



East Anglia ONE North and East Anglia TWO Offshore Windfarms

Applicants' Responses to the Secretary of State's Questions of 20th December 2021 (Item 5)

Applicants: East Anglia ONE North Limited and East Anglia TWO Limited

Document Reference: ExA.AS-2.SoSQ2.V1

SPR Reference: EA2-DWF-CNS-REP-IBR-000003 / EA1N-DWF-CNS-REP-IBR-000003

Date: 31st January 2022

Revision: Version 01

Author: ScottishPower Renewables

Revision Summary				
Rev	Date	Prepared by	Checked by	Approved by
01	31/01/2022	ScottishPower Renewables	Lesley Jamieson	Brian McGrellis

Description of Revisions			
Rev	Page	Section	Description
01	n/a	n/a	Final for submission

Table of Contents

1	Introduction	1
1.1	Purpose and structure of document	1
2	Summary	3
2.1	Decision-making framework	3
2.2	The Applicants' approach in respect of RTD to date	3
2.3	Project updates	4
2.4	Updated compensatory measures	5
2.5	EA1N: existing and updated layouts	5
2.6	EA2: existing and updated layouts	7
3	Legal framework	8
3.1	HRA legal framework	8
3.2	Threshold for adverse effect on integrity	9
3.3	Ecological consequence	11
4	Evidence	13
4.1	Introduction	13
4.2	Likely significant effect	13
4.3	AEoI	13
4.4	Derogation: alternatives	17
4.5	Derogation: IROPI	17
4.6	Derogation: compensatory measures	18
5	EA1N: updated project layouts and compensatory measures	19
5.1	Introduction	19
5.2	Consultation with Natural England	19
5.3	Additional compensatory measures	20
5.4	2km buffer + compensation	23
5.5	6.5km buffer + compensation	27
5.6	8km buffer + compensation	28
5.7	Absence of other alternatives	30
6	EA2: updated project layouts and compensatory measures	30
6.1	Introduction	30
6.2	8.3km buffer + compensation	31
6.3	10km buffer	32
7	Relationship with Projects as a whole	34
8	Conclusion	35
	Appendix A: Technical Appendix	36
	Appendix B: EA1N Updated Layouts Plan	37
	Appendix C: EA2 Updated Layout Plan	38

Appendix D: Legal Agreement between EA1N and EA1 regarding vessel traffic within the OTE SPA	39
Appendix E: Legal Agreement between EA2 and EA1 regarding vessel traffic within the OTE SPA	40

Glossary of Acronyms

AEoI	Adverse Effect on Integrity
Birds Directive	Council Directive 2009/147/EC on the conservation of wild birds
DCO	Development Consent Order
DEFRA	Department for Environment, Food and Rural Affairs
EA1	East Anglia ONE offshore windfarm
EA1N	East Anglia ONE North offshore windfarm
EA3	East Anglia THREE offshore windfarm
EA2	East Anglia TWO offshore windfarm
Habitats Directive	Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora
Habitats Regulations	The Conservation of Habitats and Species Regulations 2017
HRA	Habitats Regulations Assessment
IROPI	Imperative Reasons Of Overriding Public Interest
JNCC	Joint Nature Conservation Committee
NE	Natural England
Offshore Habitats Regulations	The Conservation of Offshore Marine Habitats and Species Regulations 2017
OTE SPA	Outer Thames Estuary SPA
RTD	Red Throated Diver
SoS	Secretary of State for Business, Energy and Industrial Strategy
SPA	Special Protection Area

Glossary of Terminology

Applicants	East Anglia TWO Limited / East Anglia ONE North Limited
East Anglia ONE North project	The proposed project consisting of up to 67 wind turbines, up to four offshore electrical platforms, up to one construction, operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
East Anglia TWO project	The proposed project consisting of up to 75 wind turbines, up to four offshore electrical platforms, up to one construction, operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.

1 Introduction

1. This document has been prepared by East Anglia TWO Limited and East Anglia ONE North Limited (“the Applicants”) in relation to the East Anglia TWO (“EA2”) and East Anglia ONE North (“EA1N”) Development Consent Order (“DCO”) applications (“the Applications”). It responds to Part 5 of the letters issued by the Secretary of State for Business, Energy and Industrial Strategy (“SoS”) on 20th December 2021 (“the SoS letters”).
2. Although the SoS letters relate to the EA2 and EA1N projects respectively, the contents of each are identical. The responses set out in this document are therefore applicable to both projects (“the Projects”).

1.1 Purpose and structure of document

3. Part 5 of the SoS letters stated:

In relation to the red-throated diver feature of the Outer Thames Estuary Special Protection Area (“SPA”), the Applicant, in consultation with Natural England, is requested to provide an updated project layout that includes a sufficient buffer between the array and the SPA boundary to remove displacement impacts on red-throated divers within the SPA

4. This document sets out the Applicants’ response to the request as follows:

- **Section 2** provides a **summary** of the Applicants’ response.
- **Section 3** sets out the **legal framework** for the decision to be taken by the SoS in respect of impacts on red-throated divers.
- **Section 4** summarises the **evidence** before the SoS on matters relevant to the decision.
- **Section 5** summarises the **consultation** undertaken with Natural England and sets out **updated project layouts for EA1N**, including **updated compensatory measures**.
- **Section 6** sets out an **updated project layout for EA2**, including **updated compensatory measures**.
- **Section 7** comments on the **relationship of the updated layouts with the Projects as a whole**.
- **Section 8** provides a **conclusion**.
- **Appendix A** provides the technical information to support the Applicants’ response in the form of a Technical Appendix.
- **Appendix B** contains **updated project layouts for EA1N**.

-
- **Appendix C** contains an **updated project layout** for **EA2**.
 - **Appendix D** contains a copy of the **legal agreement** between **EA1N** and **EA1** securing vessel management measures in respect of **EA1**.
 - **Appendix E** contains a copy of the **legal agreement** between **EA2** and **EA1** securing vessel management measures in respect of **EA1**.

2 Summary

2.1 Decision-making framework

5. Red-throated divers (RTD) are protected as a qualifying feature of the Outer Thames Estuary Special Protection Area (“OTE SPA”). The legislative framework provides a multi-stage process for the decision-maker to follow in such a case, comprising first **screening**, secondly (in the event that a project is screened-in) **appropriate assessment**, and thirdly (in the event that an adverse effect on integrity cannot be ruled out) **derogation**. Derogation requires consideration of **alternatives**, **imperative reasons of overriding public interest**, and **compensatory measures**.
6. In considering whether there is an adverse effect on integrity (“AEoI”), it is not the case that any disturbance or displacement of RTD will necessarily lead to a finding of AEoI. The disturbance or displacement must be significant. In so far as the reference in the SoS letters to ‘removing’ displacement impacts implies otherwise, that is incorrect and contrary to the agreed position between the Applicants and Natural England. In addition, regard must be had to whether there is any ecological consequence.

2.2 The Applicants’ approach in respect of RTD to date

7. The Applicants’ evidence before the examination and the SoS comprehensively considers impacts on the over wintering RTD population within the OTE SPA. The most recent estimation of this population, as published by Natural England, is 18,079¹. To put this in context, using Natural England’s precautionary advised rates, the number of RTDs potentially displaced would, based on the current layouts, be 127.08 individuals for EA1N and 3.96 individuals for EA2. Using the Applicants’ model the number of RTDs potentially displaced would be 34.3 individuals for EA1N. For EA2, the Applicants’ model predicts no displacement.
8. In respect of both EA1N and EA2, the Applicants screened into the assessment effects on the OTE SPA in respect of RTD, including due to displacement. In order to understand whether there would be an AEoI, the Applicants engaged leading experts to undertake modelling and provide advice on the impact on RTDs. The Applicants’ modelling represents the most comprehensive and robust study conducted for the OTE SPA. Based on that evidence, the Applicants considered that the Projects would not result in an AEoI on the OTE SPA either alone or in-combination with other plans or projects. Section 4.3 below and

¹ Natural England, 2019. Outer Thames Estuary SPA: Supplementary Advice. Available at:

[REDACTED]

Appendix A: Technical Appendix provides further detail on the Applicants' modelling and Natural England's advised rates and why the Applicants' modelling should be preferred.

9. Without prejudice to the Applicants' position that there would be no AEoI, the Applicants concluded that derogation would be justified, should the SoS reach this stage of the decision-making process. In particular:
- There are no feasible alternative solutions that would have a lesser effect on the integrity of the OTE SPA. Alternatives that would reduce project capacity would not meet project objectives, including the Government's 40GW of offshore wind by 2030 policy target and also the wider legal requirement to achieve net zero. All of EA1N's and EA2's generating capacity is required, given that even assuming that all projects in development are consented and subsequently constructed and operational by 2030, there is still a deficit of 4GW against the policy target.
 - IROPI exist in light of the overwhelming environmental and social benefits to the UK from increasing the generation of low carbon energy.
 - Compensatory measures are set out in the EA1N and EA2 **Offshore Ornithology Without Prejudice Compensation Measures** (REP12-060), as supplemented by the **Applicants' Responses to the Secretary of State's Questions of 2nd November 2021 (Items 4 – 7)** (dated 30th November 2021). The Applicants have entered into legal agreements to secure avoidance of the OTE SPA by vessel movements relating to the construction, operation, maintenance and decommissioning of the East Anglia THREE offshore windfarm ("EA3"). The area of displacement avoided by the measures in the agreements would be in excess of the total effective area of displacement² from the operational turbines of EA1N and EA2, even using Natural England's assessment of the area of displacement (which the Applicants consider to be an over-estimate).

2.3 Project updates

10. The Applicants have given further consideration to both the project layouts and compensatory measures in light of the SoS letters. This has been undertaken in close consultation with Natural England.
11. The Applicants now provide updated layouts and additional compensatory measures in respect of EA1N and EA2. These are presented without prejudice

² The effective area of displacement is explained in the **Technical Appendix** accompanying this submission.

to the Applicants' position that the existing layouts and (if necessary) compensatory measures are compliant with the HRA tests, as set out above.

12. None of the updated layouts for EA1N or EA2 materially affect any other aspect of the case for granting consent for EA1N and EA2.
13. The layout options are presented without prejudice to each other to enable the SoS to grant consent for EA1N and EA2 schemes which align to his conclusions on AEol and the derogation tests.

2.4 Updated compensatory measures

14. Two additional compensatory measures are proposed. They are applicable to both the EA1N and EA2 layouts.
15. First, the Applicants will provide for **re-routing of vessels relating to the existing East Anglia ONE (EA1) windfarm**. EA1 is situated to the south of EA1N and is already fully operational. The Applicants are able to secure compensatory measures of benefit to the OTE SPA via avoidance of the SPA by crew transfer vessel movements connected with the operation, maintenance and decommissioning of the EA1 generation assets. The owner of EA1 (East Anglia ONE Limited) has agreed to these vessel restrictions and the Applicants have entered into legal agreements with East Anglia ONE Limited to secure these compensatory measures. A copy of the legal agreements entered into with East Anglia ONE in order to secure these compensatory measures are contained within **Appendix D** and **Appendix E**.
16. Reduction of displacement elsewhere in the OTE SPA by vessel re-routing from EA1 and EA3 creates environmental headroom for EA1N, should the SoS consider that such headroom is needed. The amount of headroom provided by the vessel re-routing significantly exceeds the amount of displacement. This is the case for all of the existing and updated layouts for EA1N and EA2 below. The minimum ratio in terms of compensation to effect with the updated compensatory measures in place is 1.7:1 using Natural England's advised rates and 5.8:1 using the Applicants' modelling. Such ratios significantly increase if an EA1N layout with a larger buffer is adopted.
17. Secondly, the Applicants propose to undertake research into **ornithological by-catch reduction** and subsequently, if suitable gear types are identified that reduce by-catch, to fund a voluntary fishing gear change scheme.

2.5 EA1N: existing and updated layouts

18. The Applicants now provide layouts for EA1N as follows:
 - **The existing layout, which has a 2km buffer between the site boundary and the OTE SPA;**

- **Alternatively, an updated layout with a 6.5km buffer;**
 - **Alternatively, an updated layout with an 8km buffer.**
19. In respect of the **existing layout (2km buffer)**, the Applicants consider that there is no AEol. If the SoS reaches a contrary conclusion, then derogation is justified in any event. In particular:
- There are no feasible alternative solutions, given that larger buffers (such as a 6.5km or 8km buffer) would reduce project capacity which would not meet project objectives, as set out above.
 - IROPI exist in light of the overwhelming environmental and social benefits to the UK from increasing the generation of low carbon energy, as set out above.
 - Compensatory measures more than offset any displacement effects. The new EA1 and by-catch reduction measures enhance the existing compensatory measures.
20. In respect of the **6.5km buffer layout**, in the scenario that the SoS considers that there is an AEol, then derogation is justified. In particular:
- There are no feasible alternative solutions, given that larger buffers (such as an 8km buffer) would reduce project capacity which would not meet project objectives, as set out above.
 - IROPI exist in light of the overwhelming environmental and social benefits to the UK from increasing the generation of low carbon energy, as set out above.
 - Compensatory measures, including the new measures, more than offset any displacement effects.
21. In respect of the **8km buffer layout**, the Applicants' modelling shows that the distance over which RTD are displaced by the operational windfarms in the OTE SPA declines to zero by 8km. On that basis, there is zero displacement at 8km and no AEol arises. If the SoS reaches a contrary conclusion, then derogation is justified in any event. In particular:
- There are no feasible alternative solutions, given that any buffer larger than 8km would render the project unviable and undeliverable.
 - IROPI exist in light of the overwhelming environmental and social benefits to the UK from increasing the generation of low carbon energy, as set out above.

- Compensatory measures, including the new measures, more than offset any displacement effects.

2.6 EA2: existing and updated layouts

22. The Applicants now provide layouts for EA2 as follows:

- **The existing layout (8.3km buffer);**
- **Alternatively, an updated EA2 layout with a 10km buffer**, which is the Applicants' understanding of what Natural England consider to be the distance where no AEol occurs.

23. In respect of the **existing layout (8.3km buffer)**, there is no AEol, given that the Applicants' modelling shows zero displacement at 8km. If the SoS reaches a contrary conclusion, then derogation is justified. In particular:

- There are no feasible alternative solutions, given that larger buffers (such as a 10km buffer) would reduce project capacity which would not meet project objectives, as set out above.
- IROPI exist in light of the overwhelming environmental and social benefits to the UK from increasing the generation of low carbon energy, as set out above.
- Compensatory measures more than offset any displacement effects. The new EA1 and by-catch reduction measures enhance the existing compensatory measures.

24. In respect of the **10km buffer layout**, it is the Applicants' understanding that with such a buffer, Natural England accept that no AEol would arise from EA2 even on an in-combination basis. That position is supported by the Applicants' modelling (given that the Applicants' modelling shows zero displacement at 8km, let alone 10km). In light of the agreement as to the absence of an AEol, there is no need to consider the derogation tests for this updated layout.

3 Legal framework

3.1 HRA legal framework

25. Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (“the Habitats Directive”) and Council Directive 2009/147/EC on the conservation of wild birds (“the Birds Directive”) aim to ensure the long-term conservation of certain species and habitats by protecting them from possible adverse effects of plans and projects. The protection given by the Directives is transposed into UK legislation through the Conservation of Habitats and Species Regulations 2017 (“the Habitats Regulations”) as far as the 12 nautical mile limit of territorial waters. Beyond territorial waters, the Conservation of Offshore Marine Habitats and Species Regulations 2017 (“the Offshore Habitats Regulations”) serve the same function for the UK’s offshore marine area. The Applications cover areas within and outside the 12 nautical mile limit, such that both sets of Regulations apply.
26. The multi-stage process required by the Habitats Regulations (reg. 63-64 and 68) and the Offshore Habitats Regulations (reg. 28-29 and 36) is as follows:
- **Screening.** Identify whether the project is likely to have a significant effect on the designated site, either alone or in combination with other plans or projects.
 - **Appropriate assessment.** If there are likely significant effects, assess whether the project will adversely effect the integrity of the site, in view of the site’s conservation objectives.
 - **Derogation.** Where an adverse effect on the integrity of the site cannot be ruled out, the project may be approved provided three tests are met:
 - **Alternatives.** There are no feasible alternative solutions to the project which are less damaging;
 - **IROPI.** There are imperative reasons of overriding public interest for the project to proceed; and
 - **Compensation.** Compensatory measures are secured to ensure that the overall coherence of the national site network is maintained.
27. The designated site in question is the Outer Thames Estuary Special Protection Area (“OTE SPA”), whose qualifying features include the red-throated diver (“RTD”). The conservation objectives for the OTE SPA are as follows:

With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the ‘Qualifying Features’ listed below), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- a. the extent and distribution of the habitats of the qualifying features;*
- b. the structure and function of the habitats of the qualifying features;*
- c. the supporting processes on which the habitats of the qualifying features rely;*
- d. the populations of each of the qualifying features; and*
- e. the distribution of qualifying features within the site.*

3.2 Threshold for adverse effect on integrity

28. In assessing whether there is any adverse effect on integrity (“AEol”), the threshold for AEol must be correctly identified. A decision by the SoS based on an incorrect identification of the threshold would risk falling into legal error.
29. There is agreement between the Applicants and Natural England that it is not the case that **any** disturbance or displacement of RTD will necessarily lead to a finding of AEol. The disturbance or displacement must be significant. This is clear from the following:

- **Natural England’s Comments on legal submissions concerning displacement of RTD** (REP7-070) state (paragraph 9; emphasis added):

*It is right to say that the test of what amounts to an adverse effect on integrity should be broad based and not mechanistic, and that **the simple fact of an element of disturbance is not of itself enough to prove adverse effect on site integrity.***

- Natural England’s supplementary advice on conservation objectives for the OTE SPA (2019)³ notes a range of attributes which are considered to describe the site’s ecological integrity. One of the attributes of RTD is “Disturbance caused by human activity”. The target associated with this attribute is to (emphasis added):

*Reduce the frequency, duration and / or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not **significantly disturbed***

³ Cited at REP11-026 paragraph 84. The supplementary advice can be accessed here:

[REDACTED]

- Natural England rely on the European Commission guidance “Managing Natura 2000 sites – The provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC” at paragraph 4.6.4⁴. This provides (emphasis added):

*In other words, if none of the habitat types or species for which the site has been designated is **significantly affected** then the site’s integrity cannot be considered to be adversely affected. However, if just one of them is **significantly affected**, taking into account the site’s conservation objectives, then the site integrity is necessarily adversely affected.*

- Natural England accept that EA2 alone will not give rise to AEol. This is notwithstanding that EA2 is 8.3km from the OTE SPA, i.e. within the 10km distance beyond which Natural England consider effects would be difficult to detect, and that Natural England accept EA2 will affect a limited area of habitat within the SPA. In answer to ExQ 3.2.4, Natural England stated (REP11-123) (emphasis added):

*c) The severity of displacement effects from an OWF will depend on its proximity to the SPA. There will be a continuum of effect from an OWF within the SPA, where impacts will be at their most severe, to an OWF beyond 10km, where effects would be difficult to detect. ... EA1N at 2km from the SPA is predicted to affect between 0.5% and 1.4% of the SPA, a substantial area given the size of the SPA – thereby triggering an AEol alone. **Whereas with EA2 at 8.5km,⁵ the area of habitat affected would be between 0 and 0.075% of the SPA – hence our advice being that EA2 will not have an AEol alone, though it will make a contribution to the in-combination AEol.***

30. The request made in Part 5 of the SoS letters is for the Applicants to provide “an updated project layout that includes a sufficient buffer between the array and the SPA boundary to **remove** displacement impacts on red-throated divers within the SPA” (emphasis added). The reference to ‘removing’ displacement impacts appears to be based on the premise that zero displacement is necessary in order to rule out AEol. If so, that premise is incorrect and contrary to the position of both the Applicants and Natural England, as set out above. Proceeding on such premise would render the decision vulnerable to legal challenge.

⁴ Cited in full at paragraph 20 of **Natural England’s Legal Submission Concerning Displacement of Red-Throated Divers in the Outer Thames Estuary SPA** (REP4-089). Natural England refer to paragraph 3.6.4 of the guidance, which appears to be a typographical error for 4.6.4.

⁵ N.b. the Applicants understand that the reference to 8.5km is a typographical error by Natural England. The correct figure is 8.3km.

3.3 Ecological consequence

31. A related issue concerns whether the effect of a project on an SPA gives rise to an ecological consequence. The Applicants' position is that, without an ecological consequence, there can be no AEol. In the alternative, the Applicants say that at the very least the absence of an ecological consequence is highly relevant to the question of whether there is AEol, and strongly indicative that there is no such AEol.

32. In particular, the conservation objectives for the OTE SPA, as set out in full above, are structured such that the five items (a) – (e) are identified as means to (emphasis added):

*Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes **to achieving the aims of the Wild Birds Directive** ...*

33. The basic aim of the Birds Directive is to preserve and enhance the **populations** of relevant birds. Thus the Directive provides, so far as material, as follows (emphasis added):

Article 2

*Member states shall take the requisite measures to **maintain the population of the species** referred to in Article 1 at a level which corresponds in particular to ecological, scientific and cultural requirements, while taking account of economic and recreational requirements, **or to adapt the population of these species to that level.***

Article 3

*1. **In light of the requirements referred to in Article 2**, Member States shall take the requisite measures to preserve, maintain or re-establish a sufficient diversity and area of habitats for all the species of birds referred to in Article 1.*

2. ...

Article 4

*1. The species mentioned in Annex I shall be the subject of special conservation measures concerning their habitat **in order to ensure their survival and reproduction in their area of distribution.***

34. The fact that the basic objective of the Directive is the preservation or enhancement of population is obvious from the passages emphasised. The

consideration of habitats is clearly (“in the light of the requirements of Article 2”) related to the effects of changes in habitats on populations.

35. The courts have also formulated the basis of designation of an SPA in a manner which directs attention back to the underlying population. In *Grace v An Bord Pleanala (C-164/17)*, the Court of Justice of the European Union stated (paragraph 35; emphasis added):

The designation of a territory as an SPA for the conservation of species entails the lasting preservation of the constitutive characteristics of the habitat in that area, the survival of the species in question and its reproduction being the objective justifying the designation of that area.

36. The Projects achieve the aims of the Birds Directive, in particular the central aim of maintaining the population of the species. It is common ground with Natural England that the RTD population in the OTE SPA is likely to have increased or at worst remained stable despite the construction and operation of multiple offshore windfarms within the OTE SPA since 2010 (the designation date of the OTE SPA). These matters strongly indicate that there is no ecological consequence to any limited displacement effect which the Projects may have. The Applicants say that necessarily leads to the conclusion that there is no AEol.

4 Evidence

4.1 Introduction

37. The Applicants rely on and do not repeat the evidence set out at length in the examination in respect of the effect on RTD. The Applicants consider that it is useful, however, to summarise the Applicants' position in respect of the evidence, and the Applicants' understanding of Natural England's position, in order to provide necessary context for the updated layouts and compensatory measures set out in section 5 and 6 below.

4.2 Likely significant effect

38. The Applicants screened into the assessment effects on the OTE SPA in respect of RTD, including due to displacement, on the basis that likely significant effects could not be ruled out (**EA1N and EA2 Information to Support Appropriate Assessment** at Table 2.2 (APP-043) and (APP-043)). This approach is agreed with Natural England (**EA1N and EA2 Statement of Common Ground with Natural England (Offshore Ornithology)** at ID NE-0036 (REP8-110)).
39. This agreed position needs to be understood in the light of the nature of the screening threshold. As stated by Advocate General Sharpston in *Sweetman v An Bord Pleanala C-258/11*:

49. The threshold at the first stage of Article 6(3) is thus a very low one. It operates merely as a trigger, in order to determine whether an appropriate assessment must be undertaken of the implications of the plan or project for the conservation objectives of the site. ...

4.3 AEoI

40. The Applicants consider that the Projects will not result in an AEoI on the OTE SPA either alone or in-combination with other plans or projects. The detailed evidence in support of that conclusion is set out most fully in the Applicants' report **Displacement of Red-Throated Divers in the Outer Thames Estuary SPA – Deadline 11 Update** (REP11-026) ("the RTD report").
41. Natural England's **Relevant Representation** (RR-059) raised concerns regarding displacement based on research from Germany and elsewhere. In response to this concern and a request from Natural England, the Applicants undertook modelling from survey data for the OTE SPA in order to provide a more appropriate local understanding for RTD in this specific SPA. It used data which were analysed using statistical spatial models which related the observed bird locations to explanatory variables (distance to coast, bathymetry, average

shipping activity and distance to windfarms). This modelling, as well as being geographically more appropriate than the German studies, was also focussed on the season of key importance for the OTE SPA (mid-winter), rather than spring (as analysed for the German studies). This is important because the behaviour of the birds varies through these phases of the non-breeding period, and this further reinforces the greater weight that should be given to the Applicants' modelling results. The Applicants' modelling represents the most comprehensive and robust study of RTD distribution conducted for the OTE SPA. The modelling is reported in the RTD report, along with conclusions on AEol. The RTD report, has taken account of feedback on earlier versions of the report from Natural England.

42. The Applicants engaged renowned experts to undertake its modelling and advise on RTD. Professor Jason Matthiopoulos is a Professor of Spatial and Population Ecology at the University of Glasgow and has extensive experience in ecological modelling. His academic work has been instrumental in the design of policy on mammals and birds by UK governmental departments and public bodies (including DEFRA and JNCC). Professor Matthiopoulos designed and undertook the RTD modelling on behalf of the Applicants. Professor Bob Furness is an Emeritus Professor at the University of Glasgow, a member of the Board of NatureScot, appointed Chair of NatureScot's Scientific Advisory Committee, a member of NatureScot's Protected Areas Committee, on the board of the British Trust for Ornithology and an honorary member of the German Ornithological Society. Professor Furness advised the Applicants on the ecology of RTD and their relationship to windfarm development and in the preparation of the RTD report. He also gave oral evidence on this matter in Issue Specific Hearing 14 on 16th March 2021.
43. The analysis of the modelling found that displacement of RTD by the operational windfarms in the OTE SPA declined to zero at a distance of 8km.
44. The RTD report explains that a 10km buffer, as sought by Natural England, "*is not supported by the current analysis and would result in over-estimating the potential displacement effects*" (paragraph 56).
45. The RTD report also quantifies the effects, noting their limited scale, even in combination and even on Natural England's over-estimated view of the effects. This is both in terms of displacement and mortality effects.

