



		<p>and submitted to Natural England. This provides more information than the OCOCP, but it does not elaborate further. Paragraph 5.4.3.4 of the OEMP states (in full): "Further details of the proposed mitigation strategy are provided in the Report to Inform Appropriate Assessment which also accompanies the application." However, no references are given as to where in the 350+ page document this information is to be found: if cross-references are to be relied upon (rather than inclusion of all the necessary information in a single working document) it is essential that appropriately detailed references are supplied. Recourse to the RIAA provides little further detail, repeating the text of paragraph A.1.1.1 of the OCOCP and 5.4.3.1 of the OEMP, and adding a statement that mitigation measures will be implemented between 1 November and 31 January only and that if the measures are implemented that they will be monitored to ensure their effectiveness (paragraph 8.7.2.13, Report to Inform Appropriate Assessment). The whole provision of ecological information and proposed mitigation measures for construction impacts on pink-footed geese using sugar beet fields is set out between paragraphs 8.7.2.1 and 8.7.2.18 of the RIAA.</p> <p>Given that the OEMP is supposed to be the detailed guide to the mitigation measures which are required during the construction period the RSPB is concerned that the document refers (at paragraph 4.3.4.2 and again at paragraph 5.4.3.4) to the RIAA as containing the detailed mitigation measures for pink-footed geese, which we have highlighted above it does not.</p> <p>To address the replication of information we recommend that the OCOCP, the OEMP and the RIAA are amended as follows:</p> <ul style="list-style-type: none">• The OCOCP makes it clear that the pink-footed geese mitigation plan is set out in the OEMP;• The limited details of the pink-footed geese mitigation plan in the RIAA are moved to the OEMP;• The OEMP sets out the details of how the sugar beet cropping will be secured with affected land owners to ensure that impacts upon the pink-footed goose population is avoided. We consider that this can be achieved in line with the approach highlighted in our response to Q1.15.8 above. The RSPB is willing to work with the Applicant to help secure an
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		<p>appropriate mitigation plan.</p> <p><i>Table 10.1: Timetable of suitable work periods</i> (page 30) of the Outline Ecological Management Plan needs to be amended as there is no reference at present to surveying or mitigation periods for pink-footed geese: this omission needs to be corrected.</p> <p>In our response to Q1.15.7 above the RSPB has highlighted its concerns that the Development Consent Order will need to be amended to ensure that any mitigation measures secured within the OEMP during the course of the Examination will be retained in the final operational version.</p>
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