

East Anglia THREE
Offshore Windfarm

East Anglia THREE

Statement of Common Ground

Natural England

Document Reference – Deadline 7 SoCG / SoCG /
NE and Applicant

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Date – December 2016
Revision History – Revision D

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1 Introduction

1.1 Introduction

1. This Statement of Common Ground (SoCG) has been prepared with Natural England to show where agreement has been reached with East Anglia THREE Limited (EATL) during the pre and post Development Consent Order (DCO) application consultation and in the course of the DCO Examination
2. This SoCG comprises an agreement log which has been structured to reflect topics of interest to Natural England on the East Anglia THREE DCO application (the **Application**). Topic specific matters agreed, not agreed and actions to resolve between Natural England and East Anglia THREE are included.
3. The position with respect to each topic of interest is presented in a tabular form.
4. Throughout this document points of agreement and disagreement between EATL and Natural England are clearly indicated. Points that are not agreed will be the subject of ongoing discussion wherever possible to resolve, or refine, the extent of disagreement between the parties.
5. A Glossary is attached at Appendix 1.

1.2 The Development

6. The Application is for development consent to construct and operate up to 172 wind turbine generators and associated infrastructure, with an installed capacity of up to 1,200 MW (the **Project**).
7. The DCO, if made, would be known as the East Anglia THREE Offshore Wind Farm Order. It will comprise the following elements:
 - Up to 172 offshore wind turbines and associated foundations, with an installed capacity of up to 1,200 MW;
 - Up to two meteorological masts and foundations;
 - Up to twelve buoys;
 - Up to six offshore electrical stations;
 - Up to one offshore platform housing accommodation facilities;
 - Subsea inter-array cables between the wind turbines and offshore electrical stations;
 - Up to four subsea export cables to transmit electricity from the offshore electrical stations to shore;
 - Up to four interconnector cables between the East Anglia ONE and East Anglia THREE Projects;
 - Scour protection around foundations and on inter-array and export cables as required;

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- Landfall at Bawdsey with onshore transition bays to join the offshore and onshore cables;
 - Up to four onshore underground circuits (each containing up to three cables) pulled through existing ducting to be laid by East Anglia ONE or directly laid, running for approximately 37km from landfall to the connection point at Bramford, Suffolk, with jointing pits, to transmit electricity to up to two new onshore substations;
 - Up to two onshore substations at Bramford, Suffolk, to connect the offshore windfarm to the National Grid;
 - The permanent and / or temporary compulsory acquisition (if required) of land and / or rights for the proposed Project;
 - Overriding of easements and other rights over or affecting land for the proposed Project;
 - The application and / or disapplication of legislation relevant to the proposed Project including inter alia legislation relating to compulsory purchase; and
 - Such ancillary, incidental and consequential provisions, permits or consents as are necessary and / or convenient.
8. The Application was submitted to the Planning Inspectorate on 18th November 2015 and accepted for examination on 15th December 2015.

1.3 Consultation with Natural England

9. This section briefly summarises the consultation that EATL has had with Natural England, for further information on the consultation process and the outcome of consultations please see the Consultation Report (document 5.2 of the East Anglia THREE DCO Application).

1.3.1 Pre-Application

10. EATL engaged with Natural England on the Project during the pre-Application process, both in terms of informal non-statutory engagement and formal consultation carried out pursuant to Section 42 of the Planning Act 2008.
11. During formal (Section 42) consultation, Natural England provided comments on the Preliminary Environmental Information Report (**PEIR**) by way of a letter dated 8th July 2014 and on a separate consultation (also conducted under Section 42) regarding changes in project design by email on the 23rd of July 2015 (the **Consultation Responses**).
12. Further to the statutory Section 42 consultation, several meetings were held with Natural England through the Evidence Plan process. Further detail on the Evidence Plan can be found in the relevant Appendices of the Environmental Statement chapter for each of the topics within this SoCG (namely Appendix 7.1 (document 6.3.7 (1)), Appendix 10.1 (document 6.3.10 (1)), Appendix 11.1 (document 6.3.11 (1)), Appendix 12.1 (document 6.3.12 (1)), Appendix 13.1 (document 6.3.13 (1)), and Appendix 23.3 (document 6.3.23 (3)),

1.3.2 Post-Application

13. Natural England made a relevant representation to the Planning Inspectorate on 23rd March 2016 (the **Relevant Representation**). Following a meeting on 24th March and 8th June 2016 and subsequent communication with Natural England (attached at Appendix 2), agreement was reached on certain matters previously raised by Natural England
14. In the Rule 17 request for further information of the 28th October 2016, the Examining Authority requested that this SoCG be updated to reflect the submission of additional information with regard to the Southern North Sea possible Special Area of Conservation and further discussions on offshore ornithology. Amendments have been made in Tables 4 and 5, below.

2 Agreement Log

15. Within the sections and table below the different topics for areas of agreement between Natural England and EATL are set out. []

2.1 Marine Geology, Oceanography and Physical Processes

16. The Project has the potential to impact upon Marine geology, oceanography and physical processes. Chapter 7 of the East Anglia THREE Environmental Statement (ES), Application document 6.1.7, provides an assessment of the significance of these impacts. Table 1 below provides areas of common ground that have been reached regarding the findings reported within that chapter.
17. Marine geology, oceanography and physical processes were discussed at an Evidence Plan meeting hosted by EATL on the 13th September 2013. Representatives of Natural England and the MMO were both present. A method statement detailing EATL's proposed approach to the assessment was produced prior to the meeting. This was subsequently revised based on discussions had during the meeting and was then circulated and agreed by all parties involved.
18. A second meeting was held to discuss the PEIR on 3rd July 2014. Natural England, the MMO and Cefas (as statutory advisor to the MMO) were present. The discussion formed the basis of the Section 42 PEIR consultation response provide by Natural England which were in turn was used to update the impacts assessment for the ES (as recorded in *Table 7.1*, document reference 6.1.7 of the East Anglia THREE DCO Application, of Chapter 7 of the ES).

Table 1. SoCG – Marine Geology, Oceanography and Physical Processes

Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
Environmental Impact Assessment			
Existing Environment	Sufficient survey data (extent/duration) has been collected to undertake the assessment	Agreed through the Evidence Plan	It is agreed by both parties that sufficient survey data have been collected to undertake the assessment.
Assessment Methodology	The list of potential physical process effects assessed, as proposed in the Evidence Plan method statement provided October 2013 is appropriate.	Agreed through the Evidence Plan	It is agreed by both parties that the list of potential impacts assessed in Chapter 7 of the ES is appropriate to the project.
	<p>The impact assessment methodologies used (as proposed in the Evidence Plan method statement provided October 2013) for the EIA provide an appropriate approach to assessing potential impacts of the project. This includes:</p> <ol style="list-style-type: none"> 1. An assessment based on expert judgement using knowledge of sites and available contextual information (in particular Zone and East Anglia ONE studies and modelling); therefore no new modelling (e.g. sediment plumes or deposition) was undertaken. 2. The definitions used of sensitivity and magnitude in the impact assessment are appropriate. 3. The approach to screening in plans and projects for consideration the cumulative impact assessment, and the resulting lists of plans and projects for each receptor. 	Agreed through the Evidence Plan	It is agreed by both parties that the impact assessment methodologies used in the EIA are appropriate.
	The worst case scenario presented in the ES, is appropriate for the project.	Agreed	It is agreed by both parties that the worst case scenario presented in the ES is appropriate for this project.

Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
Assessment conclusions	The ES adequately characterises the baseline environment in terms of Marine Geology, Oceanography and Physical Processes (The baseline which was presented in the PEIR is unchanged in the ES).	Agreed	It is agreed by both parties that the ES adequately characterises the baseline environment.
	The assessment of effects for construction, operation and decommissioning presented is appropriate and, assuming the inclusion of the embedded mitigation described, impacts on Marine Geology, Oceanography and Physical Process are likely to be non-significant in EIA terms.	Agreed	It is agreed by both parties that the impacts presented for construction, operation and decommissioning are appropriate and are likely to be non-significant in EIA terms.
	The changes to physical processes in relation to impacts of the proposed project on the eroding and sensitive East Anglia coastline have been considered and are non-significant in EIA terms.	Agreed	It is agreed by both parties that changes to physical processes in relation to impacts of the proposed project on the eroding and sensitive East Anglia coastline have been considered and are non-significant in EIA terms.
	The assessment of cumulative effects is appropriate and, assuming the inclusion of the embedded mitigation described, cumulative impacts on Marine Geology, Oceanography and Physical Process are likely to be non-significant in EIA terms.	Agreed	It is agreed by both parties that the cumulative impacts presented are appropriate and are likely to be non-significant in EIA terms.
Habitats Regulations Assessment			
Assessment	The assessment of effects upon designated sites is appropriate and there are no effects which require consideration in HRA.	Agreed	It is agreed by both parties that the assessment of effects upon designated sites is appropriate and that there are no effects which require consideration in HRA.
Mitigation			
	Given the impacts of the project, the conditions provided within the draft DML (and supporting	Agreed	It is agreed by both parties that the conditions provided within the draft

Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
	certified documents) for the management and monitoring of sediment dynamics, waste and debris are considered appropriate and adequate.		DML (and supporting certified documents) for the management and monitoring of sediment dynamics, waste and debris are considered appropriate and adequate.

2.2 Benthic Ecology

19. The Project has the potential to impact upon benthic ecology. Chapter 10 of the ES (Application document 6.1.10) provides an assessment of the significance of these impacts. Table 2 below provides areas of common ground that have been reached regarding the findings reported within that chapter.
20. Benthic Ecology was discussed at an Evidence Plan meeting on the 10th September 2013. A method statement for the assessment was produced which was revised based on that discussion, circulated and agreed. Natural England and Cefas were present at the 10th September meeting.
21. A second meeting was held to discuss the PEIR on 3rd July 2014. Natural England, the MMO and Cefas were present. The discussion formed the basis of the Section 42 PEIR consultation responses which were in turn used to update the assessment for the ES (as recorded in *Table 10.1* of the Chapter 10 of the ES).

Table 2. SoCG – Benthic Ecology

Issue on which EATL seek agreement	EATLs Position	Natural England’s Position	Final Position
Environmental Impact Assessment			
Existing Environment	Sufficient survey data (extent/duration) has been collected to undertake the assessment.	Agreed through the Evidence Plan	It is agreed by both parties that sufficient survey data have been collected to undertake the assessment.
	The ES adequately characterises the baseline environment in terms of the Benthic Ecology	Agreed	It is agreed by both parties that the ES adequately characterises the baseline environment in terms of the Benthic Ecology.
Assessment Methodology	The list of potential impacts to be assessed, as proposed in the Evidence Plan method statement is appropriate.	Agreed through the Evidence Plan	It is agreed by both parties that the list of potential impacts assessed in Chapter 7 of the ES are appropriate to the project.
	<p>The impact methodologies used provide an appropriate approach to assessing potential impacts of the proposed project on the Benthic Environment.</p> <p>This includes:</p> <p>Assessments which utilise the Marine Geology, Oceanography and Physical Process assessment which is based on expert judgement</p> <p>The definitions of sensitivity and magnitude used in the impact assessment.</p>	Agreed through the Evidence Plan	It is agreed by both parties that the impact assessment methodologies used in the EIA are appropriate.
	The approach to cumulative impact assessment for each receptor is appropriate and, assuming the inclusion of the embedded mitigation described, cumulative impacts on the Benthic Environment are likely to be non-significant in EIA terms	Agreed through the Evidence Plan	It is agreed by both parties that the cumulative impact assessment methodologies used in the EIA are appropriate.
	Detailed assessment of biogenic reef (<i>Sabellaria</i> or <i>Mytilus</i>) is a matter for pre-construction survey and	Agreed through the Evidence Plan	It is agreed by both parties that detailed assessment of biogenic

Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
	final routeing.		reef (<i>Sabellaria</i> or <i>Mytilus</i>) is a matter for pre-construction survey and final routeing.
	The worst case scenario presented in the ES is appropriate for this project.	Agreed	It is agreed by both parties that the worst case scenario presented in the ES is appropriate for this project.
Assessment conclusions	The assessment of impacts for construction, operation and decommissioning presented is appropriate and, assuming the inclusion of the embedded mitigation described, impacts on the Benthic Environment are likely to be non-significant in EIA terms.	Agreed	It is agreed by both parties that the assessment of impacts for construction, operation and decommissioning presented is appropriate and, assuming the inclusion of the embedded mitigation described, impacts on the Benthic Environment are likely to be non-significant in EIA terms.
	Assuming the inclusion of the embedded mitigation described in the ES, cumulative impacts on the Benthic Environment are likely to be non-significant in EIA terms.	Agreed	It is agreed by both parties that assuming the inclusion of the embedded mitigation described in the ES, cumulative impacts on the Benthic Environment are likely to be non-significant in EIA terms.
Habitats Regulations Assessment			
	It is agreed that the draft assessment of effects upon designated sites is appropriate and there are no effects which require consideration in HRA. All Special Areas of Conservation are screened out of the assessment with regard to Benthic Ecology.	Agreed.	It is agreed by both parties that the draft assessment of effects upon designated sites is appropriate and there are no effects which require consideration in HRA. All Special Areas of Conservation are screened out of the assessment with regard to Benthic Ecology.
Mitigation			
	It is agreed that given the impacts of the project, the conditions provided within the draft DML (and	Agreed.	It is agreed by both parties that given the impacts of the project, the

Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
	supporting certified documents) for the management and monitoring of impacts on the Benthic Environment are considered appropriate and adequate.		conditions provided within the draft DML (and supporting certified documents) for the management and monitoring of impacts on the Benthic Environment are considered appropriate and adequate.

2.3 Fish and Shellfish Ecology

22. The Project has the potential to impact upon fish and shellfish ecology. Chapter 11 of the ES, Application document 6.1.11, provides an assessment of the significance of these impacts. Table 3 below provides areas of common ground that have been reached regarding the findings reported within that chapter.
23. Fish and shellfish ecology was discussed at an Evidence Plan meeting on the 10th September 2013. A method statement for assessment was produced which was revised based on the discussion, circulated and agreed. Natural England and Cefas were present.
24. A second meeting was held to discuss the PEIR on 3rd July 2014. Natural England, the MMO and Cefas were present. The discussion formed the basis of the Section 42 PEIR consultation responses which were in turn used to update the assessment for the ES (as recorded in *Table 11.1* of the Chapter 11 of the ES).

Table 3. SoCG – Fish and Shellfish Ecology

Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
Environmental Impact Assessment			
Existing Environment	Sufficient survey data (extent/duration) has been collected to undertake the Assessment.	Agreed through the Evidence Plan	It is agreed by both parties that sufficient survey data have been collected to undertake the assessment.
	The ES adequately characterises the baseline environment in terms of Fish and Shellfish Ecology.	Agreed	It is agreed by both parties that the ES adequately characterises the baseline environment in terms of Fish and Shellfish Ecology.
Assessment methodology	It is agreed that the list of potential impacts to be assessed, as proposed in the Evidence Plan method statement, is appropriate.	Agreed through the Evidence Plan	It is agreed by both parties on list of potential impacts to be assessed.
	<p>It is agreed that the impact methodologies used provide an appropriate approach to assessing potential impacts of the proposed project on Fish and Shellfish Ecology.</p> <p>The definitions used of sensitivity and magnitude in the impact assessment are appropriate.</p> <p>The key species taken forward for assessment is appropriate.</p>	Agreed through the Evidence Plan	It is agreed by both parties that the impact methodologies used provide an appropriate approach to assessing potential impacts of the proposed project on Fish and Shellfish Ecology.
	The worst case scenario presented in the ES is appropriate for this project.	Agreed	It is agreed by both parties that the worst case scenario presented in the ES is appropriate for this project.
	The approach to screening in plans, projects and impacts for consideration in the cumulative impact assessment is appropriate.	Agreed through the Evidence Plan	It is agreed by both parties that the approach to screening in plans, projects and impacts for consideration in the cumulative impact assessment is appropriate.
	The approach to cumulative impact assessment for each receptor is appropriate.	Agreed through the Evidence Plan	It is agreed by both parties that the approach to cumulative impact assessment for each receptor is

Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
	Given the inclusion of the embedded mitigation described in the ES, cumulative impacts on Fish and Shellfish Ecology are likely to be non-significant in EIA terms.	Agreed	appropriate It is agreed by both parties that with the inclusion of the embedded mitigation described in the ES, cumulative impacts on Fish and Shellfish Ecology are likely to be non-significant in EIA terms.
Assessment conclusions	The assessment of impacts for construction, operation and decommissioning presented is appropriate and, assuming the inclusion of the embedded mitigation described, impacts on Fish and Shellfish Ecology are likely to be non-significant in EIA terms.	Agreed	It is agreed by both parties that the assessment of impacts for construction, operation and decommissioning presented is appropriate and, assuming the inclusion of the embedded mitigation described, impacts on Fish and Shellfish Ecology are likely to be non-significant in EIA terms.
Habitats Regulations Assessment			
	There are no HRA considerations for Fish and Shellfish Ecology (distance from designated sites and diffuse distribution of Annex 1 species) All Special Areas of Conservation are screened out of the assessment with regard to Fish and Shellfish Ecology	Agreed through the Evidence Plan	It is agreed by both parties that there is no HRA considerations for Fish and Shellfish Ecology due to the distance from designated sites and diffuse distribution of Annex 1 species.
Management measures			
	It is agreed that the given the impacts of the project, the conditions provided within the draft DML (and supporting certified documents) for the management and monitoring of impacts on Fish and Shellfish Ecology are considered appropriate and adequate.	Agreed	It is agreed by both parties that given the impacts of the project, the conditions provided within the draft DML (and supporting certified documents) for the management and monitoring of impacts on Fish and Shellfish Ecology are considered appropriate and adequate

2.4 Marine Mammals

25. The Project has the potential to impact upon Marine Mammals. Chapter 12 of the ES and the Report to Inform Habitats Regulations Assessment (document 5.4 of the DCO Application) provide an assessment of the significance of these impacts. Table 4 below provides areas of common ground that have been reached regarding the findings reported within that chapter and identifies areas where agreement is still to be reached.
26. Impacts on Marine Mammals were discussed at Evidence Plan meetings on 13th September and 15th November 2013 and the 2nd April 2014. A method statement for the assessment was produced which was revised based on the discussion at the first meeting, circulated and agreed by Natural England. These meetings allowed for the preparation of the PEIR.
27. A meeting was held to discuss the PEIR on 3rd July 2014. Natural England, the MMO and Cefas were present. The discussion formed the basis of the Section 42 PEIR consultation responses which were in turn used to update the assessment for the ES (as recorded in *Table 12.1* of the Chapter 12 of the ES).
28. A further meeting was held on 6th July 2015 to go over the previously agreed statements and to discuss the shadow Habitats Regulations Assessment report. A method statement was produced for this meeting specifically for the HRA. Further meetings were held on 24th March and 8th June 2016 post-submission of the application.
29. Following discussions undertaken during the Examination, the Examining Authority asked for the SoCG to be revised to reflect the conclusion of all outstanding marine mammal HRA issues.

Table 4. SoCG – Marine Mammals

Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
Environmental Impact Assessment			
Existing Environment	The site specific survey methods, duration and data analysis are sufficient to characterise the existing environment.	Agreed through the Evidence Plan	It is agreed by both parties that the site specific survey data collection and analysis are sufficient to characterise the existing environment.
	The ES adequately characterises the baseline (which is unchanged from the PEIR) environment in terms of Marine Mammals.	Agreed through the Evidence Plan	It is agreed by both parties that the baseline environment for marine mammals has been adequately characterised.
	The use of harbour porpoise and unidentified individuals represents a precautionary approach to calculating harbour porpoise density across the Project area.	Agreed through the Evidence Plan	It is agreed by both parties that the use of harbour porpoise and unidentified individuals represents a precautionary approach to calculating harbour porpoise density across the Project area.
	Suitable correction factors have been used to account for marine mammals below the surface during aerial surveys.	Agreed through the Evidence Plan	It is agreed by both parties that suitable correction factors have been used to account for marine mammals below the surface during aerial surveys.
Assessment methodology	Harbour porpoise, grey seal and harbour seal are the only species of marine mammal to be considered in the impact assessment	Agreed through the Evidence Plan	It is agreed by both parties that harbour porpoise, grey seal and harbour seal are the only species of marine mammal to be considered in the impact assessment
	The reference populations as defined in the ES (which are unchanged from the PEIR) are appropriate.	Agreed through the Evidence Plan	It is agreed by both parties that the reference populations as defined in the ES are appropriate.
	The definitions used in the ES (which are unchanged from the PEIR) of sensitivity and magnitude in the impact assessment are appropriate.	Agreed through the Evidence Plan	It is agreed by both parties that the definitions for sensitivity and magnitude used in the impact assessment are appropriate.
	The potential impacts considered in the assessment are appropriate.	Agreed through the Evidence Plan	It is agreed by both parties that the potential impacts considered in the assessment are appropriate
	The approach to assessment of impacts from pile driving noise for marine mammals follows current best practice and is therefore	Agreed through the Evidence Plan	It is agreed by both parties that the approach to assessment of impacts from pile driving noise is appropriate for this assessment.

Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
	appropriate for this assessment.		
	Underwater noise impacts from pile driving are the only impact where a quantified assessment can be made.	Agreed through the Evidence Plan	It is agreed by both parties that underwater noise impacts from pile driving are the only impact where a quantified assessment can be made.
	The approach to screening in plans and projects for consideration in the cumulative impact assessment, and the resulting lists of plans and projects for each receptor is appropriate.	Agreed through the Evidence Plan	It is agreed by both parties that the approach to screening in plans and projects for consideration in the cumulative impact assessment, and the resulting lists of plans and projects for each receptor is appropriate.
	The approach to cumulative impact assessment for each receptor is appropriate.	Agreed	It is agreed by both parties that the approach to cumulative impact assessment for each receptor is appropriate.
	The worst case scenario presented in the ES is appropriate for this project. This includes the worst case scenarios for both temporal and spatial underwater noise effects	Agreed	It is agreed by both parties that the worst case scenario presented in the ES is appropriate for this project.
Assessment Conclusions	The assessment of impacts for construction, operation and decommissioning presented is appropriate and, assuming the inclusion of the embedded mitigation described, impacts on Marine Mammals are likely to be non-significant in EIA terms for the project.	Agreed	It is agreed by both parties that the assessment of impacts for construction, operation and decommissioning presented is appropriate and, assuming the inclusion of the embedded mitigation described, impacts on Marine Mammals are likely to be non-significant in EIA terms for the project.
	The assessment of cumulative impacts for construction, operation and decommissioning presented is appropriate	Agreed	It is agreed by both parties that the assessment of cumulative impacts for construction, operation and decommissioning presented is appropriate
Habitats Regulations Assessment			
	There are no HRA considerations for species other than harbour porpoise, harbour seal and grey seal.	Agreed through the Evidence Plan	It is agreed by both parties that there are no HRA considerations for species other than harbour porpoise, harbour seal and grey seal.
	The list of sites screened in for assessment for each of the species harbour porpoise, harbour	Agreed through the Evidence Plan	It is agreed by both parties that the list of sites screened in for assessment for each of the

Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
	seal and grey seal is appropriate.		species harbour porpoise, harbour seal and grey seal is appropriate.
	The potential impacts considered in the draft assessment (which are unchanged for the DCO submission) are appropriate.	Agreed through the Evidence Plan	It is agreed by both parties that the potential impacts considered are appropriate.
	Based upon the full screening exercise there is no potential for likely significant effect LSE on any site designated for harbour seal	Agreed through the Evidence Plan	It is agreed by both parties that there is no potential for LSE on any site designated for harbour seal.
	Based upon the full screening exercise there is no potential for LSE on any site designated for grey seal	Agreed through the Evidence Plan	It is agreed by both parties that there is no potential for LSE on any site designated for grey seal.
	Based upon the full screening exercise there is no potential for LSE on any site currently designated for harbour porpoise	Agreed through the Evidence Plan	It is agreed by both parties that there is no potential for LSE on any site currently designated for harbour porpoise.
	No LSE could be concluded for all cSACs and SACs and therefore no Appropriate Assessment is required at the time of submission of the Application.	Agreed through the Evidence Plan	It is agreed by both parties that, at the time of submission, no LSE could be concluded for all cSAC and SAC and therefore no Appropriate Assessment is required.
	Due to the overlap with the Southern North Sea pSAC this site is screened in for further assessment (to allow robust assessment in a scenario where this site is taken forward).	Agreed through the Evidence Plan	It is agreed by both parties that the Southern North Sea pSAC should be screened in for further assessment.
	At the time of the submission of the Application there was insufficient information available to undertake a meaningful assessment of the pSAC.	Agreed through the Evidence Plan	It is agreed by both parties that at the time of the submission of the Application there was insufficient information available to undertake a meaningful assessment of the proposed pSACs.
	EATL has undertaken an assessment (provided as the Information for the Habitats Regulations Assessment: Marine Mammal Assessment Southern North Sea pSAC) based upon the draft conservation objectives available for the pSAC and worked with Natural England to refine this assessment in line with their latest advice.		It is agreed by both parties that the Information for the Habitats Regulations Assessment: Marine Mammal Assessment Southern North Sea pSAC is adequate and robust and that the conclusions are valid. It is agreed by both parties that condition 13(2) in the DMLs (schedules 10 to 13) secures

Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
	<p>EATL conclude that there is unlikely to be potential for Adverse Effect on Integrity (AEOI) of the pSAC for the project alone, and that for the in-combination effects some scenarios may have potential for AEOI</p> <p>EATL have produced an In-principle Site Integrity Plan (SIP) which, together with new condition 13(2) in the DMLs for the generation and transmission assets (schedules 10 to 13 of the draft DCO), secures mitigation to prevent AEOI.</p>		<p>mitigation to avoid AEOI and that the SIP also provides a framework to secure the development and implementation of specific mitigation measures (if required) to avoid AEOI..</p>
Management measures			
	<p>The assessment predicts impacts are expected to be low for both species of seal and harbour porpoise and that additional mitigation (beyond embedded mitigation) is not necessary. No additional mitigation is necessary for shipping noise No additional mitigation is necessary for other noise induced impacts</p>	<p>Agreed through the Evidence Plan</p>	<p>It is agreed by both parties that no additional mitigation is necessary for shipping noise and no additional mitigation is necessary for other noise inducing impacts.</p>
	<p>An application for the European Protected Species (EPS) licence will be submitted after the DCO is made, prior to the onset of construction, once more detailed design work has been carried out and is available to inform the licence application, and in consultation with the relevant Statutory Nature Conservation Agencies.</p>	<p>Agreed through the Evidence Plan</p> <p>Natural England is not currently aware of any impediments to the granting of an EPS licence.</p>	<p>It is agreed by both parties that the appropriate time to submit an application for the EPS licence will be following the making of the East Anglia THREE Order.</p>
	<p>It is agreed that the draft MMMP will be developed post consent in consultation with the Natural England.</p>	<p>Natural England welcomes the commitment from the Applicant to produce a MMMP and looks forward to working with the Applicant to further develop the draft MMMP that was submitted with the application.</p>	<p>It is agreed by both parties that the draft MMMP will be developed post consent in consultation with Natural England to reflect the most update advice on appropriate mitigation measures.</p>

2.5 Offshore Ornithology

30. The Project has the potential to impact upon Offshore Ornithology. Chapter 13 of the ES, Application document 6.1.13, provides an assessment of the significance of these impacts. Table 5 below provides areas of common ground that have been reached regarding the findings reported within that chapter and identifies areas where agreement is still to be reached.
31. This topic was discussed at Evidence Plan meetings on 30th September and 11th November 2013, 28th March and 2nd July 2014 and 3rd June and 6th July 2015 and at a Project Steering Group meeting on the 4th August 2015. Further meetings were held on 24th March and 8th June 2016.
32. Following discussions undertaken during the Examination, the Examining Authority asked for the SoCG to be revised to reflect the conclusion of all outstanding ornithological issues.

Table 5. SoCG – Offshore Ornithology

ID	Issue on which EATL seek agreement	EATLs Position	Natural England’s Position	Final Position
Data Collection and Description of Baseline Environment				
1ai	The ES (which is unchanged from the PEIR) adequately characterises the baseline relevant to offshore ornithology.	24 months of offshore digital aerial survey data collected for the ‘Site’ and a 4km buffer. Used to characterise bird distributions and estimate populations. This is sufficient for the assessment.	Agreed through the Evidence Plan	It is agreed by both parties that the ES adequately characterises the baseline relevant to offshore ornithology.
1aii		No additional surveys have been conducted of the offshore cable route. It is sufficient to rely on the information provided for the EA ONE application (now consented) and NE’s latest population data on Red-throated Diver in the Outer Thames Estuary SPA.	Agreed through the Evidence Plan	
1bi	The methods and techniques used to analyse offshore ornithological data are appropriate for characterising bird distributions and estimating populations.	Using design based methods to estimate population sizes for the Site and relevant buffers is appropriate.	Agreed through the Evidence Plan	It is agreed by both parties that the methods and techniques used to analyse offshore ornithological data are appropriate for characterising bird distributions and estimating populations.
1bii		The method used to correct for non-detection of diving auks (the ‘correction factor’ or ‘availability bias’) following that recommended by JNCC (referred to as Method C, based on estimates that 24% of guillemot and 17% razorbill may be underwater when an aerial image is captured) is appropriate.	Agreed on receipt of final application	
1biii		The method used to determine flight heights is appropriate.	Agreed through the Evidence Plan	
1biv		The method used to proportion unidentified birds is appropriate.	Agreed through the Evidence Plan	

ID	Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
Impact Assessment Methodology				
2a	The impact assessment methodology – specifically the definitions of sensitivity and magnitude and the use of the impact matrix approach - is adequate and appropriate.	The impact assessment method described in Section 13.4.3 of the ES is appropriate.	Agreed through the Evidence Plan	Agreed by both parties.
2b	The potential impacts assessed during construction, operation and decommissioning are appropriate.	The potential impacts set out in Section 13.6 of the ES are the appropriate ones to be assessed.	Agreed through the Evidence Plan	Agreed by both parties.
2c	Cumulative assessments will include sites operational and built, under construction, consented and submitted for application in tiers 1 to 4.	Approach provided in Section 13.4.5 of the ES is appropriate.	Agreed. NE would advise that future plans or projects should be included where information is available	Final list agreed by both parties.
2d	The use of Furness (2015) BDMPS seasons utilised for the assessment is appropriate.	The biological periods used in the EIA are appropriate.	Agreed through the Evidence Plan	Agreed by both parties.
2e	Collision risk modelling results will be presented for each species using Band Model Options for which species specific avoidance rates have been accepted by the SNCBs.	Band model Option 1 and 2 – all species, Band Model Option 3 – herring gull, lesser black-backed gull and great black-backed gull only, using SNCB guidance on avoidance rates used and presentation of ranges due to avoidance rate and flight height uncertainty.	Agreed through the Evidence Plan	Agreed by both parties.
2f	The offshore ornithology assessment is unaffected by potential phasing of construction (1 or 2).	Differences between Single and Two phased approaches to construction are trivial in terms of ornithology impacts.	Agreed through the Evidence Plan	Agreed by both parties.
2g	Seabirds present in very low numbers whilst on migration will be assessed using the approach used in the Marine Scotland assessment (WWT and MacArthur Green 2014).	This approach is considered the most appropriate for migratory seabirds.	Agreed through the Evidence Plan	Agreed by both parties.

ID	Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
2h	Terrestrial migrant collision risk to be assessed using Migropath methods.	The results presented in Appendix 13.1, which predict very small risks for all species are accurate and appropriate.	Agreed on receipt of final application	Agreed by both parties.
2i	Red-throated diver displacement method based on monitoring data at existing offshore windfarms.	Evidence based method used in preference to generic displacement matrix. Presented in ES	Assessment of displacement impacts should be considered using generic displacement matrix as there is no East Anglia zone specific evidence	Both methods shown in assessment
2j	Displacement methods (except for red-throated diver, see 2i) are based on standard displacement matrix. Assessments are presented for relevant biological seasons and against agreed BDMPS. Seasonal estimates to be summed using suitable method and assessed against biogeographic populations.	These methods are appropriate.	NE considers the assessment should be summed across the whole annual cycle and include breeding season impacts from other projects..	NE is satisfied that using its preferred method (including summing seasonal displacement totals) for assessing guillemot, razorbill and puffin displacement, no significant impacts were found for both the project alone and cumulatively. Agreed by both parties
EIA				
3a	The screening matrix adequately identifies those species at risk of disturbance and displacement during construction - red-throated diver (for offshore cable corridor only), guillemot, razorbill and puffin.	Information provided in Section 13.7.1.1 of the ES correctly identifies those species at risk of disturbance and displacement.	Agreed through the Evidence Plan	Agreed by both parties.
3b	During construction, displacement impacts due to the project alone on the species identified are not significant under the EIA regulations (i.e. minor adverse or lower).	Section 13.7.1.1 of the ES correctly identifies the significance of the impacts of displacement during construction.	Agreed following discussion on 8 th June 2016	Agreed by both parties.

ID	Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
3c	The screening matrix adequately identifies those species at risk of disturbance and displacement during operation – gannet, guillemot, razorbill and puffin. Recognising that there may be future requirements to monitor vessel requirements once port has been identified	Information provided in Section 13.7.2.1 of the ES adequately identifies those species at risk of disturbance and displacement during operation	Agreed on receipt of final application	Agreed by both parties.
3d	During operation, displacement impacts due to the project alone on the species identified are not significant under the EIA regulations (i.e. minor adverse or lower).	Information provided in Section 13.7.2.1 of the ES correctly identifies the significance of the impacts of displacement during operation.	NE disagree with method used for summing seasonal displacement impacts, however using either approach (that preferred by NE or that used by EATL) the project alone impacts are not significant in EIA terms.	Agreed by both parties.
3e	During construction and operation, indirect impacts on habitats and prey due to the project alone are not significant under the EIA regulations (i.e. minor adverse or lower).	Information provided in Section 13.7.1.2 and 13.7.2.2 of the ES correctly identifies that the indirect impacts on habitats and prey due to the project alone are not significant.	Agreed on receipt of final application	Agreed by both parties.
3f	Collision risk impacts have been assessed for fulmar, gannet, kittiwake, lesser black backed gull, herring gull and great black backed gull. When considering the project alone, collision risk impacts are not significant under the EIA regulations (i.e. minor adverse or lower).	Information provided in Section 13.7.2.3 of the ES correctly identifies that collision risk impacts are not significant under the EIA regulations.	Agreed on receipt of final application	Agreed by both parties.

ID	Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
3g	The impact significance of the barrier effect due to the project alone for all species assessed is negligible.	Information provided in Section 13.7.2.4 of the ES correctly identifies that impact significance of the barrier effect due to the project alone for all species assessed is negligible.	Agreed on receipt of final application	Agreed by both parties.
3h	No impacts predicted for migrating great skua, Arctic skua, common tern and Arctic tern due to the project alone. No further consideration required for this project.	Information provided in Section 13.7.2.3 should state negligible impacts for these species.	NE agrees that predicted impacts are negligible.	Agreed by both parties..
3i	The impacts on migrating waders and wildfowl, and marsh harrier due to the project alone, are not significant under the EIA regulations (i.e. minor adverse or lower).	Information provided in Section 13.7.2.3 of the ES demonstrates that these impacts will be non-significant.	Agreed on receipt of final application	Agreed by both parties.
3j	No significant impacts are predicted for decommissioning due to the project alone.	Information provided in Section 13.7.3 of the ES demonstrates that no significant impacts should be expected during decommissioning due to the project alone.	Agreed on receipt of final application	Agreed by both parties.
Cumulative Assessment				
4a	The screening matrix adequately identifies potential cumulative impacts of the proposed project (disturbance and displacement: red-throated diver, gannet, guillemot, razorbill and puffin) and collision risk (gannet, kittiwake, herring gull, lesser black-backed gull and great black-backed gull).	Information provided in Sections 13.8.1 of the ES adequately identifies potential cumulative impacts of the proposed project.	Agreed on receipt of final application	Agreed by both parties.
4b	The list of windfarms included in the assessment is complete and the correct tiers have been assigned.	Information provided in Sections 13.8.1.1 of the ES is correct and adequate for the project.	Agreed on receipt of final application	Agreed by both parties.

ID	Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
4c	Cumulative displacement impacts are of minor significance at most.	Information provided in Sections 13.8.1.4 of the ES correctly assesses the significance of cumulative displacement impacts.	Not agreed for guillemot, razorbill and puffin. EATL need to provide revised matrices that include all the relevant information (see Written Representations)	<p>Revised matrices provided by EATL.</p> <p>NE is satisfied that using its preferred method (including summing seasonal displacement totals) for assessing guillemot, razorbill and puffin displacement, no significant impacts were found for both the project alone and cumulatively.</p> <p>Agreed by both parties</p>
4d	Cumulative collision impacts for gannet are of minor significance at most.	Information provided in Sections 13.8.1.5 of the ES correctly assesses the significance of cumulative collision impacts.	NE's position is whilst the impacts may not be significant an up to date PVA modelling is required.	<p>NE advises that there is no Adverse Effect on Integrity (AEoI) and no significant effect (EIA) for the project alone. However, it is not possible to rule out significant effects to gannet when considered cumulatively, but NE agrees that due to the revised East Anglia THREE design (i.e. increase in draught height) and the reduction of the contribution to the cumulative total from East Anglia ONE (due to the adoption of the smaller HVAC wind farm), the total cumulative impact is now smaller than the consented position as of the Hornsea 2 consent.</p> <p>Given the above NE has no further concerns.</p>

ID	Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
4e	Cumulative collision impacts for kittiwake are of minor significance at most	Information provided in Sections 13.8.1.5 of the ES correctly assesses the significance of cumulative collision impacts.	NE consider there to be a significant cumulative impact. However, while the contribution of East Anglia THREE to the total is not <i>de minimis</i> , it is so small as to not materially alter the significance of the overall cumulative mortality figure.	The updated cumulative totals including East Anglia THREE are not materially different from the most recently consented totals for Hornsea Project 2, therefore NE has no further concerns Agreed by both parties
4f	Cumulative collision impacts for great black-backed gull are of minor significance at most	Information provided in Sections 13.8.1.5 of the ES correctly assesses the significance of cumulative collision impacts.	NE considers that there is potentially a significant cumulative impact, and further (PVA) modelling is required to assess	NE welcomes the Applicant providing PVA modelling to address outstanding matter on greater black-backed gulls The updated cumulative totals including East Anglia THREE are not materially different from the most recently consented totals for Hornsea Project 2, therefore NE has no further concerns Agreed by both parties
4g	Cumulative collision impacts for herring gull are of minor significance at most	Information provided in Sections 13.8.1.5 of the ES correctly assesses the significance of cumulative collision impacts.	Agreed on receipt of final application	Agreed by both parties.
4h	Cumulative collision impacts for lesser black-backed gull are of minor significance at most	Information provided in Sections 13.8.1.5 of the ES correctly assesses the significance of cumulative collision impacts.	Agreed on receipt of final application	Agreed by both parties.
HRA Screening				
5a	The screening report includes all potentially relevant European sites.		Agreed through the Evidence Plan	Agreed by both parties.

ID	Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
5b	SPA features identified in the updated screening report are the only ones for which HRA will be required: <ul style="list-style-type: none"> • Deben Estuary SPA (dark-bellied brent goose); • Outer Thames Estuary SPA (red-throated diver); • Alde-Ore Estuary SPA (lesser black-backed gull); • Flamborough and Filey Coast pSPA (gannet, kittiwake). 		Agreed through the Evidence Plan	Agreed by both parties.
HRA Assessment.				
6a	The project alone and in-combination has no adverse effects on the integrity of the Deben Estuary SPA.	The results presented in the HRA are appropriate for the Deben Estuary SPA.	Agreed on receipt of final application, on the basis that winter working restrictions will be secured through the DCO	Agreed by both parties.
6b	The project alone and in-combination has no adverse effects on the integrity of the Alde-Ore Estuary SPA and Ramsar.	The results presented in the HRA are appropriate for the Alde-Ore Estuary SPA and Ramsar.	Agreed on receipt of final application	Agreed by both parties
6c	The project alone and in combination has no adverse effects on the integrity of the Outer Thames Estuary SPA.	The results presented in the HRA are appropriate for the Outer Thames Estuary SPA.	Agreed on receipt of final application although NE notes that this is based on the adoption of best practice vessel operations to minimise disturbance to red-throated diver.	Agreed by both parties,
6d	For all species the project alone has no adverse effects on the integrity of the Flamborough Head and Filey Coast pSPA.	The results presented in the HRA are appropriate for the Flamborough Head and Filey Coast pSPA.	Agreed following discussions on 8 th June 2016	Agreed by both parties

ID	Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
6e	The project in combination has no adverse effects on the integrity of the Flamborough Head and Filey Coast pSPA with respect to gannet	The results presented in the HRA are appropriate for the Flamborough Head and Filey Coast pSPA.	Adverse Effect On Integrity (AEoI) for gannet due to in-combination collision mortality uncertain as SOSS PVA model is out of date and ideally an up to date PVA for gannet should be produced	<p>NE advises that there is no Adverse Effect on Integrity (AEoI) and no significant effect (EIA) for the project alone. However, it is not possible to rule out significant effects to gannet when considered cumulatively, but NE agrees that due to the revised East Anglia THREE design (i.e. increase in draught height) and the reduction of the contribution to the cumulative total from East Anglia ONE (due to the adoption of the smaller HVAC wind farm), the total cumulative impact is now smaller than the consented position as of the Hornsea 2 consent.</p> <p>Given the above NE has no further concerns.</p>
6f	The project in combination has no adverse effects on the integrity of the Flamborough Head and Filey Coast pSPA with respect to kittiwake	The results presented in the HRA are appropriate for the Flamborough Head and Filey Coast pSPA.	An adverse effect on kittiwake due to in-combination collision mortality cannot be ruled out. However, the EA3 contribution while not de minimis is so small as to not materially alter the significance or the likelihood of an adverse effect on the integrity of the SPA.	It is agreed by both parties that, the EA3 contribution while not de minimis is so small as to not materially alter the significance or the likelihood of an adverse effect on the integrity of the SPA.

ID	Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
Management measures				
7a	Given the impacts of the project in terms of offshore ornithology, the conditions provided within the deemed marine licence are considered appropriate and adequate.	The conditions provided within the draft deemed marine licence are considered appropriate and adequate.	Not agreed	Agreed
7b	Turbine draught height	<p>EATL has committed to increasing the draught height of 70% of the East Anglia THREE turbines to 24m from MHWS. This will be secured by a new parameter in the Requirements of the DCO as well as in the DMLs for the generation (schedules 10 and 11 of the DCO) as set out below:</p> <p><i>The number of turbines with a draught height of less than 24m from MHWS comprised in the authorised scheme and the authorised scheme in licence 2 (generation) taken together must not exceed 52 turbines</i></p>	Natural England welcomes the proposal to increase the draught height to 24m across 70% of the East Anglia THREE turbines. We accept the principle that raising the draught height will result in a reduction in collision risk.	It is agreed by both parties that the proposed parameter secures the increase in the draught height to 24m across 70% of the total number of East Anglia THREE turbines.

2.6 Terrestrial Ecology

33. The Project has the potential to impact upon Terrestrial Ecology. Chapter 23 of the Provides an assessment of the significance of these impacts. Table 6 below provides areas of common ground that have been reached regarding the findings reported within that chapter and identifies areas where agreement is still to be reached.
34. This topic was discussed at an Evidence Plan meeting on the 5th December 2013. A method statement for the assessment was produced which was revised based on the discussion, circulated and agreed. Natural England and Suffolk County Council (SCC) were present.
35. No further topic specific meetings were held.

Table 6. SoCG – Terrestrial Ecology

Issue on which EATL seek agreement	EATLs Position	Natural England’s Position	Final Position
Environmental Impact Assessment			
Existing Environment	Survey data collected by [East Anglia Offshore Wind (EAOW) for characterisation of the onshore ecology for East Anglia ONE are suitable for the East Anglia THREE assessment (see ETG background paper Appendix 2)	Agreed through the Evidence Plan	It is agreed by both parties that survey data collected by EAOW for characterisation of the onshore ecology are suitable for the assessment
	Further information to supplement data particularly for the new access locations was obtained in 2014. These data are suitable for the East Anglia THREE assessment	Agreed	It is agreed by both parties that further information to supplement data particularly for the new access locations was obtained in 2014. It is agreed by both parties that these data are suitable for the East Anglia THREE assessment
	Data were further updated with the use of Biological Records data	Agreed	
	It is agreed that the ES adequately characterises the baseline environment in terms of Terrestrial Ecology.	Agreed	It is agreed by both parties that the ES adequately characterises the baseline environment in terms of Terrestrial Ecology.
Assessment methodology	The methodology for the EIA is appropriate	Agreed	It is agreed by both parties that the methodology for the EIA is appropriate
	The Terminology used in the EIA is appropriate	Agreed	It is agreed by both parties that the terminology used in the EIA is appropriate
	List of potential impacts considered in the EIA is appropriate	Agreed	It is agreed by both parties that the list of potential impacts considered in the EIA is appropriate
	It is appropriate that the impact assessment considers embedded mitigation as the starting point and East Anglia ONE mitigation is the basis East Anglia THREE	Agreed	It is agreed by both parties that it is appropriate that the impact assessment considers embedded mitigation as the starting point and East Anglia ONE mitigation is the basis for East Anglia THREE
	The worst case scenario presented in the	Agreed	It is agreed by both parties that the worst

Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
	ES is appropriate for this project.		case scenario presented in the ES is appropriate for this project.
	The assessment of impacts for construction, operation and decommissioning presented is appropriate and, assuming the inclusion of the embedded mitigation described, impacts on Terrestrial Ecology are likely to be non-significant in EIA terms for the project.	Agreed	It is agreed by both parties that the assessment of impacts for construction, operation and decommissioning presented is appropriate and, assuming the inclusion of the embedded mitigation described, impacts on Terrestrial Ecology are likely to be non-significant in EIA terms for the project.
	The assessment of cumulative impacts for construction, operation and decommissioning presented is appropriate.	Agreed	It is agreed by both parties that the assessment of cumulative impacts for construction, operation and decommissioning presented is appropriate.
Habitats Regulations Assessment			
	<p>There are no HRA considerations for Terrestrial Ecology.</p> <p>All Special Areas of Conservation are screened out of the assessment with regard to on Terrestrial Ecology.</p>	Agreed	It is agreed by both parties that there are no HRA considerations for Terrestrial Ecology.
Management measures			
	All mitigation measures required are outlined within the Outline Construction Code of Practice and the Outline Landscape and Ecological Management Strategy.	Agreed	It is agreed by both parties that all mitigation measures required are outlined within the Outline Construction Code of Practice and the Outline Landscape and Ecological Management Strategy

2.7 Onshore Ornithology

36. The Project has the potential to impact upon Onshore Ornithology. Chapter 24 of the ES, Application document 6.1.24, provides an assessment of the significance of these impacts. Table 7 below provides areas of common ground that have been reached regarding the findings reported within that chapter.
37. This topic was discussed at Evidence Plan meetings on 30th September and 11th November 2013, 28th March and 2nd July 2014 and 3rd June and 6th July 2015, and at a Project Steering Group meeting on the 4th August 2015.

Table 6. SoCG – Onshore Ornithology

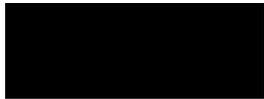
Issue on which EATL seek agreement	EATLs Position	Natural England’s Position	Final Position
Environmental Impact Assessment			
Existing Environment	Survey data collected by EAOW for characterisation of the onshore ecology for East Anglia ONE are suitable for the East Anglia THREE assessment.	Agreed through the Evidence Plan	It is agreed by both parties that the site specific survey data collection and analysis are sufficient to characterise the existing environment.
	Further information to supplement data particularly for the new access locations was obtained in 2014. These data are suitable for the East Anglia THREE assessment.	Agreed	It is agreed by both parties that the site specific survey data collection and analysis are sufficient to characterise the existing environment.
	The ES adequately characterises the baseline environment in terms of Onshore Ornithology (terrestrial and intertidal).	Agreed	It is agreed by both parties that the assessment provided in the ES is sufficient to characterise the existing environment.
Assessment methodology	The list of potential impacts assessed, in the chapter is appropriate.	Agreed through the Evidence Plan	It is agreed by both parties that the list of impacts assessed is appropriate.
	<p>The impact assessment methodologies used provide an appropriate approach to assessing potential impacts of the proposed project.</p> <p>This includes:</p> <p>The definitions used of sensitivity and magnitude in the impact assessment are appropriate.</p> <p>The approach to screening in plans and projects for consideration in the cumulative impact assessment, and the resulting lists of plans and projects for each receptor.</p>	Agreed	It is agreed by both parties that the impact assessment methodologies used provide an appropriate approach to assessing potential impacts of the proposed project.

Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
	The worst case scenario presented in the assessment is appropriate for this project.	Agreed	It is agreed by both parties that the worst case scenario presented in the assessment is appropriate for this project.
	The assessment of effects for construction, operation and decommissioning presented is appropriate and, assuming the inclusion of the embedded mitigation described, impacts on Onshore Ornithology are likely to be non-significant in EIA terms.	Agreed	It is agreed by both parties that the assessment of effects for construction, operation and decommissioning presented is appropriate and, assuming the inclusion of the embedded mitigation described, impacts on Onshore Ornithology are likely to be non-significant in EIA terms.
	The assessment of cumulative effects is appropriate and, assuming the inclusion of the embedded mitigation described, cumulative impacts on Onshore Ornithology are likely to be non-significant in EIA terms.	Agreed	It is agreed by both parties that the assessment of cumulative effects is appropriate and, assuming the inclusion of the embedded mitigation described, cumulative impacts on Onshore Ornithology are likely to be non-significant in EIA terms.
Habitats Regulations Assessment			
	The screening method for identifying potential impacts on interest features of European designated sites is adequate and appropriate.	Agreed	It is agreed by both parties that the screening method for identifying potential impacts on interest features of European designated sites is adequate and appropriate.
	The assessment of effects presented in the Report to Inform the Habitats Regulations Assessment on the interest features of designated sites identified through the screening process is appropriate.	Agreed	It is agreed by both parties that the assessment of effects presented in the Report to Inform the Habitats Regulations Assessment on the interest features of designated sites identified through the screening process is appropriate.
	The conclusion of the HRA is correct: there	Agreed	It is agreed by both parties that the

Issue on which EATL seek agreement	EATLs Position	Natural England’s Position	Final Position
	will be no adverse effects on the integrity of European designated sites due to the project alone and in-combination with other plans and projects.		conclusion of the HRA is correct: there will be no adverse effects on the integrity of European designated sites due to the project alone and in-combination with other plans and projects.
Management Measures			
	<p>Adequate mitigation can be secured for Schedule 1 breeding birds and waterbirds (including brent goose) of the Deben Estuary SSSI, Ramsar and SPA through the implementation of the proposals in the Outline Landscape and Ecological Management Strategy (OLEMS). This will be secured via the DCO.</p> <p>Requirement 21 of the draft DCO will be amended to include a signpost to this particular element of the OLEMS</p>	Restriction agreed through the Evidence Plan	It is agreed by both parties that the OLEMS provide adequate mitigation for Schedule 1 breeding birds and waterbirds of the Deben Estuary. The draft DCO will be amended to secure this restriction.
	<p>With regard to brent geese the following restriction is proposed:</p> <p>During periods of construction works, from the 1st November to 28/29th February the only activities to be undertaken at the east side of the Deben Estuary (i.e. between Ferry Road and the Deben Estuary) would be:</p> <ul style="list-style-type: none"> • Walk-over site investigation or survey works; or • Any inspections required to assess the integrity, safety and security of [EATL] assets; or • Any response required for the purposes of 	Agreed through the Evidence Plan	It is agreed by both parties that the proposed mitigation measures for limiting impacts to wintering birds are suitable for the project.

Issue on which EATL seek agreement	EATLs Position	Natural England's Position	Final Position
	<p>ensuring the health, safety and security of employees, contractors and the general public, unless otherwise agreed with Natural England.</p> <p>Access by vehicle would be from either Access B or Access C (but not from both simultaneously to ensure that any disturbance is localised).</p> <p>For the same period, during times of severe weather (prolonged cold conditions), access will only be taken for the purposes of health, safety and security unless otherwise agreed with Natural England. The definition of 'severe weather' will be the same as that used to implement the Statutory Suspension of Wildfowl Shooting in Severe Winter Weather measure under the Wildlife and Countryside Act. The severe weather condition will come into force at 00h01 following the day when the relevant Secretary of State signs the necessary Statutory Instrument to bring the requirement into force. The suspension will end after a maximum period of 14 days unless otherwise extended by the Secretary of State through the signing of a further Statutory Instrument. After the end of the shooting season and up until the end of February, the same weather criteria shall apply, albeit without a signed order from the Secretary of State: EATL shall be responsible for monitoring local temperatures for this purpose.</p>		

Signing box: The undersigned agreed to the provisions within this SoCG – Natural England

Signed	
Printed Name	K. Louise Burton
Position	Marine Senior Adviser and Team Leader
On behalf of	Natural England
Date	6 th December 2016

Signing box: The undersigned agreed to the provisions within this SoCG – EATL

Signed	
Printed Name	Keith Morrison
Position	East Anglia THREE Senior Project Manager
On behalf of	East Anglia THREE Limited (EATL)
Date	6 th December 2016

Appendix 1 Glossary

AEOI	Adverse Effect On Integrity
cSAC	Candidate Special Area of Conservation
DCO	Development Consent Order
EA3	East Anglia THREE
EAOW	East Anglia Offshore Wind
EATL	East Anglia THREE Limited
EIA	Environmental Impact Assessment
EPS	European Protected Species
ES	Environmental Statement
HRA	Habitats Regulations Assessment
MMMP	Marine Mammal Mitigation Plan
NE	Natural England
OLEMS	Ecological Management Strategy
pSAC	Potential Special Area Conservation
PVA	Population Viability Analysis
REIS	Report on the Implications for European Sites
SAC	Special Area of Conservation
SCC	Suffolk County Council
SoCG	Statement of Common Ground
SOSS	Strategic Ornithological Support Services
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest

Appendix 2 Relevant Representation and EATL Response



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Winchester
SO23 7BT

FREEPOST RSTC-EJEY-RKRX
1 Atlantic Quay,
45 Robertson Street,
4th Floor,
Glasgow, G2 8JB

2016-05-31

Dear Alex,

Planning Act 2008

East Anglia THREE Limited

The Proposed East Anglia THREE Offshore Wind Farm Order

Relevant Representation reply letter (Appendix 1 of the SoCG)

East Anglia THREE Limited (EATL) would like to thank you for taking the time to provide a relevant representation to the development consent order application made by EATL for the East Anglia THREE offshore wind farm.

In this letter we provide a reply to all the comments you have made in your relevant representation. In order to do this in a clear and transparent manner this is in the form of a tabulated reply.

This letter will form Appendix 1 of the final Statement of Common Ground (SoCG). In addition to the comments below, where more detailed responses are required these have been attached in Annex 1.

Relevant Representation Comment	EATLs response
Natural England does not advocate the use of PBR modelling when PVA modelling is available. Natural England has previously considered PBR outputs for assessing population impacts in cases where up to date PVA models have not been available at an appropriate population scale. However, the use of PBR on its own, as the means of assessing population impacts on seabird populations presents a number of issues. Therefore, Natural England advises that wherever possible, the population-level impacts of predicted mortality from developments should be assessed using PVA models as these allow the effects of factors such as population trends and varying demographic parameters to be explicitly investigated in terms of their effect on the	We accept and broadly agree with Natural England's position with regards the relative merits of PBR and PVA, however we consider that PBR remains a useful preliminary tool to act as a filter for identifying the population impacts for which more detailed modelling (e.g. PVA) will be informative and those for which the relative scale of impact to population size is such that PVA is unwarranted.

Relevant Representation Comment	EATLs response
<p>population trajectory. PVA models also allow relative comparisons of population level effects with and without the additional mortality to be considered in a way that is not possible with PBR.</p>	
<p>Natural England does not agree with the Applicant's method of assessing displacement impacts. We advise that the Applicant assess the cumulative impact across the whole annual cycle, where seasonal impacts are summed. The cumulative total should then be assessed against the appropriate population scale</p>	<p>EATL consider that Natural England's approach of summing seasonal displacement generates overly precautionary predictions on top of the high level of precaution already inherent in the worst case scenarios of 70% displacement & 10% mortality advocated. Notwithstanding this, we present additional assessment (see Annex 1) using the methods adopted by NE in their written submission for deadline 6 of the Hornsea Project 2 examination on the basis that this approach will be accepted by NE.</p>
<p>Natural England welcomes the Applicant's approach to use Population Viability Analysis (PVA) modelling to assess EIA impacts on kittiwake. However, we advise further consideration of a number of issues. These include whether it is appropriate to rely on density dependent outputs, and identifying the appropriate population scale at which to assess impacts.</p>	<p>EATL welcomes Natural England's broad acceptance of the kittiwake population model, however we disagree with regards to Natural England's views on density dependence and the appropriate scale at which to model impacts. All populations are subject to limits on their growth due to competition for resources. Furthermore, contrary to Natural England's assertion that there is a lack of evidence in support of density dependence for this species there is strong evidence of compensatory density dependence which we summarise in Annex 1. There is also good evidence in support of modelling the North Sea population as a whole as has been presented in our response.</p>
<p>There appears to be little clear evidence to suggest compensatory density dependence is operating on the kittiwake population at a North Sea scale, therefore Natural England advise that the assessment should focus on outputs from the density independent models.</p>	<p>See above.</p>

Relevant Representation Comment	EATLs response
<p>Natural England advise that the Applicant further consider whether the kittiwake PVA model has been constructed at the appropriate population scale for assessing EIA impacts. We appreciate that the Applicant has carried out at a North Sea BDMPS scale assessment which is the scale that we initially accepted impacts should be measured against. However, further consideration is required as to whether it is biologically meaningful and therefore appropriate to construct a PVA model at this scale. Using the North Sea BDMPS is appropriate for HRA because impacts are apportioned back to individual SPA colonies, but for EIA if the North Sea BDMPS scale is used it does not consider a biologically discrete population.</p>	<p>See above.</p>
<p>The total cumulative effects on great black-backed gulls from collision mortality equates to 16.4% of baseline mortality for the largest BDMPS (non-breeding in Furness (2015)) and 6.38% of baseline mortality for the biogeographic population. Therefore, Natural England advises further consideration through population modelling. We note that the outputs of PBR modelling from Rampion are presented. However, Natural England advise the use of PVA modelling (see above).</p>	<p>EATL acknowledge this point regarding impacts on GBBG, however we question the requirement to undertake population modelling in this case. In Natural England's written submission for deadline 6 of the Hornsea Project 2 examination a method for assessing EIA level collision risk impacts which included GBBG was presented which concluded no significant cumulative effects. EATL have applied the same approach for the current assessment; with the inclusion of EA3 (see Annex 1).</p>
<p>Therefore, Natural England advises that the Applicant undertakes PVA modelling to assess EIA impacts on great black-backed gulls. We suggest using either a UK North Sea colony scale or UK colony scale population model and apportion the predicted project impacts back to the respective scale.</p>	<p>See above.</p>
<p>Natural England considers that the impacts from the project alone will not have an adverse effect on the integrity of Flamborough and Filey Coast pSPA. Natural England considers that the level of in-combination mortality, when considered with other plans and projects is such that an adverse effect on integrity of the Flamborough and Filey Coast pSPA cannot be ruled out. However, the effect of the additional predicted mortality from the project alone while not de minimis, is so small as to not materially alter the significance of the overall in-combination mortality figure or the likelihood of an adverse effect on the integrity of the pSPA arising from</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>

Relevant Representation Comment	EATLs response
such an in-combination level of mortality.	
<p>The Applicant provided a table of designated sites (Table 13.10 of the Environmental Statement Report) and their ornithological features: we assume this table only lists ornithological features of the sites that may have connectivity with the East Anglia Three Offshore Wind Farm (EA3) site, as the breeding tern qualifying features of several of the Special Protection Areas (SPAs) (e.g. Hamford Water, Chichester & Langstone Harbours and Solent & Southampton Water SPAs) are not mentioned.</p>	<p>This is correct - we have only included those features which could be affected by the proposed development.</p>
<p>The Applicant has provided a summary of the nature conservation value of bird species which were recorded during surveys and which are considered to be at potential risk either due to their abundance, potential sensitivity to windfarm impacts or due to biological characteristics. Please note that kittiwake and puffin are now red listed and red-throated diver is now green listed on Birds of Conservation Concern 4 (2015).</p>	<p>EATL thanks NE for confirming the updated status of these species and notes that this does not materially affect the assessment as presented.</p>
<p>Table 13:15: We advise that there is an error in Table 13.15 of the Environmental Statement Report which should refer only to a non-breeding season for guillemot in Furness (2015) and not separate migration periods. This table should also include migration periods and a winter period for razorbill in Furness (2015) rather than a single non-breeding period.</p>	<p>EATL acknowledges this comment however, this refers only to the screening table. The full assessment includes the appropriate seasons as defined by Furness (2015).</p>
<p>Red Throated Diver Displacement: When assessing the displacement and disturbance of red-throated diver, Natural England notes that Furness & Wade (2012) is for species occurring in Scottish Waters only. Therefore we advise that Bradbury et al. (2014) is used instead as this expanded coverage to species occurring in English Waters, although we recognise that Bradbury et al. (2014) use the same scoring system as Furness & Wade (2012).</p>	<p>EATL thanks NE for pointing out this referencing point and notes that this does not materially affect the assessment as presented.</p>
<p>The Applicant assumes that red-throated diver displaced by the cable laying vessel will return to their previous position following passage of the vessel. Natural England finds it unclear what the justification is for the assumption that birds return to their previous position straight away as soon as the vessel leaves the area. We advise that a more precautionary approach is adopted.</p>	<p>EATL consider this approach to be justified on the basis that the cable laying vessel will be moving much more slowly than the tidal flow. Therefore, since from the bird's perspective the vessel will essentially be stationary it is appropriate to assume that the exclusion zone around the vessel will be the same as that around a static structure (2km). Consequently the current assessment is</p>

Relevant Representation Comment	EATLs response
	considered precautionary and robust.
<p>Construction Worst Case Scenario (WCS): Paragraph 77 of the Environmental Statement Report states: ‘However, construction will not occur across the whole of the proposed wind turbine array area simultaneously or every day, but will be phased, with no more than one foundation expected to be installed at any time.’ This is not consistent with the worst case scenario – Table 13.2 says construction spatial worst case scenario for Impact 2 for monopiles is two concurrent piling events. Also paragraphs 85 on razorbill and 97 on puffin both state a maximum of two foundations are expected to be installed simultaneously.</p>	<p>EATL acknowledges that the description in paragraph 77 incorrectly stated that there would be a maximum of one piling event at a time while the WCS describes up to two simultaneous piling events. However, paragraph 78 clearly states that birds could be excluded for up to 2 vessels, therefore construction impacts were estimated correctly and the assessment remains unchanged.</p>
<p>Biologically Defined Minimum Population Scales (BDMPS): The Applicant uses non-breeding season Biologically Defined Minimum Population Scales (BDMPS) proportion of immature birds to calculate breeding season populations for guillemot, razorbill and puffin. It is not clear why the Applicant has used this technique when Furness (2015) gives a population total for immatures in each BDMPS. We do not think this approach is valid (notwithstanding the validity of the calculations) as it cannot be assumed that the distribution and origin of immature birds is the same in the breeding season compared to the non-breeding season. We do not advise that the non-breeding season populations in Furness (2015) are in any way applicable to the breeding season – either for adults or immatures. We advise that the Applicant determines their own breeding season population scales and sizes for species.</p>	<p>EA3 is beyond the foraging range of any auk breeding colonies, therefore auks observed during the breeding season will not be actively breeding adults. Hence it was assumed that auks present in the breeding season will comprise immature birds and nonbreeding adults. As the size of the population from which such birds could be drawn is not well understood, however it seems very likely that both of these categories of bird are drawn from the BDMPS populations. Indeed, given what is known about the movements of immature birds (that they disperse to similar areas as adults and gradually make their way back towards their natal colonies as they approach maturity) this seems a much more plausible assumption than assuming there is no connection between the wintering populations and the summer distribution of immatures as NE suggest. Therefore we are content that this approach provides a robust means to estimate reference populations in the summer. The above notwithstanding, we present additional assessment (see Annex 1) using the methods adopted by NE in their written submission for deadline 6 of the Hornsea Project 2 examination on the basis that this approach will be accepted by NE.</p>
<p>Construction displacement for all auk species: Natural England’s position is that the individual seasons should be summed to give an annual mortality figure. However, we recognise that even the summed numbers would be so small against the BDMPS (or biogeographical) populations that it would not significantly alter overall conclusions.</p>	<p>EATL consider that Natural England’s approach of summing seasonal displacement generates overly precautionary predictions on top of the high level of precaution already inherent in the worst case scenarios of 70% displacement & 10% mortality advocated. Notwithstanding this, we present additional assessment (see Annex 1) using the methods adopted by NE in their</p>

Relevant Representation Comment	EATLs response
	written submission for deadline 6 of the Hornsea Project 2 examination on the basis that this approach will be accepted by NE.
<p>Red Throated Diver displacement: There are no displacement matrix tables provided for the red-throated diver operational displacement assessments. Natural England advises that these should be included (as done for gannet and auks) for at least the EA3 site and 4km buffer with no gradient.</p>	<p>In order to clarify the displacement assessment for this species, rather than present a matrix with a range of displacement values, we have used values derived from a study conducted over several years for a wind farm site near to the proposed development. Consequently the displacement percentages for Red Throated Diver (RTD) used in the assessment are grounded in evidence and are therefore considered to be robust and reliable. This contrasts with the situation for the auks and gannet, for which displacement percentages are less well estimated. Therefore, using a wide range is appropriate for auks/gannet but for RTD we have used a more realistic evidence based approach.</p>
<p>Displacement mortalities: Natural England advises that the displacement mortalities for each season be summed to give an annual total. We acknowledge that this is precautionary as it is in theory, possible that the same bird may be assessed more than once using this approach. However, assessing against different populations for each season will reduce this possibility since a large proportion of the birds present in the non-breeding seasons are predicted to be different individuals from those present in the breeding season. For red-throated diver for the EA3 site plus 4km buffer with no gradient, the annual total predicted mortality is 29 birds, which using the largest BDMPS (13,277 for spring/autumn migration in Furness (2015)) and the 0.228 mortality rate provided, equates to 0.96% of baseline mortality. Given this is close to 1%, we would consider the impact to be minor adverse.</p>	<p>EATL consider that Natural England's approach of summing seasonal displacement generates overly precautionary predictions on top of the high level of precaution already inherent in the worst case scenarios of 70% displacement & 10% mortality advocated. Notwithstanding this, we present additional assessment (see Annex 1) using the methods adopted by NE in their written submission for deadline 6 of the Hornsea Project 2 examination on the basis that this approach will be accepted by NE.</p> <p>In addition, EATL notes that Natural England's conclusion is the same as the estimate of significance presented in the ES.</p>
<p>Average Peak Density: It would be useful if the Applicant could provide a table of monthly estimates of average peak density of gannets within the EA3 site plus a 2km buffer. This would assist us in assessing if we agree with the seasonal mean peak data used in the displacement matrices.</p>	<p>EATL acknowledge Natural England's request for additional assessment, however to obtain density estimates for the site plus 2km buffer would require re-analysis of the raw data. Given the very low level of impact predicted for gannet displacement and the already precautionary basis adopted (using the higher density estimate from the site plus 4km buffer) we question the justification for undertaking additional assessment since it will have no material effect on the conclusions reached.</p>

Relevant Representation Comment	EATLs response
<p>Mortality Rates: In regards to gannet mortality rate in the winter season, the Applicant assumes a 1% mortality rate. We recommend that given the uncertainty of predicting a mortality rate for gannet, a range of mortality rates are used.</p>	<p>We draw Natural England's attention to the fact that the assessment already includes a range of mortality rates which can be reviewed for context. However, as noted in the assessment, gannets are regarded as highly flexible in their foraging habits (a major contributory factor in their ongoing population increases) so assuming more than a very low level of displacement mortality is unduly precautionary. Moreover, gannets are predominantly passing through the region on migration when recorded in EA3, with the consequence that displacement from the site will be expected to have a minimal effect, with even a 1% mortality likely to be highly precautionary.</p>
<p>Impacts on Gannets: Paragraph 131 of the Environmental Statement Report gives the combined autumn and spring migration mortalities as 5 individuals. However, if you combine the spring migration number of 3 with the autumn migration number of 7, the total is 10 not 5. However, this error does not alter the overall conclusion that effects on gannets will be negligible.</p>	<p>We agree with NE that if seasonal impacts are summed this equates to 10 individuals, however the assessment applied a mean impact across seasons, giving a value of 5. Therefore 5 was consistent with the approach for assessing displacement used in the ES. NE have applied their method (summing individual displacement values) to obtain the figure of 10. Nonetheless, the key factor is that irrespective of the method used the conclusion remains the same and there is therefore no material difference to the conclusion in the ES.</p>
<p>Seasonal Displacement of Auks: Natural England does not agree with the proposed alternative method of summing seasonal displacement impacts on auks to give an annual total. We recommend simply summing the seasonal totals. We understand the rationale for assessing that the annual effects against the biogeographic populations, but there needs to be clarity over how the impacts are apportioned to UK colonies.</p>	<p>EATL consider that Natural England's approach of summing seasonal displacement generates overly precautionary predictions on top of the high level of precaution already inherent in the worst case scenarios of 70% displacement & 10% mortality advocated. Notwithstanding this, we present additional assessment (see Annex 1) using the methods adopted by NE in their written submission for deadline 6 of the Hornsea Project 2 examination on the basis that this approach will be accepted by NE.</p>

Relevant Representation Comment	EATLs response
<p>Use of immature auks: The Applicant has used proportions of immature auks (paragraph 140 of the Environmental Statement) in the non-breeding BDMPSs (Furness 2015) to calculate breeding season proportions. As stated above (paragraph 9), we do not agree that this method is appropriate.</p>	<p>East Anglia THREE is beyond the foraging range of any auk breeding colonies, therefore auks observed during the breeding season will not be actively breeding adults. Hence it was assumed that auks present in the breeding season will comprise immature birds and nonbreeding adults. As the size of the population from which such birds could be drawn is not well understood, however it seems very likely that both of these categories of bird are drawn from the BDMPS populations. Indeed, given what is known about the movements of immature birds (that they disperse to similar areas as adults and gradually make their way back towards their natal colonies as they approach maturity) this seems a much more plausible assumption than assuming there is no connection between the wintering populations and the summer distribution of immatures as NE suggest. Therefore we are content that this approach provides a robust means to estimate reference populations in the summer. In addition we present additional assessment (see Annex 1) using the methods adopted by NE in their written submission for deadline 6 of the Hornsea Project 2 examination on the basis that this approach will be accepted by NE.</p>
<p>Guillemot mean peak: We consider the mean peak breeding season estimate for guillemot to be between 5 and 122. The addition of a maximum of 122 (rather than 117) equates to 0.13% (rather than 0.12%) of baseline mortality, but will still result in a low magnitude of impact.</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>
<p>Due to the error in calculating the guillemot breeding period seasonal mean peak (see above), the summed total using the Applicants method of dividing each seasonal mortality by the number of seasons (in the case of guillemot by 2) before summing should be:</p> <p>Non-breeding total of $200/2 = 100$ Breeding total of $122/2 = 61$ (rather 58)</p> <p>Giving an annual total mortality of $100 + 61 = 161$ (rather than 158) for our advised worst case scenario of 70% displacement and 10% mortality. This equates to 0.028% (rather than 0.027%) of baseline mortality, so would still result in a low magnitude of impact.</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>