- In terms of **displacement**, the Projects contribute very little to the existing effective area of displacement⁶ from other (operational) windfarms as stated in the RTD report (emphasis added):

*60. The total effective area of the SPA estimated to be subject to displacement due to the operational windfarms for red-throated diver is 204km² using the 2013 predictions and 196km² using the 2018 predictions, and using NE's advised precautionary method is 948km². Using the spatial modelling results, these equate to 5.0% to 5.2% of the SPA, while using NE's precautionary rate this represents 24.2% (of the total area of 3,294km²). **East Anglia ONE North adds between 16km² and 19km² to the total area (model results) or 54km² (NE approach), which equates to an additional 0.4% to 0.5% (model results) or 1.4% (NE approach) of the total SPA area.**⁷*

- In terms of **mortality**, the RTD report explains that less than 0.1% of the RTD population are at risk of in-combination displacement mortality (and only 0.7% on NE's highly precautionary 10% mortality rate) (paragraph 107). It is also highly relevant to note that the RTD population has not declined since the construction of other windfarms within the OTE SPA. In fact the population appears to have increased. As the RTD report explains (emphasis added):

*107. This conclusion applies to the existing windfarms within the Outer Thames Estuary SPA, while for the East Anglia ONE North and East Anglia TWO windfarms, the total number of birds predicted to be displaced are a maximum of 34 and 6, respectively. Adding 40 to the worst case for existing windfarms (1,393) gives an in-combination total of 1,433 individuals at risk of displacement, and at 10% mortality, **a total of 143 individuals which equates to 0.7% of the SPA population.***

*108. However, as discussed in section 3 above, a mortality rate of 1% is considered more realistic and precautionary for this species and impact (see Vattenfall 2019 for a discussion of evidence for red-throated diver displacement mortality), **which would result in less than 0.1% of the population at risk of in-combination displacement mortality.***

109. As discussed above, the fact that the red-throated diver population has either remained stable, or as seems more probable,

⁶ The total effective area of displacement is explained in **Appendix A: Technical Appendix** accompanying this submission.

⁷ In respect of EA2, see paragraph 106 of the RTD report: "note that East Anglia TWO adds nothing on this basis, being at least 8.3km from the SPA, however using the precautionary NE approach this windfarm would add an area equivalent to 0.075% of the SPA".

increased, over the period that windfarms have been constructed within the SPA, is strongly indicative that displacement has not had any detrimental effects on the population. ...

46. These factors lead the Applicants to conclude that, with the current EA1N layout (which results in a 2km buffer between the site boundary and the OTE SPA) and the current EA2 layout (which results in an 8.3km buffer between the site boundary and the OTE SPA), there is no project alone or in-combination AEol (paragraph 110). This applies in respect of all five of the conservation objectives of the OTE SPA, including (d) population and (e) distribution (Table 11, page 38).
47. Natural England's position as stated in the examination is as follows (**Natural England's Comments on Updated Displacement of Red-throated Divers in the Outer Thames Estuary SPA** (REP9-067) at Table 1):
- EA2 alone does not result in an AEol. This is the case for all five of the conservation objectives.
 - Neither EA1N nor EA2 result in an AEol in respect of conservation objective (d), i.e. population. This is the case looking at the Projects alone and in-combination with other plans and projects. Natural England state (emphasis added):

We acknowledge that the current population estimate is considerably higher than was estimated at time of the original notification in 2010. Although it is not possible to know what that previous abundance estimate would be had it be (sic) undertaken with digital aerial survey methods, we accept that the population is unlikely to have decreased since 2010, despite the presence of additional OWF during this period. Therefore, based on the latest survey data, there is sufficient likelihood that an AEol alone and in-combination through this conservation objective can be ruled out.
 - For EA1N alone, and EA1N and EA2 in combination with other plans and projects, an AEol cannot be ruled out in respect of conservation objectives (a) – (c) and (e).
48. In addition to presenting the Applicants' predictions of displacement based solely on their model, Natural England stated in **Deadline 4 Submission Appendix A12 – Advice on RTD in the OTE SPA** (REP4-087) that results showing “up to 100% [displacement] within the windfarm area and associated gradient out to 11.5km” should also be reported (described in **Appendix A: Technical Appendix** and the updated **Offshore Ornithology Without Prejudice Compensation Measures** as the ‘straight-line approach’). The Applicants therefore presented the Natural England advised rates in addition to their

modelling but consider the Natural England advised rates to be crude and unrealistic, as explained in the **Technical Appendix** which accompanies this submission. Where this submission refers to Natural England's advised rates, the additional straight-line approach is being referred to.

49. The Applicants maintain that their position on AEoI is to be preferred, for all the reasons set out above and more fully in the examination.

4.4 Derogation: alternatives

50. The Applicants' case on derogation is set out in the **EA1N and EA2 Habitats Regulations Assessment Derogation Case – D12 Update** (REP12-059) (“the Derogation Case”). The Derogation Case, which deals with alternatives, IROPI, and compensation, is presented without prejudice to the Applicants' primary position that there will be no AEoI (paragraph 8).
51. The assessment of alternatives concluded that there are no feasible alternative solutions that would have a lesser effect on the integrity of the OTE SPA (section 4 of the Derogation Case). The assessment noted, inter alia, that alternatives that would reduce project capacity would not meet project objectives, including Project Objectives ID3 (optimising capacity) and ID4 (meeting the 40GW of offshore wind by 2030 policy target) (Table 4.3, p.28).

4.5 Derogation: IROPI

52. The Applicants assert that IROPI exist, should it be necessary to demonstrate them. This is set out in the Derogation Case at section 5.
53. The environmental and social benefits to the UK from increasing the generation of low carbon energy are compelling, and the Projects play a key role in delivering those benefits. The Projects contribute to the UK's legally binding climate change targets by helping to decarbonise the UK's energy supply, whilst contributing to the essential tasks of ensuring security of supply and providing low cost energy for consumers in line with Government policy. The environmental benefits that the Projects provide are long term, with both national and local benefits, reducing local air pollution and helping to meet Government renewable targets to tackle climate change. There are also benefits to wild birds species including RTD, given that without reducing carbon emissions there are likely to be very significant ecological consequences, including species loss of wild birds and their prey.
54. The assessment of whether IROPI exist involves undertaking a balance, whereby the need for and benefits of the Projects must be set against the nature and extent of any harm. This is inherent in the test being whether “overriding” reasons exist. Even if the SoS were to consider, contrary to the Applicants' case, that an AEoI could not be ruled out, the risk and level of harm is plainly limited even on Natural

England's case and is outweighed by the imperative reasons of public importance for the Projects to go ahead.

4.6 Derogation: compensatory measures

55. The Applicants set out proposed compensatory measures, should the SoS consider compensatory measures necessary, in **EA1N Offshore Ornithology Without Prejudice Compensation Measures** (REP12-060) and **EA2 Offshore Ornithology Without Prejudice Compensation Measures** (REP12-060). These were supplemented by the **Applicants' Responses to the Secretary of State's Questions of 2nd November 2021 (Items 4 – 7)** (dated 30th November 2021). In section 7 of those responses, the Applicants explained that they had entered into legal agreements to secure avoidance of the OTE SPA by vessel movements relating to the construction, operation, maintenance and decommissioning of the East Anglia THREE offshore windfarm ("EA3"). The area of the OTE SPA over which displacement would be avoided by the measures in the agreements would be in excess of the total effective area of displacement from the operational turbines of EA1N and EA2, even using Natural England's assessment of the area of displacement (which the Applicants consider to be an over-estimate). The legal agreements were contained in Appendices 4 and 5 of the responses.

5 EA1N: updated project layouts and compensatory measures

5.1 Introduction

56. The Applicants have given further consideration to both the layouts of the Projects and compensatory measures in light of the SoS' letters. The outcome of that further consideration is set out in this section for EA1N and in section 6 for EA2.
57. The Applicants now propose layouts for EA1N as follows:
- **The existing layout, which has a 2km buffer between the site boundary and the OTE SPA;**
 - **Alternatively, an updated layout with a 6.5km buffer;**
 - **Alternatively, an updated layout with an 8km buffer.**
58. These layouts are shown in the figure in **Appendix B**. All three options are presented without prejudice to each other to enable the SoS to grant consent for a scheme which aligns to his conclusions on AEoI and the derogation tests.
59. The Applicants also propose **additional measures to compensate for any displacement of RTD**. These compensatory measures are applicable to all layouts.
60. This section summarises the consultation undertaken with Natural England and then sets out the additional compensatory measures followed by the project layouts. The compliance of each layout and the enhanced compensation package with the HRA legal framework is explained.

5.2 Consultation with Natural England

61. As requested in the SoS letters, the Applicants have consulted and engaged with Natural England in proposing these updated layouts and compensatory measures. Building upon the close working relationship established prior to and during the examination, the Applicants consulted and engaged with Natural England in December 2021 and January 2022 on technical matters raised in the SoS letters. This comprised a series of meetings, calls and exchanges of correspondence, including data-sharing, both with the Natural England senior management team and the Natural England Offshore Wind and Consents Team. Despite this engagement it has not been possible to reach agreement with

Natural England on the matters set out in relation to RTD in the SoS letters and the position of each party remains as set out at the close of Examination.

5.3 Additional compensatory measures

62. The Applicants have given further consideration to what compensatory measures are available and would be effective. Two additional compensatory measures are proposed:

- **Re-routing of vessels relating to the existing East Anglia ONE (EA1) windfarm;**
- **By-catch measures.**

5.3.1 Vessel re-routing

63. In respect of vessel re-routing, the Applicants have already entered into legal agreements to secure a reduction in vessel movements relating to the construction, operation, maintenance and decommissioning of the EA3 offshore windfarm, as set out at paragraph 55 above.

64. The area of displacement avoided by the measures in the EA3 agreements is **59km²**. It is noted that the corresponding figure given in the **EA1N Offshore Ornithology Without Prejudice Compensation Measures** (REP12-060) (paragraph 260), **EA2 Offshore Ornithology Without Prejudice Compensation Measures** (REP12-060) (paragraph 263) and the **Applicants' Responses to the Secretary of State's Questions of 2nd November 2021 (Items 4 – 7)** (dated 30th November 2021) (paragraphs 78 – 81) was 80km². The 59km² figure has been recalculated on a more precautionary basis and is considered particularly robust, for the reasons set out in updated versions of the **Offshore Ornithology Without Prejudice Compensation Measures**.

65. The 59km² would be in excess of the total **56.52km²** effective area of displacement from the operational turbines of EA1N and EA2 in-combination, as set out in **Table 1**. This is using Natural England's assessment of the area of displacement, which the Applicants consider to be an over-estimate. On the Applicants' model the total effective area of displacement is **16.58km²**. These effective areas of displacement of 56.52km² or 16.58km² are those arising from the existing project layouts (a 2km buffer for EA1N and an 8.3km buffer for EA2). If updated layouts with increased buffers were to be adopted, the effective areas of displacement would reduce, as also set out in **Table 1**. The ratio of compensation to effective area of displacement would increase accordingly. Details are provided in the sections dealing with each of the updated layouts below.

66. EA3 is consented and although it has yet to be implemented it is actively being brought forward by ScottishPower Renewables (the same parent company as that of the Applicants), such that reliance can be placed on the compensatory measures it will facilitate. The compensation is also secured by way of the **Red-Throated Diver Implementation and Monitoring Plan** (“RTDIMP”), through Part 6 of Schedule 18 to the **Draft Development Consent Order** (REP12-013). The SoS’ approval is required for the RTDIMP and no wind turbine generator can be installed before the measures in the RTDIMP have been implemented (paragraphs 3 – 5). Accordingly, the SoS retains control to ensure satisfactory compensation is in place prior to any potential harm occurring.
67. In order to provide further comfort, the Applicants intend to supplement the existing EA3 compensation with further compensation to be secured through the East Anglia ONE offshore windfarm (“EA1”). EA1 is situated to the south of EA1N and is already fully operational. The Applicants are able to secure compensatory measures of benefit to the OTE SPA via avoidance of the OTE SPA by crew transfer vessel movements connected with the operation, maintenance and decommissioning of the EA1 generation assets. The owner of EA1 (East Anglia ONE Limited) has agreed to these vessel restrictions and the Applicants have entered into legal agreements with East Anglia ONE Limited to secure these compensatory measures. A copy of the legal agreements entered into with East Anglia ONE in order to secure these compensatory measures are contained within **Appendix D** and **Appendix E**.
68. The area of displacement that would be avoided by the EA1 vessel re-routing measures is **38.2km²** (see **Table 1**). The calculation of this area is set out in the updated **Offshore Ornithology Without Prejudice Compensation Measures**. As with EA3, it has been undertaken on a precautionary and robust basis.
69. The total area of displacement that would be avoided by the EA1 and EA3 measures would therefore be **97.2km²** (i.e. 59km² + 38.2km²). This is significantly in excess of the combined effective area of displacement from the EA1N and EA2 proposals, regardless of whether the existing or updated layouts (with increased buffers) are adopted, as shown in **Table 1** below and explained further in relation to each layout below.

Table 1: Compensation ratios for vessel re-routing measure compared using effective area of SPA subject to displacement for Applicant’s model and Natural England advised rates for East Anglia ONE North boundary options in-combination with East Anglia TWO.

Note that for East Anglia TWO, it is assumed that the boundary remains unchanged from current position (8.3km)

	Applicants' Model			Natural England advised rates		
	Effective area of displacement (km ²)	Compensation area (km ²)	Compensation ratio	Effective area of displacement (km ²)	Compensation area (km ²)	Compensation ratio
EA1 compensation only						
Current (2km)	16.58	38.20	2.3:1	56.52	38.20	0.7:1
6.5km	1.75	38.20	22:1	19.06	38.20	2:1
8km	0	38.20	n/a	10.36	38.20	3.7:1
EA3 compensation only						
Current (2km)	16.58	59.00	3.5:1	56.52	59.00	1:1
6.5km	1.75	59.00	34:1	19.06	59.00	3:1
8km	0	59.00	n/a	10.36	59.00	5.7:1
Both EA1 & EA3 compensation						
Current (2km)	16.58	97.20	5.8:1	56.52	97.20	1.7:1
6.5km	1.75	97.20	55:1	19.06	97.20	5:1
8km	0	97.20	n/a	10.36	97.20	9:1

70. The updated **Offshore Ornithology Without Prejudice Compensation Measures** and the **Applicants' Responses to the Secretary of State's Questions of 2nd November 2021 (Items 4 – 7)** (dated 30th November 2021) explain that vessel re-routing is effective in terms of protecting the integrity of the OTE SPA. That explanation is relied on and not repeated here. It is clear that the approach being taken by the Applicants is appropriate, in light of DEFRA's latest draft consultation **Best practice guidance for developing compensatory measures in relation to Marine Protected Areas** (22nd July 2021). This refers to "Removal of other industries" as a possible compensatory measure and notes that (Table 1, p.18; emphasis added):

*In certain cases it may be appropriate for developers to work with other regulatory bodies to secure **environmental headroom** for their activities.*

71. Reduction of displacement elsewhere in the OTE SPA by vessel re-routing from EA1 and EA3 creates environmental headroom for EA1N, should the SoS consider that such headroom is needed.

5.3.2 By-catch measures

72. The Applicants have added a further new compensatory measure in the form of a proposal to undertake research into ornithological by-catch reduction and subsequently, if suitable gear types are identified that reduce by-catch, to fund a voluntary fishing gear change scheme. The measure is explained in the updated **Offshore Ornithology Without Prejudice Compensation Measures**.

-
73. Entanglement in fishing gear is one of the main causes of red-throated diver mortality and although RTD by-catch was not recorded in recent UK-based reviews, it has previously been widely recorded in other countries. By-catch reduction has the potential to have a positive effect on the population of RTD in the OTE SPA and support their conservation status and is therefore a credible compensation measure in line with draft guidance from DEFRA (2021).
74. This measure is not currently referred to in Part 6 of Schedule 18 to the Draft Development Consent Order (REP12-013), however should the Secretary of State consider that compensation is required and that by-catch measures should be secured within the DCO then the Applicants would suggest including the following text after paragraph 3(c) of Part 6 to Schedule 18:

(d) details of the work in respect of ornithological by-catch measures as set out in Appendix 7 of the Offshore Ornithology Without Prejudice Compensation Measures, that could support practical management measures to reduce ornithological by-catch, and which would be undertaken alongside the vessel route diversions and/or exclusions.

5.4 2km buffer + compensation

75. The existing EA1N layout provides for a 2km buffer between the site boundary and the OTE SPA. In accordance with the Applicants' case set out at the examination, the Applicants maintain that this layout gives rise to no AEoI in respect of RTD within the OTE SPA, whether alone or in-combination with other plans or projects, such that EA1N is compliant with the relevant HRA tests.
76. Without prejudice to that position, the above enhanced compensation package ensures compliance with the HRA tests should the SoS consider that an AEoI cannot be ruled out with a 2km buffer.
77. In particular, the three legal tests for derogation are made out.
78. First, there are no feasible **alternative solutions** to the EA1N project that would have a lesser effect on the integrity of the OTE SPA. As noted above at paragraph 51 and in the Derogation Case (section 4), alternatives that would reduce project capacity would not meet project objectives, including Project Objectives ID3 and ID4 (Table 4.3, p.28):
- 3 *To optimise generation and export capacity within the constraints of available sites and onshore transmission infrastructure*
 - 4 *To deliver a significant volume of offshore wind energy in the 2020s to support the urgent need to achieve 40GW of offshore wind energy by 2030 in line with UK Government policy*

79. Larger buffers would have a significant impact on EA1N's deliverable capacity, thereby meaning that generation would not be optimised (contrary to ID3), and reducing the contribution EA1N would make toward the UK Government's policy targets for offshore wind generation deployment (contrary to ID4).
80. The Applicants have reviewed the potential installed capacity of the EA1N project based on their current knowledge of turbine technology that fits within the application parameters and which might become available within the timescales of the consent. They have then reviewed the potential capacity of the Project at various buffers from the OTE SPA. The figures are a realistic estimation but the final installed capacity would be influenced by a number of factors including the number of wind turbines, wind turbine design, electrical infrastructure, ground conditions and optimal array layout. The installed capacity relates to the wind turbine capacity and not the connection capacity at the onshore National Grid substation. The figures are set out in **Table 2** below. The capacity figure at 2km is higher than the base figure of 800MW due to the confirmed advances in likely turbine output.

Table 2: Approximate installed capacity of East Anglia ONE North at varying buffers from the OTE SPA and associated reduction in installed capacity compared to the current layout (2km from OTE SPA)

Buffer Size (km from OTE SPA)	EA1N	
	Approximate Project Installed Capacity (MW)	Approximate Reduction in Installed Capacity (%)
2km	911.4	N/A
2.5km	911.4	0.00%
3.0km	882	-3.23%
3.5km	852.6	-6.45%
4.0km	852.6	-6.45%
4.5km	808.5	-11.29%
5.0km	779.1	-14.52%
5.5km	749.7	-17.74%
6.0km	735	-19.35%
6.5km	690.9	-24.19%
7.0km	661.5	-27.42%
7.5km	632.1	-30.65%
8.0km	602.7	-33.87%

Buffer Size (km from OTE SPA)	EA1N	
	Approximate Project Installed Capacity (MW)	Approximate Reduction in Installed Capacity (%)
8.5km	558.6	-38.71%
9.0km	514.5	-43.55%
9.5km	470.4	-48.39%
10.0km	455.7	50.00%

81. It is important to recognise that **all** of EA1N's generating capacity is required to meet UK policy objectives on energy generation. Government policy is to deliver 40GW of offshore wind energy by 2030.⁸ As explained in detail in the Derogation Case, even assuming that all projects in development are consented and subsequently constructed and operational by 2030, there is still a deficit of 4GW against the 40GW target (paragraph 61). Projects that have been successful in recent leasing rounds would be likely to commence construction only from the late 2020s and as such would be unlikely to be generating power on any scale before 2030 (paragraph 63). Accordingly, the option of reducing capacity is not a feasible alternative. As the Derogation Case concludes (Table 4.8, p.40):

A reduction in turbine numbers would reduce the overall capacity of the Project, this would fail to meet objective ID3 by not optimising capacity. In addition, this would reduce the ability to meet objective ID4 as it would reduce the project's contribution to the 40GW target.

The UK needs the maximum size of projects to be constructed. Any reduction in project capacity will reduce the chance of meeting this target.

82. Updated layouts are presented later in this submission for EA1N with 6.5km and 8km buffers. The Applicants present those updated layouts without prejudice to their primary position that they are not feasible alternatives for the purpose of the HRA legal framework. They materially reduce project capacity and hence do not meet project objectives as set out above.
83. Secondly, there are **imperative reasons of overriding public interest** for the Project to proceed. As set out at paragraphs 52 - 54 above and in the **Derogation Case** (section 5), there are compelling environmental and social benefits from the low carbon energy generation which the Projects will provide.
84. The benefit of any perceived reduction in effects on RTD at the varying buffer distances, using either the Applicants' model or Natural England's advised rates

⁸ Government's "Ten Point Plan for a Green Industrial Revolution". See **EA1N and EA2 Habitats Regulations Assessment Derogation Case – D12 Update** (REP12-059) at paragraphs 36 and 50.

, are overwhelmingly outweighed by disbenefits in the reduction in generation capacity. It is relevant to note the low level to which any residual displacement impacts fall based on the current EA1N layout, for example, the effective area of displacement is **54.54km²** (using Natural England's advised rates) and **16.58km²** (using the Applicants' model) and the number of individuals displaced is **127.08** (using Natural England's advised rates) and **34.3** (using the Applicants' model) (as set out in **Table 3-4** of the **Technical Appendix**). With respect to the number of individuals displaced, this is in the context of a current population of the OTE SPA of **18,079**. In terms of the balance between benefits and harm inherent in the IROPI test, the imperative reasons of public interest are clearly overriding.

85. Thirdly, **compensatory measures** are secured to ensure that the overall coherence of the national site network is maintained, as set out above. The compensatory measures more than offset any displacement effects. In particular:

- Adopting the current layout for EA1N (2km buffer) and for EA2 (8.3km buffer), the combined effective area of displacement is **56.52km²** (using Natural England's advised rates, which the Applicants consider to be an over-estimation in any event). The total area of displacement that would be avoided by the EA1 and EA3 vessel re-routing measures would be **97.2km²**. That is a ratio of **1.7:1** in terms of compensation to effect.
- The combined effective area of displacement on the Applicants' modelling is **16.58km²**, which is a ratio of **5.8:1** in terms of compensation to effect.
- The displacement that would be avoided by the EA3 vessel re-routing measure alone would be **59km²**. Accordingly, the EA3 measure alone compensates for the **56.52km²** effective area of displacement (using Natural England's advised rates) at a ratio of **1:1**, or the **16.58km²** effective area of displacement (on the Applicants' modelling) at a ratio of **3.5:1**.
- The displacement that would be avoided by the EA1 vessel re-routing measure alone would be **38.2km²**. The EA1 measure alone therefore compensates for the **16.58km²** effective area of displacement (on the Applicants' modelling) at a ratio of **2.3:1**.
- The above figures show that the compensation is sufficient to offset the **combined** area of effective displacement from EA1N and EA2, which is the correct approach given that consent is sought for both projects. For completeness, the Applicants note that it follows that the compensation is also sufficient to offset the area of effective displacement from EA1N and EA2 when each are considered in isolation, given that their individual effect is less than their combined effect. This point equally applies to the 6.5km and 8km buffer scenarios considered below.

86. The by-catch measures complement these compensatory measures.

5.5 6.5km buffer + compensation

87. The Applicants are providing an updated layout with a 6.5km buffer. This is provided without prejudice to the Applicants' case that a 2km buffer leads to compliance with the HRA tests.

88. Neither the Applicants' nor Natural England's evidence draws a distinction between a 2km and a 6.5km buffer in terms of AEoI. The Applicants therefore present the 6.5km buffer option on the assumption (contrary to the Applicants' primary case) that the SoS concludes an AEoI cannot be ruled out with such a buffer in place. On that assumption, the issue then arises as to whether the three legal tests are made out for derogation on the basis of a 6.5km buffer. The Applicants consider that the derogation tests plainly are made out.

89. First, there are no feasible **alternative solutions** to the EA1N project that would have a lesser effect on the integrity of the OTE SPA, in light of the fact that alternatives that would reduce project capacity would not meet project objectives in respect of optimising generation and export capacity and delivering renewable energy to meet Government policy targets, as set out above. The Applicants' primary case is that there is in fact no feasible alternative to the current layout (with a 2km buffer), on the basis that an increased buffer would reduce capacity. If the SoS disagrees with that primary position, then the Applicants present a 6.5km buffer on a without prejudice basis as a secondary position and submit that there are no feasible alternatives beyond a 6.5km buffer. A 6.5km buffer already involves a 24.19% loss of capacity as compared with the current layout (see **Table 2** above). Even if the SoS were to take the view that an alternative might be feasible notwithstanding **some** loss of capacity, alternatives which reduce capacity beyond this cannot be said to be feasible, particularly when the Government policy requires **all** capacity to come forward.

90. While an 8km buffer is presented below as a further without prejudice alternative, the Applicants submit that further losses of capacity are of such an order of magnitude that buffers in excess of 6.5km cannot be said to be feasible alternatives.

91. Secondly, there are **imperative reasons of overriding public interest** for the Project to proceed, as set out at paragraphs 83 - 84 above. In terms of the balance inherent in the IROPI test, it is relevant to note the even lower level to which any residual displacement impacts fall with a 6.5km buffer, for example, the effective area of displacement is **17.08km²** (using Natural England's advised rates) and **1.75km²** (using the Applicants' model) and the number of individuals

displaced is **24.72** (using Natural England's advised rates) and **1.75** (using the Applicants' model) (as set out in **Table 3-4** of the **Technical Appendix**).

92. Thirdly, **compensatory measures** are secured to ensure that the overall coherence of the national site network is maintained, as set out above. In particular (and as set out in **Table 1**):

- Adopting a 6.5km buffer for EA1N, and the current layout for EA2 (8.3km buffer), the combined effective area of displacement is **19.06km²** (using Natural England's advised rates). The combined area of displacement that would be avoided by the EA1 and EA3 vessel re-routing measures would be **97.2km²**. That is a ratio of **5:1** in terms of compensation to effect.
- The combined effective area of displacement on the Applicants' modelling is **1.75km²**, which is a ratio of **55:1** in terms of compensation to effect.
- The displacement that would be avoided by the EA1 vessel re-routing measure alone would be **38.2km²**. Accordingly, even the EA1 measure alone compensates for the **19.06km²** effective area of displacement (using Natural England's advised rates) at a ratio of **2:1**, or the **1.75km²** effective area of displacement (on the Applicants' modelling) at a ratio of **22:1**.
- The displacement that would be avoided by the EA3 vessel re-routing measure alone would be **59km²**. Accordingly, the EA3 measure alone compensates for the **19.06km²** effective area of displacement (using Natural England's advised rates) at a ratio of **3:1**, or the **1.75km²** effective area of displacement (on the Applicants' modelling) at a ratio of **34:1**.

93. The by-catch measures complement these compensatory measures.

5.6 8km buffer + compensation

94. The Applicants further provide an updated layout with an 8km buffer, without prejudice to the Applicants' case that a 2km and a 6.5km buffer would both lead to compliance with the HRA tests.

95. As to **AEoI**, the Applicants' modelling shows that the distance over which RTD are displaced by the operational windfarms in the OTE SPA declines to zero by 8km. On that basis, the Applicants consider that no AEoI arises with such an 8km buffer.

96. Natural England's view is that an AEoI cannot be ruled out without a 10km buffer. The Applicants disagree, but even were the SoS to accept Natural England's view, the derogation tests are made out so as to justify granting consent.

97. First, there are no feasible **alternative solutions** to the EA1N project that would have a lesser effect on the integrity of the OTE SPA. A buffer of a distance greater than 8km would make EA1N unviable, as explained in paragraph 101 below. An alternative that is not viable is not a feasible alternative. This is without prejudice to the Applicants' position, as set out above, that the 6.5km and 8km buffers are themselves not feasible alternatives because they would reduce project capacity and would not meet project objectives in respect of optimising generation and export capacity and delivering renewable energy to meet Government policy targets.
98. Secondly, there are **imperative reasons of overriding public interest** for the project to proceed, as set out at paragraphs 83 - 84 above. In terms of the balance inherent in the IROPI test, it is relevant to note the extremely low level to which any residual displacement impacts fall with a 8km buffer, even using Natural England's advised rates, for example, the effective area of displacement using Natural England's advised rates is **8.38km²** and the number of individuals displaced is **10.34** (as set out in **Table 3-4** of the **Technical Appendix**).
99. Thirdly, **compensatory measures** are secured to ensure that the overall coherence of the national site network is maintained, as set out above. The compensation need only offset any residual displacement occurring between the Applicants' 8km buffer and the 10km point at which Natural England consider that displacement becomes difficult to detect. The extensive package of compensation now offered is plainly more than capable of offsetting any such limited residual displacement in that final 2km area. In particular (and as set out in **Table 1**):
- Adopting an 8km buffer for EA1N, and the current layout for EA2 (8.3km buffer), the combined effective area of displacement is **10.36km²** (using Natural England's advised rates⁹). The total area of displacement that would be avoided by the EA1 and EA3 vessel re-routing measures would be **97.2km²**. That is a ratio of **9:1** in terms of compensation to effect.
 - Even considering the area of displacement avoided by the EA1 vessel re-routing alone (**38.2km²**), there is compensation for the displacement at a ratio of **3.7:1**.
 - Similarly considering the area of displacement avoided by the EA3 vessel re-routing alone (**59km²**), there is compensation for the displacement at a ratio of **5.7:1**.
100. The by-catch measures complement these compensatory measures.

⁹ There is no displacement at 8km on the Applicants' modelling.

5.7 Absence of other alternatives

101. A buffer of a greater distance than 8km would make the EA1N Project undeliverable due to spatial constraints. At such a distance, the spaces available within the remaining windfarm area would result in a project with an installed capacity below 600MW. The space available is influenced by known constraints which include the necessary wind turbine separation distances, proximity to EA1 and avoidance of interactions with third party cables. The reduction in capacity would harm the project economics in a number of ways and would render the project unviable. The loss of scale and synergies would impact on the cost of windfarm and grid components. In addition a number of incurred and future fixed costs associated with the development, construction and operation and maintenance of the windfarm would have to be borne by the reduced income. Increased relative costs would also need to be borne by the reduced economic return. It would also result in a less efficient grid design which would further impact on the project economics and efficiency. A buffer of a greater distance than 8km would therefore make the EA1N Project unviable. There would be wider economic disbenefits including those for the UK supply chain which the Applicants have been working with in the development of the project.

6 EA2: updated project layouts and compensatory measures

6.1 Introduction

102. The existing EA2 layout has a buffer of 8.3km between the site boundary and the OTE SPA. Natural England accept that EA2 alone does not result in an AEoI (see paragraph 47 above). Natural England only consider an issue arises in respect of EA2's in-combination effects.
103. Without prejudice to the Applicants' case that EA2 gives rise to no AEoI either alone or in-combination, the Applicants now provide:
- **The existing 8.3km buffer layout but supplemented by the enhanced compensation package to compensate for any RTD displacement.** The package is as set out above in respect of EA1N. It is equally applicable and effective in respect of EA2.
 - **Alternatively, an updated EA2 layout with a 10km buffer,** which is the Applicants' understanding of what Natural England consider to be the distance where no AEoI occurs.

Both layouts are shown in the figure in **Appendix C**.

6.2 8.3km buffer + compensation

104. The Applicants' modelling shows zero displacement at 8km. Accordingly, on the Applicants' case there is no AEoI with the existing 8.3km buffer and no need to apply the derogation tests.
105. Without prejudice to that position, the Applicants consider that the three derogation tests are satisfied, if the SoS considers it necessary to apply them.
106. First, there are no feasible **alternative solutions** to the EA2 project that would have a lesser effect on the integrity of the OTE SPA, in light particularly of the fact that alternatives that would reduce project capacity would not meet project objectives in respect of optimising generation and export capacity and delivering renewable energy to meet Government policy targets, as set out at paragraphs 78- 79.
107. **Table 3** sets out the reduction in EA2 installed capacity resulting from moving the project further from the OTE SPA. The analysis has been conducted on the same basis as that for EA1N as set out in in paragraph 80 above.

Table 3: Approximate installed capacity of East Anglia TWO at varying buffers from the OTE SPA and associated reduction in installed capacity compared to the current layout (8.3km from OTE SPA)

Buffer Size (km from OTE SPA)	EA2	
	Approximate Project Installed Capacity (MW)	Approximate Reduction in Installed Capacity (%)
8.3km	940.8	N/A
8.5km	940.8	N/A
9.0km	911.4	-3.13%
9.5km	896.7	-4.69%
10.0km	867.3	-7.81%

108. Secondly, there are **imperative reasons of overriding public interest** for the Project to proceed, as set out at paragraphs 83 - 84 above. In terms of the balance inherent in the IROPI test, it is relevant to note the very limited effective areas of displacement with an 8.3km buffer, for example, the effective area of displacement using Natural England's advised rates is **1.98km²**. In addition, the number of individuals predicted to be displaced is extremely low at **3.96** (as set out in **Table 3-5** of the **Technical Appendix**). As noted at paragraph 84 above,

with respect to the number of individuals displaced, this is in the context of a current population of the OTE SPA of **18,079**.

109. Thirdly, **compensatory measures** are secured to ensure that the overall coherence of the national site network is maintained. In particular (and as set out in **Table 1**):

- The combined effect area of displacement when adopting the existing EA2 layout (8.3km buffer) and the existing EA1N layout (2km buffer) is **56.52km²** (using Natural England's advised rates). The total area of displacement that would be avoided by the EA1 and EA3 vessel re-routing measures would be **97.2km²**. That is a ratio of **1.7:1** in terms of compensation to effect.
- The combined effective area of displacement on the Applicants' modelling is **16.58km²**, which is a ratio of **5.8:1** in terms of compensation to effect.
- Any larger buffer (e.g. 6.5km or 8km) for EA1N would increase the ratio still further, as set out above in section 5.
- The above figures show that the compensation is sufficient to offset the combined area of effective displacement from EA1N and EA2, which is appropriate given that consent is sought for both. For completeness, the Applicants note that it follows that the compensation is also sufficient to offset the area of effective displacement from EA1N and EA2 when each are considered in isolation, given that their individual effect is less than their combined effect. The effective area of displacement from EA2 alone based on the existing layout (8.3km) using Natural England's advised rates is **1.98km²** (**Table 4-2** of the **Technical Appendix**). Considered against the EA1 vessel re-routing compensation alone (**38.2km²**), the ratio of compensation to effect is **19:1**. Considered against the EA3 vessel re-routing compensation alone (**59km²**), the ratio is **30:1**. Considered against the EA1 and EA3 vessel re-routing together (**97.2km²**), the ratio is **49:1**.

110. The by-catch measures complement these compensatory measures.

6.3 10km buffer

111. Without prejudice to the Applicants' case on the acceptability of an 8.3km buffer, the Applicants provide an updated layout with a 10km buffer.

112. It is the Applicants' understanding that with such a buffer, Natural England accept that no AEoI would arise from EA2 even on an in-combination basis. That position is supported by the Applicants' modelling (given that the Applicants' modelling shows zero displacement at 8km, let alone 10km).

113. In light of the agreement as to the absence of an AEoI, there is no need to consider the derogation tests for this updated layout.

7 Relationship with Projects as a whole

114. None of the updated layouts for EA1N and EA2 set out above materially affect any other aspect of the case for granting consent for EA1N or EA2. In particular, the scale and extent of onshore infrastructure required would be unchanged. The planning balance would still come down firmly in favour of granting consent, given the very significant level of benefits resulting from both EA1N and EA2, even with a reduction in capacity due to an increased buffer. Any reduced capacity would inevitably result in some reduction in benefit, but the benefits of the capacity created on any of the updated layouts would still overwhelmingly outweigh the harm, particularly given the urgent policy imperative for increased capacity. For the same reasons, the compelling case in the public interest for compulsory acquisition would still be made out.

8 Conclusion

115. This submission responds to the request by the SoS for updated project layouts for EA1N and EA2 that include a sufficient buffer between the array and the OTE SPA boundary to remove displacement impacts on red-throated divers within the OTE SPA. Updated projects layouts, together with additional compensatory measures, have been presented. The various layout options are presented without prejudice to each other to enable the SoS to grant consent for EA1N and EA2 schemes which align to his conclusions on AEoI and (if necessary) the derogation tests. The Applicants consider that all of the layouts (including the current layout for each project) provide for schemes which are fully compliant with the HRA legal framework and can be granted consent accordingly.

Appendix A: Technical Appendix



East Anglia ONE North and East Anglia TWO Offshore Windfarms

Applicants' Responses to SoS Questions 20th December 2021 (Item 5)

Technical Appendix A

Applicants: East Anglia ONE North Limited and East Anglia TWO Limited

Document Reference: ExA.AS-2.SoSQ2.V1_01

SPR Reference: EA2-DWF-CNS-REP-IBR-000003 / EA1N-DWF-CNS-REP-IBR-00003

Date: 31st January 2022

Revision: Version 1

Author: Royal HaskoningDHV and MacArthur Green

Revision Summary				
Rev	Date	Prepared by	Checked by	Approved by
1	31/01/2022	Paolo Pizzolla & Mark Trinder	Lesley Jamieson	Brian McGrellis

Description of Revisions			
Rev	Page	Section	Description
01	n/a	n/a	Final for Submission

Table of Contents

1	Introduction	1
2	Methodology for Boundary Amendment	1
3	Summary of assessment methodology	8
3.1	Approaches to assessment of effect	8
3.2	Application of the approaches	9
3.3	Summary Tables for both Projects	13
4	Vessel management compensation measure	16
4.1	Methodology	16
4.2	Results tables for both projects	19
5	Full tables of results for the Projects	20
5.1	East Anglia ONE North	21
5.2	East Anglia TWO	38

Glossary of Acronyms

AEoI	Adverse Effect on Integrity
EA1N	East Anglia ONE North
EA2	East Anglia TWO
JNCC	Joint Nature Conservation Committee
NE	Natural England
SoS	Secretary of State
SPA	Special Protection Area

Glossary of Terminology

Applicant	East Anglia TWO Limited / East Anglia ONE North Limited
East Anglia ONE North project	The proposed project consisting of up to 67 wind turbines, up to four offshore electrical platforms, up to one construction, operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
East Anglia ONE North windfarm site	The offshore area within which wind turbines and offshore platforms will be located.
East Anglia TWO project	The proposed project consisting of up to 75 wind turbines, up to four offshore electrical platforms, up to one construction, operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
East Anglia TWO windfarm site	The offshore area within which wind turbines and offshore platforms will be located.

1 Introduction

1. This document has been prepared by East Anglia TWO Limited and East Anglia ONE North Limited (the Applicants) in relation to the East Anglia TWO and East Anglia ONE North Development Consent Order (DCO) applications (the Applications). It provides technical information to support the Applicants' response to Parts 5 of the letters published by the Secretary of State for Business, Energy and Industrial Strategy (SoS) on 20th December 2021 (the SoS letters).
2. Although the SoS letters relate to the East Anglia TWO (EA2) and East Anglia ONE North (EA1N) Offshore Windfarm projects respectively, the contents of each are identical. This document is therefore applicable to both projects (the Projects).
3. The Applicants' Responses to SoS Questions 20th December 2021 (Item 5) and the Without Prejudice Compensation Measures documents present summary information which is covered in detail in this document.

2 Methodology for Boundary Amendment

4. Part 5 of the SoS letters state:
In relation to the red-throated diver feature of the Outer Thames Estuary Special Protection Area ("SPA"), the Applicant, in consultation with Natural England, is requested to provide an updated project layout that includes a sufficient buffer between the array and the SPA boundary to remove displacement impacts on red-throated divers within the SPA
5. At the close of the examination the distances between the windfarm sites and the Outer Thames Estuary Special Protection Area (OTE SPA) were 2km (EA1N) and 8.3km (EA2). Following the request in part 5 of the SoS letters the Applicants reviewed information from on-going detailed design work for the Projects in order to determine if there was flexibility within the proposed windfarm sites that would allow the boundaries to be amended to provide a larger buffer from the windfarm sites to the OTE SPA.
6. For this exercise new site boundaries were drawn by applying a buffer from the SPA at 0.5km increments starting from a distance of 2km from the SPA (the current site boundary) for EA1N and 8.5km from the SPA (just beyond the current

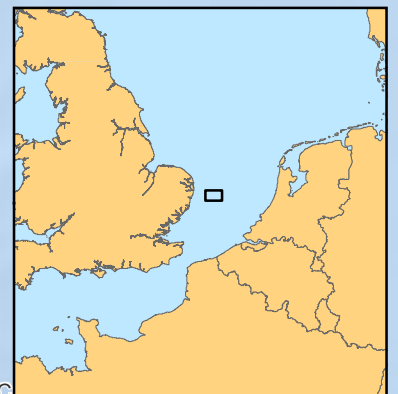
boundary at 8.3km from the SPA) for EA2 out to 10km. This is illustrated in **Figure 1**.

7. Once each boundary was created the boundary was buffered at 1km increments up to 15km for the Applicants' model and 12km for the straight-line approach (replicating the original methodology for the purposes of consistency with the **Displacement of red-throated divers in the Outer Thames Estuary - Version 05** (REP11-026)). This is illustrated in Figure 3 using a 5km site boundary for EA1N (i.e. the boundary is 5km from the SPA) as an example.
8. The area of the overlaps of these buffers with the SPA was then the basis of the updated assessment. Note that the buffer area that does not overlap with the SPA is not relevant to the assessment as we are only concerned with the effects on the distribution of birds within the SPA itself.
9. This exercise generated a table of areas for all the potential site boundaries and all their resultant buffers as shown in Table 2-1. The same exercise was also undertaken for EA2 with results shown in Table 2-2.



Legend

- East Anglia ONE North Windfarm Site
- Outer Thames Estuary Special Protection Area (SPA)
- 2.5km Alternate Boundary
- 3km Alternate Boundary
- 3.5km Alternate Boundary
- 4km Alternate Boundary
- 4.5km Alternate Boundary
- 5km Alternate Boundary
- 5.5km Alternate Boundary
- 6km Alternate Boundary
- 6.5km Alternate Boundary
- 7km Alternate Boundary
- 7.5km Alternate Boundary
- 8km Alternate Boundary
- 8.5km Alternate Boundary
- 9km Alternate Boundary
- 9.5km Alternate Boundary
- 10km Alternate Boundary



Esri, Garmin, GEBCO



Rev	Date	By	Comment
1	28/01/2022	AB	First Issue.

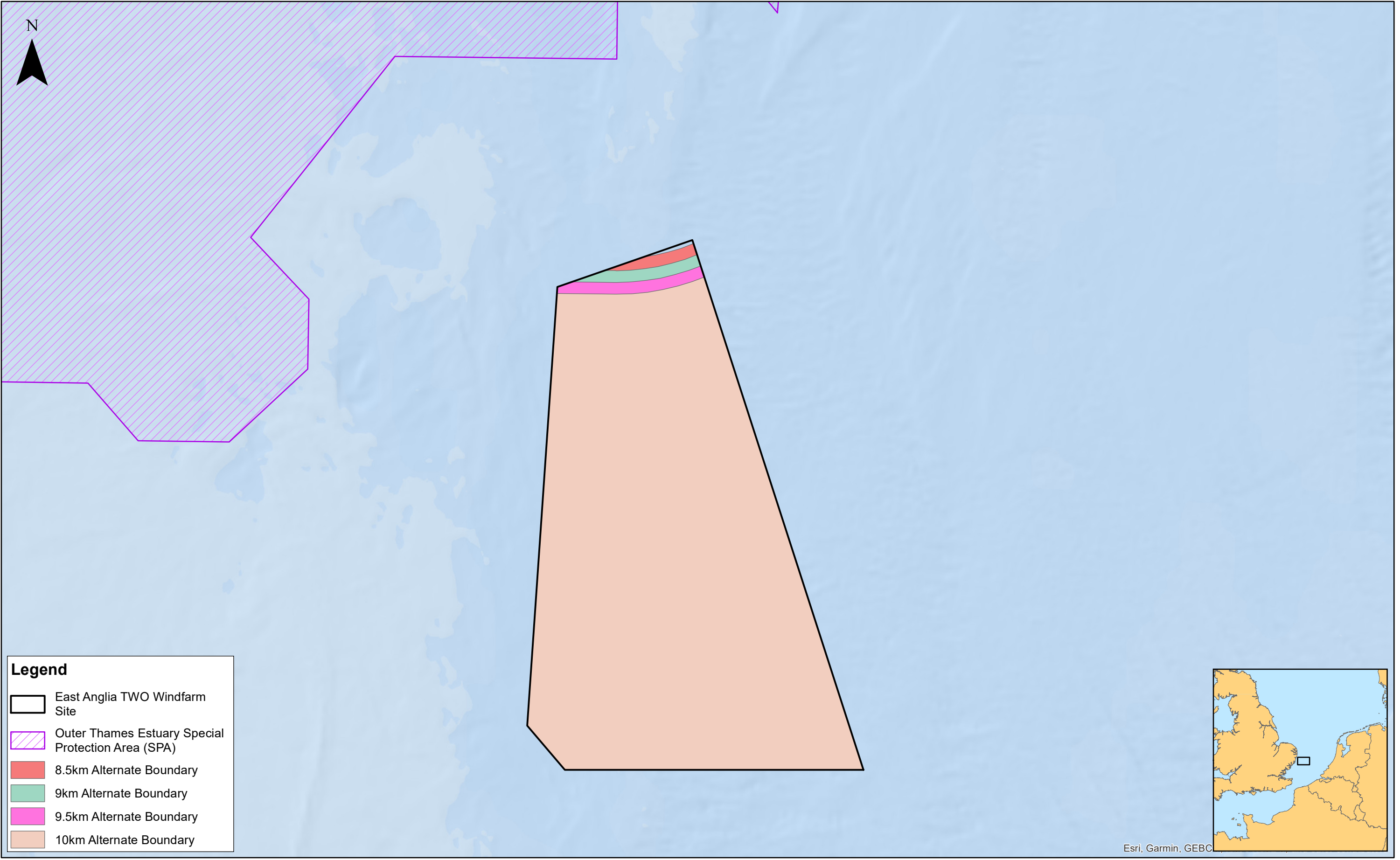
Prepared:	AB
Checked:	PM
Approved:	PP

1:100,000
Scale @ A3

Source: © JNCC, 2021. © Contains OS data © Crown copyright and database right, 2020. © British Crown and OceanWise, 2020. All rights reserved. License No. EM5-EM001-548150. Not to be used for navigation.
This map has been produced to the latest known information at the time of issue, and has been produced for your information only. Please consult with the SPN Offshore GIS team to ensure the content is still current before using the information contained on this map. To the fullest extent permitted by law, we accept no responsibility or liability (whether in contract, tort (including negligence) or otherwise in respect of any errors or omissions in the information contained in the map and shall not be liable for any loss, damage or expense caused by such errors or omissions.

East Anglia ONE North
EA1N Alternate Boundary Options

Drg No	EA1N-DEV-DRG-IBR-001334	
Rev	1	Datum: WGS 1984 Projection: Zone 31N
Date	28/01/22	
Figure	1	



Legend

- East Anglia TWO Windfarm Site
- Outer Thames Estuary Special Protection Area (SPA)
- 8.5km Alternate Boundary
- 9km Alternate Boundary
- 9.5km Alternate Boundary
- 10km Alternate Boundary

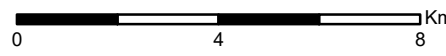
Esri, Garmin, GEBCO



Rev	Date	By	Comment
1	28/01/2022	AB	First Issue.

Scale @ A3

1:150,000



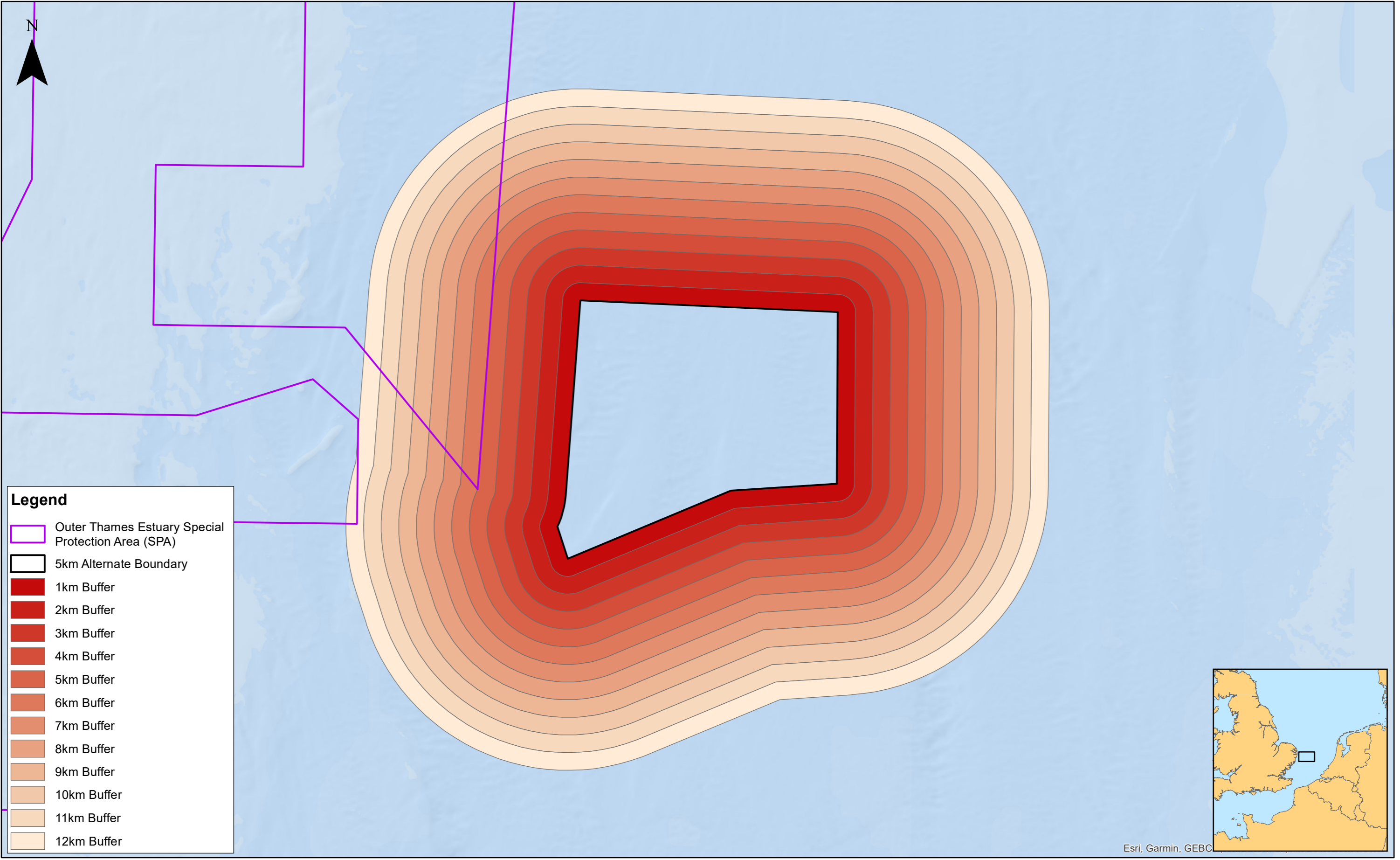
Prepared: AB
Checked: PM
Approved: PP

Source: © JNCC, 2021. © Contains OS data © Crown copyright and database right, 2020. © British Crown and OceanWise, 2020. All rights reserved. License No. EMS-EX001-548150. Not to be used for navigation.
This map has been produced to the latest known information at the time of issue, and has been produced for your information only. Please consult with the SPN Offshore GIS team to ensure the content is still current before using the information contained on this map. To the fullest extent permitted by law, we accept no responsibility or liability (whether in contract, tort (including negligence) or otherwise in respect of any errors or omissions in the information contained in the map and shall not be liable for any loss, damage or expense caused by such errors or omissions.