Relevant Representation Comment	EATLs response
<p>Seasonal displacement guillemot: Natural England's preferred method for summing seasonal displacement mortalities to give an annual total is to simply sum the seasonal mortalities. Using this method the total annual guillemot mortality from operational displacement is calculated as 322 birds at the worst case scenario of 70% displacement and 10% mortality. This equates to 0.14% of baseline mortality of the largest BDMPS (non-breeding season in Furness 2015) and 0.06% of baseline mortality of the biogeographic population. Therefore, this does not alter the overall negligible conclusion provided by the Applicant.</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>
<p>The breeding season mean peak guillemot abundance from Table 13.20 of the Environmental Statement Report should be 1,744 (April) rather than the 1,699 given stated by the Applicant (which is the March figure). However, the result is still only a low magnitude of impact.</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>
<p>Seasonal displacement razorbill: As stated above, Natural England's preferred method for summing seasonal displacement mortalities to give an annual total is to simply sum the seasonal mortalities. Using this method the total annual razorbill mortality from operational displacement is calculated as 417 birds at the worst case scenario of 70% displacement and 10% mortality. This equates to 0.40% of baseline mortality of the largest BDMPS (migration periods in Furness (2015)) and 0.14% of baseline mortality of the biogeographic population. As this is a low impact on a species with low to medium sensitivity we would advise that this is a minor impact.</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>

Relevant Representation Comment	EATLs response
<p>Seasonal displacement puffins: It has not been possible to check the puffin assessment figures used in the assessment as no table of data is provided in Appendix 13.2 (Baseline Technical Report) for the EA3 site plus 2km buffer. However, data provided in Annex C, Table C3.21 for the EA3 site plus 4km buffer. If these data are used instead (a precautionary approach) then the following is obtained:</p> <p>Breeding season – number of puffins predicted to die is between 1 (30% displacement and 1% mortality) and 18 (70% displacement and 30% mortality). This equates to 0.10% of baseline mortality of the breeding season BDMPS. So, using the precautionary figure of the EA3 site plus 4km does not alter the negligible conclusion of the Applicant</p> <p>· Non-breeding season – number of puffins predicted to die is between 1 (30% displacement and 1% mortality) and 23 (70% displacement and 30% mortality). This equates to 0.06% of baseline mortality of the non-breeding season BDMPS. Using the precautionary figure of the EA3 site plus 4km does not alter the negligible conclusion of the Applicant.</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES. However, there are two points to raise on this comment: (1) In the ES the approach presented was virtually identical to this, using the density estimated across the site plus 4km buffer, however the abundance was calculated for the area of the site plus 2km buffer, ensuring appropriate numbers were used. (2) The NE approach reports an upper mortality derived using 10% mortality, but the description erroneously describes this as being 30% mortality.</p>
<p>In the case of puffin (as stated for guillemot and razorbill), our preferred method for summing seasonal displacement mortalities to give an annual total is to sum the seasonal mortalities. Using this method the total annual puffin mortality from operational displacement is calculated, using the figures presented in the Environmental Statement Report for the EA3 site plus 2km buffer is 34 birds at the worst case scenario of 70% displacement and 10% mortality. This equates to 0.09% of baseline mortality of the largest BDMPS (non-breeding period in Furness (2015)) and 0.002% of baseline mortality of the biogeographic population. Therefore, this does not alter the overall negligible conclusion stated by the Applicant. The more precautionary figure (the EA3 site plus 4km buffer) is 41 birds for the worst case scenario of 70% displacement and 10% mortality. This equates to 0.11% of baseline mortality of the largest BDMPS (non-breeding period in Furness (2015)) and 0.002% of baseline mortality of the biogeographic</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>

Relevant Representation Comment	EATLs response
<p>population. Therefore, this still represents a low magnitude of impact.</p>	
<p>When considering the cumulative nonbreeding displacement figure for puffin, we advise the Applicant to use a wider range of mortality than just 1%.</p>	<p>We note this comment, however the assessment already includes a range of mortality rates and given the very large BDMPS puffin population, this would have no material effect on the outcomes of the assessment.</p>
<p>We agree that impacts on birds from indirect impacts through effects on habitats and prey are either negligible or minor.</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>
<p>Use of generic flight height curves: Natural England considers it inappropriate to use the Johnston et al. (2014) generic flight height curves for boat-based data with site-specific densities from aerial surveys in Collision Risk Modelling (CRM) assessments using the Band model. We therefore advise that the focus, wherever possible should be on the CRM Band Option 1 outputs.</p>	<p>EATL acknowledges this comment however, the mortality estimates derived using the other models are included for completeness, with the assessment itself based on the outputs from Band option 1 as previously agreed with Natural England.</p>
<p>Gannet Avoidance Rate: Natural England acknowledges the findings in APEM (2014) that use of the 98.9% avoidance rate for the basic Band model may overestimate collision predictions. At present our advice regarding gannet avoidance is as per the joint Statutory Nature Conservation Bodies response to the Marine Scotland review of avoidance rates report by Cook et al. (2014), i.e. 98.9% avoidance rate for gannet with the basic Band model. As this study is based on just 8 gannets entering the offshore wind farm, there is not enough evidence to robustly determine the avoidance rate. However, we welcome future monitoring along the lines of the APEM (2014) study to determine an appropriate avoidance rate for gannet.</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>
<p>Non seabird migrants: The Applicant uses the Migropath model to assess collision risk for non-seabird migrants. However, paragraph 55 of the Environmental Statement Report suggests that the SOSS-05 model (SOSS-MAT) was used. Whilst we recognise that these two models are similar and we do not have a preference for which is used; it would be good to be clear about which has been used.</p>	<p>The non-seabird migrant assessment was conducted using Migropath.</p>

Relevant Representation Comment	EATLs response
<p>When assessing collision impacts for individual seasons for all bird species, it is important that the Applicant include breeding season impacts, even if they are small.</p>	<p>The breeding season collisions were reported and included in the annual assessment.</p>
<p>Flight Heights: We agree that site specific estimates of flight height are appropriate if the sample size is large. However we consider it appropriate to present a range of flight heights.</p>	<p>We acknowledge Natural England's agreement that the appropriate height data have been used in the gannet collision modelling. As requested we have provided a histogram of gannet flight heights in our response (see Annex 1).</p>
<p>Nocturnal Flights: We note that the MacArthur Green review (contained within Appendix 13.1 of the Environmental Statement Report) presents a reasonable amount of evidence of nocturnal flight activity of gannet and kittiwake. But much less is presented for lesser black-backed gulls and none for herring gulls or great black-backed gulls. Therefore, Natural England does not consider there to be sufficient evidence to accept changing the nocturnal factor used for large gulls. However, there may be sufficient evidence for stating that the nocturnal activity assumed for gannet and kittiwake in the CRM can be considered a precautionary approach.</p>	<p>We welcome Natural England's support for the nocturnal activity review presented in the assessment and the conclusions reached. We will continue to review the available data with a view to further refinement to the estimated nocturnal activity if possible.</p>
<p>Increases in mortality: Table 13.34 of the Environmental Statement Report would be much clearer in terms of understanding how the increases in mortality have been calculated if the seasonal CRM figures were also presented here, rather than having to go back to Table 13.31 where these figures are available.</p>	<p>EATL acknowledges this comment. We have provided an updated table in Annex 1.</p>
<p>Additive impacts: Natural England considers the two impacts of collision and displacement as additive and advises that they should be summed. We acknowledge that in summing the predicted mortalities that may arise via these two mechanisms, there is a risk of double counting. Thus it is acknowledged that this simplistic approach will therefore incorporate a degree of precaution. However, the extent of that is hard to gauge given that the predictions of the number of fatalities due to collisions depends critically upon application of an assumed overall avoidance rate (i.e. an assumed percentage of individuals which alter their flight behaviour to avoid collisions) which in some cases can be considered to incorporate some degree of macro-avoidance of entire wind farms and might otherwise be classed as barrier impacts. The SNCBs are seeking</p>	<p>This only applies to gannet. We have provided the combined assessment in Annex 1, although the individual impacts were very small for this species therefore there will be no material change to the assessment.</p>

Relevant Representation Comment	EATLs response
<p>further evidence from ongoing and proposed studies into avoidance rates that will help clarify the relationship between collision risk, displacement and so called 'macro' avoidance.</p>	
<p>Percentage of migrant seabirds at rotor height: We recommend that Table 13.35 of the Environmental Statement Report be updated with the percentage of migrant seabird species at rotor height data from Johnston et al. (2014) and should be calculated for the EA3 worst case scenario turbine specifications.</p>	<p>We acknowledge this comment, however as noted by NE in the following comment, given the distance of EA3 from the coast this update will have no change on the assessed impact.</p>
<p>In regard to migrant sea birds, while we cannot say with certainty that there will be no impact, we do agree with the Applicant that given the distance EA3 is offshore, any impacts will be negligible.</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>
<p>Guillemot: Whilst Natural England agrees that the mortality is likely to be at the low end of the range, we do not agree that using 1% mortality for the cumulative assessment (with 70% displacement) can be considered the worst case scenario. Our recommendation is a range from 30% displacement and 1% mortality up to 70% displacement and 10% mortality, with 70% displacement and 10% mortality as the worst case. We also recommend that the Applicant use this same worst case scenario (70% displacement and 10% mortality) for assessment of the project alone.</p>	<p>We note Natural England's comments with respect to estimating displacement impacts and draw attention to the fact that we have presented the full range of predicted impacts as suggested by NE. However, we disagree with Natural England's assertion that up to 10% of displaced guillemots could die as a consequence of displacement. We provided a summary of evidence on wintering movements to support this (since guillemots are predominantly present outside the breeding season) and consider this provided robust justification for the mortality figures used in the assessment.</p>
<p>Guillemot: Using our recommended worst case scenario of 70% displacement and 10% mortality, the predicted mortality is 4,618 birds for the wintering season (assumed non-breeding season in the BDMPS report). This equates to 2.04% of baseline mortality, which would not be a negligible impact.</p>	<p>See above.</p>
<p>Guillemot: There does not appear to be any displacement impacts in the breeding season from other North Sea projects added to the overall cumulative assessment of displacement impacts.</p>	<p>The assessment focussed on the nonbreeding season on the basis that very few guillemot were present during the breeding seasons with the consequence that this was the period when East Anglia THREE would be predicted to contribute to the cumulative impact.</p>

Relevant Representation Comment	EATLs response
<p>Guillemot: Natural England advises that the applicant undertakes a further assessment that incorporates the cumulative impact across the whole annual cycle, where seasonal impacts are summed. The cumulative total should then be assessed against the appropriate scale.</p>	<p>In the assessment the annual cumulative figure presented for Dogger Bank Teesside A & B was provided (75,144) and was considered alongside that presented for the cumulative nonbreeding season in the Hornsea Project Two assessment (63,111). As discussed above, since very few guillemots were observed during the breeding season the cumulative assessment focussed on the nonbreeding season and therefore the latter was used as the basis for cumulative assessment (with the addition of EA3). We can provide additional assessment based on the higher annual figure (75,144). This additional assessment notwithstanding, we note that in Natural England's written submission for deadline 6 of the Hornsea Project 2 examination a method for assessing EIA level displacement impacts was presented which concluded no significant cumulative effects. EATL have applied the same approach for the current assessment, with the inclusion of EA3 (see Annex 1).</p>
<p>Razorbill: As with guillemot, Natural England advises that for the cumulative assessment of impacts the Applicant use a range from 30% displacement and 1% mortality up to 70% displacement and 10% mortality the worst case. We also recommend that the Applicant use this same worst case (70% displacement and 10% mortality) for assessment of the project alone.</p>	<p>We acknowledge this comment (see Annex 1)</p>
<p>Razorbill: Using our recommended worst case scenario of 70% displacement and 10% mortality, the predicted mortality for autumn is 1,925 birds. This equates to 1.87% of baseline mortality, which would not be a negligible impact.</p>	<p>We acknowledge this comment and have applied the same update as described for guillemot (see Annex 1)</p>
<p>Razorbill:As with guillemot, there does not appear to be any displacement impacts in the breeding season from other North Sea projects added to the overall cumulative assessment of displacement impacts.</p>	<p>We acknowledge this comment (see Annex 1)</p>
<p>Razorbill:Natural England advises that the Applicant undertakes a further assessment that incorporates the cumulative impact across the whole annual cycle, where seasonal impacts are summed. The cumulative total should then be assessed against the appropriate scale.</p>	<p>We acknowledge this comment (see Annex 1)</p>

Relevant Representation Comment	EATLs response
<p>Razorbill: Using our recommended worst case scenario of 70% displacement and 10% mortality, the predicted mortality for the winter season is 1,016 birds. This equates to 2.67% of baseline mortality, which would not be a negligible impact.</p>	<p>We acknowledge this comment (see Annex 1)</p>
<p>Razorbill: Using our worst case scenario of 70% displacement and 10% mortality, the predicted mortality for spring is 1,527 birds. This equates to 1.48% of baseline mortality, which wouldn't be a negligible impact.</p>	<p>We acknowledge this comment (see Annex 1)</p>
<p>Razorbill: As set out above, Natural England's preferred method for summing seasonal displacement mortalities to give an annual total is to simply sum the seasonal mortalities. If this approach is taken, the displacement combined across the three non-breeding seasons gives a cumulative total of 63,814 (27,497 + 14,509 + 21,808 autumn, mid-winter and spring respectively) razorbill at risk of displacement (compared to 21,270 calculated by the Applicant). Based on this, the estimated number of razorbills subject to potential mortality during the non-breeding season is between 191 and 4,467 individuals (from 30% displaced and 1% mortality to 70% displaced and 10% mortality) compared to 64-1,489 using the Applicant's proposed method.</p>	<p>We acknowledge this comment (see Annex 1)</p>
<p>Razorbill: We note that if the seasonal mortalities are simply summed then the predicted cumulative mortality for razorbill in the non-breeding season for the Applicant's chosen scenario of 70% displacement and 1% mortality would be 447 birds per year. If our advised worst case scenario of 70% displacement and 10% mortality is used and the approach of simply summing the seasonal mortalities is taken, the predicted cumulative mortality for the non-breeding periods is 4,467 birds. This equates to 1.5% of baseline mortality of the biogeographic population, which would not be a negligible impact.</p>	<p>We acknowledge this comment (see Annex 1)</p>
<p>Puffin: As with guillemot and razorbill, Natural England advises that a range from 30% displacement and 1% mortality up to 70% displacement and 10% mortality, with 70% displacement and 10% mortality as the worst case is provided. We note that the worst case 70% displacement and 10% mortality has been used for their assessments of the project alone.</p>	<p>We acknowledge this comment and will apply the same update as described for guillemot (see Annex 1)</p>

Relevant Representation Comment	EATLs response
<p>Puffin: Using our advised worst case scenario of 70% displacement and 10% mortality, the predicted mortality for the non-breeding period is 940 birds. This equates to 2.43% of baseline mortality, which would not be a negligible impact.</p>	<p>We acknowledge this comment (see Annex 1)</p>
<p>Gannet: The cumulative CRM annual total presented in the application is 3,071 birds, which equates to 3.5% of baseline mortality for the largest BDMPS (autumn migration in Furness (2015)) and 1.36% of baseline mortality for the biogeographic population. Therefore we advise that this requires further consideration through population modelling. We note the use of the SOSS gannet Population Viability Analysis (PVA) model outputs (WWT 2012). We also note that at Dogger Bank the PVA was scaled to a North Sea scale and calculated a threshold of 2852 as potentially significant. Therefore we would welcome further discussions around the implications of the cumulative effect.</p>	<p>We do not consider it appropriate to assess the annual mortality against the autumn BDMPS as this would be inconsistent. Instead we consider that the autumn total mortality should be assessed against the autumn BDMPS population. The autumn cumulative mortality was 764, which increases the baseline mortality of the autumn BDMPS population by 0.88% (i.e. less than 1%) and therefore is below the level at which further assessment would typically be required. With regards the annual mortality, this has been modelled using the existing PVA for the British population, as would be expected for an impact which exceeded this precautionary 1% increase in mortality threshold. In order for this to be robust the cumulative mortality included wind farms other than those in the North Sea (e.g. Irish Sea) and this thereby avoided underestimating collisions and ensured the assessment of mortality was conducted at the appropriate population scale. This assessment demonstrated that the cumulative total for ALL UK wind farms is below the level at which the modelling found even 5% of simulated populations decline, and that this conclusion was based on what is acknowledged to be a worst case total mortality, including the fact (acknowledged by NE) that gannet nocturnal activity has been overestimated to date in collision assessments by at least 7%. Furthermore the gannet population has continued to increase since this model was developed: the model was based on a British and Irish population of 261,000 pairs (2004), which is now estimated to be over 400,000 (i.e. 50% larger), and this will considerably reduce the level of predicted impacts. EATL are therefore content that the gannet cumulative assessment is robust and demonstrates that cumulative impacts are below the level at which population consequences would be of concern.</p>

Relevant Representation Comment	EATLs response
<p>Kittiwake: The total cumulative kittiwake CRM total presented in the Environmental Statement is 4,003 collisions per annum, which equates to 3.09% of baseline mortality for the largest BDMPS (autumn migration in Furness (2015)) and 0.5% of baseline mortality for the biogeographic population. Therefore we advise that this requires further consideration through population modelling.</p>	<p>We do not consider it appropriate to assess the annual mortality against the autumn BDMPS, but rather the autumn total mortality should be assessed against the autumn BDMPS population. The autumn cumulative mortality was 1533, which increases the baseline mortality of the autumn BDMPS population by 1.18%. The spring assessment similarly generated an increase in baseline mortality above the 1% threshold (1.35%). As these were above the level at which further assessment would typically be required (and at Natural England's request), a population model was developed and presented in the original assessment to further explore the potential impacts. The conclusions of this assessment were that the cumulative impacts were not off concern. NE have questioned some of the assumptions made in the population modelling (in particular regarding density dependence and relevant population scales), and these will be addressed in our response to NE. Furthermore, we note that in Natural England's written submission for deadline 6 of the Hornsea Project 2 examination a method for assessing EIA level collision risk impacts for kittiwake was presented which concluded no significant cumulative effects. EATL have applied the same approach for the current assessment, with the inclusion of EA3 to further support the original conclusion of no significant impacts (see Annex 1).</p>
<p>Kittiwake: Natural England does not advocate the use of PBR modelling when PVA modelling is available. Therefore our consideration will focus only on the PVA outputs. Although Natural England has previously considered PBR outputs for assessing population impacts in cases where up to date PVA models have not been available at an appropriate population scale². However, the use of PBR on its own, as the means of assessing population impacts on seabird populations presents a number of issues. Therefore, Natural England advises that wherever possible the population level impacts of predicted mortality from developments should be assessed using PVA models as these allow the effects of factors such as density dependence, population trends and varying demographic parameters to be explicitly investigated in terms of their effect on the population trajectory. PVA models also allow relative comparisons of population level effects with and without the additional</p>	<p>We accept and broadly agree with Natural England's position with regards the relative merits of PBR and PVA, however we consider that PBR remains a useful preliminary tool to act as a filter for identifying the population impacts for which more detailed modelling (e.g. PVA) will be informative and those for which the relative scale of impact to population size is such that PVA is unwarranted.</p>

Relevant Representation Comment	EATLs response
<p>mortality to be considered in a way that is not possible with PBR.</p>	
<p>Kittiwake: A significant cumulative impact at an Environmental Impact Assessment (EIA) scale is predicted, and EA3 contributes nearly 4% to the in-combination total. We are concerned to note that using the density dependent model, a cumulative mortality of 4,000 individuals was predicted which resulted in the population (after 25 years) being 3.3% to 4.5% smaller than that predicted to result in a population decline in the absence of additional mortality. Natural England's view is that the density independent model should be used to predict impacts, as there is no evidence that density dependence is operating on this population. Appendix 13.4 includes the predictions from density independent models which predicted that the population would be 10% lower than the un-impacted scenario. The outputs of the PVA model will need to be carefully considered before we advise on the cumulative collision total effects on the population. Further consideration is also required to determine the appropriate scale for the PVA model.</p>	<p>EATL welcomes Natural England's broad acceptance of the kittiwake population model, however we disagree with regards to Natural England's views on density dependence and the appropriate scale at which to model impacts. All populations are subject to limits on their growth due to competition for resources. Furthermore, we believe that there is strong evidence of compensatory density dependence which is summarised in our response (see Annex 1). There is also good evidence in support of modelling the North Sea population as a whole as has also been presented.</p>
<p>Kittiwake: Further consideration is required regarding whether the PVA model has been constructed at the appropriate population scale for assessing EIA impacts. We appreciate that the Applicant has conducted a PVA model at a North Sea BDMPS scale (which is the scale that we are advised impacts should be measured at, because this is the scale that we have a reasonable understanding of the cumulative project impacts at, and also a reasonable understanding of the origins and numbers of birds). However, there has not been sufficient consideration given as to whether or not it is biologically meaningful and therefore appropriate to construct a PVA model at this scale. Using the North Sea BDMPS works for HRA because impacts are apportioned back to individual SPA colonies, but for EIA if we use the North Sea BDMPS scale, a biologically discrete population is not being considered. The North Sea BDMPS for kittiwake contains only about 40% of the UK Kittiwake population and only about 50% of the kittiwake from North Sea colonies i.e. 50-60% of UK kittiwake will be distributed elsewhere in the non-breeding season and therefore subject to impacts elsewhere. Around 40-50% of the North Sea BDMPS comprises overseas kittiwakes,</p>	<p>There is good evidence in support of modelling the North Sea population as a whole as has been presented (see Annex 1).</p>

Relevant Representation Comment	EATLs response
<p>but these overseas birds only represent less than 10% of the birds from these overseas colonies i.e.90% of the birds from these overseas colonies are predicted to be in other areas in the non-breeding season.</p>	
<p>Kittiwake: As the North Sea BDMPS is not a discrete or closed population unit, the key question is then from an EIA perspective how to assess the impact. It seems practical to only consider cumulative impacts occurring in the North Sea UK waters as it would be difficult to get data on impacts at a wider scale (although it should be attempted to at least get information for the whole of the North Sea – not just UK waters). Therefore, we believe that there are three options for constructing population models:</p>	<p>We disagree on this point. There is evidence to indicate that the entire North Sea population should be treated as one meta-population (see Annex 1)</p>
<p>Kittiwake: Construct a PVA for all UK or alternatively North Sea kittiwake colonies and then apportion the cumulative North Sea impacts to this population scale – i.e. 50-60% of the impacts could be assumed to fall on the UK/North Sea kittiwake colony populations as 50-60% of the North Sea BDMPS birds are predicted to be from UK colonies. Additionally this is saying that the impact from the North Sea OWFs is only acting on some of the UK population as only about 40-50% of UK birds are predicted to be in the North Sea in winter. However, in the breeding season we would assume that 100% birds in the North Sea are UK birds. The disadvantage to this approach is that the 50% of cumulative impacts in the North Sea in the winter which would fall on the overseas colony birds would be ignored. Additionally this approach would ignore impacts on the 50% of UK birds that are not in the North Sea UK waters in the non-breeding season and will be subject to impacts outside UK waters. But we acknowledge that it is unlikely that a cumulative assessment across the whole wintering range is possible, so perhaps it is appropriate to focus on a practical North Sea level where we can quantify impacts from OWFs.</p>	<p>See above.</p>

Relevant Representation Comment	EATLs response
<p>Kittiwake: Construct a PVA model for the whole biogeographic population – this would be 5-8 million birds here of which less than 2 million have any colony connectivity with the North Sea and only ~800,000 of these are predicted to be in North Sea waters in the non-breeding season. Therefore, this approach does not appear to be very practical or useful. It will not be possible to calculate cumulative impacts across the whole biogeographic range so this approach will be applying an impact occurring in North Sea UK waters to a very large population some of which never occur in the North Sea.</p>	<p>See above.</p>
<p>Kittiwake: Construct a PVA model based on a “population” defined as those birds present in UK North Sea waters in the non-breeding season. This is what the Applicant has done, using an initial “population” size as the BDMPS population – but this is not a population and it is certainly not a closed population. Also the demographic parameters in these models relate to UK colonies, so there is an issue about applicability to birds from overseas colonies. It needs to be considered if the model is providing any understanding of the impact of the cumulative North Sea mortality on the 800,000 birds that are predicted to be present in the North Sea in the winter. Natural England would suggest that it does not, because any mortality occurring in the breeding season is likely to impact on UK North Sea colony birds only – there are about 840,000 of these. In the winter about 400,000 of these birds are predicted to be in the North Sea, but about 400,000 are predicted to come from overseas. Therefore, this equates to 1,240,000 birds in the North Sea across both the breeding season and non-breeding season.</p>	<p>See above.</p>
<p>Kittiwake: As there does not appear to be a good argument for Option 3 (the approach taken by the Applicant), Natural England’s advises that option 1 (i.e. using a UK North Sea colony or perhaps UK colony scale PVA model) and apportioning impacts to the UK population is more meaningful. We therefore suggest that the PVA model is re-run on this basis and the results presented alongside the PVA presented in Appendix 13.4.</p>	<p>See above.</p>

Relevant Representation Comment	EATLs response
<p>Kittiwake: Due to the point made above regarding the appropriate scale, the kittiwake PVA model (Appendix 13.4 of the Environmental Statement) will need further consideration. Natural England's focus for assessing impacts will be on the outputs of density independent models. The density dependent model makes assumptions that the population is close to carrying capacity, which may be inappropriate and there appears to be little evidence to suggest density dependence was operating. Therefore, we advise that the assessment only focuses on density independent models.</p>	<p>We present evidence in support of both density dependent modelling and the North Sea population scale in our response (see Annex 1) which supports the PVA work as presented. We also note that in Natural England's written submission for deadline 6 of the Hornsea Project 2 examination a method for assessing EIA level collision risk impacts was presented for kittiwake which concluded no significant cumulative effects. We present an updated assessment (see Annex 1) following this approach with the inclusion of EA3 which further demonstrates that the worst case predicted impacts on this species are within acceptable limits.</p>
<p>Kittiwake: The Applicant states that: 'The models used a matrix formulation and simulated an annual post-breeding census over a period of 25 annual time steps with one year age classes up to adults, which is a multi-age class for all individuals four years old and older. The initial population size was defined as either the spring or autumn BDMPS, against which relevant cumulative collision risks could be assessed. Annual collisions were assessed against the larger autumn population (as agreed with M. Kershaw, pers. comm.)' Dr Kershaw has not discussed anything with the EA3 project team in relation to assessing impacts from PVA models, and this reference should be removed. We advise that the Applicant provides a rationale for using the autumn BDMPS population.</p>	<p>EATL acknowledge this comment however, Dr Kershaw has provided detailed technical advice in relation to several North Sea offshore wind farms and therefore her advice on this matter was considered to be robust and reliable.</p>
<p>Kittiwake: We note that a review of nocturnal activity has indicated that the value of 50% used in CRM is likely to be an over estimate. However, we note that there has been no proposal/evidence collected validating assumptions about nocturnal activity. This could be something that the regulators and industry consider as part of any monitoring conditions within marine licences.</p>	<p>We welcome Natural England's agreement on this point and agree that further study would help to refine the estimates of nocturnal activity in seabirds. However, we also believe the existing evidence already makes a sufficiently compelling case in favour of reducing the nocturnal activity factor for kittiwake that this should be adopted and applied retrospectively to existing wind farms included in the cumulative assessment.</p>
<p>Kittiwake: Natural England considers that the resulting collision impacts have a moderate adverse impact. Whilst the impacts of the EA3 site (alone) on kittiwake makes a relatively small contribution to the in-combination total, we would welcome any proposals of best practice that seeks to reduce the in-combination collision total, for example by raising the height of the lower rotor tip of the turbines.</p>	<p>We welcome Natural England's acknowledgement that EA3 makes a small contribution to the in-combination total and EATL will continue to explore options to further reduce impacts and will discuss these with NE as plans progress.</p>

Relevant Representation Comment	EATLs response
<p>Lesser black-backed gull: The total cumulative lesser black-backed gull CRM total is 522 collisions per annum, which equates to 1.98% of baseline mortality for the largest BDMPS (autumn migration in Furness (2015)) and 0.48% of baseline mortality for the biogeographic population. Natural England advises that further consideration is required as to the appropriate scale for assessing impacts. But as EA3's contribution to the total is small (11 of the 522 birds, which equates to 2.1% of cumulative total), then we agree with the Applicant's conclusion of minor adverse effects.</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>
<p>Herring gull: The total cumulative herring gull CRM total is 726 collisions per annum, which equates to 0.90% of baseline mortality for the largest BDMPS (non-breeding in Furness (2015)) and 0.38% of baseline mortality for the biogeographic population. If the biogeographic population is the most appropriate population to use for annual assessments at an EIA scale then Natural England agrees that there is no need for further population modelling. As EA3's contribution to the total is small (26 of the 726 birds, which equates to 3.6% of cumulative total), Natural England agrees with the Applicant's conclusion of minor adverse effects.</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>
<p>Great black-backed gull: The total cumulative great black-backed gull CRM total is 1,049 collisions per annum, which equates to 16.4% of baseline mortality for the largest BDMPS (non-breeding in Furness (2015)) and 6.38% of baseline mortality for the biogeographic population. Therefore, Natural England advises that this does require further consideration through population modelling. We note that the outputs of PBR from Rampion are presented. However, as stated previously Natural England no longer accepts the use of PBR, and advises that a PVA model at the appropriate scale should be provided by the Applicant.</p>	<p>We consider that the reduction in predicted collisions (due to the increases in avoidance rate) from over 3,000 (up to and inc. Triton Knoll) to the current estimate of just over 1,000, coupled with the previous acceptance of the higher total in wind farm consent decisions (e.g. Rampion) indicates that the cumulative impact on this species remains below a threshold of concern. We also note that in Natural England's written submission for deadline 6 of the Hornsea Project 2 examination a method for assessing EIA level collision risk impacts was presented for great black-backed gull which concluded no significant cumulative effects. EATL present an updated assessment following this approach with the inclusion of EA3 (see Annex 1) which further demonstrates that the worst case predicted impacts on this species are within acceptable limits. We therefore question Natural England's advice with respect to the provision of PVA modelling, since the impacts are sufficiently small that they are very unlikely to give rise to a significant impact.</p>

Relevant Representation Comment	EATLs response
<p>Dark-bellied brent geese: Natural England agrees with the Applicant's conclusion that with mitigation measures in place to avoid winter working there will be no adverse effect on integrity of dark-bellied brent geese on the Deben Estuary SPA.</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>
<p>Red-throated diver: Natural England agrees with the Applicant's approach of estimating the magnitude of during construction disturbance to red-throated divers on a 'worst case' basis assuming that there would be 100% displacement of birds in a 2km buffer surrounding the cable laying vessel(s). However, 10% mortality is very precautionary, therefore we conclude that even using these precautionary assumptions the additional mortality is likely to be less than 1%.</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>
<p>Red-throated diver: Natural England advises that consideration should be given in the HRA to operational and maintenance activities that may cause disturbance of red-throated diver from transiting to the site from the operational port. However, if best practice vessel operations are adopted then any LSE can be removed.</p>	<p>We will discuss appropriate measures with NE for inclusion in the SoCG.</p>
<p>Red-throated diver: Therefore, if best practice is adopted then Natural England agrees with the Applicant that there are no adverse effects on the integrity of the Outer Thames Estuary SPA and the Greater Wash SPA alone and in combination.</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>
<p>Lesser black-backed gull: Natural England agrees that it is reasonable to conclude that there will be no adverse effects on Alde Ore Estuary SPA from collisions at EA3 alone. Similarly Natural England also agrees that EA3's contribution to the in-combination total is so small as to not materially alter the overall in-combination effects.</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>
<p>Gannet: Natural England recognises that due to changes in avoidance rate the current in-combination mortality is below the levels assessed for the nearby East Anglia ONE offshore wind farm. We agree that there is likely to be no adverse effect on integrity the Flamborough and Filey Coast pSPA due to the EA3 project alone. However, before concluding there is no impacts in-combination we require the Applicant to present outputs from the amended PVA model.</p>	<p>We welcome Natural England's conclusion that EA3 alone will not cause an LSE for the Flamborough and Filey Coast pSPA. However we question the requirement to undertake further population modelling for this population, given that such modelling was presented in relation to the Hornsea Project Two assessment and the additional mortality from EA3 attributable to this population (9 individuals) will not affect the conclusions of that modelling work and therefore does not merit</p>

Relevant Representation Comment	EATLs response
	additional analysis.
<p>Kittiwake: Natural England agrees with the Applicant that the EA3 project alone would not have an adverse effect on integrity of the Flamborough and Filey Coast pSPA.</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>
<p>Kittiwake: Natural England considers that the level of in-combination mortality under consideration here is such that an adverse effect on integrity of the Flamborough and Filey Coast pSPA cannot be ruled out. However, the effect of the additional predicted mortality from EA3 alone while not de minimis, is so small as to not materially alter the significance of the overall in-combination mortality figure or the likelihood of an adverse effect on the integrity of the pSPA arising from such an in-combination level of mortality.</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>
<p>Natural England does not agree with the Applicant's method of assessing displacement impacts. We advise that the Applicant assess the predicted impacts of displacement across the whole annual cycle (for both the site alone and cumulatively with other North Sea projects), by summing seasonal impacts. This annual total should then be assessed against the appropriate population scale. Natural England recommends that any displacement in the breeding season from other North Sea projects are included in the overall cumulative assessment of displacement.</p>	<p>EATL consider that Natural England's approach of summing seasonal displacement generates overly precautionary predictions on top of the high level of precaution already inherent in the worst case scenarios of 70% displacement & 10% mortality advocated. This disagreement notwithstanding, EATL present additional assessment (see Annex 1) using the methods adopted by NE in their written submission for deadline 6 of the Hornsea Project 2 examination on the basis that this approach will be accepted by NE.</p>

Relevant Representation Comment	EATLs response
<p>Natural England advises that the Applicant use a different approach to that used in the Environmental Statement to define an appropriate population scale to use for assessing impacts on birds present in the project area during the breeding season months. The Applicant currently uses estimates of the proportion of immature birds predicted to be in a typical population applied to the number of birds in the non-breeding season Biologically Defined Minimum Population Scales (BDMPS) to calculate a breeding season population size for immature birds relevant to the project area. We do not consider that the non-breeding season populations in Furness (2015) are applicable to the breeding season, either for adult or immature birds. We therefore advise that the Applicant produce their own breeding season population scales and sizes for species.</p>	<p>East Anglia THREE is beyond the foraging range of any auk breeding colonies, therefore auks observed during the breeding season will not be actively breeding adults. Hence it was assumed that auks present in the breeding season will comprise immature birds and nonbreeding adults. As the size of the population from which such birds could be drawn is not well understood, however it seems very likely that both of these categories of bird are drawn from the BDMPS populations. Indeed, given what is known about the movements of immature birds (that they disperse to similar areas as adults and gradually make their way back towards their natal colonies as they approach maturity) this seems a much more plausible assumption than assuming there is no connection between the wintering populations and the summer distribution of immatures as NE suggest. Therefore we are content that this approach provides a robust means to estimate reference populations in the summer. Nevertheless, we present additional assessment (see Annex 1) using the methods adopted by NE in their written submission for deadline 6 of the Hornsea Project 2 examination on the basis that this approach will be accepted by NE.</p>
<p>Natural England recommends that for the cumulative assessment of displacement impacts from other North Sea projects, the Applicant uses a range from 30% displacement and 1% mortality up to 70% displacement and 10% mortality as the worst case. We also recommend that the Applicant use this same worst case (70% displacement and 10% mortality) for assessment of the project alone.</p>	<p>EATL acknowledges this point, however we would also draw Natural England's attention to the fact that the range of displacement figures recommended by NE is already presented in the assessment. We consider Natural England's worst case combination (70% displacement and 10% mortality) to be overly precautionary.</p>
<p>Natural England welcomes the Applicant's approach to use Population Viability Analysis (PVA) modelling to assess EIA impacts on kittiwake. However, we advise further consideration of a number of issues. These include whether it is appropriate to rely on density dependent outputs, and identifying the appropriate population scale at which to assess impacts.</p>	<p>All populations are subject to limits on their growth due to competition for resources. Furthermore, contrary to Natural England's assertion that there is a lack of evidence in support of density dependence for this species there is strong evidence of compensatory density dependence (we will provide this in our response). There is also good evidence in support of modelling the North Sea population as a whole as has been presented (we will provide this in our response).</p>

Relevant Representation Comment	EATLs response
<p>There appears to be little clear evidence to suggest compensatory density dependence is operating on the kittiwake population at a North Sea scale, therefore Natural England advises that the assessment should focus on outputs from the density independent models.</p>	<p>See above.</p>
<p>Natural England advises that the Applicant further considers whether the kittiwake PVA model has been constructed at the appropriate population scale for assessing EIA impacts. We appreciate that the Applicant has carried out at a North Sea BDMPS scale assessment which is the scale that we initially accepted impacts should be measured against. However, further consideration is required as to whether it is biologically meaningful and therefore appropriate to construct a PVA model at this scale. Using the North Sea BDMPS is appropriate for HRA because impacts are apportioned back to individual SPA colonies, but for EIA if the North Sea BDMPS scale is used it does not consider a biologically discrete population.</p>	<p>See above.</p>
<p>The total cumulative effects on great black-backed gulls from collision mortality equates to 16.4% of baseline mortality for the largest BDMPS (non-breeding in Furness (2015)) and 6.38% of baseline mortality for the biogeographic population. Therefore, Natural England advises further consideration through population modelling. We note that the outputs of PBR modelling from Rampion are presented. However, Natural England advises the use of PVA modelling (see row 2 above).</p> <p>Therefore, Natural England advises that the Applicant undertakes PVA modelling to assess EIA impacts on great black-backed gulls. We suggest using either a UK North Sea colony scale or UK colony scale population model and apportion the predicted project impacts back to the respective scale.</p>	<p>We consider that the reduction in predicted collisions (due to the increases in avoidance rate) from over 3,000 (up to and inc. Triton Knoll) to the current estimate of just over 1,000, coupled with the previous acceptance of the higher total in wind farm consent decisions (e.g. Rampion) indicates that the cumulative impact on this species remains below a threshold of concern. We also note that in Natural England's written submission for deadline 6 of the Hornsea Project 2 examination a method for assessing EIA level collision risk impacts was presented for great black-backed gull which concluded no significant cumulative effects. EATL present an updated assessment (see Annex 1) following this approach with the inclusion of EA3 which further demonstrates that the worst case predicted impacts on this species are within acceptable limits. We therefore question Natural England's advice with respect to the provision of PVA modelling, since the impacts are sufficiently small that they are very unlikely to give rise to a significant impact.</p>

Relevant Representation Comment	EATLs response
<p>Natural England considers that the impacts from the project alone will not have an adverse effect on the integrity of Flamborough and Filey Coast pSPA.</p> <p>Natural England considers that the level of in-combination mortality, when considered with other plans and projects is such that an adverse effect on integrity of the Flamborough and Filey Coast pSPA kittiwake population cannot be ruled out. However, the effect of the additional predicted mortality from the project alone while not de minimis, is so small as to not materially alter the significance of the overall in-combination mortality figure or the likelihood of an adverse effect on the integrity of the pSPA arising from such an in-combination level of mortality.</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>
<p>SmartWind Relevant Representation on Ornithology</p>	
<p>Smart Wind - have informed EATL that the numbers for cumulative assessment for Hornsea 2 are now outdated.</p>	<p>EATL note that at the time of submission the numbers within our assessment were correct. Updated collision tables are provided and incorporated into Annex 1</p>
<p>Marine mammals</p>	
<p>Now that the consultation has begun, the pSACs become a material consideration for projects such as East Anglia THREE. Therefore further work is likely to be required by the Applicant during the Examination process to assess the impacts of the project on the sites, particularly the harbour porpoise feature of the Southern North Sea pSAC.</p>	<p>As agreed in the SoCG with Natural England, EATL will complete further assessment once management measures for the pSAC have been formally adopted. Natural England will be consulted regarding this assessment.</p>
<p>Natural England welcomes the commitment from the Applicant to produce a marine mammal mitigation plan (MMMP) and we look forward to working with the Applicant to further develop the draft MMMP that was submitted with this application.</p>	<p>Work to complete the MMMP will begin once a consenting decision has been made.</p>

Relevant Representation Comment	EATLs response
<p>The PCoD project is due to complete at the start of April 2016 and should enable an assessment of whether multiple pile driving operations in the English part of the North Sea are likely to have a population level effect on the harbour porpoise population in the wider North Sea. Should a population level effect be a possibility, relevant developers would need to review and assess their construction methodology and mitigation options to ensure there is a reduction in underwater noise.</p>	<p>It is noted that no further action is required at the current time.</p>
<p>Noise reduction at source is the best mitigation to protect marine mammals from injury and disturbance. Due to the scale on which noise is measured, a small decrease in sound pressure (6dB) is a halving of the sound level. While Natural England agrees that certain methods (e.g. bubble curtains) are currently not feasible for this project, there may be other methods available that could be used. New technology is being developed (e.g. hydro sound dampeners) as a result of noise thresholds being enforced in German waters. Such technology includes alternative piling methods (e.g. vibro-piling) which can reduce sound levels at source. Recognising the evolving nature of this area Natural England is content that consideration of noise reduction measures can take place prior to construction, specifically within the Marine Mammal Mitigation Protocol (MMMP) which is required by Part 2, Condition 13(f) of the project's draft deemed marine licences. In pre-application discussions the Applicant has committed to exploring up to date noise reduction techniques and other mitigation technologies available at that time, including the reasons why it will, or will not be used within the MMMP when it is submitted.</p>	<p>It is noted that no further action is required at the current time.</p>
<p>The DEPONS (Disturbance Effects on the Harbour Porpoise Population in the North Sea) project is also due to report in the next few months and should provide further evidence of whether multiple piling operations in the North Sea are likely to have a population level effect on harbour porpoise in the North Sea.</p>	<p>It is noted that no further action is required at the current time.</p>
<p>Natural England will look to discuss any further developments of the issue of Corkscrew injuries to seals post consent, during future development of the MMMP as required by Part 2, Condition 13(f) of the project's draft deemed Marine Licences.</p>	<p>The latest information regarding the potential for any corkscrew injuries will be reviewed and any further advice taken into account in the MMMP.</p>

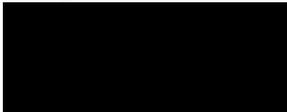
Relevant Representation Comment	EATLs response
Onshore ornithology	
<p>Natural England's main concern for onshore ornithology involved wintering dark bellied Brent geese at the Deben Estuary SPA. However, the Applicant's commitment to seasonal construction restrictions has addressed our concerns.</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>
<p>There are many areas along the cable route that support breeding birds, including breeding marsh harrier and Cetti's warbler. However, the mitigation proposed by the Applicant, including siting the cable to avoid environmentally sensitive areas, completing targeted breeding bird surveys and targeted habitat management measures for species likely to be affected should ensure that none of the species listed suffer more than a minor impact due to disturbance or habitat loss.</p>	<p>We welcome Natural England's conclusion on this issue which is in agreement with that in the ES.</p>
Physical processes, benthic ecology and sediment quality	
<p>The Applicant states that the export cable, where possible, will be buried to a target depth of 0.5m to 5m. Natural England advises burial depths of greater than 1m wherever possible so as to avoid potential scour effects and future exposure of the export cable</p>	<p>Noted</p>
<p>Natural England considers that, in the first instance, best efforts should be made to use drop-down photography because this is the best method to inform patchiness and avoids damage to the reef. Mitigation could include waiting for visibility to clear during periods of slack water or, if available, use of a freshwater lens. However, it is recognised that a single grab combined with the drop-down video survey can help inform elevation and abundance.</p>	<p>The final survey methodology would be agreed with Natural England at least 4 months prior to the survey works which could be completed up to 18 months prior to construction. The mitigation measures will be based on the methods and technology available at the time of survey and the mitigation suggested by Natural England will be considered in the survey design.</p>
<p>Gravity Based foundations: By committing to not placing gravity based structures in areas where sandwaves are greater than 5m, the applicant is reducing the potential for habitat impact. Natural England would welcome further discussion with the Applicant on how this commitment can be included within the draft DCO.</p>	<p>EATL propose to amend the draft DCO to include the following condition in the draft DML, which is the same approach taken by EA1: <i>"No gravity base foundations may be installed in any area of the seabed with mobile sand waves of 5 metres or more, as identified by the swath-bathymetry survey carried out under condition 17(2)(b), unless otherwise agreed in writing by the MMO."</i></p>

Relevant Representation Comment	EATLs response
<p>Elevated levels of arsenic: Natural England notes that elevated levels of arsenic were found to be present at sample station 30, which is within the offshore cable corridor. Should dredging be required in the vicinity of station 30, arsenic levels should be monitored in order to inform disposal. Natural England welcomes a commitment by the applicant to undertake this monitoring if required, but we consider that a proposed monitoring method should be included in the In Principle Monitoring Plan (IPMP). We would welcome further discussion with the Applicant on this matter.</p>	<p>If dredging is required at or around site 30, EATL has committed to further survey work to determine the extent of any contamination and inform the appropriate disposal method. EATL will work with Natural England and the MMO, post consent, once detailed design information is available. We do not believe that there is any requirement for a monitoring programme rather a survey to determine the nature of any contamination.</p>
<p>Orford Inshore recommended Marine Conservation Zone (rMCZ) overlaps with the proposed export cable route. Recommended MCZs are a material consideration in the marine licencing process, but, weight given to the consideration is less than that given to proposed MCZs (pMCZs) as pMCZs have been put out for consultation. The site remains an rMCZ and it may be put forward for consultation in the future. Orford Inshore rMCZ contains a feature (subtidal mixed sediment) that may be affected by cable installation, operation and decommissioning. There are no pMCZs that are potentially affected by the project</p>	<p>EATL understand Natural England's position regarding the Orford Inshore rMCZ and recognise that if this site is designated a pMCZ prior to the construction of East Anglia THREE then further work would be required by EATL to assess potential impacts to the features and provide mitigation if appropriate.</p>
<p>The percentage of the East Anglia Zone affected by EA3 is stated in paragraph 291 of Chapter 10 of the Environmental Statement Report as 0.34% which is different to that stated in Table 10.2 (0.43%). Please can the Applicant clarify the correct figure.</p>	<p>The correct figure is 0.43%. This was a typographic error in the assessment section of the ES, however it does not make a material difference to the significance of the impact.</p>
<p>Homogeneity: Natural England advises that the assertion made by the Applicant that habitats across the Southern North Sea are ubiquitous and of low ecological sensitivity should be evidenced/removed/clarified. While Natural England agrees with the Applicant that cumulatively impacts may be low, and the East Anglia Three zone benthic habitats are homogenous this assumption cannot be extended to the cumulative sensitivity of habitats (many of which are Annex I features of N2K sites) across the southern North Sea.</p>	<p>EATL recognises that there are habitats of importance for nature conservation across the North Sea, the intention was to highlight that the habitats within the site and wider Zone are relatively common across the North Sea and that given the substrate type (e.g. subtidal mixed sediment) are not particularly sensitive themselves, notwithstanding any designation they may have.</p>
<p>The assessment of cumulative impacts varies in context between the North Sea and the southern North Sea. Natural England would welcome consistency, notably in paragraph 361 of the Environmental Statement Report.</p>	<p>Noted it should be southern North Sea throughout</p>

Relevant Representation Comment	EATLs response
Onshore ecology	
Bats may still suffer a small effect during construction due to loss of commuting and foraging habitat, but this is not likely to constitute more than a low impact.	Noted

If you wish to discuss the above or any other issues in connection with the Project, please contact Keith Morrison, EA3 Senior Project Manager, ScottishPower Renewables, 4th Floor, Atlantic Quay, Glasgow G2 8JB or by email at Eastangliathree@scottishpower.com

Yours faithfully



Keith Morrison
Senior Project Manager

East Anglia THREE
Offshore Windfarm

East Anglia THREE

Response to NE Section 56 Consultation Annex 1: Ornithology and Updated Cumulative Collision Risk Tables

Author – MacArthur Green
East Anglia Offshore Wind Limited
Date – May 2016
Revision History – Revision A

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1.1 Introduction

1. In Natural England's Relevant Representation for the East Anglia THREE Windfarm application (Natural England 2016), further work or clarifications were requested by Natural England to enable a robust assessment in relation to offshore ornithology to be undertaken. The key concerns identified by Natural England were:
 - a. Use of Potential Biological Removal vs. Population Viability Analysis;
 - b. EIA impacts on guillemot, razorbill and puffin;
 - c. EIA impacts on kittiwake; and
 - d. EIA impacts on great black-backed gull.
2. In addition to the above main requests, several lower priority requests and comments which were made are addressed in this note:
 - a. Presentation of a combined table for two separate ones (Tables 13.31 and 13.34) presented in the ornithology chapter of the Environmental Statement to assist interpretation;
 - b. Provision of further details of recorded gannet flight heights; and
 - c. Assessment of additive impacts of displacement and collision risk.
3. This note provides responses from EATL with respect to the above topics. The remaining comments and questions made by Natural England in their Relevant Representation have been addressed by means of clarifications in a table of responses covering all topics, of which this note is an appendix.
4. Following submission of the ES for East Anglia THREE, modifications to the design of the Hornsea Project Two Wind Farm were submitted to the Planning Inspectorate (SmartWind 2015a). Updated cumulative collision tables have therefore been produced for East Anglia THREE and these have been included in this note.