East Anglia TWO

EA2 Alternate Boundary Options

Drg No	EA2-DEV-DRG-IBR-001344	
Rev	1	Datum: WGS 1984
Date	28/01/22	Projection: Zone 31N
Figure	2	



Legend

- Outer Thames Estuary Special Protection Area (SPA)
- 5km Alternate Boundary
- 1km Buffer
- 2km Buffer
- 3km Buffer
- 4km Buffer
- 5km Buffer
- 6km Buffer
- 7km Buffer
- 8km Buffer
- 9km Buffer
- 10km Buffer
- 11km Buffer
- 12km Buffer

Esri, Garmin, GEBCO



Rev	Date	By	Comment
1	28/01/2022	AB	First Issue.

Prepared:	AB
Checked:	PM
Approved:	PP

1:200,000
Scale @ A3

East Anglia ONE North
5km Alternate Boundary - Buffer Illustration

Drg No	EA1N-DEV-DRG-IBR-001335	
Rev	1	Datum: WGS 1984 Projection: Zone 31N
Date	28/01/22	
Figure	3	

Table 2-1 Buffer overlaps in 1km increments for all potential alternate site boundaries for EA1N

Overlap into SPA	Alternate site boundary EA1N																
	10km	9.5km	9km	8.5km	8km	7.5km	7km	6.5km	6km	5.5km	5km	4.5	4	3.5km	3km	2.5km	2km
	Area of overlap (km ²)																
Windfarm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0-1km	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-2km	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-3km	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.59	8.7
3-4km	0	0	0	0	0	0	0	0	0	0	0	0	0	6.04	11.95	12.64	13.1
4-5km	0	0	0	0	0	0	0	0	0	0	0	6.14	12.59	13.06	13.14	13.33	13.7
5-6km	0	0	0	0	0	0	0	0	0	6.23	12.83	13.38	13.65	13.8	13.64	13.43	13.4
6-7km	0	0	0	0	0	0	0	6.31	13.05	13.7	14.02	14.22	14.35	14.42	14.23	13.98	13.7
7-8km	0	0	0	0	0	6.39	13.25	13.98	14.37	14.62	14.78	14.89	14.96	15	14.8	14.55	14.3
8-9km	0	0	0	6.46	13.45	14.26	14.7	14.99	15.19	15.33	15.43	15.5	15.53	15.55	15.36	15.1	14.9
9-10km	0	6.53	13.63	14.52	15.01	15.35	15.59	15.76	15.88	15.98	16.04	16.07	16.09	16.1	15.95	16.88	17.5
10-11km	13.75	14.73	15.25	15.66	15.94	16.14	16.29	16.4	16.49	16.54	16.58	16.6	17.26	19.75	21.69	22.08	22.6
11-12km	15.61	16.02	16.3	16.56	16.73	16.85	16.97	17.06	17.18	17.73	18.86	21.35	23.47	23.97	24.55	25.31	26.1
Total area of overlap (km ²)	29.36	37.28	45.19	53.2	61.12	68.99	76.8	84.51	92.16	100.12	108.54	118.16	127.9	137.69	145.31	151.89	158

Table 2-2 Buffer overlaps in 1km increments for all potential alternate site boundaries for EA2

Overlap into SPA	New Site EA2				
	10km	9.5km	9km	8.5km	8.3km
Area of overlap (km ²)					
Windfarm	0	0	0	0	0
0-1km	0	0	0	0	0
1-2km	0	0	0	0	0
2-3km	0	0	0	0	0
3-4km	0	0	0	0	0
4-5km	0	0	0	0	0
5-6km	0	0	0	0	0
6-7km	0	0	0	0	0
7-8km	0	0	0	0	0
8-9km	0	0	0	0.58	0.71
9-10km	0	1.94	3.37	3.63	3.67
10-11km	7.51	8.49	8.6	8.9	9.05
11-12km	14.72	16.57	17.11	17.72	17.92
Total area of overlap (km²)	22.23	26.99	29.08	30.83	31.35

3 Summary of assessment methodology

3.1 Approaches to assessment of effect

10. From the spatial overlaps the effect of displacement was then determined through the use of two approaches.
11. The first approach was to apply the displacement values determined by the Applicants' model (as presented in REP11-026) to each of the potential alternate site boundaries. Note that no additional or new modelling was done, the displacement effect estimated by the model for each 1km increment were simply applied to the potential alternate site boundaries and their buffers.
12. The Applicants undertook the modelling following advice from Natural England (NE) as there was agreement that existing studies did not provide a robust, site specific picture of displacement in the OTE SPA. This approach used JNCC/NE data which covered the full extent of the OTE SPA and included data collected before and after the existing windfarms within the OTE SPA were operational. These data were analysed using statistical spatial models which related the observed bird locations to explanatory variables (distance to coast, bathymetry, average shipping activity and distance to windfarms). These models provide estimates of the relative contributions from each variable and also permit density surfaces (akin to contour maps) of the red-throated diver densities to be obtained. These predicted surfaces can be produced with and without the windfarm effect, thereby allowing comparisons to be made for the expected distribution of red-throated diver with, and without, the windfarms.
13. The data used covered the whole SPA and were as follows
 - Jan 2002-Mar 2007 (DTI/BERR visual aerial surveys (provided by JNCC))
 - Jan/Feb 2013 (APEM digital (provided by NE))
 - Feb 2018 (HiDef digital (provided by NE))
14. The second approach was the straight-line approach (as presented in REP11-026 as '*NE advised rates*'). This approach was based upon NE advice provided in response to the first iteration of the Applicants' model (presented in REP3-049) in **Deadline 4 Submission Appendix A12 – Advice on RTD in the OTE SPA** (REP4-087). Paragraph 20 states:

Given the questions around the validity of the modelling approach we suggest that a range of displacement figures are presented, based on:

- *varying spatial extents of effect (including 7km from the Applicant's modelling, but also up to 12km, to reflect the evidence from the London Array monitoring).*
 - *varying magnitudes of displacement and associated gradients with increasing distance (including the Applicant's modelled displacement of 33% within the windfarm footprint, associated gradient out to 7km and up to 100% within the windfarm area and associated gradient out to 11.5km to reflect the empirical studies that have reported much higher levels, typically 80-100% within windfarm footprints).*
15. The Applicants therefore presented the straight-line approach with 100% displacement within the windfarm reducing to zero at 11.5km (the 11-12km buffer increment).
16. The Applicants consider that their modelled approach is robust and provides the most comprehensive picture of displacement of red-throated diver in the OTE SPA. The straight-line approach is crude and unrealistic. The alternative of extrapolating SPA-wide patterns from, for example, a single source such as the London Array monitoring risks the conclusions being skewed by very specific confounding factors. The key point is that the area monitored for London Array did not cover the same buffer areas in all directions, in particular it omitted areas to the north-west of the wind farm. Therefore, any spatial analysis of these data is compromised and can only provide a partial explanation for the distributions observed. Given the other factors which influence diver distributions it should not be assumed that apparent displacement from wind farms is symmetrical. The Applicants have discussed at length throughout the examination why they consider that the London Array data are not representative of the wider picture across the SPA (see for example **Applicants' Comments on Natural England's Deadline 8 Submissions** (REP9-016, section 2 Applicants' Comments on NE Appendix A20 [REP8-160] – NE Red-Throated Diver Displacement Clarification Note)).

3.2 Application of the approaches

17. The approaches have the following parameters / outputs which are explained in **Table 3-1** together with examples for how the figures are derived for the two approaches. **Table 3-2** and **Table 3-3** show the results for the assessment for EA1N as presented in the examination (REP11-026). The assessments provide results both spatial (i.e. area and percentage area of the SPA) and population (i.e. number of individuals) terms. Note that for EA1N the individuals are calculated from the modelled densities assuming an SPA population of 20,000 this is used for both approaches. For EA2 the model was not run (as EA2 is

beyond the range at which the model showed effects) therefore the individuals are calculated from densities presented in Irwin et al (2019)^a.

18. The complete set of tables for both EA2 and EA1N for all alternate boundary options is provided in **Section 5**.
19. The full tables were provided along with the relevant GIS shapefiles to Natural England in advance of the 31st January 2022 to aid them in providing their response to the SoS.

Table 3-1 Terminology used in the analysis of displacement effects

Analysis parameter / output	Definition	Applicants' model	Straight-line approach
Range of effect	This is the distance from the windfarm at which a displacement effect can be detected	For the SPR model this is calculated to be at 7-8km	For the NE approach this is 12km ^b
Area of overlap with SPA	This is simply the area contained within the overlap of the buffer between the windfarm and the SPA. This is provided in 1km increments from 0 – 15km ^c . These areas are unique to each site boundary.	This is the same for both approaches	
Total area of overlap with SPA	This is the sum of each of the 1km increments of buffer overlap The total area of overlap decreases as the distance between the SPA and the windfarm increases.	This is the same for both approaches	
Displacement percentage	The displacement effect is agreed to follow a gradient where the effect decreases with distance from the windfarm (the modelling was undertaken to better understand this gradient of effect). The gradient of effect is expressed as a percentage of displacement within each of the 1km increments of buffer overlap. This percentage is on a gradient which decreases from the windfarm	For the SPR model this is calculated to be approximately 42% displacement within the windfarm (and to a distance of 1km from the boundary). This % decreases to zero at 7-8km	For the NE approach this is a straight-line relationship which assumes 100% displacement within the windfarm (and to a distance of 1km from the boundary). This % decreases linearly to zero at 12km

^a Irwin, C., Scott, M., S., Humphries, G. & Webb, A. 2019. HiDef report to Natural England - Digital video aerial surveys of red-throated diver in the Outer Thames Estuary Special Protection Area 2018. Natural England Commissioned Reports, Number 260

^b This is derived from the London Array monitoring which reported displacement to 11.5km. For simplicity this was rounded to 12km

^c 15km was simply the distance modelled so that there was confidence that the effect was fully captured. Neither approach subsequently assumed a range of effect to that distance.

Analysis parameter / output	Definition	Applicants' model	Straight-line approach
	outwards and reaches zero at the maximum range of effect.		
Effective area of displacement	<p>This is the area within each of the 1km increment buffer overlaps with the SPA which is potentially subject to displacement. This is calculated by multiplying the area by the appropriate displacement percentage.</p> <p>This allows for the gradient of effect to be expressed spatially.</p>	<p>Assuming the base case of EA1N at 2km from the SPA</p> <p>The model shows that the displacement effect in the 2-3km buffer overlap is 35%. The area of overlap for this increment is 8.7km². Applying the displacement effect % to the area gives an <i>effective area of displacement</i> of 3.07km² for that increment (i.e. 35% of 8.7 km²).</p> <p>The total effective area of displacement is the sum of each of the 1km increments which overlap the SPA up to the 7-8km increment.</p>	<p>Assuming the base case of EA1N at 2km from the SPA</p> <p>The approach shows that the displacement effect in the 2-3km buffer overlap is 82%. The area of overlap for this increment is 8.7km². Applying the displacement effect % to the area gives an <i>effective area of displacement</i> of 7.13km² for that increment (i.e. 82% of 8.7 km²).</p> <p>The total effective area of displacement is the sum of each of the 1km increments which overlap the SPA up to the 11-12km increment.</p>
% SPA affected	This is the total effective area of displacement as a percentage of the SPA (which has an area of 3,924km ²)	This is the same for both approaches	
		<p>Assuming the base case of EA1N at 2km from the SPA</p> <p>The total effective area of displacement for this scenario is 16.58km². This equates to 0.42% of the SPA area</p>	<p>Assuming the base case of EA1N at 2km from the SPA</p> <p>The total effective area of displacement for this scenario is 54.54km². This equates to 1.39% of the SPA area</p>
Individuals displaced	<p>This is the number of individual birds which could be displaced.</p> <p>For EA1N this is calculated using the model outputs to generate the density of birds within each of the 1km buffer overlap increments. Using this density for both approaches ensures that the results are directly comparable.</p>	This is the same for both approaches	
		<p>Assuming the base case of EA1N at 2km from the SPA</p> <p>The model shows that the number of birds within the 2-3km buffer overlap is 12 individuals.</p>	<p>Assuming the base case of EA1N at 2km from the SPA</p> <p>The model shows that the number of birds within the 2-3km buffer overlap is 12 individuals.</p>

Analysis parameter / output	Definition	Applicants' model	Straight-line approach
	The displacement percentage for that increment is then applied to derive the number of birds affected. The total number of birds displaced is the sum of each of the 1km buffer overlap increments.	Applying the displacement percentage in the 2-3km buffer overlap of 35% means that 4.2 birds are displaced.	Applying the displacement percentage in the 2-3km buffer overlap of 82% means that 9.84 birds are displaced.
Mortality	<p>Mortality is provided at the upper end of the theoretical range accepted by NE; this is of 10% of birds displaced.</p> <p>The Applicants consider this level of mortality highly unrealistic as discussed in REP3-049 and subsequent iterations of the assessment.</p>	This is the same for both approaches	

Table 3-2 Displacement for the EA1N base case (boundary 2km from SPA) shown in terms of percentage area of the SPA

Region	Area of overlap (km ²)	Applicants' model		Straight-line approach	
		Displacement % (model)	Effective area of displacement (km ²)	Displacement % (straight-line)	Effective area of displacement (km ²)
OWF	0	0.42	0	1.00	0
0-1 km	0	0.41	0	1.00	0
1-2 km	0	0.38	0	0.91	0
2-3 km	8.7	0.35	3.07	0.82	7.13
3-4 km	13.1	0.32	4.15	0.73	9.56
4-5 km	13.7	0.27	3.71	0.64	8.77
5-6km	13.4	0.21	2.84	0.55	7.37
6-7km	13.7	0.14	1.93	0.46	6.30
7-8km	14.3	0.06	0.88	0.37	5.29
8-9km	14.9	-0.01	0	0.28	4.17
9-10km	17.5	-0.07	0	0.19	3.33
10-11km	22.6	-0.10	0	0.10	2.26
11-12km	26.1	-0.08	0	0.01	0.26
Total area of overlap (km²)	158		16.58		54.45
% SPA	4.03		0.42		1.39

Table 3-3 Displacement for the EA1N base case (boundary 2km from SPA) shown in terms of number of individual RTD displaced. The model is used to estimate the number of birds predicted both with and without the windfarm. The ‘without’ windfarm figure is then used to calculate the number of individuals displaced in the straight-line approach (which is simply the number of birds present multiplied by the displacement %)

Region	Applicants' model				Straight-line approach		
	Individuals (without OWF)	Individuals (with OWF)	No. displaced	Displacement % (model)	Displacement % (straight line)	Individuals (with OWF)	No. displaced
OWF	0.00	0.00	0.00	42	100	0.00	0.00
0-1km	0.00	0.00	0.00	41	100	0.00	0.00
1-2km	0.00	0.00	0.00	38	91	0.00	0.00
2-3km	12.00	7.80	4.20	35	82	2.16	9.84
3-4km	20.20	13.80	6.40	31	73	5.45	14.75
4-5km	27.80	20.30	7.50	27	64	10.01	17.79
5-6km	35.20	27.70	7.50	21	5	15.84	19.36
6-7km	42.50	36.40	6.10	14	46	22.95	19.55
7-8km	41.70	39.10	2.60	6	37	26.27	15.43
8-9km	43.90	44.40	-0.50	-1	28	31.61	12.29
9-10km	53.40	57.10	-3.70	-7	19	43.25	10.15
10-11km	70.60	77.20	-6.60	-10	10	63.54	7.06
11-12km	86.80	93.80	-7.00	-8	1	85.93	0.87
12-13km	99.70	102.40	-2.70	-3	0.00	99.70	0.00
13-14km	100.60	95.50	5.10	5	0.00	100.60	0.00
14-15km	114.40	98.30	16.10	14	0.00	114.40	0.00
Total			34.30				127.08
Mort (@10%)			3.43				12.71

3.3 Summary Tables for both Projects

20. **Table 3-4** and **Table 3-5** summarise all the assessment outputs for each alternate boundary option for both Projects.

Table 3-4 Summary of displacement effect for East Anglia ONE North in terms of effective area of displacement and individuals displaced using both Applicants’ model and straight-line approach for each of the alternate boundaries

Alternate Boundary	Area of overlap (km ²)	% area of SPA	Applicants’ Model			Straight-line approach		
			Effective area of displacement (km ²)	Effective area of displacement % SPA (3,924km ²)	Individuals displaced	Effective area of displacement (km ²)	Effective area of displacement % SPA (3,924km ²)	Individuals displaced
Current (2km)	158	4.03	16.58	0.42	34.3	54.54	1.39	127.08
2.5km	151.89	3.87	14.77	0.38	22.17	50.62	1.29	97.22
3km	145.31	3.70	12.88	0.33	18.54	46.4	1.18	88.05
3.5km	137.69	3.51	10.99	0.28	15.01	42.17	1.07	77.83
4km	127.9	3.26	8.87	0.23	11.4	37.07	0.94	66.42
4.5km	118.16	3.01	7.04	0.18	8.4	32.61	0.83	56.43
5km	108.54	2.77	5.61	0.14	5.88	28.19	0.72	47.04
5.5km	100.12	2.55	4.15	0.11	3.88	24.3	0.62	38.61
6km	92.16	2.35	2.72	0.07	2.35	20.41	0.52	31.15
6.5km	84.51	2.15	1.75	0.04	1.75	17.08	0.44	24.72
7km	76.8	1.96	0.82	0.02	0.55	13.78	0.35	19.03
7.5km	68.99	1.76	0.39	0.01	0.16	11.06	0.28	14.39
8km	61.12	1.56	0	0	n/a	8.38	0.21	10.34
8.5km	53.2	1.36	0	0	n/a	6.3	0.16	7.24
9km	45.19	1.15	0	0	n/a	1.52	0.04	4.63
9.5km	37.28	0.95	0	0	n/a	0.8	0.02	2.88
10km	29.36	0.75	0	0	n/a	0.14	0.00	1.4
Area of Overlap	This is simply the area contained within the overlap of the buffer between the windfarm and the SPA. At each boundary distance this was calculated in 1km increments from 0 – 12km and then summed							
% SPA	This is the area of overlap as a percentage of the total SPA area of 3,924km ²							
Effective area of displacement	This is the area within each of the 1km increment buffer overlaps with the SPA which is potentially subject to displacement. This is calculated by multiplying the area of overlap by the appropriate displacement percentage (using either the Applicant’s modelled displacement rate or straight-line approach rate and then each increment is summed. For example, in the first row (‘Current (2km)’) the Applicant’s model has a value of 16.58km, which was the summed figure in the final row of Table 3-2 (and the same for the straight-line approach with a value of 54.54km). The same steps have been followed for the alternate boundaries (see section 5 for full calculations). This allows for the gradient of effect to be expressed spatially.							
Effective area of displacement % SPA	This is the effective area of displacement as a percentage of the total SPA area of 3,924km ²							
Individuals displaced	This is the number of individual birds which could be displaced.							

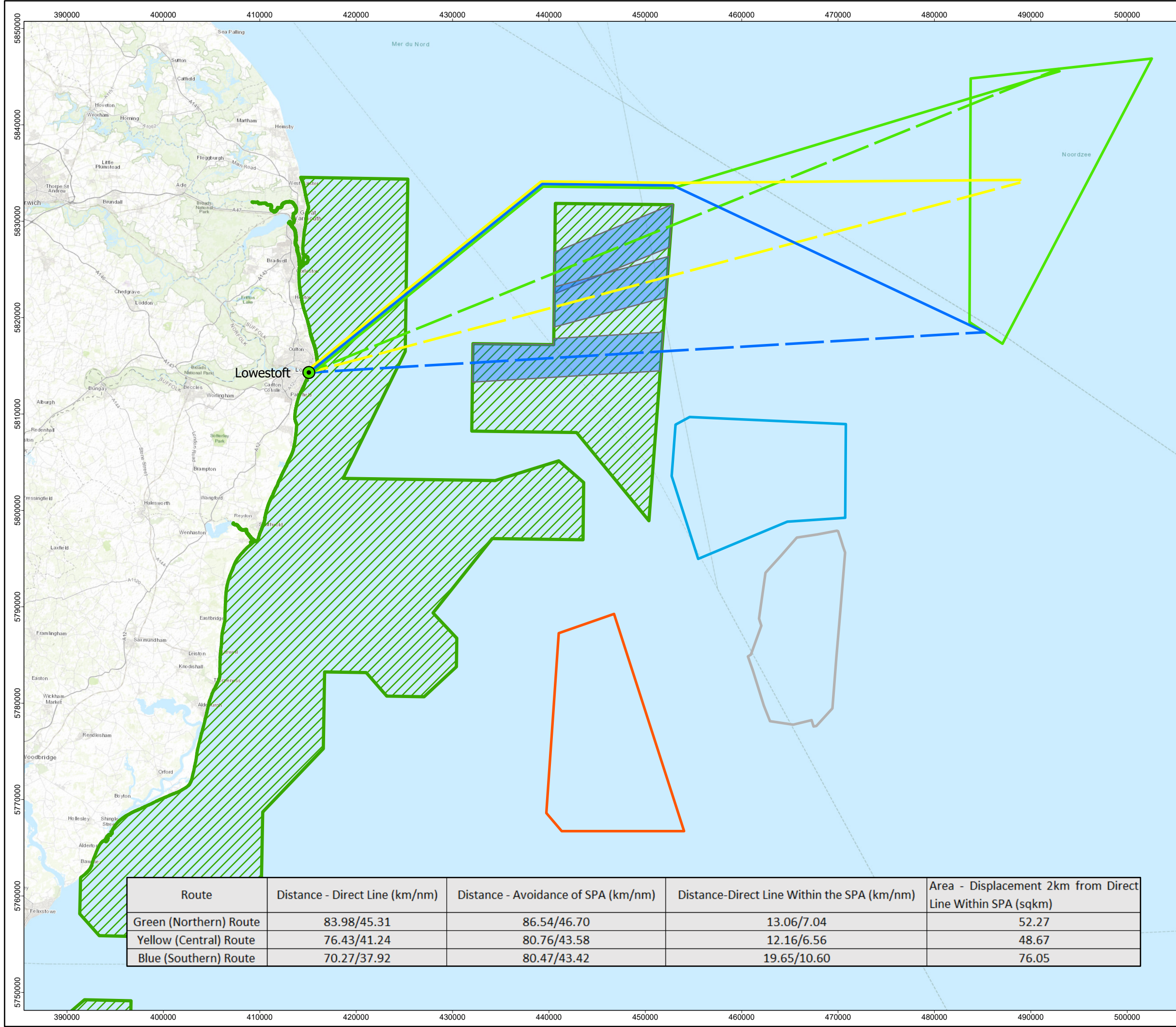
Table 3-5 Summary of displacement effect for East Anglia TWO in terms of effective area of displacement and individuals displaced (note no results from Applicants model as current boundary beyond range of effect) for each of the alternate boundaries

Alternate Boundary	Area of overlap (km ²)	% SPA (3,924km ²)	Applicants' Model			Straight-line approach		
			Effective area of displacement (km ²)	Effective area of displacement % SPA (3,924km ²)	Individuals displaced	Effective area of displacement (km ²)	Effective area of displacement % SPA (3,924km ²)	Individuals displaced
Current (8.3km)	31.35	0.80	n/a	n/a	n/a	1.98	0.050	3.96
8.5km	30.83	0.79	n/a	n/a	n/a	1.92	0.049	3.84
9km	29.08	0.74	n/a	n/a	n/a	1.67	0.04	3.34
9.5km	27	0.69	n/a	n/a	n/a	1.38	0.04	2.77
10km	22.23	0.57	n/a	n/a	n/a	0.9	0.02	1.8
Area of Overlap	This is simply the area contained within the overlap of the buffer between the windfarm and the SPA. At each boundary distance this was calculated in 1km increments from 0 – 12km and then summed							
% SPA	This is the area of overlap as a percentage of the total SPA area of 3,924km ²							
Effective area of displacement	This is the area within each of the 1km increment buffer overlaps with the SPA which is potentially subject to displacement. This is calculated by multiplying the area of overlap by the appropriate displacement percentage (using either the Applicant's modelled displacement rate or straight-line approach rate and then each increment is summed. For example, in the first row ('Current (2km)') the Applicant's model has a value of 16.58km, which was the summed figure in the final row of Table 3-2 (and the same for the straight-line approach with a value of 54.54km). The same steps have been followed for the alternate boundaries (see section 5 for full calculations). This allows for the gradient of effect to be expressed spatially.							
Effective area of displacement % SPA	This is the effective area of displacement as a percentage of the total SPA area of 3,924km ²							
Individuals displaced	This is the number of individual birds which could be displaced.							

4 Vessel management compensation measure

4.1 Methodology

21. This measure compensates for the area of displacement from the windfarm(s) by reducing vessel traffic through the SPA (as vessels also cause displacement).
22. The extent of compensation required would be in proportion to the magnitude of effect predicted to occur as a result of the Projects (both alone and in combination). The first step is to estimate the area of the SPA affected by the windfarms. On the basis of the assessment in REP11-026 (and reproduced in this document), using the current boundaries and the straight-line approach the projects combined could have an effective area of displacement within the SPA of 54.54km² (East Anglia ONE North) and 1.98km² (East Anglia TWO) and 56.52km² (in combination) which may need to be compensated. These areas decrease if the site boundaries are moved further from the OTE SPA.
23. The Applicant has calculated the area of the OTE SPA that would be affected by daily vessel transits assuming three direct routes from Lowestoft to the centre-north, centre and centre-south of East Anglia ONE and East Anglia THREE.
24. The three direct routes were plotted (**Figure 4** and **Figure 5**) through the SPA and a 2km buffer applied either side of the route to establish the area of disturbance that each route had within the SPA. The average of these three areas of displacement were calculated for East Anglia ONE and for East Anglia THREE.
25. The average areas for each Project which would be avoided by re-routing are as follows:
 - East Anglia ONE: $(35.7 + 37.1 + 41.8) / 3 = 38.2\text{km}^2$
 - East Anglia THREE: $(52.3 + 76.0 + 48.7) / 3 = 59.0\text{km}^2$
 - East Anglia ONE and East Anglia THREE combined = 97.2km²
26. The Applicant used these figures as the area of the OTE SPA that would be affected by daily operation and maintenance vessel transits prior to re-routing. Avoidance of these routes therefore provides compensation in the form of the area of the SPA no longer disturbed.
27. The compensation available was then compared to the effective area of displacement for each of the alternate project boundary options to understand the level of compensation provided (expressed as the ratio of displacement area to compensation area).