1.2 Use of Potential Biological Removal vs. Population Viability Analysis

5. Natural England (2016) stated that Population Viability Analysis (PVA) is their preferred method for assessing impacts on populations, rather than Potential Biological Removal (PBR), wherever the former is available. EATL is in agreement with this statement, however we also consider that PBR does have merit as it can provide a useful context for determining if additional assessment using a PVA approach is warranted. For example, if the results from PBR indicate that an impact will be very small relative to the population affected then there is little justification for population modelling.
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6. In Natural England's written submission for deadline 6 of the Hornsea Project Two Examination (Natural England 2015a), it is stated that while Natural England prefer the use of PVA over PBR, the latter (i.e. PBR) may still be useful. Paragraph 2.21 of Natural England (2015a) states:
 7. *'Natural England has based its assessment of impacts for the HRA species on PVA models produced by the Applicant for colonies at [Flamborough and Filey Coast] FFC pSPA. However, there are currently no suitable PVA models at an appropriate scale for the EIA species considered above, with the exception of gannet where there is a SOSS PVA model for the UK gannet population which can be used to evaluate impacts for the smaller North Sea scale (WWT 2012). Due to the lack of available PVA models at an appropriate scale for kittiwake, [lesser black backed gull] LBBG and [great black backed gull] GBBG, Natural England has considered the results from PBR models in assessing the significance of EIA impacts for these species.'*
 8. Based on this, therefore Natural England and EATL are in agreement that PBR may be useful, and indeed Natural England used the results of PBR to reach conclusions on certain impacts in relation to the Hornsea Project Two Wind Farm. We are not aware of any further evidence having been produced since November 2015 which would lead to a change in this position, and therefore consider it reasonable to present PBR results for the East Anglia THREE assessment, with the caveat that should these results indicate potentially significant impacts then further population modelling (e.g. PVA) may be necessary.

1.3 EIA impacts on guillemot, razorbill and puffin;

9. Natural England does not agree with the methods used to estimate annual displacement impacts on guillemot, razorbill and puffin. This aspect was discussed at Evidence Plan meetings, however no agreement on the most appropriate method was reached. The key aspects of disagreement are:
 - a. Natural England advised that the impact in each biologically defined season should be summed to obtain an annual total. EATL consider that this is not appropriate for two reasons; a) it will incorporate an unknown (and potentially large) amount of double counting (i.e. individuals may be present in more than one season) and b) species-specific differences in the number of nonbreeding seasons means that impacts will be artificially inflated (guillemot have one non-breeding season, razorbill three, however there is no reason to expect impacts for these two species to differ by three times).
 - b. Natural England disagreed with the method used to estimate the reference population during the breeding season (with respect to the number of immature birds potentially present).
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10. Natural England therefore advised that further assessment of auk displacement was required.
11. Following a review of options which could provide Natural England with the requested additional assessment, work undertaken by Natural England (2015a) with respect to the Hornsea Project Two Offshore Wind Farm Application was identified as providing a suitably robust approach. This conclusion was reached on the basis that Natural England applied this assessment in relation to the Hornsea Project Two Wind Farm (in a submission dated 25th November 2015) and therefore as East Anglia THREE is the next offshore wind farm to reach examination, its application remains appropriate for assessing the same impacts at this site.
12. Natural England (2015a) used PBR to assess the cumulative impact of displacement on auks. The relevant sections from Tables 6 and 7 in Natural England (2015a) for guillemot, razorbill and puffin, have been reproduced in Table 1, together with the modelling parameters required to calculate the PBR recovery factor (*Fr*) value. The displacement mortality for the East Anglia THREE project has been added to the Hornsea Project Two cumulative total to permit recalculation of the *Fr* for all sites up to and including East Anglia THREE. Note that to obtain an annual figure for East Anglia THREE the seasonal displacement values have been summed (i.e. using the method advocated by Natural England). While EATL do not agree that this is the most appropriate method for estimating annual impacts due to reasons set out in the ES (and summarised above), using this method ensures that the worst case impact (as Natural England would estimate it) has been presented.

Table 1. Data presented in Tables 6 and 7 of Natural England (2015a) with PBR parameters used to calculate *Fr*. Shaded cells indicate values taken from Natural England (2015a), unfilled cells provide an update of the calculations with the inclusion of estimated annual displacement mortality due to the East Anglia THREE project. Note that where a range of values is shown these bracket the impact range from 30% displacement and 1% mortality to 70% displacement and 10% mortality (guillemot and razorbill) and from 10% displacement and 1% mortality to 70% displacement and 10% mortality (puffin) as per Natural England (2015a). The impact range is reflected in the *Fr* ranges in the final column.

Species	Cumulative total up to project:	NE population scale	Project impact considered by NE (annual total)	Nmin	Adult survival	Age first breeding	Lambda max.	Rmax	Fr
Guillemot	HP2	2045078	515-12032	1879933	0.939	6	1.079	0.079	0.007 - 0.163
	EA3		529-12349						0.007 - 0.167
Razorbill	HP2	591874	235-5473	544079	0.895	5	1.109	0.109	0.008 - 0.185
	EA3		252-5890						0.009 - 0.199
Puffin	HP2	868689	39-2737	798540	0.906	5	1.105	0.105	0.001 - 0.0656
	EA3		39-2771						0.001 - 0.0664

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13. The estimated range of *Fr* values for guillemot presented in Natural England (2015a) was from <0.01 to 0.163 (from 30% displacement and 1% mortality to 70% displacement and 10% mortality). Since the highest value (0.163) was obtained under the most precautionary assumptions (70% displaced and 10% mortality) and was below an *Fr* threshold of 0.2, Natural England concluded that '*predicted mortality levels are sustainable under all scenarios*'. Including the East Anglia THREE project displacement increases the highest *Fr* value (under the assumption of 70% displacement and 10% mortality) to 0.167 (Table 1).
 14. The estimated range of *Fr* values for razorbill presented in Natural England (2015a) was from <0.01 to 0.185 (from 30% displacement and 1% mortality to 70% displacement and 10% mortality). Since the highest value (0.185) was obtained under the most precautionary assumptions (70% displaced and 10% mortality) and was below an *Fr* threshold of 0.2, Natural England concluded that '*predicted mortality levels are sustainable under all scenarios*'. Including the East Anglia THREE project displacement increases the highest *Fr* value (under the assumption of 70% displacement and 10% mortality) to 0.199 (Table 1).
 15. The estimated range of *Fr* values for puffin presented in Natural England (2015a) was from <0.01 to 0.065 (from 30% displacement and 1% mortality to 70% displacement and 10% mortality). Since the highest value (0.065) was obtained under the most precautionary assumptions (70% displaced and 10% mortality) and was below an *Fr* threshold of 0.1, Natural England concluded that '*the predicted mortality level from projects cumulatively in UK North Sea waters are sustainable*'. The inclusion of displacement from the East Anglia THREE project increases the highest *Fr* value to 0.066 (Table 1).
 16. Following this assessment, in paragraph 2.43 of Natural England (2015a) it was stated that:
 17. '*Therefore at a North Sea EIA scale Natural England are able to conclude no significant effect for guillemot, razorbill and puffin from the project alone and cumulatively with other projects in North Sea UK waters.*'
 18. As can be seen, updating this assessment to include worst case displacement mortality from the East Anglia THREE project the *Fr* values for each species remain below the sustainable thresholds considered appropriate by Natural England. Therefore, the above conclusion (no significant effects), with respect to the cumulative impact on these species, is considered to remain valid for the East Anglia THREE project.
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1.4 EIA impacts on kittiwake and great black-backed gull

19. Following discussions with Natural England during Evidence Plan meetings a PVA model for kittiwake was developed and presented for the assessment of kittiwake impacts at the wider North Sea scale. Following review of the ES Natural England advised that further consideration of two key aspects was required: the role of density dependent regulation and the appropriate reference population to use.
 20. With respect to density dependence, Natural England (2016) stated:
 21. *'There appears to be little clear evidence to suggest compensatory density dependence is operating on the kittiwake population at a North Sea scale, therefore Natural England advises that the assessment should focus on outputs from the density independent models.'*
 22. Most demographic parameters of seabirds are likely to show some density-dependent variation (Newton 1998). Cairns (1987) pointed out that life history theory predicts that seabird breeding success will show a compensatory density-dependent response at an earlier stage of reduced food abundance and adult survival is likely to show less response until food abundance is drastically reduced. Age at first breeding may vary in a compensatory density-dependent way at an intermediate level. Empirical evidence provides some support for Cairns' predictions (Cury et al. 2011; Furness 2015). There are extensive data on breeding success of kittiwakes, showing that breeding success declines with reduction in food supply which is consistent with but does not prove compensatory density-dependent limitation by food supply (Frederiksen et al. 2005; Furness 2007).
 23. Furness and Birkhead (1984) showed that the spatial distribution of kittiwake colonies indicated compensatory density-dependent competition for resources in the marine areas around colonies; numbers breeding at neighbouring colonies were influenced by the neighbouring kittiwake colony size.
 24. Mean age of first breeding of male kittiwakes decreased from 4.59 years in 1961-70 to 3.69 in 1981-90 (Coulson 2011). The lower age of first breeding in the 1980s coincided with a much increased adult mortality, and Coulson (2011) interpreted that as evidence that competition for nest sites at the colony influenced age of first breeding so acted in a compensatory density-dependent manner.
 25. Coulson (2011) showed that the annual rate of increase in size of 46 kittiwake colonies in the UK between 1959 and 1969 was inversely related to colony size. Colonies of 1-10 pairs in 1959 increased on average by 70% up to 1969. Colonies of 10-100 pairs in 1959 increased on average by 20% up to 1969. Colonies of 100-1000 pairs in 1959 increased on average by 5%. Colonies of
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1000-10,000 pairs in 1959 increased on average by 3%. This implies very strong compensatory density-dependence. It is unclear just from these changes in numbers which particular demographic parameters were affected, but Coulson (2011) inferred that the most likely candidate is the rate of net immigration into each colony. Coulson (2011) inferred from his detailed observational studies, and from population modelling, that the main reason for the progressive differences in growth of an individual colony is the balance between immigration and emigration of immature birds. Frederiksen et al. (2005) found that for the period 1986-2000, there was no relationship between colony size and colony growth rate, and suggested that compensatory density-dependence occurred during the expansion phase but not necessarily at all stages of population change.

26. A compensatory density-dependent reduction in colony growth rate is also clearly evident from data on colony size over a period of decades for colonies studied in detail. Numbers at Marsden (Tyne & Wear) showed a rate of increase that progressively decreased as numbers grew (Coulson 2011, Figure 11.5). Numbers at nearby Coquet Island (Coulson 2011, Figure 11.6) show exactly the same trend with colony size. However, numbers grew rapidly at Coquet at the same time that growth had virtually ceased at Marsden (in the 1990s). This shows clearly that the rate of growth was a colony-specific feature related to local competition, and was not a consequence of region-wide variations in conditions. According to Coulson (2011) '*examination of the rates of increase of kittiwake colonies with time almost always showed the same pattern*' as described above. This pattern implies compensatory density-dependence at individual colonies according to local conditions.
27. Most kittiwake colonies in the UK North Sea have declined in breeding numbers in the last few years, most strongly in the north. Decreases in numbers appear to have been greater in large colonies than in small ones, suggesting a density-dependent effect with competition increasing most in the largest colonies as resources have declined.
28. Jovani et al. (2015) found empirical evidence from the data on the distribution of colony sizes of seabirds (including kittiwakes) in relation to breeding season foraging range for density-dependence through competition for resources around breeding colonies.
29. In conclusion, there is strong evidence, summarised above, for compensatory density dependence acting on the kittiwake population of the UK, although exact mechanisms remain to be determined and there is some evidence to suggest that the strength of density-dependence may vary in relation to environmental conditions.

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30. On this basis the density dependent version of the PVA model is considered the more robust one on which to base assessment.
 31. With respect to the appropriate reference population size, Natural England (2016) stated:
 32. *‘Natural England advises that the Applicant further considers whether the kittiwake PVA model has been constructed at the appropriate population scale for assessing EIA impacts. We appreciate that the Applicant has carried out at a North Sea BDMPS scale assessment which is the scale that we initially accepted impacts should be measured against. However, further consideration is required as to whether it is biologically meaningful and therefore appropriate to construct a PVA model at this scale. Using the North Sea BDMPS is appropriate for HRA because impacts are apportioned back to individual SPA colonies, but for EIA if the North Sea BDMPS scale is used it does not consider a biologically discrete population.’*
 33. The appropriate spatial scale at which to model impacts should be informed by evidence on the extent to which individual colonies either represent closed populations or are part of a much larger meta-population. If colonies form a meta-population then we need to consider the spatial scale over which colony dynamics is influenced by immigration-emigration processes between colonies.
 34. Coulson (2011) inferred from his detailed observational studies, and from population modelling, that the main reason for the progressive differences in growth of an individual colony is the balance between immigration and emigration of immature birds. At newly formed colonies at North Shields and Coquet Island, it took 9 and 7 years respectively before the first locally-reared bird bred in these colonies (Coulson 2011). Coulson (2011) inferred that almost all kittiwakes recruiting into small and newly formed colonies are immigrants. Furthermore, he inferred from ringing evidence that numbers of immigrants exceed numbers of locally born kittiwakes recruiting into a colony even when the colony has grown to a substantial size. Therefore, kittiwake colonies form a larger meta-population.
 35. At North Shields over a long-term study period, 91% of female recruits were immigrants, as were 63.5% of male recruits (Coulson 2011). Birds moved up to 1,600 km from their place of birth to breed, with a bi-modal distribution of distances, one peak being within 100 km of the natal colony and the second being between 400 and 1000 km from the natal colony. Therefore, the spatial scale over which colonies interact is at least 1000 km.
 36. These detailed data on emigration of juveniles contrast with the observation that once a kittiwake has established a nest site, it normally returns to the same nest site each year. Emigration of established breeding adults is very
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- unusual, but can occur in extreme cases when large areas of colonies are physically destroyed, or are severely affected by predators or by long-term severe food shortage causing extreme breeding failure (Danchin and Monnat 1992; Coulson 2011; Ponchon et al. 2015).
37. High rates of emigration of juvenile birds imply a meta-population structure that makes modelling of colonies assuming those are closed populations inappropriate. The meta-population of kittiwakes is over a large spatial scale. Because a significant proportion of emigrants recruit into colonies 400 to 1000 km away from their place of birth, the dynamics of kittiwake colonies will be influenced by factors affecting colonies over at least a range of 400 to 1000 km. This suggests that the entire North Sea kittiwake population should be treated as one meta-population rather than as numerous closed individual colony populations, and there would be a case for modelling the population at an even larger spatial scale than just the North Sea, although increasing the spatial scale further makes the modelling increasingly complex because it is unlikely that demographic parameters appropriate for the North Sea colonies would necessarily be appropriate for colonies in other oceanographic systems.
 38. On this basis use of the BDMPS population sizes as the reference population in the kittiwake PVA model is considered robust for assessment.
 39. Natural England (2016) advised that further consideration of great black-backed gull collision impacts should be conducted, including a proposal that a PVA model should be developed to provide further assessment.
 40. As discussed above, EATL and Natural England are essentially in agreement that PVA provides greater insights for assessments than PBR. However, EATL maintain a position that PBR is a useful tool which can be used as a filter to distinguish between instances when PVA is unnecessary (i.e. impacts are very small) and those when it is warranted.
 41. This rationale was applied by Natural England in the use of PBR for considering cumulative impacts up to and including the Hornsea Project Two Offshore Wind Farm (Natural England 2015a). Since East Anglia THREE is the next offshore wind farm to reach examination, updating this assessment is considered to provide a robust approach for assessing the same impacts, with the caveat that if this indicates potentially significant impacts then PVA will be justified.
 42. The following sections of this note present an update of the cumulative assessment conducted by Natural England (2015a) for the Hornsea Project Two Wind Farm, with the addition of the annual collision impacts for kittiwake and great black-backed gull estimated for the East Anglia THREE project (EATL 2015). East Anglia THREE is the only additional wind farm in the
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English North Sea which has submitted an application since the assessment was conducted by Natural England (2015a). Therefore, no other projects need to be considered in order to bring Natural England's cumulative assessments up to date.

43. The relevant sections from Tables 4 and 5 in Natural England (2015a) have been reproduced below (Table 2), together with the modelling parameters required to calculate the PBR recovery factor (*Fr*) presented in Natural England (2015). The cumulative mortality estimated for the East Anglia THREE project has then been added for each species to permit recalculation of the *Fr* using the same method but including all the wind farms listed in the EATL (2015) cumulative assessment.
44. For each species, two cumulative totals have been presented for the East Anglia THREE project. The first are the values presented in the ES (EATL 2015), while the second are revised cumulative totals which include the revised estimates for the Hornsea Project Two assessment (Smart Wind 2015a) which were made after the East Anglia THREE ES was submitted. The updated cumulative collision mortality tables for gannet, kittiwake, lesser black-backed gull and great black-backed gull are presented in Tables 4 to 7 of this note.
45. It should also be noted that the difference in the cumulative collision values between those presented for projects up to and including Hornsea Project Two and those up to and including East Anglia THREE is partially accounted for by the inclusion of the estimated East Anglia THREE mortality but also reflects the inclusion of a larger number of wind farms in the East Anglia THREE cumulative assessment. This further highlights the precautionary nature of the current assessment.

Table 2. Data presented in Tables 4 and 5 of Natural England (2015) with parameters used to calculate *Fr*. Rows labelled 'EA3' update the calculations to include collisions at East Anglia THREE. Shaded cells indicate values taken from Natural England (2015).

Species	Final project included in cumulative assessment	Population scale	Project impact considered by NE	Nmin	Adult survival	Age first breeding	Lambda max.	Rmax	<i>Fr</i>
Kittiwake	HP2	839456	3616	771668	0.854	4	1.144	0.144	0.065
	EA3 (ES)		4003						0.072
	EA3 (revised)		3654						0.066
Great black-	HP2	91399	679	84018	0.93	5	1.094	0.094	0.173

Species	Final project included in cumulative assessment	Population scale	Project impact considered by NE	Nmin	Adult survival	Age first breeding	Lambda max.	Rmax	Fr
	EA3 (ES)		1048						0.267
	EA3 (revised)		882						0.224

46. The estimated *Fr* value for the North Sea kittiwake population presented in Natural England (2015a) was 0.065. This value was considered in relation to a sustainable threshold defined as ‘less than 0.5’. Following the update to the cumulative total including the East Anglia THREE collision estimates (from the ES and the revised one) the *Fr* value increases to between 0.066 and 0.072.
47. The estimated PBR *Fr* value for great black-backed gull presented in Natural England (2015a) was 0.173, which was considered in relation to a sustainable threshold defined as ‘0.5’. Following the update to the cumulative total including the East Anglia THREE collision estimates (from the ES and the revised one) the *Fr* value increases to between 0.224 and 0.267.
48. On the basis of the *Fr* values it was concluded in Natural England (2015a) that:
49. ‘...the impacts to kittiwake and great black-backed gull under EIA at the North Sea population scale when considered cumulatively with other wind farms in the North Sea can be considered unlikely to give rise to a significant effect.’
50. Following the update to this cumulative assessment using the East Anglia THREE cumulative collision mortality values in place of those presented by Natural England (2015a), the *Fr* values increase by small amounts and remain well below the sustainable thresholds considered appropriate by Natural England. Therefore, the above conclusion, with respect to the cumulative impact on these species, is considered to remain valid for the East Anglia THREE project.
51. Following this assessment EATL consider that undertaking additional assessment and modelling for kittiwake and great black-backed gull is unnecessary in order to establish that there will be no significant impacts on these species as a result of mortality at the East Anglia THREE site acting either alone or cumulatively.

1.5 Combined collision risk table

Natural England (2016) requested that the seasonal collision estimates for East Anglia THREE (Table 13.31) should be included in the table of

percentage increases in mortality (Table 13.34) to assist reviewing. Table 3 provides this combined table.

Table 3 Percentage increase in seasonal BDMPS and annual biogeographic mortality due to collisions at the East Anglia THREE site, including seasonal and annual collision mortality (this table combines the seasonal collision values from Table 13.31 and the increases in mortality from table 13.34 in the ES).

Species	Baseline average mortality	Band model	Reference population and percentage increase in mortality											
			Spring Migration			Wintering			Autumn Migration			Annual		
			CRM	BDMPS	Increase in mortality (%)	CRM	BDMPS	Increase in mortality (%)	CRM	BDMPS	Increase in mortality (%)	CRM	Biogeographic population	Increase in mortality (%)
Gannet	0.191	1	11	248385	0.027	n/a			38	456298	0.041	56	1,180,000	0.025
Kittiwake	0.156	1	49	627816	0.050	n/a			90	829937	0.069	147	5,100,000	0.018
Lesser black-backed gull	0.126	2	1	197483	0.004	2	39314	0.040	6	209007	0.023	11	864,000	0.010
		3	1		0.004	2		0.040	6		0.023	11		
Herring gull	0.172	2	n/a			25	466511	0.031	n/a			25	1,098,000	0.013
		3	25	0.031	25	0.013								
Great black-backed gull	0.07	2	n/a			37	91399	0.575	n/a			42	235,000	0.255
		3	40	0.621	45	0.273								

1.6 Gannet and kittiwake flight height data

52. Natural England agreed that site specific flight heights should be used in collision risk modelling if sufficient data are available. However, they also consider it appropriate to present a range of flight heights. Collision modelling in the ES used site specific flight heights for gannet and kittiwake as these were the only species for which sufficient data were collected (n=251 and n=208 respectively). Histograms of these data are provided below (Figures 1 and 2).

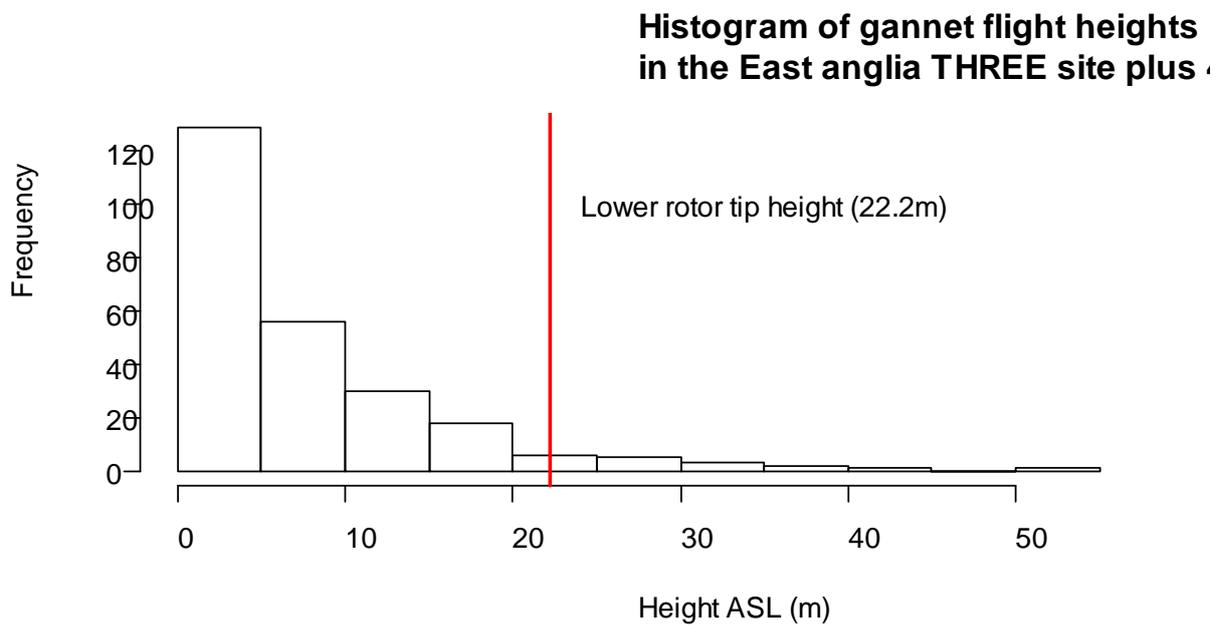


Figure 1. Gannet flight height observations at the East Anglia THREE site.