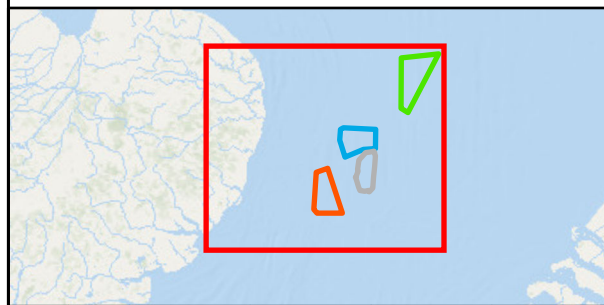


Lowestoft

Route Category

- Green (Northern) Route - Direct Line
- Green (Northern) Route - Avoidance of SPA
- Yellow (Central) Route - Direct Line
- Yellow (Central) Route - Avoidance of SPA
- Blue (Southern) Route - Direct Line
- Blue (Southern) Route - Avoidance of SPA
- Avoidance Route Buffer Within SPA (2km)
- East Anglia ONE OWF
- East Anglia ONE North OWF
- East Anglia TWO OWF
- East Anglia THREE OWF
- Outer Thames Estuary - SPA

0 5 10 15 Kilometres



2	28/01/2022	FM	TG	BM	--
REV	REV DATE	GIS CREATOR	GIS REVIEWER	TECHNICAL CHECKER	TECHNICAL APPROVER

DRAWING NUMBER: EA3-GEN-GIS-DRG-IBR-000444

DATUM	WGS84	PROJECTION	UTM Zone 31N
SCALE	1:380,000	PAGE SIZE	A3

PROJECT TITLE: East Anglia THREE

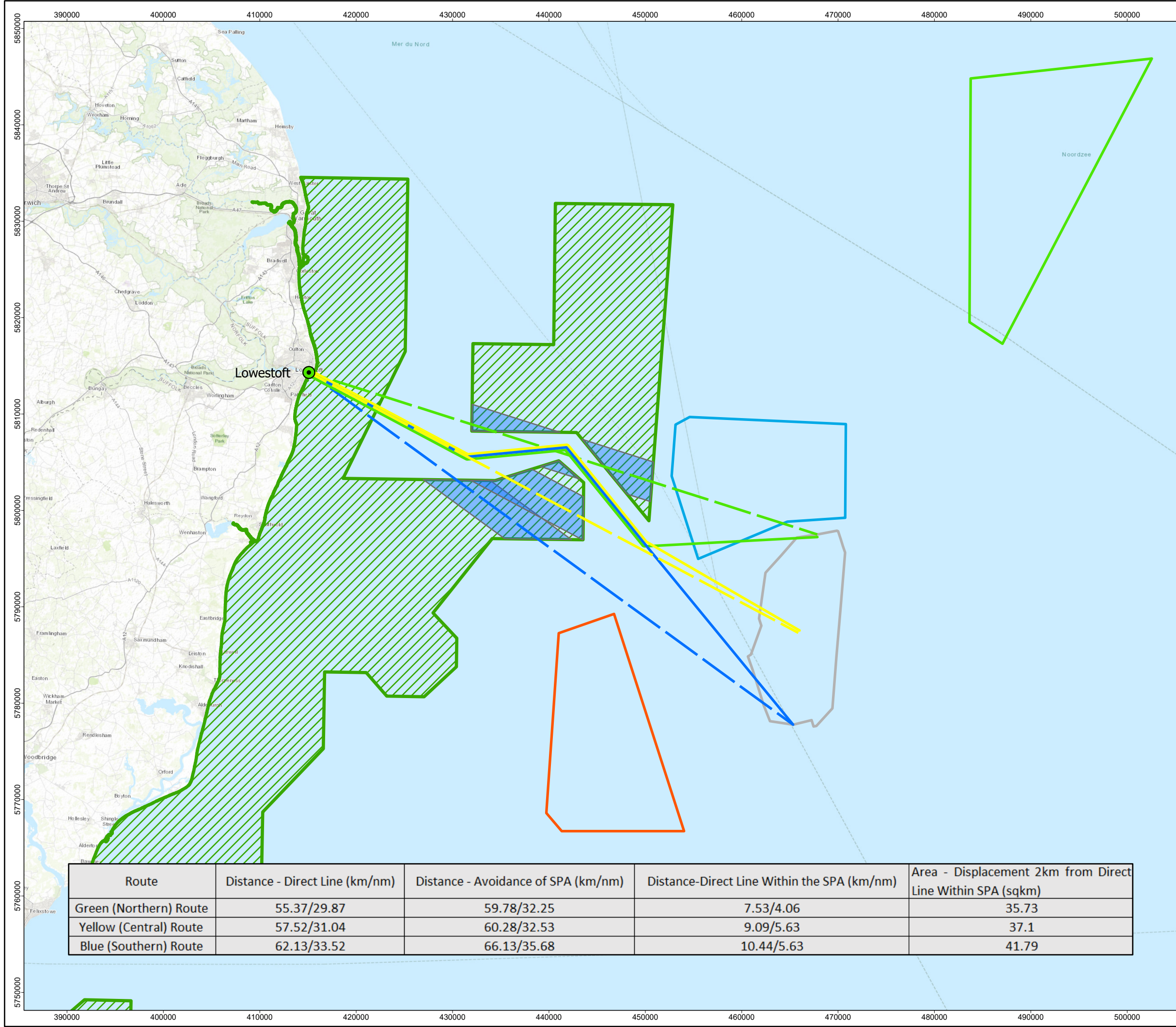
DRAWING TITLE: EA3 Vessel Movement - Avoidance of SPA Lowestoft

© COPYRIGHT NOTES
Service Layer Credits: World Ocean Base: OceanWise, Esri, GEBCO, DeLorme, NaturalVue
World Topographic Map: Esri, HERE, Garmin, USGS, NGA

This map has been produced to the latest known information at the time of issue, and has been produced for your information only. Please consult with the SPR Offshore GIS team to ensure the content is still current before using the information contained on this map. To the fullest extent permitted by law, we accept no responsibility or liability (whether in contract, tort (including negligence) or otherwise in respect of any errors or omissions in the information contained in the map and shall not be liable for any loss, damage or expense caused by such errors or omissions.

NOT TO BE USED FOR NAVIGATION

Route	Distance - Direct Line (km/nm)	Distance - Avoidance of SPA (km/nm)	Distance-Direct Line Within the SPA (km/nm)	Area - Displacement 2km from Direct Line Within SPA (sqkm)
Green (Northern) Route	83.98/45.31	86.54/46.70	13.06/7.04	52.27
Yellow (Central) Route	76.43/41.24	80.76/43.58	12.16/6.56	48.67
Blue (Southern) Route	70.27/37.92	80.47/43.42	19.65/10.60	76.05

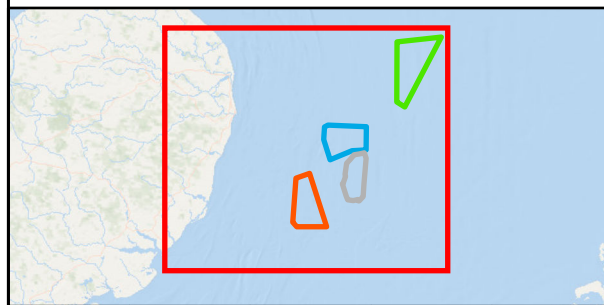


Lowestoft

Route Category

- Green (Northern) Route - Direct Line
- Green (Northern) Route - Avoidance of SPA
- Yellow (Central) Route - Direct Line
- Yellow (Central) Route - Avoidance of SPA
- Blue (Southern) Route - Direct Line
- Blue (Southern) Route - Avoidance of SPA
- Avoidance Route Buffer Within SPA (2km)
- East Anglia ONE OWF
- East Anglia ONE North OWF
- East Anglia TWO OWF
- East Anglia THREE OWF
- Outer Thames Estuary - SPA

0 5 10 15 Kilometres



2	28/01/2022	FM	TG	BM	--
REV	REV DATE	GIS CREATOR	GIS REVIEWER	TECHNICAL CHECKER	TECHNICAL APPROVER

DRAWING NUMBER: EAH-GEN-GIS-DRG-IBR-000429

DATUM	WGS84	PROJECTION	UTM Zone 31N
SCALE	1:380,000	PAGE SIZE	A3

PROJECT TITLE: East Anglia HUB

DRAWING TITLE: EA1 Vessel Movement - Avoidance of SPA

© COPYRIGHT NOTES
Service Layer Credits: World Ocean Base: Esri, GEBCO, DeLorme, NaturalVue
World Topographic Map: Esri, HERE, Garmin, USGS, NGA

This map has been produced to the latest known information at the time of issue, and has been produced for your information only. Please consult with the SPR Offshore GIS team to ensure the content is still current before using the information contained on this map. To the fullest extent permitted by law, we accept no responsibility or liability (whether in contract, tort (including negligence) or otherwise in respect of any errors or omissions in the information contained in the map and shall not be liable for any loss, damage or expense caused by such errors or omissions.

NOT TO BE USED FOR NAVIGATION

Route	Distance - Direct Line (km/nm)	Distance - Avoidance of SPA (km/nm)	Distance-Direct Line Within the SPA (km/nm)	Area - Displacement 2km from Direct Line Within SPA (sqkm)
Green (Northern) Route	55.37/29.87	59.78/32.25	7.53/4.06	35.73
Yellow (Central) Route	57.52/31.04	60.28/32.53	9.09/5.63	37.1
Blue (Southern) Route	62.13/33.52	66.13/35.68	10.44/5.63	41.79



4.2 Results tables for both projects

Table 4-1 Compensation ratios for vessel re-routeing measure compared using effective area of SPA subject to displacement for Applicant's model and Straight-line approach for alternate East Anglia ONE North boundary options

EA1N	Applicants' Model			Straight line approach		
	Effective area of displacement (km ²)	Compensation area (km ²)	Compensation ratio	Effective area of displacement (km ²)	Compensation area (km ²)	Compensation ratio
EA1 compensation only						
Current	16.58	38.20	2.3:1	54.54	38.20	0.7:1
6.5km	1.75	38.20	22:1	17.08	38.20	2.2:1
8km	0	38.20	n/a	8.38	38.20	4.6:1
EA3 compensation only						
Current	16.58	59.00	3.6:1	54.54	59.00	1:1
6.5km	1.75	59.00	34:1	17.08	59.00	3.5:1
8km	0	59.00	n/a	8.38	59.00	7:1
Both EA1 & EA3 compensation						
Current	16.58	97.20	5.9:1	54.54	97.20	1.8:1
6.5km	1.75	97.20	55:1	17.08	97.20	5.7:1
8km	0	97.20	n/a	8.38	97.20	11.6:1

Table 4-2 Compensation ratios for vessel re-routeing measure compared using effective area of SPA subject to displacement for Applicant's model and straight-line approach for alternate East Anglia TWO boundary options

EA2	Applicants' Model			Straight line approach		
	Effective area of displacement (km ²)	Compensation area (km ²)	Compensation ratio	Effective area of displacement (km ²)	Compensation area (km ²)	Compensation ratio
EA1 compensation only						
Current	n/a	38.20	n/a	1.98	38.20	19:1
10km	n/a	38.20	n/a	0.9	No AEol	No AEol
EA3 compensation only						
Current	n/a	59.00	n/a	1.98	59.00	30:1
10km	n/a	59.00	n/a	0.9	No AEol	No AEol
Both EA1 & EA3 compensation						
Current	n/a	97.20	n/a	1.98	97.20	49:1
10km	n/a	97.20	n/a	0.9	No AEol	No AEol

Table 4-3 Compensation ratios for vessel re-routeing measure compared using effective area of SPA subject to displacement for Applicant’s model and Straight-line approach for East Anglia ONE North boundary options in-combination with East Anglia TWO. Note that for East Anglia TWO in the in-combination scenarios, it is assumed that the boundary remains unchanged from current position (8.3km)

Applicants' Model				Straight line approach		
	Effective area of displacement (km ²)	Compensation area (km ²)	Compensation ratio	Effective area of displacement (km ²)	Compensation area (km ²)	Compensation ratio
EA1 compensation only						
Current	16.58	38.20	2.3:1	56.52	38.20	0.7:1
6.5km	1.75	38.20	22:1	19.06	38.20	2:1
8km	0	38.20	n/a	10.36	38.20	3.7:1
EA3 compensation only						
Current	16.58	59.00	3.5:1	56.52	59.00	1:1
6.5km	1.75	59.00	34:1	19.06	59.00	3:1
8km	0	59.00	n/a	10.36	59.00	5.7:1
Both EA1 & EA3 compensation						
Current	16.58	97.20	5.8:1	56.52	97.20	1.7:1
6.5km	1.75	97.20	55:1	19.06	97.20	5:1
8km	0	97.20	n/a	10.36	97.20	9:1

5 Full tables of results for the Projects

5.1 East Anglia ONE North

Table 5-1 EA1N current boundary (2km)

2km site						2km site							
		Model		Straight line						Model		Straight line	
Region	Area of overlap (km2)	Displacement % (model)	Effective area of displacement (km2)	Displacement % (straight line)	Effective area of displacement (km2)	Region	With OWF (individuals)	Without OWF (individuals)	No. displaced	Displacement % (model)	Displacement % (straight line)	With OWF (individuals)	No. displaced
OWF	0	42	0	100	0	Windfarm	0.00	0.00	0.00	42	100	0.00	0.00
0-1 km	0	41	0	100	0	0-1km	0.00	0.00	0.00	41	100	0.00	0.00
1-2 km	0	38	0	91	0	1-2km	0.00	0.00	0.00	38	91	0.00	0.00
2-3 km	8.7	35	3.07	82	7.13	2-3km	7.80	12.00	4.20	35	82	2.16	9.84
3-4 km	13.1	31	4.15	73	9.56	3-4km	13.80	20.20	6.40	31	73	5.45	14.75
4-5 km	13.7	27	3.71	64	8.77	4-5km	20.30	27.80	7.50	27	64	10.01	17.79
5-6km	13.4	21	2.84	55	7.37	5-6km	27.70	35.20	7.50	21	55	15.84	19.36
6-7km	13.7	14	1.93	46	6.30	6-7km	36.40	42.50	6.10	14	46	22.95	19.55
7-8km	14.3	6	0.88	37	5.29	7-8km	39.10	41.70	2.60	6	37	26.27	15.43
8-9km	14.9	-1	0	28	4.17	8-9km	44.40	43.90	-0.50	-1	28	31.61	12.29
9-10km	17.5	-8	0	19	3.33	9-10km	57.10	53.40	-3.70	-8	19	43.25	10.15
10-11km	22.6	-10	0	10	2.26	10-11km	77.20	70.60	-6.60	-10	10	63.54	7.06
11-12km	26.1	-8	0	1	0.26	11-12km	93.80	86.80	-7.00	-8	1	85.93	0.87
Total area	158		16.58		54.45	12-13km	102.40	99.70	-2.70	-3	n/a	99.70	0.00
% SPA	4.03		0.42		1.39	13-14km	95.50	100.60	5.10	5	n/a	100.60	0.00
						14-15km	98.30	114.40	16.10	13	n/a	114.40	0.00
						Total			34.30				127.08
						Mort (@10%)			3.43				12.71

Table 5-2 EA1N 2.5km alternate boundary

2.5km site													
Model			Straight line						Model			Straight line	
Region	Area of overlap (km2)	Displacement % (model)	Effective area of displacement (km2)	Displacement % (straight line)	Effective area of displacement (km2)	Region	With OWF (individuals)	Without OWF (individuals)	No. displaced	Displacement % (model)	Displacement % (straight line)	With OWF (individuals)	No. displaced
OWF	0.00	42	0.00	100	0.00	Windfarm	0.00	0.00	0.00	42	100	0.00	0.00
0-1 km	0.00	41	0.00	100	0.00	0-1km	0.00	0.00	0.00	41	100	0.00	0.00
1-2 km	0.00	38	0.00	91	0.00	1-2km	0.00	0.00	0.00	38	91	0.00	0.00
2-3 km	4.59	35	1.61	82	3.76	2-3km	2.03	3.08	1.06	35	82	0.55	2.53
3-4 km	12.64	31	3.97	73	9.23	3-4km	8.17	11.90	3.73	31	73	3.21	8.69
4-5 km	13.33	27	3.58	64	8.53	4-5km	13.35	18.25	4.91	27	64	6.57	11.68
5-6km	13.43	21	2.81	55	7.39	5-6km	20.58	26.03	5.45	21	55	11.71	14.32
6-7km	13.98	14	1.93	46	6.43	6-7km	28.63	33.18	4.56	14	46	17.92	15.26
7-8km	14.55	6	0.88	37	5.38	7-8km	39.35	41.82	2.47	6	37	26.35	15.47
8-9km	15.10	-1	-0.21	28	4.23	8-9km	45.49	44.81	-0.67	-1	28	32.26	12.55
9-10km	16.88	-8	-1.20	19	3.21	9-10km	52.98	49.44	-3.54	-8	19	40.05	9.39
10-11km	22.08	-10	-2.15	10	2.21	10-11km	72.23	65.82	-6.41	-10	10	59.24	6.58
11-12km	25.31	-8	-2.13	1	0.25	11-12km	80.68	74.42	-6.27	-8	1	73.67	0.74
Total area	151.89		14.77		50.62	12-13km	84.33	81.71	-2.62	-3	n/a	81.71	0.00
% SPA	3.87		0.38		1.29	13-14km	89.66	94.01	4.35	5	n/a	94.01	0.00
						14-15km	91.31	105.67	14.36	13	n/a	105.67	0.00
						Total			22.17				97.22
						Mort (@10%)			2.22				9.72

Table 5-3 EA1N 3km alternate boundary

3km site													
Model			Straight line						Model			Straight line	
Region	Area of overlap (km2)	Displacement % (model)	Effective area of displacement (km2)	Displacement % (straight line)	Effective area of displacement (km2)	Region	With OWF (individuals)	Without OWF (individuals)	No. displaced	Displacement % (model)	Displacement % (straight line)	With OWF (individuals)	No. displaced
OWF	0	42	0.00	100	0.00	Windfarm	0.00	0.00	0.00	42	100	0.00	0.00
0-1 km	0	41	0.00	100	0.00	0-1km	0.00	0.00	0.00	41	100	0.00	0.00
1-2 km	0	38	0.00	91	0.00	1-2km	0.00	0.00	0.00	38	91	0.00	0.00
2-3 km	0	35	0.00	82	0.00	2-3km	0.00	0.00	0.00	35	82	0.00	0.00
3-4 km	11.95	31	3.74	73	8.72	3-4km	6.29	9.13	2.85	31	73	2.47	6.67
4-5 km	13.14	26	3.50	64	8.41	4-5km	12.47	16.99	4.52	26	64	6.12	10.87
5-6km	13.64	20	2.82	55	7.50	5-6km	17.41	21.97	4.56	20	55	9.88	12.08
6-7km	14.23	13	1.94	46	6.55	6-7km	26.33	30.55	4.22	13	46	16.50	14.05
7-8km	14.8	5	0.88	37	5.48	7-8km	37.30	39.69	2.39	5	37	25.01	14.69
8-9km	15.36	-2	-0.25	28	4.30	8-9km	47.65	46.90	-0.75	-2	28	33.77	13.13
9-10km	15.95	-8	-1.17	19	3.03	9-10km	53.49	49.82	-3.67	-8	19	40.35	9.47
10-11km	21.69	-10	-2.14	10	2.17	10-11km	70.06	63.76	-6.31	-10	10	57.38	6.38
11-12km	24.55	-9	-2.07	1	0.25	11-12km	77.00	71.03	-5.98	-9	1	70.32	0.71
Total area	145.31		12.88		46.40	12-13km	81.36	78.84	-2.52	-3	n/a	78.84	0.00
% SPA	3.70		0.33		1.18	13-14km	87.07	91.39	4.32	5	n/a	91.39	0.00
						14-15km	88.74	102.92	14.19	13	n/a	102.92	0.00
						Total			18.54				88.05
						Mort (@10%)			1.85				8.80

Table 5-4 EA1N 3.5km alternate boundary

3.5km site													
Model			Straight line						Model			Straight line	
Region	Area of overlap (km ²)	Displacement % (model)	Effective area of displacement (km ²)	Displacement % (straight line)	Effective area of displacement (km ²)	Region	With OWF (individuals)	Without OWF (individuals)	No. displaced	Displacement % (model)	Displacement % (straight line)	With OWF (individuals)	No. displaced
OWF	0.00	42	0.00	100	0	Windfarm	0.00	0.00	0.00	42	100	0.00	0.00
0-1 km	0.00	41	0.00	100	0	0-1km	0.00	0.00	0.00	41	100	0.00	0.00
1-2 km	0.00	38	0.00	91	0	1-2km	0.00	0.00	0.00	38	91	0.00	0.00
2-3 km	0.00	35	0.00	82	0.00	2-3km	0.00	0.00	0.00	35	82	0.00	0.00
3-4 km	6.04	31	1.89	73	4.41	3-4km	2.91	4.17	1.26	31	73	1.13	3.05
4-5 km	13.06	26	3.47	64	8.36	4-5km	9.87	13.42	3.55	26	64	4.83	8.59
5-6km	13.80	20	2.85	55	7.59	5-6km	16.56	20.87	4.31	20	55	9.39	11.48
6-7km	14.42	13	1.94	46	6.63	6-7km	24.12	27.88	3.76	13	46	15.06	12.83
7-8km	15.00	5	0.85	37	5.55	7-8km	34.78	36.91	2.12	5	37	23.25	13.66
8-9km	15.55	-2	-0.26	28	4.35	8-9km	43.89	43.19	-0.70	-2	28	31.10	12.09
9-10km	16.10	-8	-1.19	19	3.06	9-10km	53.23	49.61	-3.62	-8	19	40.18	9.43
10-11km	19.75	-10	-1.97	10	1.98	10-11km	66.06	60.07	-5.99	-10	10	54.06	6.01
11-12km	23.97	-9	-2.05	1	0.24	11-12km	77.15	71.10	-6.05	-9	1	70.39	0.71
Total area	137.69		10.99		42.17	12-13km	80.08	77.61	-2.47	-3	n/a	77.61	0.00
% SPA	3.51		0.28		1.07	13-14km	80.89	84.97	4.08	5	n/a	84.97	0.00
						14-15km	83.34	96.39	13.06	13	n/a	96.39	0.00
						Total			15.01				77.83
						Mort (@10%)			1.50				7.78

Table 5-5 EA1N 4km alternate boundary

4km site													
Model			Straight line						Model			Straight line	
Region	Area of overlap (km2)	Displacement % (model)	Effective area of displacement (km2)	Displacement % (straight line)	Effective area of displacement (km2)	Region	With OWF (individuals)	Without OWF (individuals)	No. displaced	Displacement % (model)	Displacement % (straight line)	With OWF (individuals)	No. displaced
OWF	0	42	0	100	0	Windfarm	0.0	0.0	0.0	42	100	0.0	0.0
0-1 km	0	41	0	100	0	0-1km	0.0	0.0	0.0	41	100	0.0	0.0
1-2 km	0	38	0	91	0	1-2km	0.0	0.0	0.0	38	91	0.0	0.0
2-3 km	0	35	0	82	0.00	2-3km	0.0	0.0	0.0	35	82	0.0	0.0
3-4 km	0	31	0	73	0.00	3-4km	0.0	0.0	0.0	31	73	0.0	0.0
4-5 km	12.59	26	3.33	64	8.06	4-5km	7.4	10.0	2.6	26	64	3.6	6.4
5-6km	13.65	20	2.80	55	7.51	5-6km	14.4	18.1	3.7	20	55	8.1	9.9
6-7km	14.35	13	1.92	46	6.60	6-7km	21.0	24.2	3.2	13	46	13.1	11.1
7-8km	14.96	5	0.82	37	5.54	7-8km	31.4	33.3	1.9	5	37	21.0	12.3
8-9km	15.53	-2	0	28	4.35	8-9km	41.5	40.8	-0.7	-2	28	29.4	11.4
9-10km	16.09	-8	0	19	3.06	9-10km	52.3	48.6	-3.6	-8	19	39.4	9.2
10-11km	17.26	-10	0	10	1.73	10-11km	58.0	52.6	-5.3	-10	10	47.4	5.3
11-12km	23.47	-9	0	1	0.23	11-12km	75.8	69.8	-6.0	-9	1	69.1	0.7
Total area	127.9		8.87		37.07	12-13km	77.4	75.0	-2.5	-4	n/a	75.0	0.0
% SPA	0.0326	0	0.0023	0	0.0094	13-14km	74.0	77.5	3.5	4	n/a	77.5	0.0
						14-15km	82.7	95.4	12.7	13	n/a	95.4	0.0
						Total			11.4				66.4
						Mort (@10%)			1.1				6.6

Table 5-6 EA1N 4.5km alternate boundary

4.5km site													
Model			Straight line						Model			Straight line	
Region	Area of overlap (km2)	Displacement % (model)	Effective area of displacement (km2)	Displacement % (straight line)	Effective area of displacement (km2)	Region	With OWF (individuals)	Without OWF (individuals)	No. displaced	Displacement % (model)	Displacement % (straight line)	With OWF (individuals)	No. displaced
OWF	0	42	0	100	0	Windfarm	0.00	0.00	0.00	42	100	0.00	0.00
0-1 km	0	40	0	100	0	0-1km	0.00	0.00	0.00	40	100	0.00	0.00
1-2 km	0	38	0	91	0	1-2km	0.00	0.00	0.00	38	91	0.00	0.00
2-3 km	0	35	0.00	82	0.00	2-3km	0.00	0.00	0.00	35	82	0.00	0.00
3-4 km	0	31	0.00	73	0.00	3-4km	0.00	0.00	0.00	31	73	0.00	0.00
4-5 km	6.14	26	1.62	64	3.93	4-5km	3.12	4.17	1.05	26	64	1.50	2.67
5-6km	13.38	20	2.72	55	7.36	5-6km	11.86	14.86	3.00	20	55	6.69	8.17
6-7km	14.22	13	1.89	46	6.54	6-7km	18.14	20.89	2.76	13	46	11.28	9.61
7-8km	14.89	5	0.81	37	5.51	7-8km	27.50	29.09	1.59	5	37	18.33	10.76
8-9km	15.5	-2	0	28	4.34	8-9km	38.77	38.05	-0.72	-2	28	27.39	10.65
9-10km	16.07	-8	0	19	3.05	9-10km	49.27	45.77	-3.50	-8	19	37.07	8.70
10-11km	16.6	-10	0	10	1.66	10-11km	58.01	52.62	-5.39	-10	10	47.36	5.26
11-12km	21.35	-9	0	1	0.21	11-12km	65.60	60.34	-5.26	-9	1	59.74	0.60
Total area	118.16		7.04		32.61	12-13km	76.18	73.55	-2.63	-4	n/a	73.55	0.00
% SPA	0.0301	0	0.0018	0	0.0083	13-14km	72.47	75.69	3.21	4	n/a	75.69	0.00
						14-15km	76.52	88.13	11.61	13	n/a	88.13	0.00
						Total			8.40				56.43
						Mort (@10%)			0.84				5.64

Table 5-7 EA1N 5km alternate boundary

5km site													
Model			Straight line			Model			Straight line				
Region	Area of overlap (km2)	Displacement % (model)	Effective area of displacement (km2)	Displacement % (straight line)	Effective area of displacement (km2)	Region	With OWF (individuals)	Without OWF (individuals)	No. displaced	Displacement % (model)	Displacement % (straight line)	With OWF (individuals)	No. displaced
OWF	0	42	0	100	0	Windfarm	0.00	0.00	0.00	42	100	0.00	0.00
0-1 km	0	40	0	100	0	0-1km	0.00	0.00	0.00	40	100	0.00	0.00
1-2 km	0	38	0	91	0	1-2km	0.00	0.00	0.00	38	91	0.00	0.00
2-3 km	0	35	0	82	0	2-3km	0.00	0.00	0.00	35	82	0.00	0.00
3-4 km	0	31	0	73	0	3-4km	0.00	0.00	0.00	31	73	0.00	0.00
4-5 km	0	26	0	64	0	4-5km	0.00	0.00	0.00	26	64	0.00	0.00
5-6km	12.83	20	2.72	55	7.06	5-6km	8.36	10.47	2.11	20	55	4.71	5.76
6-7km	14.02	13	1.97	46	6.45	6-7km	16.09	18.53	2.44	13	46	10.00	8.52
7-8km	14.78	5	0.91	37	5.47	7-8km	23.40	24.73	1.33	5	37	15.58	9.15
8-9km	15.43	-2	0	28	4.32	8-9km	35.76	35.06	-0.70	-2	28	25.24	9.82
9-10km	16.04	-8	0	19	3.05	9-10km	45.76	42.47	-3.29	-8	19	34.40	8.07
10-11km	16.58	-10	0	10	1.66	10-11km	57.14	51.77	-5.37	-10	10	46.59	5.18
11-12km	18.86	-9	0	1	0.19	11-12km	59.44	54.60	-4.84	-9	1	54.05	0.55
Total area	108.54		5.61		28.19	12-13km	73.70	71.14	-2.55	-4	n/a	71.14	0.00
% SPA	0.0277	0	0.0014	0	0.0072	13-14km	71.30	74.43	3.13	4	n/a	74.43	0.00
						14-15km	71.91	82.78	10.87	13	n/a	82.78	0.00
						Total			5.88				47.04
						Mort (@10%)			0.59				4.70

Table 5-8 EA1N 5.5km alternate boundary

5.5km site													
Model			Straight line						Model			Straight line	
Region	Area of overlap (km2)	Displacement % (model)	Effective area of displacement (km2)	Displacement % (straight line)	Effective area of displacement (km2)	Region	With OWF (individuals)	Without OWF (individuals)	No. displaced	Displacement % (model)	Displacement % (straight line)	With OWF (individuals)	No. displaced
OWF	0	42	0	100	0	Windfarm	0.00	0.00	0.00	42	100	0.00	0.00
0-1 km	0	40	0	100	0	0-1km	0.00	0.00	0.00	40	100	0.00	0.00
1-2 km	0	38	0	91	0	1-2km	0.00	0.00	0.00	38	91	0.00	0.00
2-3 km	0	35	0	82	0	2-3km	0.00	0.00	0.00	35	82	0.00	0.00
3-4 km	0	31	0	73	0	3-4km	0.00	0.00	0.00	31	73	0.00	0.00
4-5 km	0	26	0	64	0	4-5km	0.00	0.00	0.00	26	64	0.00	0.00
5-6km	6.23	20	1.32	55	3.43	5-6km	3.39	4.17	0.78	20	55	1.88	2.30
6-7km	13.7	13	1.93	46	6.30	6-7km	12.92	14.86	1.94	13	46	8.02	6.83
7-8km	14.62	5	0.90	37	5.41	7-8km	20.24	21.40	1.16	5	37	13.48	7.92
8-9km	15.33	-2	0	28	4.29	8-9km	31.97	31.32	-0.66	-2	28	22.55	8.77
9-10km	15.98	-8	0	19	3.04	9-10km	42.42	39.32	-3.10	-8	19	31.85	7.47
10-11km	16.54	-10	0	10	1.65	10-11km	53.03	48.00	-5.03	-10	10	43.20	4.80
11-12km	17.73	-9	0	1	0.18	11-12km	57.25	52.49	-4.76	-9	1	51.97	0.52
Total area	100.12		4.15		24.30	12-13km	68.56	66.12	-2.44	-4	n/a	66.12	0.00
% SPA	0.0255	0	0.0011	0	0.0062	13-14km	69.47	72.37	2.90	4	n/a	72.37	0.00
						14-15km	69.96	80.34	10.39	13	n/a	80.34	0.00
						Total			3.88				38.61
						Mort (@10%)			0.39				3.86

Table 5-9 EA1N 6km alternate boundary

6km site						6km site							
Model			Straight line			Model			Straight line				
Region	Area of overlap (km ²)	Displacement % (model)	Effective area of displacement (km ²)	Displacement % (straight line)	Effective area of displacement (km ²)	Region	With OWF (individuals)	Without OWF (individuals)	No. displaced	Displacement % (model)	Displacement % (straight line)	With OWF (individuals)	No. displaced
OWF		42	0	100	0	Windfarm	0.00	0.00	0.00	42	100	0.00	0.00
0-1 km	0	40	0	100	0	0-1km	0.00	0.00	0.00	40	100	0.00	0.00
1-2 km	0	38	0	91	0	1-2km	0.00	0.00	0.00	38	91	0.00	0.00
2-3 km	0	35	0	82	0	2-3km	0.00	0.00	0.00	35	82	0.00	0.00
3-4 km	0	31	0	73	0	3-4km	0.00	0.00	0.00	31	73	0.00	0.00
4-5 km	0	26	0	64	0	4-5km	0.00	0.00	0.00	26	64	0.00	0.00
5-6km	0	20	0	55	0	5-6km	0.00	0.00	0.00	20	55	0.00	0.00
6-7km	13.05	13	1.84	46	6.00	6-7km	9.51	10.90	1.39	13	46	5.88	5.01
7-8km	14.37	5	0.89	37	5.32	7-8km	17.14	18.10	0.96	5	37	11.40	6.70
8-9km	15.19	-2	0	28	4.25	8-9km	28.00	27.38	-0.61	-2	28	19.72	7.67
9-10km	15.88	-8	0	19	3.02	9-10km	38.47	35.62	-2.85	-8	19	28.85	6.77
10-11km	16.49	-10	0	10	1.65	10-11km	49.63	44.89	-4.75	-10	10	40.40	4.49
11-12km	17.18	-9	0	1	0.17	11-12km	55.82	51.15	-4.66	-9	1	50.64	0.51
Total area	92.16		2.72		20.41	12-13km	63.83	61.55	-2.29	-4	n/a	61.55	0.00
% SPA	0.023	0	0.0007	0	0.0052	13-14km	66.63	69.50	2.87	4	n/a	69.50	0.00
						14-15km	68.99	79.27	10.29	13	n/a	79.27	0.00
						Total			2.35				31.15
						Mort (@10%)			0.23				3.11

Table 5-10 EA1N 6.5km alternate boundary

6.5km site													
Model			Straight line						Model			Straight line	
Region	Area of overlap (km ²)	Displacement % (model)	Effective area of displacement (km ²)	Displacement % (straight line)	Effective area of displacement (km ²)	Region	With OWF (individuals)	Without OWF (individuals)	No. displaced	Displacement % (model)	Displacement % (straight line)	With OWF (individuals)	No. displaced
OWF	0	42	0	100	0	Windfarm	0.00	0.00	0.00	42	100	0.00	0.00
0-1 km	0	40	0	100	0	0-1km	0.00	0.00	0.00	40	100	0.00	0.00
1-2 km	0	38	0	91	0	1-2km	0.00	0.00	0.00	38	91	0.00	0.00
2-3 km	0	35	0	82	0	2-3km	0.00	0.00	0.00	35	82	0.00	0.00
3-4 km	0	31	0	73	0	3-4km	0.00	0.00	0.00	31	73	0.00	0.00
4-5 km	0	26	0	64	0	4-5km	0.00	0.00	0.00	26	64	0.00	0.00
5-6km	0	20	0	55	0	5-6km	0.00	0.00	0.00	20	55	0.00	0.00
6-7km	6.31	13	0.89	46	2.90	6-7km	4.06	4.56	0.51	13	46	2.46	2.10
7-8km	13.98	5	0.86	37	5.17	7-8km	14.16	14.90	0.74	5	37	9.39	5.51
8-9km	14.99	-2	0	28	4.20	8-9km	23.36	22.83	-0.53	-2	28	16.44	6.39
9-10km	15.76	-8	0	19	2.99	9-10km	34.57	32.00	-2.57	-8	19	25.92	6.08
10-11km	16.4	-10	0	10	1.64	10-11km	45.99	41.57	-4.42	-10	10	37.42	4.16
11-12km	17.06	-9	0	1	0.17	11-12km	52.57	48.16	-4.41	-9	1	47.67	0.48
Total area	84.51		1.75		17.08	12-13km	60.08	57.88	-2.20	-4	n/a	57.88	0.00
% SPA	0.022		0.000		0.004	13-14km	63.35	66.10	2.75	4	n/a	66.10	0.00
						14-15km	66.39	76.26	9.88	13	n/a	76.26	0.00
						Total			1.25				24.72
						Mort (@10%)			0.13				2.47

Table 5-11 EA1N 7km alternate boundary

7km site													
Model			Straight line							Model		Straight line	
Region	Area of overlap (km2)	Displacement % (model)	Effective area of displacement (km2)	Displacement % (straight line)	Effective area of displacement (km2)	Region	With OWF (individuals)	Without OWF (individuals)	No. displaced	Displacement % (model)	Displacement % (straight line)	With OWF (individuals)	No. displaced
OWF	0	42	0	100	0	Windfarm	0.00	0.00	0.00	42	100	0.00	0.00
0-1 km	0	41	0	100	0	0-1km	0.00	0.00	0.00	40	100	0.00	0.00
1-2 km	0	38	0	91	0	1-2km	0.00	0.00	0.00	38	91	0.00	0.00
2-3 km	0	35	0	82	0	2-3km	0.00	0.00	0.00	35	82	0.00	0.00
3-4 km	0	32	0	73	0	3-4km	0.00	0.00	0.00	31	73	0.00	0.00
4-5 km	0	27	0	64	0	4-5km	0.00	0.00	0.00	26	64	0.00	0.00
5-6km	0	21	0	55	0	5-6km	0.00	0.00	0.00	20	55	0.00	0.00
6-7km	0	14	0	46	0	6-7km	0.00	0.00	0.00	13	46	0.00	0.00
7-8km	13.25	6	0.82	37	4.90	7-8km	10.35	10.90	0.55	5	37	6.87	4.03
8-9km	14.7	-1	0	28	4.12	8-9km	20.01	19.57	-0.43	-2	28	14.09	5.48
9-10km	15.59	-7	0	19	2.96	9-10km	30.02	27.82	-2.20	-8	19	22.53	5.29
10-11km	16.29	-10	0	10	1.63	10-11km	41.81	37.85	-3.96	-10	10	34.06	3.78
11-12km	16.97	-8	0	1	0.17	11-12km	48.28	44.30	-3.99	-9	1	43.85	0.44
Total area	76.8		0.82		13.78	12-13km	56.27	54.24	-2.02	-4	n/a	54.24	0.00
% SPA	0.020		0.000		0.004	13-14km	57.27	59.80	2.52	4	n/a	59.80	0.00
						14-15km	64.12	73.87	9.75	13	n/a	73.87	0.00
						Total			0.55				19.03
						Mort (@10%)			0.06				1.90

Table 5-12 EA1N 7.5km alternate boundary

7.5km site													
Model			Straight line						Model			Straight line	
Region	Area of overlap (km ²)	Displacement % (model)	Effective area of displacement (km ²)	Displacement % (straight line)	Effective area of displacement (km ²)	Region	With OWF (individuals)	Without OWF (individuals)	No. displaced	Displacement % (model)	Displacement % (straight line)	With OWF (individuals)	No. displaced
OWF	0	42	0	100		Windfarm	0.00	0.00	0.00	42	100	0.00	0.00
0-1 km	0	41	0	100		0-1km	0.00	0.00	0.00	41	100	0.00	0.00
1-2 km	0	38	0	91		1-2km	0.00	0.00	0.00	38	91	0.00	0.00
2-3 km	0	35	0	82		2-3km	0.00	0.00	0.00	35	82	0.00	0.00
3-4 km	0	32	0	73		3-4km	0.00	0.00	0.00	32	73	0.00	0.00
4-5 km	0	27	0	64		4-5km	0.00	0.00	0.00	27	64	0.00	0.00
5-6km	0	21	0	55	0	5-6km	0.00	0.00	0.00	21	55	0.00	0.00
6-7km	0	14	0	46	0	6-7km	0.00	0.00	0.00	14	46	0.00	0.00
7-8km	6.39	6	0.39	37	2.36	7-8km	4.40	4.56	0.16	6	37	2.88	1.69
8-9km	14.26	-1	0	28	3.99	8-9km	16.20	15.84	-0.36	-2	28	11.40	4.43
9-10km	15.35	-7	0	19	2.92	9-10km	25.61	23.75	-1.86	-8	19	19.24	4.51
10-11km	16.14	-10	0	10	1.61	10-11km	36.89	33.44	-3.45	-10	10	30.10	3.34
11-12km	16.85	-8	0	1	0.17	11-12km	44.76	41.12	-3.63	-9	1	40.71	0.41
Total area	68.99		0.39		11.06	12-13km	51.89	50.08	-1.81	-3	n/a	50.08	0.00
% SPA	0.018		0.000		0.003	13-14km	54.65	57.07	2.42	4	n/a	57.07	0.00
						14-15km	59.13	68.33	9.20	13	n/a	68.33	0.00
						Total			0.16				14.39
						Mort (@10%)			0.02				1.44

Table 5-13 EA1N 8km alternate boundary

8km site													
Model			Straight line						Model			Straight line	
Region	Area of overlap (km ²)	Displacement % (model)	Effective area of displacement (km ²)	Displacement % (straight line)	Effective area of displacement (km ²)	Region	With OWF (individuals)	Without OWF (individuals)	No. displaced	Displacement % (model)	Displacement % (straight line)	With OWF (individuals)	No. displaced
OWF	0	42	0	100	0	Windfarm	0.00	0.00	0.00	42	100	0.00	0.00
0-1 km	0	41	0	100	0	0-1km	0.00	0.00	0.00	41	100	0.00	0.00
1-2 km	0	38	0	91	0	1-2km	0.00	0.00	0.00	38	91	0.00	0.00
2-3 km	0	35	0	82	0	2-3km	0.00	0.00	0.00	35	82	0.00	0.00
3-4 km	0	32	0	73	0	3-4km	0.00	0.00	0.00	32	73	0.00	0.00
4-5 km	0	27	0	64	0	4-5km	0.00	0.00	0.00	27	64	0.00	0.00
5-6km	0	21	0	55	0	5-6km	0.00	0.00	0.00	21	55	0.00	0.00
6-7km	0	14	0	46	0	6-7km	0.00	0.00	0.00	14	46	0.00	0.00
7-8km	0	6	0	37	0	7-8km	0.00	0.00	0.00	6	37	0.00	0.00
8-9km	13.45	-1	0	28	3.77	8-9km	11.58	11.33	-0.25	-2	28	8.16	3.17
9-10km	15.01	-7	0	19	2.85	9-10km	22.03	20.46	-1.57	-8	19	16.57	3.89
10-11km	15.94	-10	0	10	1.59	10-11km	32.07	29.12	-2.96	-10	10	26.20	2.91
11-12km	16.73	-8	0	1	0.17	11-12km	40.05	36.85	-3.20	-9	1	36.48	0.37
Total area	61.12		0.00		8.38	12-13km	47.32	45.68	-1.65	-3	n/a	45.68	0.00
% SPA	0.016	0.000	0.000	0.000	0.002	13-14km	54.79	57.29	2.51	4	n/a	57.29	0.00
						14-15km	52.90	61.23	8.33	13	n/a	61.23	0.00
						Total			0.00				10.34
						Mort (@10%)			0.00				1.03

Table 5-14 EA1N 8.5km alternate boundary

8.5km site													
Model			Straight line			Model			Straight line				
Region	Area of overlap (km2)	Displacement % (model)	Effective area of displacement (km2)	Displacement % (straight line)	Effective area of displacement (km2)	Region	With OWF (individuals)	Without OWF (individuals)	No. displaced	Displacement % (model)	Displacement % (straight line)	With OWF (individuals)	No. displaced
OWF	0	42	0	100	0	Windfarm	0.00	0.00	0.00	42	100	0.00	0.00
0-1 km	0	41	0	100	0	0-1km	0.00	0.00	0.00	41	100	0.00	0.00
1-2 km	0	38	0	91	0	1-2km	0.00	0.00	0.00	38	91	0.00	0.00
2-3 km	0	35	0	82	0	2-3km	0.00	0.00	0.00	35	82	0.00	0.00
3-4 km	0	32	0	73	0	3-4km	0.00	0.00	0.00	32	73	0.00	0.00
4-5 km	0	27	0	64	0	4-5km	0.00	0.00	0.00	27	64	0.00	0.00
5-6km	0	21	0	55	0	5-6km	0.00	0.00	0.00	21	55	0.00	0.00
6-7km	0	14	0	46	0	6-7km	0.00	0.00	0.00	14	46	0.00	0.00
7-8km	0	6	0	37	0	7-8km	0.00	0.00	0.00	6	37	0.00	0.00
8-9km	6.46	-2	0	28	1.81	8-9km	4.72	4.56	-0.16	-2	28	3.29	1.28
9-10km	14.52	-7	0	19	2.76	9-10km	17.61	16.36	-1.25	-7	19	13.25	3.11
10-11km	15.66	-10	0	10	1.57	10-11km	27.76	25.24	-2.53	-10	10	22.71	2.52
11-12km	16.56	-8	0	1	0.17	11-12km	35.28	32.51	-2.78	-8	1	32.18	0.33
Total area	53.2		0.00		6.30	12-13km	43.96	42.51	-1.46	-3	n/a	42.51	0.00
% SPA	0.014	0.000	0.000	0.000	0.002	13-14km	51.16	53.61	2.44	-5	n/a	53.61	0.00
						14-15km	50.66	58.66	8.01	14	n/a	58.66	0.00
						Total			0.00				7.24
						Mort (@10%)			0.00				0.72

Table 5-15 EA1N 9km alternate boundary

9km site													
Model			Straight line						Model			Straight line	
Region	Area of overlap (km2)	Displacement % (model)	Effective area of displacement (km2)	Displacement % (straight line)	Effective area of displacement (km2)	Region	With OWF (individuals)	Without OWF (individuals)	No. displaced	Displacement % (model)	Displacement % (straight line)	With OWF (individuals)	No. displaced
OWF	0	42	0	100	0	Windfarm	0.00	0.00	0.00	42	100	0.00	0.00
0-1 km	0	41	0	100	0	0-1km	0.00	0.00	0.00	41	100	0.00	0.00
1-2 km	0	38	0	91	0	1-2km	0.00	0.00	0.00	38	91	0.00	0.00
2-3 km	0	35	0	82	0	2-3km	0.00	0.00	0.00	35	82	0.00	0.00
3-4 km	0	32	0	73	0	3-4km	0.00	0.00	0.00	32	73	0.00	0.00
4-5 km	0	27	0	64	0	4-5km	0.00	0.00	0.00	27	64	0.00	0.00
5-6km	0	21	0	55	0	5-6km	0.00	0.00	0.00	21	55	0.00	0.00
6-7km	0	14	0	46	0	6-7km	0.00	0.00	0.00	14	46	0.00	0.00
7-8km	0	6	0	37	0	7-8km	0.00	0.00	0.00	6	37	0.00	0.00
8-9km	0	-2	0	28	0	8-9km	0.00	0.00	0.00	-2	28	0.00	0.00
9-10km	13.63	-7	0	19	2.59	9-10km	12.69	11.80	-0.89	-7	19	9.56	2.24
10-11km	15.25	-10	0	10	1.53	10-11km	23.10	21.02	-2.07	-10	10	18.92	2.10
11-12km	16.3	-8	0	1	0.16	11-12km	31.05	28.65	-2.40	-8	1	28.36	0.29
Total area	45.19		0.00		4.28	12-13km	39.92	38.66	-1.26	-3	n/a	38.66	0.00
% SPA	0.012	0.000	0.000	0.000	0.001	13-14km	46.91	49.20	2.29	-5	n/a	49.20	0.00
						14-15km	49.07	56.89	7.82	14	n/a	56.89	0.00
						Total			0.00				4.63
						Mort (@10%)			0.00				0.46

Table 5-16 EA1N 9.5km alternate boundary

9.5km site														
Model			Straight line							Model			Straight line	
Region	Area of overlap (km2)	Displacement % (model)	Effective area of displacement (km2)	Displacement % (straight line)	Effective area of displacement (km2)	Region	With OWF (individuals)	Without OWF (individuals)	No. displaced	Displacement % (model)	Displacement % (straight line)	With OWF (individuals)	No. displaced	
OWF	0	42	0	100	0	Windfarm	0.00	0.00	0.00	42	100	0.00	0.00	
0-1 km	0	41	0	100	0	0-1km	0.00	0.00	0.00	41	100	0.00	0.00	
1-2 km	0	38	0	91	0	1-2km	0.00	0.00	0.00	38	91	0.00	0.00	
2-3 km	0	35	0	82	0	2-3km	0.00	0.00	0.00	35	82	0.00	0.00	
3-4 km	0	32	0	73	0	3-4km	0.00	0.00	0.00	32	73	0.00	0.00	
4-5 km	0	27	0	64	0	4-5km	0.00	0.00	0.00	27	64	0.00	0.00	
5-6km	0	21	0	55	0	5-6km	0.00	0.00	0.00	21	55	0.00	0.00	
6-7km	0	14	0	46	0	6-7km	0.00	0.00	0.00	14	46	0.00	0.00	
7-8km	0	6	0	37	0	7-8km	0.00	0.00	0.00	6	37	0.00	0.00	
8-9km	0	-2	0	28	0	8-9km	0.00	0.00	0.00	-2	28	0.00	0.00	
9-10km	6.53	-7	0	19	0	9-10km	5.40	4.99	-0.41	-7	19	4.04	0.95	
10-11km	14.73	-10	0	10	1.47	10-11km	18.50	16.86	-1.64	-10	10	15.17	1.69	
11-12km	16.02	-8	0	1	0.16	11-12km	26.83	24.80	-2.03	-8	1	24.55	0.25	
Total area	37.28		0.00		1.63	12-13km	35.19	34.15	-1.04	-3	n/a	34.15	0.00	
% SPA	0.0095	0	0	0	0.0004	13-14km	43.06	45.25	2.20	-5	n/a	45.25	0.00	
						14-15km	45.00	52.21	7.22	14	n/a	52.21	0.00	
						Total			0.00				2.88	
						Mort (@10%)			0.00				0.29	

Table 5-17 EA1N 10km alternate boundary

10km site													
		Model		Straight line						Model		Straight line	
Region	Area of overlap (km2)	Displacement % (model)	Effective area of displacement (km2)	Displacement % (straight line)	Effective area of displacement (km2)	Region	With OWF (individuals)	Without OWF (individuals)	No. displaced	Displacement % (model)	Displacement % (straight line)	With OWF (individuals)	No. displaced
OWF	0	42	0	100	0	Windfarm	0.00	0.00	0.00	42	100	0.00	0.00
0-1 km	0	41	0	100	0	0-1km	0.00	0.00	0.00	41	100	0.00	0.00
1-2 km	0	38	0	91	0	1-2km	0.00	0.00	0.00	38	91	0.00	0.00
2-3 km	0	35	0	82	0	2-3km	0.00	0.00	0.00	35	82	0.00	0.00
3-4 km	0	32	0	73	0	3-4km	0.00	0.00	0.00	32	73	0.00	0.00
4-5 km	0	27	0	64	0	4-5km	0.00	0.00	0.00	27	64	0.00	0.00
5-6km	0	21	0	55	0	5-6km	0.00	0.00	0.00	21	55	0.00	0.00
6-7km	0	14	0	46	0	6-7km	0.00	0.00	0.00	14	46	0.00	0.00
7-8km	0	6	0	37	0	7-8km	0.00	0.00	0.00	6	37	0.00	0.00
8-9km	0	-1	0	28	0	8-9km	0.00	0.00	0.00	-1	28	0.00	0.00
9-10km	0	-7	0	19	0	9-10km	0.00	0.00	0.00	-7	19	0.00	0.00
10-11km	13.75	-10	0.00	10	1.38	10-11km	12.93	11.80	-1.13	-10	10	10.62	1.18
11-12km	15.61	-8	0	1	0.16	11-12km	23.62	21.87	-1.75	-8	1	21.65	0.22
Total area	29.36		0.00		1.53	12-13km	29.98	29.14	-0.84	-3	n/a	29.14	0.00
% SPA	0.0075	0	0	0	0.0004	13-14km	39.28	41.34	2.06	5	n/a	41.34	0.00
						14-15km	41.88	48.69	6.81	14	n/a	48.69	0.00
						Total			0.00				1.40
						Mort (@10%)			0.00				0.14

5.2 East Anglia TWO

Table 5-18 EA2 current boundary (8.3km)

Note that in REP11-026 the figures quoted for the current boundary were incorrect, effective area of displacement was stated as 0.075% of the SPA area with 6 displaced individuals. The correct figures are presented here, 0.05% of the SPA and 4 individuals.