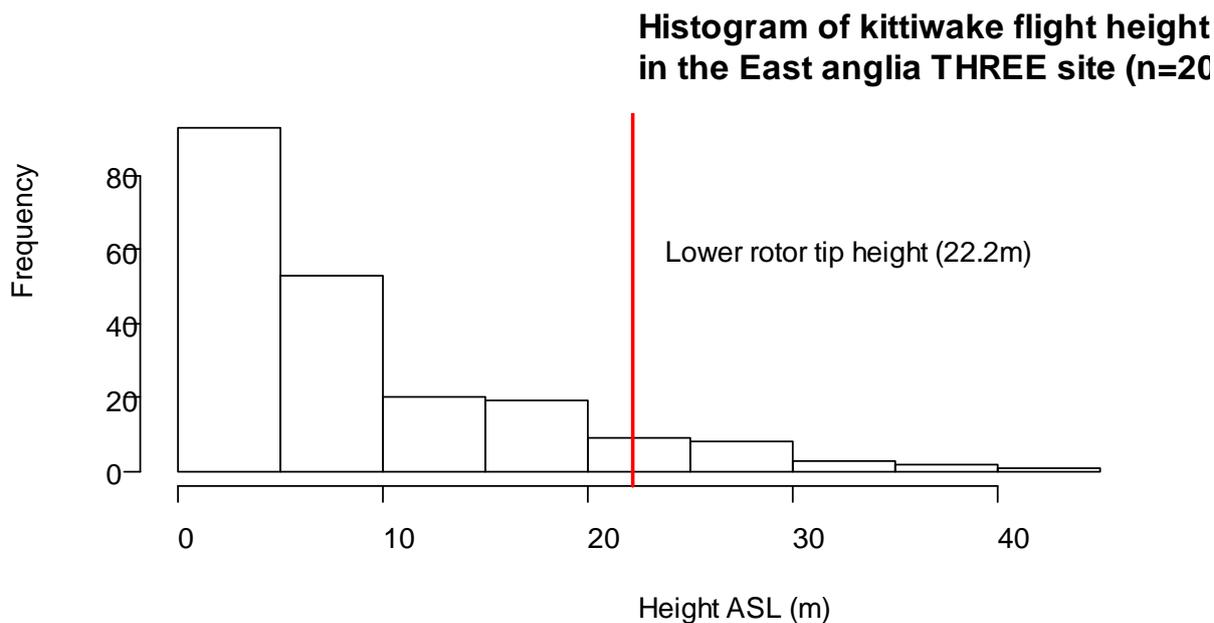


Figure 2. Kittiwake flight height observations at the East Anglia THREE site.

1.7 Revised cumulative collision mortality

53. Tables 4 to 7 presented below provide updated cumulative and in-combination collision mortalities for gannet, kittiwake, lesser black-backed gull and great black-backed gull and replace the following ones in Chapter 13 Offshore Ornithology (EATL 2015a):

- Table 4 replaces 'Table 13.45 – Cumulative Collision Risk Assessment for Gannet'.
- Table 5 replaces 'Table 13.46 – Cumulative Collision Risk Assessment for Kittiwake'.
- Table 6 replaces 'Table 13.47 – Cumulative Collision Risk Assessment for Lesser black-backed gull.'
- Table 7 replaces 'Table 13.49 – Cumulative Collision Risk Assessment for Great black-backed gull.'

54. These updates reflect revisions to the collision estimates for the Hornsea Project Two Wind Farm (SmartWind 2015a, Natural England 2015b) which occurred following submission of the East Anglia THREE application (EATL 2015a,b) during the examination for Hornsea Project Two.

55. Tables 4 to 7 also replace the following ones from The Information for the Habitats Regulations Assessment (EATL 2015b):

- Table 4 replaces 'Table 3.6 Gannet collision mortality for all wind farms with potential connectivity to the Flamborough and Filey Coast pSPA.'
- Table 5 replaces 'Table 3.7 Kittiwake collision mortality for all wind farms with potential connectivity to the Flamborough and Filey Coast pSPA.'

-
- Table 6 replaces 'Table 3.5 Lesser black-backed gull collision mortality for all wind farms (nonbreeding) and those with potential connectivity during the breeding season with the Alde-Ore SPA.'
56. It should be noted that the list of wind farms included in the cumulative and in-combination assessments for EATL (2015a,b) and updated in this note is longer than that assessed for Hornsea Project Two (see Table 10 of Natural England 2015b for the full list included for Hornsea Project Two). Consequently, the cumulative totals presented in this note differ slightly from those presented in SmartWind (2015a) and Natural England (2015b).
57. It should also be noted that the collision estimates for herring gull at the Hornsea Project Two wind farm which were presented in EATL (2015a) were erroneously attributed to the Hornsea Project Two application (SmartWind 2015b). This document did not contain a herring gull collision assessment. These collision estimates should have been attributed to the supporting technical annex for the Hornsea Project One assessment (SmartWind 2013).

Table 4. Updated gannet collision risk. This table includes revised estimates for Hornsea Project Two. Collisions have been apportioned to the Flamborough and Filey Coast pSPA in each season and summed for the year. The percentage apportioned in the breeding season has been calculated using the percentages presented in EATL (2015). This table replaces Table 13.45 in EATL (2015a) and Table 3.6 in EATL (2015b).

Tier	Project	Breeding season			Post-breeding			Pre-breeding			Annual		Ref.*
		Total	% FFC pSPA	FFC pSPA	Total	% FFC pSPA	FFC pSPA	Total	% FFC pSPA	FFC pSPA	Total	FFC pSPA	
1	Beatrice Demonstrator	0.6	0	0.0	0.9	1.9	0.02	0.7	3.3	0.02	2.2	0.0	1
1	Greater Gabbard	14.0	0	0.0	8.8	4.2	0.37	4.8	5.6	0.27	27.5	0.6	2
1	Gunfleet Sands	0.0	0	0.0	0.0	4.2	0.00	0.0	5.6	0.00	0.0	0.0	1
1	Kentish Flats	1.4	0	0.0	0.8	4.2	0.03	1.1	5.6	0.06	3.3	0.1	1
1	Lincs	2.1	100	2.1	1.3	4.2	0.05	1.7	5.6	0.09	5.0	2.2	2
1	London Array	2.3	0	0.0	1.4	4.2	0.06	1.8	5.6	0.10	5.5	0.2	2
1	Lynn and Inner Dowsing	0.2	100	0.2	0.1	4.2	0.01	0.2	5.6	0.01	0.5	0.2	1
1	Scroby Sands	0.0	100	0.0	0.0	4.2	0.00	0.0	3.3	0.00	0.0	0.0	1
1	Sheringham Shoal	14.1	100	14.1	3.5	4.2	0.15	0.0	3.3	0.00	17.6	14.2	2
1	Teesside	4.9	50	2.4	1.7	1.5	0.03	0.0	5.6	0.00	6.7	2.5	2
1	Thanet	1.1	0	0.0	0.0	4.2	0.00	0.0	5.6	0.00	1.1	0.0	2
1	Humber Gateway	1.9	100	1.9	1.1	4.2	0.05	1.5	5.6	0.08	4.5	2.0	2
1	Westernmost Rough	0.2	100	0.2	0.1	1.5	0.00	0.2	5.6	0.01	0.5	0.2	2
3	Beatrice	37.4	0	0.0	48.8	1.9	0.93	9.5	3.3	0.31	95.7	1.2	3
3	Blyth Demonstration Project	3.5	0	0.0	2.1	1.5	0.03	2.8	5.6	0.16	8.4	0.2	2
3	Dogger Bank Creyke Beck Projects A and B	5.6	50	2.8	6.6	1.5	0.10	4.3	5.6	0.24	16.5	3.1	4
3	Dudgeon	22.3	100	22.3	38.9	4.2	1.64	19.1	5.6	1.07	80.3	25.0	1
3	East Anglia ONE	5.0	100	5.0	198.0	4.2	8.32	10.0	5.6	0.56	213.0	13.9	5
3	EOWDC	4.2	0	0.0	5.1	1.8	0.09	0.1	3.4	0.00	9.3	0.1	2
3	Firth of Forth Alpha and Bravo	800.8	0	0.0	49.3	1.8	0.89	65.8	3.4	2.24	915.9	3.1	1
3	Galloper	18.1	0	0.0	30.9	4.2	1.30	12.6	5.6	0.71	61.6	2.0	2
3	Hornsea Project One	11.5	100	11.5	32.0	4.2	1.34	22.5	5.6	1.26	66.0	14.1	4
3	Inch Cape	336.9	0	0.0	29.2	1.8	0.53	5.2	3.4	0.18	371.3	0.7	2
3	Moray Firth (EDA)	80.6	0	0.0	35.4	1.9	0.67	8.9	3.3	0.29	124.9	1.0	1
3	Near na Gaoithe	509.3	0	0.0	26.1	1.8	0.47	34.8	3.4	1.18	570.1	1.7	2
3	Race Bank	33.7	100	33.7	11.7	4.2	0.49	4.1	5.6	0.23	49.5	34.4	2
3	Rampion	36.2	0	0.0	63.5	4.2	2.67	2.1	5.6	0.12	101.8	2.8	1
3	Dogger Bank Teesside Projects A and B	14.8	50	7.4	10.1	1.5	0.15	10.8	5.6	0.61	35.7	8.1	4

Tier	Project	Breeding season			Post-breeding			Pre-breeding			Annual		Ref.*
		Total	% FFC pSPA	FFC pSPA	Total	% FFC pSPA	FFC pSPA	Total	% FFC pSPA	FFC pSPA	Total	FFC pSPA	
4	Triton Knoll	26.8	100	26.8	64.1	4.2	2.69	30.1	5.6	1.69	121.0	31.1	2
4	Hornsea Project Two	7.0	100	7.0	14.0	4.2	0.59	6.0	5.6	0.34	27.0	7.9	6
4	East Anglia THREE	7.0	100	7.0	38.0	4.2	1.60	11.0	5.6	0.62	56.0	9.2	7
	TOTAL	2003.2		144.3	723.7		25.2	271.6		12.4	2998.5	182.0	

*Data sources:

1. Natural England (2014)
2. SmartWind (2015c)
3. Beatrice Offshore Windfarm Ltd. (2013)
4. Forewind (2014)
5. East Anglia THREE Ltd. (2015c)
6. SmartWind (2015a)
7. East Anglia THREE Ltd. (2015a)

Table 5. Updated kittiwake collision risk. This table includes revised estimates for Hornsea Project Two. Collisions have been apportioned to the Flamborough and Filey Coast pSPA in each season and summed for the year. The percentage apportioned in the breeding season has been calculated using the percentages presented in EAOL (2015; EA3 method) and also using the method presented in NE (2015; NE method) to assist comparison with the previous assessment for both wind farms. The annual total for FFC includes the breeding season estimates calculated using the EA3 method. This table replaces Table 13.46 in EATL (2015a) and Table 3.7 in EATL (2015b).

Tier	Project	Breeding season – EA3 method			Breeding season – NE method			Post-breeding			Pre-breeding			Annual		Ref.*
		Total	% FFC pSPA	FFC pSPA	Total	% FFC pSPA	FFC pSPA	Total	% FFC pSPA	FFC pSPA	Total	% FFC pSPA	FFC pSPA	Total	FFC pSPA	
1	Beatrice Demonstrator	0	16.8	0.0			0.0	2.1	5.4	0.11	1.7	7.2	0.12	4.95	0.2	1
1	Greater Gabbard	1.1	16.8	0.2			0.0	15	5.4	0.81	11.4	7.2	0.82	27.5	1.8	1
1	Gunfleet Sands	0	16.8	0.0			0.0	0	5.4	0.00	0	7.2	0.00	0	0.0	2
1	Kentish Flats	0	16.8	0.0			0.0	0.9	5.4	0.05	0.7	7.2	0.05	2.2	0.1	1
1	Lincs	0.70	16.8	0.1	0.92	100	0.9	1.16	5.4	0.06	0.69	7.2	0.05	2.75	0.2	1
1	London Array	1.4	16.8	0.2			0.0	2.3	5.4	0.12	1.8	7.2	0.13	5.5	0.5	1
1	Lynn and Inner Dowsing	0	16.8	0.0			0.0	0	5.4	0.00	0	7.2	0.00	0	0.0	2
1	Scroby Sands	0	16.8	0.0			0.0	0	5.4	0.00	0	7.2	0.00	0	0.0	2
1	Sheringham Shoal	0	16.8	0.0			0.0	0	5.4	0.00	0	7.2	0.00	0	0.0	2
1	Teesside	38.4	16.8	6.5			0.0	24	5.4	1.30	2.5	7.2	0.18	77.08	7.9	1
1	Thanet	0.3	16.8	0.1			0.0	0.5	5.4	0.03	0.4	7.2	0.03	1.1	0.1	1
1	Humber Gateway	1.9	100	1.9	2.55	100	2.6	3.19	5.4	0.17	1.9	7.2	0.14	7.7	2.2	1
1	Westermost Rough	0.10	100	0.1	0.18	100	0.2	0.22	5.4	0.01	0.132	7.2	0.01	0.55	0.1	1
3	Beatrice	94.7	16.8	15.9			0.0	10.7	5.4	0.58	39.8	7.2	2.87	145.2	19.4	3
3	Blyth Demonstration Project	1.4	16.8	0.2			0.0	2.3	5.4	0.12	1.4	7.2	0.10	5.39	0.5	1
3	Dogger Bank Creyke Beck Projects A and B	288.0	16.8	48.4	288	19.3	55.6	135	5.4	7.29	295	7.2	21.24	718.85	76.9	1
3	Dudgeon	0.0	16.8	0.0	0	100	0.0	0	5.4	0.00	0	7.2	0.00	0	0.0	1
3	East Anglia ONE	2.0	16.8	0.3			0.0	242	5.4	13.07	71	7.2	5.11	314	18.5	4
3*	EOWDC	11.8	16.8	2.0			0.0	5.8	5.4	0.31	1.1	7.2	0.08	18.7	2.4	1
3	Firth of Forth Alpha and Bravo	153.1	16.8	25.7			0.0	313.1	5.4	16.91	247.6	7.2	17.83	715	60.5	1
3	Galloper	6.3	16.8	1.1			0.0	27.8	5.4	1.50	31.8	7.2	2.29	65.89	4.8	1

Tier	Project	Breeding season – EA3 method			Breeding season – NE method			Post-breeding			Pre-breeding			Annual		Ref.*
		Total	% FFC pSPA	FFC pSPA	Total	% FFC pSPA	FFC pSPA	Total	% FFC pSPA	FFC pSPA	Total	% FFC pSPA	FFC pSPA	Total	FFC pSPA	
3	Hornsea Project One	44.0	16.8	7.4	47.9	66.6	31.9	55.9	5.4	3.02	20.9	7.2	1.50	122	11.9	1
3	Inch Cape	13.1	16.8	2.2			0.0	224.8	5.4	12.14	63.5	7.2	4.57	301.42	18.9	1
3	Moray Firth (EDA)	43.6	16.8	7.3			0.0	2	5.4	0.11	19.3	7.2	1.39	45.4	8.8	1
3	Near na Gaoithe	32.9	16.8	5.5			0.0	56.1	5.4	3.03	4.4	7.2	0.32	93.39	8.9	1
3	Race Bank	1.90	16.8	0.3	1.86	100	1.9	23.9	5.4	1.29	5.59	7.2	0.40	31.35	2.0	1
3	Rampion	54.40	16.8	9.1			0.0	37.4	5.4	2.02	29.7	7.2	2.14	121	13.3	1
3	Dogger Bank Teesside Projects A and B	136.9	16.8	23.0	136.9	19.3	26.4	90.7	5.4	4.90	216.9	7.2	15.62	444.4	43.5	1
4	Triton Knoll	24.60	16.8	4.1	24.6	100	24.6	139	5.4	7.51	45.4	7.2	3.27	209	14.9	1
4	Hornsea Project Two	16.0	16.8	2.7	16	83	13.3	9	5.4	0.49	3	7.2	0.22	27	3.4	5
4	East Anglia THREE	8.00	16.8	1.3			0.0	90	5.4	4.86	49	8.2	4.02	146.3	10.2	6
	TOTAL			165.7			157.3			81.8			84.5	3653.6	332.0	

*Data sources:

1. Natural England (2015b)
2. Natural England (2014)
3. Beatrice Offshore Windfarm Ltd. (2013)
4. East Anglia THREE Ltd. (2015c)
5. SmartWind (2015a)
6. East Anglia THREE Ltd. (2015a)

Table 6. Updated lesser black-backed gull collision risk. This table includes revised estimates for Hornsea Project Two. All collisions during the breeding season at wind farms located within 141 km of the Alde-Ore SPA have been apportioned to that population. This table replaces Table 13.47 in EATL (2015a) and Table 3.5 in EATL (2015b).

Tier	Project	Breeding season			Nonbreeding season		Ref.*
		Total	% Alde-Ore SPA	Alde-Ore SPA	Total	Total	
1	Beatrice Demonstrator	0.0			0.0	0.0	1
1	Greater Gabbard	12.4	100	12.4	49.6	62.0	2
1	Gunfleet Sands	1.0			0.0	1.0	1
1	Kentish Flats	0.3	100	0.3	1.3	1.6	3
1	Lincs	1.7			6.8	8.5	2
1	London Array	0.0			0.0	0.0	NA
1	Lynn and Inner Dowsing	0.0			0.0	0.0	1
1	Scroby Sands	0.0			0.0	0.0	1
1	Sheringham Shoal	1.7	100	1.7	6.6	8.3	2
1	Teesside	0.0			0.0	0.0	NA
1	Thanet	3.2	100	3.2	12.8	16.0	2
1	Humber Gateway	0.3			1.1	1.3	2
1	Westermost Rough	0.1			0.3	0.3	2
3	Beatrice	0.0			0.0	0.0	NA
3	Blyth Demonstration Project	0.0			0.0	0.0	NA
3	Dogger Bank Creyke Beck Projects A and B	2.6			10.4	13.0	2
3	Dudgeon	7.7	100	7.7	30.6	38.3	1
3	East Anglia ONE	8.0	100	8.0	53.0	61.0	4
3	EOWDC	0.0			0.0	0.0	NA
3	Firth of Forth Alpha and Bravo	2.1			8.4	10.5	2
3	Galloper	27.8	100	27.8	111.0	138.8	5
3	Hornsea Project One	4.4			17.4	21.8	2
3	Inch Cape	0.0			0.0	0.0	NA
3	Moray Firth (EDA)	0.0			0.0	0.0	NA
3	Near na Gaoithe	0.3			1.2	1.5	1
3	Race Bank	43.2			10.8	54.0	2
3	Rampion	1.6			6.3	7.9	1
3	Dogger Bank Teesside Projects A and B	2.4			9.6	12.0	2
4	Triton Knoll	7.4			29.6	37.0	6
4	Hornsea Project Two	2.0			2.0	4.0	7
4	East Anglia THREE	2.0	100	2.0	9.0	11.0	8
	TOTAL	131.9		63.0	377.7	509.6	

*Data sources:

1. E.ON (2013a)
2. SmartWind (2015b)
3. KFWL (2011)
4. East Anglia THREE Ltd. (2015c)
5. RWE (2011)
6. TKOWL (2012)
7. SmartWind (2015a)
8. East Anglia THREE Ltd. (2015a)

Table 7. Updated great black-backed gull collision risk. This table includes revised estimates for Hornsea Project Two. All collisions during the breeding season at wind farms located within 141 km of the Alde-Ore SPA have been apportioned to that population. This table replaces Table 13.49 in EATL (2015a).

Tier	Project	Breeding season	Nonbreeding season	Annual	Ref.*
1	Beatrice Demonstrator	0.0	0.0	0.0	NA
1	Greater Gabbard	15.0	60.0	75.0	1
1	Gunfleet Sands	0.0	0.0	0.0	2
1	Kentish Flats	0.1	0.2	0.3	2
1	Lincs	0.0	0.0	0.0	2
1	London Array	0.0	0.0	0.0	2
1	Lynn and Inner Dowsing	0.0	0.0	0.0	NA
1	Scroby Sands	0.0	0.0	0.0	NA
1	Sheringham Shoal	0.0	0.0	0.0	NA
1	Teesside	8.7	34.8	43.6	3
1	Thanet	0.1	0.4	0.5	3
1	Humber Gateway	1.3	5.1	6.3	2
1	Westermost Rough	0.0	0.0	0.1	2
3	Beatrice	30.2	120.8	151.0	4
3	Blyth Demonstration Project	1.3	5.1	6.3	5
3	Dogger Bank Creyke Beck Projects A and B	5.8	23.3	29.1	3
3	Dudgeon	0.0	0.0	0.0	NA
3	East Anglia ONE	1.0	70.0	71.0	6
3	EOWDC	0.6	2.4	3.0	3
3	Firth of Forth Alpha and Bravo	13.4	53.4	66.8	3
3	Galloper	4.5	18.0	22.5	7
3	Hornsea Project One	17.2	68.6	85.8	2
3	Inch Cape	0.0	36.8	36.8	2
3	Moray Firth (EDA)	9.5	25.5	35.0	2
3	Near na Gaoithe	0.9	3.6	4.5	2
3	Race Bank	0.0	0.0	0.0	NA
3	Rampion	5.2	20.8	26.0	8
3	Dogger Bank Teesside Projects A and B	6.4	25.5	31.9	3
4	Triton Knoll	24.4	97.6	122.0	2
4	Hornsea Project Two	3.0	20.0	23.0	9
4	East Anglia THREE	5.0	37.0	42.0	10
	TOTAL	153.4	728.9	882.4	

*Data sources:

1. Banks et al. (2006)
2. SmartWind (2014)
3. SmartWind (2015b)
4. Beatrice Offshore Windfarm Ltd. (2013)
5. Engena (2007)
6. East Anglia THREE Ltd. (2015c)
7. RWE (2011)
8. E.ON (2013b)
9. SmartWind (2015a)
10. East Anglia THREE Ltd. (2015a)

1.8 Conclusion

58. Natural England's Relevant Representation for the East Anglia THREE offshore wind farm (Natural England 2016) raised concerns regarding EIA level effects of displacement on auks and collision risk to kittiwake and great black-backed gull.
59. This note provides further discussion on topics identified by Natural England (e.g. density dependent population regulation) and application of methods used by Natural England (2015b) in relation to the Hornsea Project Two Wind Farm, updated to include the one additional project (East Anglia THREE) which has been submitted since the original work was conducted.
60. Natural England (2015b) reached conclusions of no significant effects on the sensitive receptors at the EIA level, due to the Hornsea Project Two Wind Farm acting cumulatively with other North Sea wind farms. As demonstrated in this note, inclusion of the East Anglia THREE project does not alter these conclusions and there will therefore be no significant effects on the species discussed here (guillemot, razorbill, puffin, kittiwake and great black-backed gull) as a result of the East Anglia THREE project acting either alone or cumulatively with other wind farms in the North Sea UK waters.

1.9 References

Banks et al. (2006) *The Potential Effects on Birds of the Greater Gabbard Offshore Wind Farm Report for February 2004 to April 2006*. BTO Research Report No. 440.