8.3km site							
		Straight line			Straight line		
Region	Area of overlap (km ²)	Displacement % (straight line)	Effective area of displacement (km ²)		Region	Displacement % (straight line)	No. displaced
OWF	0	100	0		Windfarm	100	0.00
0-1 km	0	100	0		0-1km	100	0.00
1-2 km	0	91	0		1-2km	91	0.00
2-3 km	0	82	0		2-3km	82	0.00
3-4 km	0	73	0		3-4km	73	0.00
4-5 km	0	64	0		4-5km	64	0.00
5-6km	0	55	0		5-6km	55	0.00
6-7km	0	46	0		6-7km	46	0.00
7-8km	0	37	0		7-8km	37	0.00
8-9km	0.71	28	0.20		8-9km	28	0.40
9-10km	3.67	19	0.70		9-10km	19	1.39
10-11km	9.05	10	0.91		10-11km	10	1.81
11-12km	17.92	1	0.18		11-12km	1	0.36
Total area of overlap (km ²)	31.35		1.98		12-13km	n/a	0.00
Total % SPA	0.80		0.050		13-14km	n/a	0.00
					14-15km	n/a	0.00
					Total		3.96
					Mort (@10%)		0.40

Table 5-19 EA2 8.5km alternate boundary

8.5km site						
				Straight line		
Region	Area of overlap (km2)	Displacement % (straight line)	Effective area of displacement (km2)	Region	Displacement % (straight line)	No. displaced
OWF	0	100	0	Windfarm	100	0.00
0-1 km	0	100	0	0-1km	100	0.00
1-2 km	0	91	0	1-2km	91	0.00
2-3 km	0	82	0	2-3km	82	0.00
3-4 km	0	73	0	3-4km	73	0.00
4-5 km	0	64	0	4-5km	64	0.00
5-6km	0	55	0	5-6km	55	0.00
6-7km	0	46	0	6-7km	46	0.00
7-8km	0	37	0	7-8km	37	0.00
8-9km	0.58	28	0.16	8-9km	28	0.32
9-10km	3.63	19	0.69	9-10km	19	1.38
10-11km	8.9	10	0.89	10-11km	10	1.78
11-12km	17.72	1	0.18	11-12km	1	0.35
Total area of overlap (km2)	30.83		1.92	12-13km	n/a	0.00
Total % SPA	0.79		0.049	13-14km	n/a	0.00
				14-15km	n/a	0.00
				Total		3.84
				Mort (@10%)		0.38

Table 5-20 EA2 9km alternate boundary

Straight line				Straight line		
Region	Area of overlap (km2)	Displacement % (straight line)	Effective area of displacement (km2)	Region	Displacement % (straight line)	No. displaced
OWF	0	100	0	Windfarm	100	0.00
0-1 km	0	100	0	0-1km	100	0.00
1-2 km	0	91	0	1-2km	91	0.00
2-3 km	0	82	0	2-3km	82	0.00
3-4 km	0	73	0	3-4km	73	0.00
4-5 km	0	64	0	4-5km	64	0.00
5-6km	0	55	0	5-6km	55	0.00
6-7km	0	46	0	6-7km	46	0.00
7-8km	0	37	0	7-8km	37	0.00
8-9km	0	28	0	8-9km	28	0.00
9-10km	3.37	19	0.64	9-10km	19	1.28
10-11km	8.6	10	0.86	10-11km	10	1.72
11-12km	17.11	1	0.17	11-12km	1	0.34
Total area of overlap (km2)	29.08		1.67	12-13km	n/a	0.00
Total % SPA	0.74		0.043	13-14km	n/a	0.00
				14-15km	n/a	0.00
				Total		3.34
				Mort (@10%)		0.33

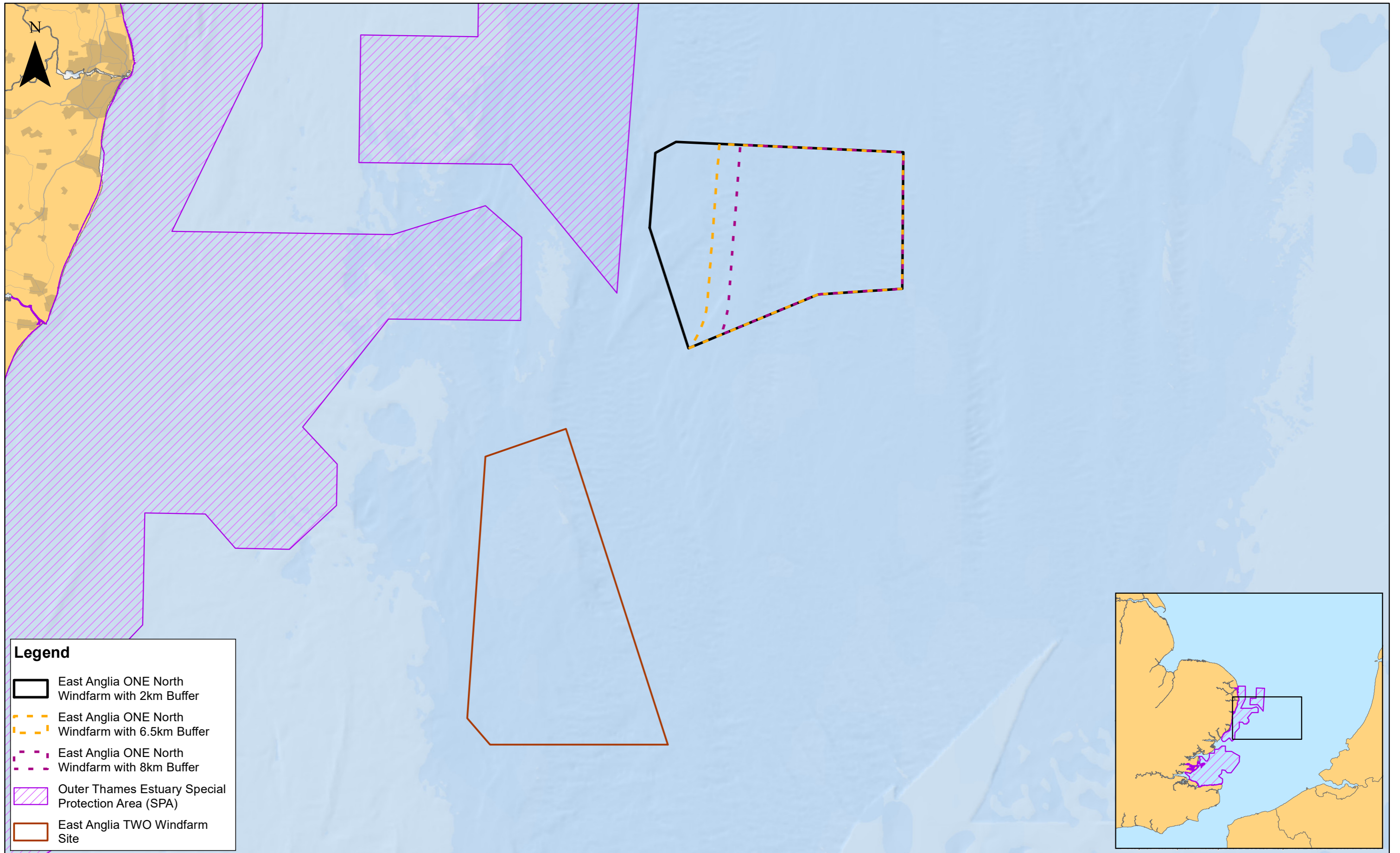
Table 5-21 EA2 9.5km alternate boundary

9.5km site						
				Straight line		
Region	Area of overlap (km2)	Displacement % (straight line)	Effective area of displacement (km2)	Region	Displacement % (straight line)	No. displaced
OWF	0	100	0	Windfarm	100	0.00
0-1 km	0	100	0	0-1km	100	0.00
1-2 km	0	91	0	1-2km	91	0.00
2-3 km	0	82	0	2-3km	82	0.00
3-4 km	0	73	0	3-4km	73	0.00
4-5 km	0	64	0	4-5km	64	0.00
5-6km	0	55	0	5-6km	55	0.00
6-7km	0	46	0	6-7km	46	0.00
7-8km	0	37	0	7-8km	37	0.00
8-9km	0	28	0	8-9km	28	0.00
9-10km	1.94	19	0.37	9-10km	19	0.74
10-11km	8.49	10	0.85	10-11km	10	1.70
11-12km	16.57	1	0.17	11-12km	1	0.33
Total area of overlap (km2)	27		1.38	12-13km	n/a	0.00
Total % SPA	0.69		0.035	13-14km	n/a	0.00
				14-15km	n/a	0.00
				Total		2.77
				Mort (@10%)		0.28

Table 5-22 EA2 10km alternate boundary

10km site						
		Straight line			Straight line	
Region	Area of overlap (km2)	Displacement % (straight line)	Effective area of displacement (km2)	Region	Displacement % (straight line)	No. displaced
OWF	0	100	0	Windfarm	100	0.00
0-1 km	0	100	0	0-1km	100	0.00
1-2 km	0	91	0	1-2km	91	0.00
2-3 km	0	82	0	2-3km	82	0.00
3-4 km	0	73	0	3-4km	73	0.00
4-5 km	0	64	0	4-5km	64	0.00
5-6km	0	55	0	5-6km	55	0.00
6-7km	0	46	0	6-7km	46	0.00
7-8km	0	37	0	7-8km	37	0.00
8-9km	0	28	0	8-9km	28	0.00
9-10km	0	19	0	9-10km	19	0.00
10-11km	7.51	10	0.75	10-11km	10	1.50
11-12km	14.72	1	0.15	11-12km	1	0.29
Total area of overlap (km2)	22.23		0.90	12-13km	n/a	0.00
Total % SPA	0.57		0.023	13-14km	n/a	0.00
				14-15km	n/a	0.00
				Total		1.80
				Mort (@10%)		0.18

Appendix B: EA1N Updated Layouts Plan



Legend

- East Anglia ONE North Windfarm with 2km Buffer
- East Anglia ONE North Windfarm with 6.5km Buffer
- East Anglia ONE North Windfarm with 8km Buffer
- Outer Thames Estuary Special Protection Area (SPA)
- East Anglia TWO Windfarm Site

	1	31/01/2022	AB	Second Issue.	Prepared:	AB
	1	26/01/2022	AB	First Issue.	Checked:	PM
Rev	Date	By	Comment	Approved:	PP	

						1:250,000
						Scale @ A3

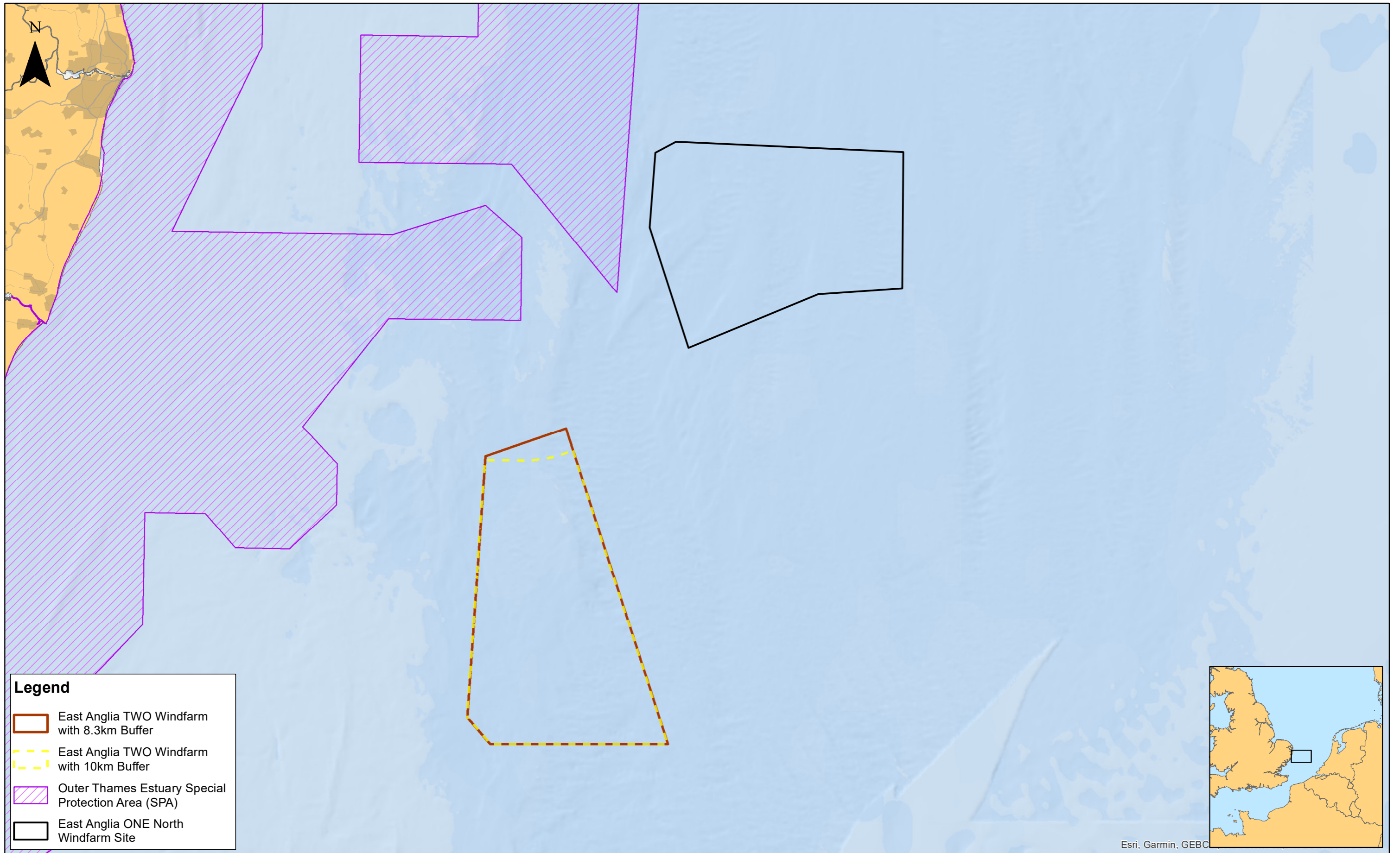
Source: © JNCC, 2021. © Contains OS data © Crown copyright and database right, 2020. © British Crown and OceanWise, 2020. All rights reserved. License No. EMS-EX0011-548150. Not to be used for navigation.
 This map has been produced to the latest known information at the time of issue, and has been produced for your information only. Please consult with the SPR Offshore GIS team to ensure the content is still current before using the information contained on this map. To the fullest extent permitted by law, we accept no responsibility or liability (whether in contract, tort (including negligence) or otherwise in respect of any errors or omissions in the information contained in the map and shall not be liable for any loss, damage or expense caused by such errors or omissions.

East Anglia ONE North

EA1N Site Boundaries - 2km, 6.5km 8km Sites

Drg No	EA1N-DEV-DRG-IBR-001336		
Rev	2	Datum:	WGS 1984
Date	31/01/22	Projection:	Zone 31N
Figure	1		

Appendix C: EA2 Updated Layout Plan



Legend

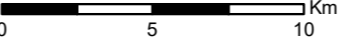
- East Anglia TWO Windfarm with 8.3km Buffer
- East Anglia TWO Windfarm with 10km Buffer
- Outer Thames Estuary Special Protection Area (SPA)
- East Anglia ONE North Windfarm Site

Esri, Garmin, GEBCO



2	31/01/2022	AB	Second Issue.	Prepared:	AB
1	26/01/2022	AB	First Issue.	Checked:	PM
Rev	Date	By	Comment	Approved:	PP

1:250,000
Scale @ A3



Source: © JNCC, 2021. © Contains OS data © Crown copyright and database right, 2020. © British Crown and OceanWise, 2020. All rights reserved. License No. EMS-EX001-548150. Not to be used for navigation.
This map has been produced to the latest known information at the time of issue, and has been produced for your information only. Please consult with the SPN Offshore GIS team to ensure the content is still current before using the information contained on this map.
To the fullest extent permitted by law, we accept no responsibility or liability (whether in contract, tort (including negligence) or otherwise in respect of any errors or omissions in the information contained in the map and shall not be liable for any loss, damage or expense caused by such errors or omissions.

East Anglia TWO
EA2 Site Boundaries - 8.3km and 10km Sites

Drg No	EA2-DEV-DRG-IBR-001341	
Rev	2	Datum: WGS 1984
Date	26/01/22	Projection: Zone 31N
Figure	6	

Appendix D: Legal Agreement between EA1N and EA1 regarding vessel traffic within the OTE SPA



SHEPHERD+ WEDDERBURN

CONSENT AGREEMENT

between

East Anglia ONE NORTH Limited

and

East Anglia ONE Limited

Relating to: the East Anglia ONE North Offshore Windfarm
Development Consent Order

CONTENTS

Clause	Page Number
1. Definitions and interpretation	1
2. Conditionality	2
3. Covenants of EA1	2
4. Covenants of EA1N	3
5. Good faith and co-operation	3
6. Partial invalidity	3
7. Variation of Agreement	4
8. Counterparts	4
9. Third Party Rights	4
10. Transfer of Powers	4
11. Notices	5
12. Governing Law and Jurisdiction	5
13. Confidentiality	5
Appendix 1	8

CONSENT AGREEMENT

Dated 31 JANUARY 2022

between

EAST ANGLIA ONE NORTH LIMITED (Company Registration Number 11121800) whose registered office is at 3rd Floor, 1 Tudor Street, London, EC4Y 0AH ("EA1N" which expression shall include its successors in title and assigns); and

EAST ANGLIA ONE LIMITED (Company Registration Number 07366753) whose registered office is at 3rd Floor, 1 Tudor Street, London, EC4Y 0AH ("EA1" which expression shall include its successors in title and assigns).

BACKGROUND

- (A) EA1N wishes to carry out the East Anglia ONE North Offshore Windfarm (the "EA1N Project") and has made an application on 25 October 2019 for a Development Consent Order to authorise the works for the EA1N Project (the "EA1N Order").
- (B) EA1 wishes to continue to operate and maintain the East Anglia ONE Windfarm (the "EA1 Project") which was granted a Development Consent Order on 16 June 2014. The EA1 Project commenced construction in 2017 and became fully operational in July 2020.
- (C) EA1N maintains that there will be no adverse effect on the integrity ("AEoI") of the Outer Thames Estuary Special Protection Area ("OTE SPA") as a result of the EA1N Project alone or in combination. However, without prejudice to EA1N's position, EA1N has proposed in-principle compensatory measures that could be progressed should the Secretary of State conclude an AEoI on the red throated diver ("RTD") feature of the OTE SPA. The in-principle compensatory measures proposed requires crew transfer vessel traffic associated with the operation, maintenance and decommissioning of the generation assets forming part of the EA1 Project to avoid the OTE SPA (excluding vessels accessing ports and harbours where any part of that port or harbour or its approaches are located within the OTE SPA).

OPERATIVE PROVISIONS

1. Definitions and interpretation

- 1.1 In this Deed the following expressions shall have the following meanings and references to clauses are references to the clauses of this Deed:
- | | |
|-------------------------------------|--|
| "EA1 Compensation Measures" | has the meaning given in clause 3.1; |
| "EA1N Offshore Works" | means Work Nos. 1 to 6 as described in Schedule 1 of the EA1N Order; |
| "EA1N Order" | means the East Anglia ONE North Offshore Windfarm Development Consent Order as it is made by the Secretary of State; |
| "EA1 Order" | means the East Anglia ONE Offshore Wind Farm Order 2014, as amended; |
| "Northern Component of the OTE SPA" | means the part of the OTE SPA outlined and hatched in blue and shaded green shown on Figure 1 in Appendix 1; |
| "OTE SPA Buffer" | means the area of sea within 2km of the boundary of the OTE SPA; |

“Relevant EA1 Works”	means Work No. 1(a), Work No. 1(c) and the network of subsea cables between the wind turbine generators and the HVAC offshore collector stations comprised within Work No. 1(d), all as described in Schedule 1 of the EA1 Order;
“RTD Implementation and Monitoring Plan”	means the red-throated diver implementation and monitoring plan or an equivalent plan required to be submitted to the Secretary of State for approval in accordance with the EA1N Order and which must include details of the compensation measures for RTD, including an implementation timetable for delivery of the measures;
“Secretary of State”	means the Secretary of State for Business, Energy and Industrial Strategy;
“Undertaker”	means the undertaker or undertakers as defined in the EA1N Order or the EA1 Order, as the case may be, and appointed for time to time;
“Vessel”	means crew transfer vessel.

- 1.2 The headings in this Deed are for convenience only and shall not be taken into account in the construction and interpretation of this Deed.
- 1.3 References in this Deed to clauses are (unless otherwise expressly provided) references to relevant clauses contained in this Deed.

2. Conditionality

- 2.1 Save in respect of clause 13, and subject to clause 2.2, this Deed is conditional upon:
- 2.1.1 the making of the EA1N Order by the Secretary of State; and
- 2.1.2 an obligation being included in the EA1N Order for EA1N to provide compensatory measures in respect of the RTD feature of the OTE SPA.
- 2.2 Clauses 3.1.1, 3.1.2, 3.1.4 and 3.1.5 are conditional upon EA1 vessel re-routing being included as a compensatory measure in the approved RTD Implementation and Monitoring Plan and take effect in accordance with the timescales set out in the approved RTD Implementation and Monitoring Plan.
- 2.3 EA1 shall no longer be required to carry out its duties and obligations under this Deed and shall have no further liability to EA1N in respect thereof upon the date determined by the Secretary of State as being the date on which compensatory measures are no longer required or, where no such date is determined, upon the decommissioning of the EA1N Offshore Works.

3. Covenants of EA1

- 3.1 EA1 HEREBY UNDERTAKES AND AGREES:
- 3.1.1 that, subject to clause 3.2, EA1 will procure that all Vessel traffic engaged in the operation, maintenance and decommissioning of the Relevant EA1 Works will avoid the Northern Component of the OTE SPA from 1 November to 1 March inclusive;
- 3.1.2 that, subject to clauses 3.2, 3.3 and 3.4, EA1 will procure that all Vessel traffic engaged in the operation, maintenance and decommissioning of the Relevant EA1 Works will avoid the OTE SPA and the OTE SPA Buffer from 1 November to 1 March inclusive;
- 3.1.3 that EA1 will participate in the RTD compensation steering group if invited to attend;
- 3.1.4 that EA1 will comply with the measures set out in the RTD Implementation and Monitoring Plan to the extent that they relate to the Relevant EA1 Works and only in so far as they require EA1 to take any action set out in clauses 3.1.1 and 3.1.2; and
- 3.1.5 that EA1 will provide monthly reports to EA1N to demonstrate compliance with clauses 3.1.1 and 3.1.2,

together, the "EA1 Compensation Measures".

- 3.2 Clauses 3.1.1 and 3.1.2 do not apply in the case of an emergency or where there are health and safety grounds (including, but not limited to, due to inclement weather) requiring (in the opinion of any applicable Vessel operator) a direct route to be taken through the OTE SPA or the OTE SPA Buffer;
- 3.3 Clause 3.1.2 does not apply to Vessel traffic accessing ports and harbours within the OTE SPA or OTE SPA Buffer where any part of that port or harbour or its approaches are located within the OTE SPA and/or OTE SPA Buffer.
- 3.4 The requirement to avoid the OTE SPA Buffer within clause 3.1.2 does not apply:
- 3.4.1 to Vessels travelling in the opposite direction of another vessel in areas between the Northern Component of the OTE SPA and the remainder of the OTE SPA where the distance between the two components of the OTE SPA is 6km or less; and
- 3.4.2 to all other Vessels in areas between the Northern Component of the OTE SPA and the remainder of the OTE SPA where the distance between the two components of the OTE SPA is 4.2km or less,

but in such areas Vessel traffic will traverse between the Northern Component of the OTE SPA and the remainder of the OTE SPA as close to the mid point between the two components of the OTE SPA as is reasonably practicable whilst allowing for an appropriate separation distance between passing vessels in the case of 3.4.1.

4. Covenants of EA1N

- 4.1 EA1N HEREBY UNDERTAKES AND AGREES:
- 4.1.1 to invite EA1 to participate in the RTD compensation steering group and, to the extent it is able to do so, to ensure that EA1 is not prevented from attending by any other person;
- 4.1.2 subject to clause 4.2 below, to obtain approval from EA1 to the measures contained within the RTD Implementation and Monitoring Plan to the extent that they relate to the provisions set out in clause 3.1.1 and 3.1.2, prior to the submission of the RTD Implementation Plan to the Secretary of State or any other governmental authority; and
- 4.1.3 to provide EA1 with a copy of the approved RTD Implementation and Monitoring Plan within two working days of notification of approval of the RTD Implementation and Monitoring Plan.
- 4.2 Approval under clause 4.1.2 must not be unreasonably withheld or delayed by EA1 if the measures contained within the RTD Implementation and Monitoring Plan which impact or affect EA1 are limited to the actions and undertakings contemplated in clauses 3.1.1 and 3.1.2.

5. Good faith and co-operation

- 5.1 The parties to this Deed shall act towards each other at all times in good faith and shall co-operate and fully consult with each other regarding their respective obligations under the terms of this Deed.

6. Partial invalidity

- 6.1 If any provision of this Deed is or becomes or is declared invalid unlawful illegal or unenforceable it shall not affect the validity, legality or enforceability of the remainder of this Deed.
- 6.2 If any part of a provision of this Deed is or becomes or is declared invalid unlawful illegal or unenforceable but the rest of such provision would remain valid lawful or enforceable if part of the wording were deleted, the provision shall be deemed modified to the minimum extent necessary to make it valid, legal and enforceable but without affecting the meaning or legality validity or enforceability of any other provision of this Deed.

7. Variation of Agreement

- 7.1 No amendment or modification of this Deed shall be valid or binding on the parties to this Deed unless the same:
- 7.1.1 is made in writing;
 - 7.1.2 refers expressly to this Deed; and
 - 7.1.3 is executed on behalf of EA1N and EA1.