Beatrice Offshore Windfarm Ltd. (2013) *Environmental Statement Addendum*.

Cairns, D.K. (1987). Seabirds as indicators of marine food supplies. *Biological Oceanography*, 5, 261–271.

Coulson, J.C. (2011). *The Kittiwake*. T. & A.D. Poyser, London.

Cury, P.M., Boyd, I.L., Bonhommeau, S., Anker-Nilssen, T., Crawford, R.J.M., Furness, R.W., Mills, J.A., Murphy, E.J., österblom, H., Paleczny, M., Piatt, J.F., Roux, J-P., Shannon, L. and Sydeman, W.J. (2011). Global seabird response to forage fish depletion – one-third for the birds. *Science*, 334, 1703-1706.

Danchin, E. and Monnat, J.Y. (1992). Population dynamics modelling of two neighbouring kittiwake *Rissa tridactyla* colonies. *Ardea*, 80, 171-180.

East Anglia THREE Limited (2015a) *Offshore Ornithology Chapter 13 Environmental Statement Vol. 1, Doc. Ref 6.1.13*.

East Anglia THREE Limited (2015b) *Information for the Habitats Regulations Assessment, Reference: 5.4*.

East Anglia THREE Limited (2015c) *Appendix 13.1, Offshore Ornithology Evidence Plan, Reference: 6.3.13 (1)*

Engena (2007) *Wansbeck Blyth Harbour Wind Farm Environmental Statement Volume 2*

E.ON (2013a) *Rampion Offshore Wind Farm: Additional Clarification on Ornithology in Relation to the Rampion Project. Dated 10 December 2013*

E.ON (2013b) *Rampion Offshore Wind Farm: ES Section 11 – Marine Ornithology. December 2012*

Forewind (2014). *Dogger Bank Teesside A & B Deadline VI Final HRA ornithology in-combination tables. Reference F-EXL-DVI-012*

Frederiksen, M., Wright, P.J., Harris, M.P., Mavor, R.A., Heubeck, M. & Wanless, S. (2005). Regional patterns of kittiwake *Rissa tridactyla* breeding success are related to variability in sandeel recruitment. *Marine Ecology Progress Series*, 300, 201-211.

Furness, R.W. (2007). Responses of seabirds to depletion of food fish stocks. *Journal of Ornithology* 148, S247-252.

Furness, R.W. (2015). *Non-breeding season populations of seabirds in UK waters: Population sizes for Biologically Defined Minimum Population Scales (BDMPS)*. Natural England Commissioned Reports, Number 164.

Furness, R.W. and Birkhead, T.R. 1984. Seabird colony distributions suggest competition for food supplies during the breeding season. *Nature*, 311, 655-656.

Jovani, R., Lascelles, B., Garamszegi, L., Mavor, R., Thaxter, C. and Oro, D. (2015). Colony size and foraging range in seabirds. *Oikos*, DOI: 10.1111/oik.02781

Kentish Flats Offshore Wind Farm Extension (2011) *Environmental Statement Section 9: Offshore Ornithology IPC Document Ref 4.2.9*

Natural England (2014) *Rampion Offshore Wind Farm. Natural England's comments Deadline 18th January 2014, Annex B.*

Natural England (2015a) *Hornsea Offshore Wind Farm - Project Two Application, Written Submission for Deadline 5. Dated 12th November 2015*

Natural England (2015b) *Written Submission for Deadline 6 - Hornsea Offshore Wind Farm Project Two Application*
(<http://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010053/Events/Deadline%206%20-%2026-11-2015/Natural%20England.pdf>)

Natural England (2016) *Relevant Representations of Natural England for the East Anglia THREE Wind Farm*

Newton, I. (1998). *Population Limitation in Birds*. Academic Press, London.

Ponchon, A., Chambert, T., Lobato, E., Tveraa, T., Gremillet, D. and Boulinier, T. (2015). Breeding failure induces large scale prospecting movements in the black-legged kittiwake. *Journal of Experimental Marine Biology and Ecology*, 473, 138-145.

RWE (2011) *Galloper Wind Farm Project Environmental Statement - Chapter 11: Offshore Ornithology October 2011 Document Reference – 5.2.11*

SmartWind (2013) *Hornsea Offshore Wind Farm Project One ES Vol 5 – Offshore Annexes Chapter 5.5.1 Ornithology Technical Report PINS Doc Ref 7.5.5.1*

SmartWind (2014) *Hornsea Offshore Wind Farm Project One: The Applicant's Response to Qu 2 of the Rule 17 Letter – updated clarification note relating to the cumulative and in-combination collision assessment. 21 May 2014*

SmartWind (2015a) *Hornsea Offshore Wind Farm Project Two, Collision Risk Modelling Note Appendix B to the Submission of 4 December 2015.*

SmartWind (2015b) *Hornsea Offshore Wind Farm Project Two ES Vol 2 – Offshore Chapter 5 Ornithology PINS Doc Ref 7.2.5*

SmartWind (2015c) *Hornsea Offshore Wind Farm Project Two, Clarification Note – Apportioning of predicted gannet mortality to the Flamborough and Filey Coast pSPA population.*

Triton Knoll Offshore Wind Farm Limited (2012) *Environmental Statement Volume 2: Chapter 6 – Ornithology January 2012 Revision A. Doc. Ref: 05/01/02/06*

Appendix 3 March 2016 Meeting Minutes

East Anglia THREE
Offshore Windfarm

East Anglia THREE

Ornithology Meeting
24/3/16

East Anglia THREE Ornithology Meeting			
Date of meeting:	24/03/16	Venue:	Tudor St
Attendees:			
Name	Position	Org	Initials
Keith Morrison	Senior Project Management	SPR	KM
Rachel Furlong	Offshore Policy Manager	SPR	RF
Marcus Cross	Environment Manager	SPR	MC
Kathleen Mongan	Case Officer	MMO	KMo
Lou Burton	Marine Senior Advisor	NE	LB
Alex Thompson	Marine Lead Advisor	NE	AT
Chris Gibson	Principal Advisor	NE	CG
Tim Frayling	Ornithologist	NE	TF
Jacqui Miller	Conservation Officer	RSPB	JM
Sarah Lee	Casework Officer	RSPB	SL
Paolo Pizzolla	Lead EIA Coordinator	RHDHV	PP
Mark Trinder	Ornithologist	McG	MT
Apologies:			

Discussion	Action
1 Introductions & Health and Safety	n/a
<p>2 Project update</p> <p>SPR and Vattenfall have formally concluded joint venture activities within the East Anglia Zone. SPR will now take forward the development of projects in the south of the zone and Vattenfall will develop projects in the north</p> <p>Vattenfall has identified two project areas part of which includes the former East Anglia FOUR site. In addition to East Anglia ONE and East Anglia THREE, SPR is progressing the development stage of a further 2 projects</p> <p>Both companies will continue to communicate regarding their respective plans and proposals</p> <p>Project timeline</p> <ul style="list-style-type: none"> • DCO submission November 2015 • S56 consultation closes 22 April 2016 • Expected Decision in Summer 2017 • If consented construction would commence in 2020 at the earliest 	
3 Overview of the ornithology assessment in the application	

MT – Overview of the onshore assessment (slide 7)

Assessment focus:

- Breeding – Cetti's warbler, marsh harrier, bird assemblage
- Nonbreeding – brent goose, avocet, other waterbirds

Embedded mitigation to minimise impacts at the Deben (restriction on disturbing construction activities which could affect brent geese between 1st Nov. – 28th Feb)

EIA: No impacts assessed as > minor significance

HRA (brent geese): no adverse effect on integrity alone or in-combination

TF / JM – confirmed NE & RSPB content with the assessment and the proposed mitigation for onshore matters

MT – provided an overview of the outstanding points on the offshore assessment (slides 8 – 22)

Assessment focus:

- Displacement – red-throated diver, gannet, auks
- Collision – gannet, kittiwake, large gulls
- CIA wind farm list agreed during evidence plan

Red-throated diver (RTD) cable laying

TF – NE have some concerns around the approach to the return of birds after displacement, however they accept that this will not change the significance of impact assessed (**slide 14**)

TF – RTD not raised in the section 56 response

SL – RSPB happy with position on RTD

MT – check on the displacement figures for RTD >2km

In the most recent reporting (Percival 2014) the percentage declines have fallen compared with Percival (2010) used in the ES (2014 value cf 2010 value):
Wind farm (-82 cf -94),
0-0.5km (-47 cf -83),
0.5-1km (-10 cf -77), 1-2km (+19 cf -59), 2-3km (+33 cf 0). Since these values are smaller than those in Percival 2010 (as used in the ES) the current assessment is precautionary.

Seasons

MT - Using the core periods of the seasons – this is a precautionary approach (**slide 12**)
Collision risk – season not material as this is an annual total

Guillemot & razorbill displacement

TF - more to be done in relation to seasonality. EA3 only is OK but question is with cumulative impact assessment (CIA). TF would like to see the displacement summing all seasons and adding impacts from breeding seasons from other NS wind farms

Auk foraging

TF NE happy with approach

Auk displacement mortality

TF – view that it is not just about looking at two different methods – also need to look at the full range of mortality 1 – 10%. There is not enough evidence to say it is 1%. The CIA does not take into account breeding season impacts, NE would like to see this

MT – breeding season complicates the reference population question

CG – is there potential to look at a worst case of recruitment to nearest designated site and then suggest something more realistic from this point?

RSPB – content that this doesn't materially affect outcome

Gannet collision height

TF – happy with Band Option 1

RSPB – want to see all Band options presented

MT – (post meeting note) all band options presented in Appendix 13.3, and options 1 & 2 in the chapter Table 13.31

Interpretation of kittiwake PVA

TF – what is the impact of tuning strength of density dependence to achieve stable baseline population,
MT – this simply refines the model to prevent a small offset between starting and end populations under baseline (no impact) scenario. It has no effect on model results.

TF - what is effect of applying downward trend to density independent model?

MT – adjusting demographic rates in order to achieve a particular trajectory in a density independent model is unrealistic and overly precautionary. Populations are regulated by resource competition (which is what stops uncontrolled population growth). A declining population indicates the current size is above the environment's carrying capacity. The most appropriate way to model a decline in size is to use a density

MT – need to look at this again with reference to s56 comments

<p>dependent model adjusted to achieve a specific future size.</p> <p>MT – need to bring it back to key point that OWF impacts in context of wider patterns – 4% = 0.16% over 25 years (slide 21)</p> <p>TF – want to see the rationale for the BDMPS population use, this isn't appropriate to the scale. NE would not advocate using BDMPS population for PVA in EIA – SPR should consider using UK colony scale</p> <p>MT – do not agree that UK colony population is relevant to the assessment; any decrease would in any case be proportional.</p> <p>RSPB – agree with NE that need to see density independent modelling for PVA, but agree with SPR that impacts are not significant</p> <p><i>Netherlands comments</i></p> <p>MT – a point to note that some sites that that the Rijkswaterstaat wished to be included were not explicitly covered in the HRA screening, these will be included in a cover note</p> <p>LB – confirmed that NE would not be commenting on transboundary issues</p> <p><i>SPA extensions</i></p> <p>MT – EATL included high-level assessment in the HRA</p> <p>LB – minor concern on HRA for Outer Thames Estuary or Greater Wash SPA dependent on where the operational port is and what the routes are. NE will share a best practice note covering operational disturbance</p> <p>LB – NE best practice</p> <p>MC - Need to add clarification on Hamford Water</p> <p>LB – any issues such as this can be dealt with through the written representations or SoCG</p> <p><i>Gannet collision impacts</i></p> <p>JM – key issue for RSPB gannet collisions. RSPB suggest raising turbine air draft height would mitigate</p> <p>KM – there is potential for this as mitigation, but there are large implications for cost and MoD radar interference</p> <p>RSPB – have done some work on raising height which they can share</p> <p>Great Black-backed Gull – EIA</p> <p>TF – cumulative collision at 99.5% is 16% above baseline mortality – NE would like to see population modelling. NE acknowledge that the Rampion PBR used in the assessment</p>	<p>LB – to provide best practice guidance</p> <p>KM – will discuss internally if there is potential for increasing clearance</p> <p>JM – to provide RSPB working on this</p> <p>EATL to discuss options for GBB gull PVA.</p>
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<p>but as PBR not accepted now, NE would like to see PVA undertaken</p> <p>MT – using new avoidance rates we are at a 1/3 of mortality based on previously consented projects. Therefore we are well within previously accepted levels of cumulative mortality, therefore do we need to undertake further work</p> <p>TF – NE see that a PVA would remove any uncertainty around this impact</p>	
<p>In-Principle Monitoring Plan (IPMP)</p> <p>MC – broadly aligned with EA1 plans</p> <p>TF – will wait for certainty of auks and GBBG before detailed comment on IPMP. Would prefer that any proposed survey work was aligned with the BDMPS dates</p> <p>LB – add IPMP to the SoCG</p>	
<p>Next steps</p> <p>SPR to reply to NE s56 response in next 3-4 weeks</p> <p>RSPB will provide a response to S56 and if SPR provide info on raising the air draft height then this will be included in the response – i.e. RSPB unlikely to raise any issues. If SPR not able to raise the height, then RSPB will consider whether their position and may attend the hearing, in which case a SOCG will be required.</p> <p>Wrap up SoCG in same timeframe</p>	

East Anglia THREE
Offshore Windfarm

East Anglia THREE

Marine Mammals Meeting
24/3/16

East Anglia THREE Marine Mammals Meeting

Date of meeting:	24/03/16	Venue:	Tudor Street
Attendees:			
Name	Position	Org	Initials
Keith Morrison	Senior Project Management	SPR	KM
Rachel Furlong	Offshore Policy Manager	SPR	RF
Marcus Cross	Environment Manager	SPR	MC
Kathleen Mongan	Case Officer	MMO	KMo
Lou Burton	Marine Senior Advisor	NE	LB
Alex Thompson	Marine Lead Advisor	NE	AT
Victoria Copley (phone)	Senior Specialist	NE	VC
Paolo Pizzolla	Lead EIA Coordinator	RHDHV	PP
Jen Learmonth (phone)	Senior Consultant (Marine Mammals)	RHDHV	JL
Apologies: None			

Discussion	Action
<p>1 Introductions & Health and Safety</p> <p>Dutch jack-up capsized, industry working to learn any lessons</p>	n/a
<p>2 Project update (slides 3 – 6)</p> <p>SPR and Vattenfall have formally concluded joint venture activities within the East Anglia Zone. SPR will now take forward the development of projects in the south of the zone and Vattenfall will develop projects in the north</p> <p>Vattenfall has identified two project areas part of which includes the former East Anglia FOUR site. In addition to East Anglia ONE and East Anglia THREE, SPR is progressing the development stage of a further 2 projects</p> <p>Both companies will continue to communicate regarding their respective plans and proposals</p> <p>Project timeline</p> <ul style="list-style-type: none"> • DCO submission November 2015 • S56 consultation closes 22 April 2016 • Expected Decision in Summer 2017 • If consented construction would commence in 2020 at the earliest 	n/a
<p>3 Overview of the Marine Mammal assessment in the application (slides 7 – 22)</p>	

<p>JL – summarised the baseline, methodology and assessment</p> <p>MC – asked if there were any comments on the cumulative impact assessment (CIA) scenarios (WCS & realistic)?</p> <p>AT – NE have no concerns around CIA, Claire Ludgate happy working through the evidence plan that she understood the rationale for the approach and scenarios</p> <p>LB – NE happy to see a range of impacts presented in the CIA</p> <p>VC – asked about the number of overlapping projects</p> <p>RF – SAC workshop, DECC advised of deployment approx, 1GW p/a based on current estimate to JNCC</p> <p>VC/LB – in NE response to s56 there is a caveat on the corkscrew injuries, this is not thought to be a major issue – but note that further work may come forward which may need to be taken into account</p> <p>MC – Interim PCoD – sought clarification on how much weight will NE put on PCoD for future responses?</p> <p>VC – Latest date given for PCoD is April. PCoD likely to be used as context for NE considerations and used to inform discussions with regulators with regard to management</p>	<p>PP - Send the cumulative section of the ES chapter to VC</p>
<p>4 - Feedback from attendees on impact assessment</p> <p>LB/AT – confirmed that matters closed on EIA, NE are happy with the assessment</p> <p>LB – stated that it is likely that CIA will be issue for ExA, therefore any Statement of Common Ground (SoCG) should highlight the uncertainty within this part of the assessment</p> <p>PP – NGOs have raised concern that they have no opportunity to comment on MMMP proposals as this is post-consent. Do NE or MMO have any objections to them being consulted?</p> <p>LB – NE are open to consultation</p> <p>KMo – MMO prefer not to have specific parties named to keep flexibility/future proof the Marine Licence</p> <p>LB – IPMP – HP pSAC assessment may need validating – therefore there may be a requirement for pre and post monitoring</p>	<p>PP - Add in statement on CIA uncertainty in SoCG</p>

<p>MC – SPR have proposed either strategic or site-specific in IPMP</p> <p>KMo – MMO will aim to draft licence conditions to maintain flexibility</p> <p>LB/KMo – happy with IPMP as it stands, this is useful to provide guidance post-consent on thoughts during application period</p> <p>VC – Note that a subgroup of the Renewable UK Consents and Licencing Group and NE are currently discussing post-consent monitoring– the focus is on ornithology, mammals parked while pSAC discussions are on-going</p>	
<p>5 - Future conservation designations</p> <p>MC –as it stands there is no assessment of the pSAC within the application as there is a lack of information to enable a thorough assessment. SPR acknowledge that the consultation on the proposed site boundaries and evidence base is open but as there is still uncertainty over management measures would see any assessment done now to be potentially abortive</p> <p>LB – Suggested that the assessment should be left as long as possible to allow full sight of the information, but SPR should provide comfort to Examiner that a submission will be made by the last deadline of the examination. NE happy to work with SPR on this assessment.</p> <p>PP – a clear statement of intent will be included in the SoCG. It is important that in the examination it is clear that the pSAC designation process does not affect consideration of the application; SPR will undertake assessment when there are clear guidelines.</p> <p>RF – discussions underway within the industry on potential ways to undertake the assessment based on initial suggestions from JNCC.</p> <p>VC – suggested that it may be useful to have a joint NE / industry (or project) statement on the current status of assessment work for submission to the ExA until such time that the full assessment is available.</p> <p>RF – SPR would welcome discussions on joint statement either at a project or RUK level.</p> <p>MC – EA3 have concerns over the proposed identification of seasonal areas of importance of the pSAC</p> <p>VC – There is no requirement to reflect seasonal aspect in the site boundary, NE expect feedback on the seasonal proposal in consultation responses.</p>	<p>PP – will add clear statement in the SoCG reflecting HRA and commitment to assessment</p> <p>VC – will discuss with JNCC if they are keen on joint statement</p>

<p>6 - Next steps</p> <p>KMo – MMO have internal 5th April meeting to discuss s56 response, will send on once drafted / finalised</p> <p>PP – will circulate a revised SoCG capturing issues discussed at this meeting</p> <p>It was noted that all parties are satisfied with the evidence plan for EA3, this has succeeded in front-loading discussions and providing assessment that all parties are happy with</p>	<p>KMo – provide s56 response when available</p> <p>PP – circulate revised SoCG</p>

Appendix 4 June 2016 Meeting Minutes and Auk Displacement Note

East Anglia THREE
Offshore Windfarm

East Anglia THREE

Natural England Meeting Minutes 8th June 2016



**SCOTTISHPOWER
RENEWABLES**

East Anglia THREE Natural England Meeting

Date of meeting:	8 th June	Venue:	RHDHV London
Attendees:			
Name	Position	Org	Initials
Keith Morrison	Senior Project Manager	SPR	KM
Gillian Sutherland	Senior Environmental Manager	SPR	GS
Rachel Furlong	Offshore Policy Manager	SPR	RF
Lou Burton (telephone)	Marine Senior Advisor	NE	LB
Alex Thompson	Marine Lead Advisor	NE	AT
Tim Frayling	Ornithologist	NE	TF
Helen Rowell (telephone)	Ornithologist	NE	HR
Mark Trinder	Ornithologist	McG	MT
Bob Furness	Ornithologist	McG	BF
Paolo Pizzolla	Lead EIA Coordinator	RHDHV	PP
Apologies: none			

Discussion	Action
1 – H&S – no issues	
<p>2 – Ornithology</p> <ul style="list-style-type: none"> • The draft statement of common ground (SoCG) was used as the basis of the discussion, focusing on those areas which had yet to be agreed. The references below are to the lines within the draft SoCG <p>2i – Red-throated diver displacement. Both methods are discussed in ES (see Table 13.17). NE to update the SoCG comment to reflect fact that both methods are shown. Agree that the method does not affect the significance.</p> <p>2j – Annual displacement. TF would like to see full matrix to look at EIA impacts (CIA). NE do not agree that PBR appropriate tool for screening MT – EATL have taken Hornsea P2 final figures and added on EA3. This was done for simplicity to avoid presenting a number of matrices/tables TF – would like to see the matrices, using the Hornsea P2 figures, with a narrative to fully justify the requirement for no further modelling MT / BF – notwithstanding presenting this, EATL will provide text on concerns with this approach and highlight areas of precaution</p> <p>3b – Construction displacement – there is no disagreement on this point now</p> <p>3d – Operational displacement impacts - there is no disagreement on this point now</p>	<p style="text-align: center;">Update SoCG (EATL & NE)</p> <p style="text-align: center;">MT / TF to discuss format of matrix prior to circulation MT – produce matrix plus text</p> <p style="text-align: center;">Update SoCG (EATL & NE)</p> <p style="text-align: center;">Update SoCG (EATL & NE)</p>

<p>3h – migrating great skua, Arctic skua, common tern and Arctic tern. No disagreement, need to update wording from ‘no impact’ to ‘negligible impact’</p> <p>4c – Cumulative displacement impacts - covered by discussion above (see 2j)</p> <p>4d – Separate out into the 3 species as each different</p> <p>Gannet MT – can we remove gannet TF – would like to see updated PVA MT / BF impacts are small and GB population is approaching double size since previous PVA, there is little justification for a new PVA.</p> <p>CIA – kittiwake</p> <p>There was a discussion on the differences between the density dependent and independent models. It was accepted there is a range between the independent & dependent results where the actual number lies.</p> <p>Scale – north sea or UK? There was a discussion about the appropriate population scale to be used for the assessment TF – it would be useful to have narrative around population scale chosen and uncertainty, with text around the ratios of impact MT – BDMPS/North Sea is correct scale to use, in any case as the impacts would be apportioned if UK scale used the relative impact would be scaled to the population and the result would be the same ACTION – narrative can be added – SoCG maintains CIA impact but small contribution from EA3 ACTION – MT to provide information on the density dependent model for TF</p> <p>Great black backed gull (GBBG) TF – NE did ask for PVA on Hornsea but this was not produced during the examination. Maintain view that PVA required LB – NE believe PVA should be done. Position unchanged from Hornsea that PVA should be done MT – maintain that given the scale of impact, PVA will add little value to the assessment BF – demographic rates missing for GBBG therefore large uncertainty with any model, would need to agree input and accept uncertainty</p>	<p>Update SoCG (EATL)</p> <p>See 2j</p> <p>Update SoCG – separate out the 3 species</p> <p>EATL Provide clarification note on the model used, include discussion on dependent vs independent models</p> <p>Update SoCG to accept cumulative impact but small effect from EA3</p> <p>EATL to consider undertaking PVA for GBBG & gannet</p>
<p>3 – Mammals</p> <ul style="list-style-type: none"> • Update on pSAC (NE) <p>AT – no date for management advice RF – all help and steer gratefully received AT – waiting for JNCC, will share position as soon as they</p>	

<p>know ACTION date in diary post HOW02 – 17th august placeholder sent</p> <ul style="list-style-type: none"> • Victoria suggest letter of comfort from NE? <p>LB – wording in the written rep</p>	
<p>4 – Other topics</p> <ul style="list-style-type: none"> • Orford MCZ • ACTION AT to get back – resolve whether assessment requested 	
<p>5 – Rule 6 letter (also attached), examination time table and working</p> <p>Reinstate the regular calls? KM & GS to discuss and come back to AT</p>	
<p>6 – AoB</p>	