8. Counterparts

- 8.1 This Deed may be executed in any number of counterparts, each of which when executed and delivered shall constitute a duplicate original, but all the counterparts shall together constitute the one agreement.
- 8.2 No counterpart shall be effective until each party has executed and delivered at least one counterpart.

9. Third Party Rights

- 9.1 Only the parties to the agreement may enforce the terms of this Deed and no third party may enforce such a term under the Contracts (Rights of Third Parties) Act 1999 provided always that any successors to the business of EA1N shall be entitled to the benefit of this Deed.

10. Transfer of Powers

- 10.1 In the event that:
- 10.1.1 any person other than EA1 is defined as the "Undertaker" for the purposes of the EA1 Order in respect of the Relevant EA1 Works, and/or
 - 10.1.2 the powers of the "Undertaker" under the EA1 Order in respect of the Relevant EA1 Works are transferred or leased to any other person; and
 - 10.1.3 the provisions of this Deed are not otherwise made directly enforceable against any such person (the "Transferee"),

EA1 will without delay require the Transferee to enter into a deed of covenant in favour of EA1N that the Transferee shall observe and perform such of the obligations of and restrictions on EA1 under this Deed as relate to the exercise of the powers which have been transferred as though the Transferee had been an original party to this Deed.

- 10.2 EA1 shall remain liable to EA1N under this Deed until EA1 has complied with clause 10.1.
- 10.3 Upon compliance with clause 10.1, EA1 shall no longer owe any duty or obligation to EA1N in respect of the powers which have been transferred (save in respect of any pre-existing claim and/or proceedings ongoing under this Deed in respect of those powers) and EA1N shall release and discharge EA1 from all claims, demands and other liabilities whatsoever in respect of those transferred powers (provided that there is no pre-existing claim and/or proceedings ongoing under this Deed in respect of those powers).

- 10.4 In the event that:
- 10.4.1 any person other than EA1N is defined as the "Undertaker" for the purposes of the EA1N Order in respect of the EA1N Offshore Works, and/or
 - 10.4.2 the powers of the "Undertaker" under the EA1N Order in respect of the EA1N Offshore Works are transferred or leased to any other person; and
 - 10.4.3 the provisions of this Deed are not otherwise made directly enforceable against any such person (the "Transferee"),

EA1N will without delay require the Transferee to enter into a deed of covenant in favour of EA1 that the Transferee shall observe and perform such of the obligations of and restrictions on EA1N

under this Deed as relate to the exercise of the powers which have been transferred as though the Transferee had been an original party to this Deed.

- 10.5 EA1N shall remain liable to EA1 under this Deed until EA1N has complied with clause 10.4.
- 10.6 Upon compliance with clause 10.4, EA1N shall no longer owe any duty or obligation to EA1 in respect of the powers which have been transferred (save in respect of any pre-existing claim and/or proceedings ongoing under this Deed in respect of those powers) and EA1 shall release and discharge EA1N from all claims, demands and other liabilities whatsoever in respect of those transferred powers (provided that there is no pre-existing claim and/or proceedings ongoing under this Deed in respect of those powers).

11. Notices

- 11.1 Any notice given under or in relation to this Deed shall be in writing and shall refer to this Deed and shall be deemed to be sufficiently served if addressed to EA1N or EA1, as the case may be, and sent by recorded delivery or registered post to the address of the Parties given in this Deed or to such other address as they may from time to time designate by written notice to the other.
- 11.2 Any notice sent in accordance with clause 11.1 shall be deemed, in the absence of evidence of earlier receipt, to have been delivered two days after costing or despatch, exclusive of the day of posting.

12. Governing Law and Jurisdiction

- 12.1 This Deed and any non-contractual obligations arising in connection with it (and, unless provided otherwise, any document entered into in connection with it) are governed by and construed in accordance with English law.
- 12.2 The English courts have exclusive jurisdiction to determine any dispute arising in connection with this Deed (and, unless provided otherwise, any document entered into in connection with it), including disputes relating to any non-contractual obligations.

13. Confidentiality

- 13.1 EA1N and EA1 Energy agree to keep confidential and not disclose to any third party the content of this Deed.
- 13.2 Either party may disclose the fact and details of this Deed, or its terms:
- 13.2.1 pursuant to an order of the Court, or by compulsion of law or the rules of any competent regulator;
- 13.2.2 to any of their auditors, professional legal advisers or insurers;
- 13.2.3 to:
- (i) any bona fide potential purchaser of shares in (or the assets of) EA1N or EA1 and its external professional consultants and advisers;
- (ii) any bona fide bank or financial institution (and its external professional consultants and advisers) from whom EA1N or EA1 is seeking or obtaining finance or financial advice
- provided that in the case of disclosure under clause 13.2.3(i) and 13.2.3(ii) such third party is either bound by a professional duty of confidence or has first executed a confidentiality agreement containing confidentiality provisions no less onerous than those set out herein;
- 13.2.4 with the prior written consent of the other Party; or
- 13.2.5 to respond to a question or request for information from the Secretary of State.
- 13.3 In the event that any party considers that it is required by law or by the rules of any competent regulator to disclose any terms of this Deed such party will provide the other party with such prompt written notice of such requirement as is reasonably practicable, so that the other party

may seek appropriate injunctive relief. If no such relief is granted, or a waiver is not obtained from the other party, and if the first party is nonetheless, in the opinion of its legal advisers required to do so by law or the rules of any competent regulator, such party may disclose that portion only of the terms of this Deed which that party is advised by its legal advisers is required to be disclosed. Such party will use its reasonable endeavours to obtain assurance that confidential treatment will be accorded to any information disclosed.

- 13.4 If any party discloses the terms of this Deed to a person within clause 13.2 (excluding in accordance with clause 13.2.5) that Party will use its reasonable endeavours to obtain assurances that any information relating to the terms of this Deed will be treated by that person as confidential.

Delivered as a deed on the date of this document.

EXECUTION PAGE

Executed as a deed by EAST ANGLIA)
ONE NORTH LIMITED acting by)

[redacted]... [name of)

) Director

first director] and

..... [*name of second director*
or secretary]

.....

Director/Secretary

Executed as a deed by EAST ANGLIA)
ONE LIMITED acting by)

[redacted]... [name of)

) Director

first director] and

..... [*name of second director*
or secretary]

.....

Director/Secretary

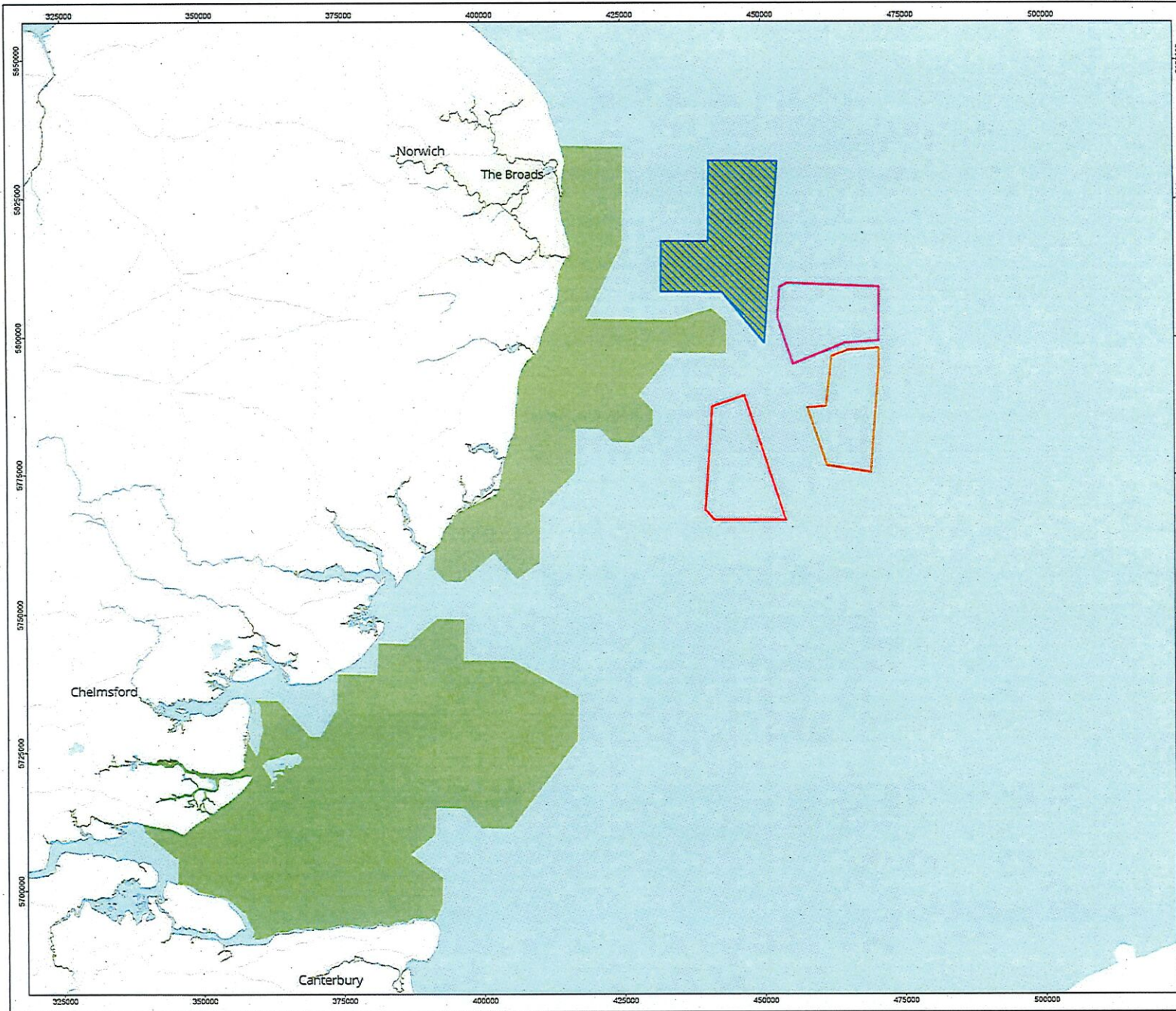
EXECUTION PAGE

Executed as a deed by **EAST ANGLIA**)
ONE NORTH LIMITED acting by)
..... *[name of*) Director
first director] and [REDACTED]
..... *[name of second director*
or secretary] [REDACTED]
Director/Secretary

Executed as a deed by **EAST ANGLIA**)
ONE LIMITED acting by)
..... *[name of*) Director
first director] and [REDACTED]
..... *[name of second director*
or secretary] [REDACTED]
Director/Secretary

Appendix 1

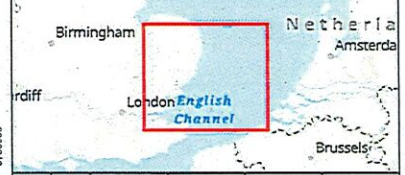
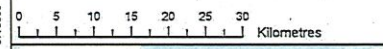
Figure 1



- EA1 Windfarm DCO Boundary
- EA1N Windfarm DCO Boundary
- EA2 Windfarm DCO Boundary
- Outer Thames Estuary SPA (OTE SPA)
- Northern Component of the OTE SPA
- Coastal Boundary



Notes:
 DCO Boundaries correct as of 24/01/2022.
 SPA designations © Natural England copyright.
 Contains Ordnance Survey data © Crown copyright and database right 2020.



REV	REV DATE	GIS CREATOR	GIS REVIEWER	TECHNICAL CHECKER	TECHNICAL APPROVER	
1		DM/MS/22	TG	JB	LJ	EM

DRAWING NUMBER: EAH-GEN-GIS-DRG-IBR-000430

DATUM	WGS84	PROJECTION	UTM Zone 31N
SCALE	1:850,000	PAGE SIZE	A3

PROJECT TITLE: East Anglia HUB

DRAWING TITLE: Figure 1

© COPYRIGHT NOTES
 Service Layer Credits: Vector Grids, Base, Etc., OLS/COG, OLS/JMS, National
 Grid Topographic, Contours, OS data © Crown Copyright and database right 2020.
 Contains data from OS Communities.
 World Ocean Resource: ERI, UK, CN, MRC, GAMMA, FAG, WDA, USCG
 This map has been produced to the best of our knowledge and belief at the time of issue, and has been produced for your information only. Please consult with the ZPR Onshore GIS team to ensure the content is still current before using the information contained on this map. To the fullest extent permitted by law, we accept no responsibility or liability (whether in contract, tort (including negligence) or otherwise) or in respect of any errors or omissions in the information contained in the map and shall not be liable for any loss, damage or expense caused by such errors or omissions.
NOT TO BE USED FOR NAVIGATION



Appendix E: Legal Agreement between EA2 and EA1 regarding vessel traffic within the OTE SPA



SHEPHERD+ WEDDERBURN

CONSENT AGREEMENT

between

East Anglia TWO Limited

and

East Anglia ONE Limited

Relating to: the East Anglia TWO Offshore Windfarm
Development Consent Order

CONTENTS

Clause	Page Number
1. Definitions and interpretation	1
2. Conditionality	2
3. Covenants of EA1	2
4. Covenants of EA2	3
5. Good faith and co-operation	3
6. Partial invalidity	3
7. Variation of Agreement	4
8. Counterparts	4
9. Third Party Rights	4
10. Transfer of Powers	4
11. Notices	5
12. Governing Law and Jurisdiction	5
13. Confidentiality	5
Appendix 1	8

CONSENT AGREEMENT

Dated 31 JANUARY 2022

between

EAST ANGLIA TWO LIMITED (Company Registration Number 11121842) whose registered office is at 3rd Floor, 1 Tudor Street, London, EC4Y 0AH ("EA2" which expression shall include its successors in title and assigns); and

EAST ANGLIA ONE LIMITED (Company Registration Number 07366753) whose registered office is at 3rd Floor, 1 Tudor Street, London, EC4Y 0AH ("EA1" which expression shall include its successors in title and assigns).

BACKGROUND

- (A) EA2 wishes to carry out the East Anglia TWO Offshore Windfarm (the "EA2 Project") and has made an application on 25 October 2019 for a Development Consent Order to authorise the works for the EA2 Project (the "EA2 Order").
- (B) EA1 wishes to continue to operate and maintain the East Anglia ONE Windfarm (the "EA1 Project") which was granted a Development Consent Order on 16 June 2014. The EA1 Project commenced construction in 2017 and became fully operational in July 2020.
- (C) EA2 maintains that there will be no adverse effect on the integrity ("AEol") of the Outer Thames Estuary Special Protection Area ("OTE SPA") as a result of the EA2 Project alone or in combination. However, without prejudice to EA2's position, EA2 has proposed in-principle compensatory measures that could be progressed should the Secretary of State conclude an AEol on the red throated diver ("RTD") feature of the OTE SPA. The in-principle compensatory measures proposed requires crew transfer vessel traffic associated with the operation, maintenance and decommissioning of the generation assets forming part of the EA1 Project to avoid the OTE SPA (excluding vessels accessing ports and harbours where any part of that port or harbour or its approaches are located within the OTE SPA).

OPERATIVE PROVISIONS

1. Definitions and interpretation

- 1.1 In this Deed the following expressions shall have the following meanings and references to clauses are references to the clauses of this Deed:
- | | |
|-------------------------------------|--|
| "EA1 Compensation Measures" | has the meaning given in clause 3.1; |
| "EA2 Offshore Works" | means Work Nos. 1 to 6 as described in Schedule 1 of the EA2 Order; |
| "EA2 Order" | means the East Anglia TWO Offshore Windfarm Development Consent Order as it is made by the Secretary of State; |
| "EA1 Order" | means the East Anglia ONE Offshore Wind Farm Order 2014, as amended; |
| "Northern Component of the OTE SPA" | means the part of the OTE SPA outlined and hatched in blue and shaded green shown on Figure 1 in Appendix 1; |
| "OTE SPA Buffer" | means the area of sea within 2km of the boundary of the OTE SPA; |

"Relevant EA1 Works"	means Work No. 1(a), Work No. 1(c) and the network of subsea cables between the wind turbine generators and the HVAC offshore collector stations comprised within Work No. 1(d), all as described in Schedule 1 of the EA1 Order;
"RTD Implementation and Monitoring Plan"	means the red-throated diver implementation and monitoring plan or an equivalent plan required to be submitted to the Secretary of State for approval in accordance with the EA2 Order and which must include details of the compensation measures for RTD, including an implementation timetable for delivery of the measures;
"Secretary of State"	means the Secretary of State for Business, Energy and Industrial Strategy;
"Undertaker"	means the undertaker or undertakers as defined in the EA2 Order or the EA1 Order, as the case may be, and appointed for time to time;
"Vessel"	means crew transfer vessel.

- 1.2 The headings in this Deed are for convenience only and shall not be taken into account in the construction and interpretation of this Deed.
- 1.3 References in this Deed to clauses are (unless otherwise expressly provided) references to relevant clauses contained in this Deed.

2. Conditionality

- 2.1 Save in respect of clause 13, and subject to clause 2.2, this Deed is conditional upon:
- 2.1.1 the making of the EA2 Order by the Secretary of State; and
- 2.1.2 an obligation being included in the EA2 Order for EA2 to provide compensatory measures in respect of the RTD feature of the OTE SPA.
- 2.2 Clauses 3.1.1, 3.1.2, 3.1.4 and 3.1.5 are conditional upon EA1 vessel re-routing being included as a compensatory measure in the approved RTD Implementation and Monitoring Plan and take effect in accordance with the timescales set out in the approved RTD Implementation and Monitoring Plan.
- 2.3 EA1 shall no longer be required to carry out its duties and obligations under this Deed and shall have no further liability to EA2 in respect thereof upon the date determined by the Secretary of State as being the date on which compensatory measures are no longer required or, where no such date is determined, upon the decommissioning of the EA2 Offshore Works.

3. Covenants of EA1

- 3.1 EA1 HEREBY UNDERTAKES AND AGREES:
- 3.1.1 that, subject to clause 3.2, EA1 will procure that all Vessel traffic engaged in the operation, maintenance and decommissioning of the Relevant EA1 Works will avoid the Northern Component of the OTE SPA from 1 November to 1 March inclusive;
- 3.1.2 that, subject to clauses 3.2, 3.3 and 3.4, EA1 will procure that all Vessel traffic engaged in the operation, maintenance and decommissioning of the Relevant EA1 Works will avoid the OTE SPA and the OTE SPA Buffer from 1 November to 1 March inclusive;
- 3.1.3 that EA1 will participate in the RTD compensation steering group if invited to attend;
- 3.1.4 that EA1 will comply with the measures set out in the RTD Implementation and Monitoring Plan to the extent that they relate to the Relevant EA1 Works and only in so far as they require EA1 to take any action set out in clauses 3.1.1 and 3.1.2; and
- 3.1.5 that EA1 will provide monthly reports to EA2 to demonstrate compliance with clauses 3.1.1 and 3.1.2,

together, the "EA1 Compensation Measures".

- 3.2 Clauses 3.1.1 and 3.1.2 do not apply in the case of an emergency or where there are health and safety grounds (including, but not limited to, due to inclement weather) requiring (in the opinion of any applicable Vessel operator) a direct route to be taken through the OTE SPA or the OTE SPA Buffer;
- 3.3 Clause 3.1.2 does not apply to Vessel traffic accessing ports and harbours within the OTE SPA or OTE SPA Buffer where any part of that port or harbour or its approaches are located within the OTE SPA and/or OTE SPA Buffer.
- 3.4 The requirement to avoid the OTE SPA Buffer within clause 3.1.2 does not apply:
- 3.4.1 to Vessels travelling in the opposite direction of another vessel in areas between the Northern Component of the OTE SPA and the remainder of the OTE SPA where the distance between the two components of the OTE SPA is 6km or less; and
- 3.4.2 to all other Vessels in areas between the Northern Component of the OTE SPA and the remainder of the OTE SPA where the distance between the two components of the OTE SPA is 4.2km or less,

but in such areas Vessel traffic will traverse between the Northern Component of the OTE SPA and the remainder of the OTE SPA as close to the mid point between the two components of the OTE SPA as is reasonably practicable whilst allowing for an appropriate separation distance between passing vessels in the case of 3.4.1.

4. Covenants of EA2

- 4.1 EA2 HEREBY UNDERTAKES AND AGREES:
- 4.1.1 to invite EA1 to participate in the RTD compensation steering group and, to the extent it is able to do so, to ensure that EA1 is not prevented from attending by any other person;
- 4.1.2 subject to clause 4.2 below, to obtain approval from EA1 to the measures contained within the RTD Implementation and Monitoring Plan to the extent that they relate to the provisions set out in clause 3.1.1 and 3.1.2, prior to the submission of the RTD Implementation Plan to the Secretary of State or any other governmental authority; and
- 4.1.3 to provide EA1 with a copy of the approved RTD Implementation and Monitoring Plan within two working days of notification of approval of the RTD Implementation and Monitoring Plan.
- 4.2 Approval under clause 4.1.2 must not be unreasonably withheld or delayed by EA1 if the measures contained within the RTD Implementation and Monitoring Plan which impact or affect EA1 are limited to the actions and undertakings contemplated in clauses 3.1.1 and 3.1.2.

5. Good faith and co-operation

- 5.1 The parties to this Deed shall act towards each other at all times in good faith and shall co-operate and fully consult with each other regarding their respective obligations under the terms of this Deed.

6. Partial invalidity

- 6.1 If any provision of this Deed is or becomes or is declared invalid unlawful illegal or unenforceable it shall not affect the validity, legality or enforceability of the remainder of this Deed.
- 6.2 If any part of a provision of this Deed is or becomes or is declared invalid unlawful illegal or unenforceable but the rest of such provision would remain valid lawful or enforceable if part of the wording were deleted, the provision shall be deemed modified to the minimum extent necessary to make it valid, legal and enforceable but without affecting the meaning or legality validity or enforceability of any other provision of this Deed.

7. Variation of Agreement

- 7.1 No amendment or modification of this Deed shall be valid or binding on the parties to this Deed unless the same:
- 7.1.1 is made in writing;
 - 7.1.2 refers expressly to this Deed; and
 - 7.1.3 is executed on behalf of EA2 and EA1.

8. Counterparts

- 8.1 This Deed may be executed in any number of counterparts, each of which when executed and delivered shall constitute a duplicate original, but all the counterparts shall together constitute the one agreement.
- 8.2 No counterpart shall be effective until each party has executed and delivered at least one counterpart.

9. Third Party Rights

- 9.1 Only the parties to the agreement may enforce the terms of this Deed and no third party may enforce such a term under the Contracts (Rights of Third Parties) Act 1999 provided always that any successors to the business of EA2 shall be entitled to the benefit of this Deed.

10. Transfer of Powers

- 10.1 In the event that:
- 10.1.1 any person other than EA1 is defined as the "Undertaker" for the purposes of the EA1 Order in respect of the Relevant EA1 Works, and/or
 - 10.1.2 the powers of the "Undertaker" under the EA1 Order in respect of the Relevant EA1 Works are transferred or leased to any other person; and
 - 10.1.3 the provisions of this Deed are not otherwise made directly enforceable against any such person (the "Transferee"),

EA1 will without delay require the Transferee to enter into a deed of covenant in favour of EA2 that the Transferee shall observe and perform such of the obligations of and restrictions on EA1 under this Deed as relate to the exercise of the powers which have been transferred as though the Transferee had been an original party to this Deed.

- 10.2 EA1 shall remain liable to EA2 under this Deed until EA1 has complied with clause 10.1.
- 10.3 Upon compliance with clause 10.1, EA1 shall no longer owe any duty or obligation to EA2 in respect of the powers which have been transferred (save in respect of any pre-existing claim and/or proceedings ongoing under this Deed in respect of those powers) and EA2 shall release and discharge EA1 from all claims, demands and other liabilities whatsoever in respect of those transferred powers (provided that there is no pre-existing claim and/or proceedings ongoing under this Deed in respect of those powers).

- 10.4 In the event that:
- 10.4.1 any person other than EA2 is defined as the "Undertaker" for the purposes of the EA2 Order in respect of the EA2 Offshore Works, and/or
 - 10.4.2 the powers of the "Undertaker" under the EA2 Order in respect of the EA2 Offshore Works are transferred or leased to any other person; and
 - 10.4.3 the provisions of this Deed are not otherwise made directly enforceable against any such person (the "Transferee"),

EA2 will without delay require the Transferee to enter into a deed of covenant in favour of EA1 that the Transferee shall observe and perform such of the obligations of and restrictions on EA2

under this Deed as relate to the exercise of the powers which have been transferred as though the Transferee had been an original party to this Deed.

- 10.5 EA2 shall remain liable to EA1 under this Deed until EA2 has complied with clause 10.4.
- 10.6 Upon compliance with clause 10.4, EA2 shall no longer owe any duty or obligation to EA1 in respect of the powers which have been transferred (save in respect of any pre-existing claim and/or proceedings ongoing under this Deed in respect of those powers) and EA1 shall release and discharge EA2 from all claims, demands and other liabilities whatsoever in respect of those transferred powers (provided that there is no pre-existing claim and/or proceedings ongoing under this Deed in respect of those powers).

11. Notices

- 11.1 Any notice given under or in relation to this Deed shall be in writing and shall refer to this Deed and shall be deemed to be sufficiently served if addressed to EA2 or EA1, as the case may be, and sent by recorded delivery or registered post to the address of the Parties given in this Deed or to such other address as they may from time to time designate by written notice to the other.
- 11.2 Any notice sent in accordance with clause 11.1 shall be deemed, in the absence of evidence of earlier receipt, to have been delivered two days after costing or despatch, exclusive of the day of posting.

12. Governing Law and Jurisdiction

- 12.1 This Deed and any non-contractual obligations arising in connection with it (and, unless provided otherwise, any document entered into in connection with it) are governed by and construed in accordance with English law.
- 12.2 The English courts have exclusive jurisdiction to determine any dispute arising in connection with this Deed (and, unless provided otherwise, any document entered into in connection with it), including disputes relating to any non-contractual obligations.

13. Confidentiality

- 13.1 EA2 and EA1 Energy agree to keep confidential and not disclose to any third party the content of this Deed.
- 13.2 Either party may disclose the fact and details of this Deed, or its terms:
- 13.2.1 pursuant to an order of the Court, or by compulsion of law or the rules of any competent regulator;
- 13.2.2 to any of their auditors, professional legal advisers or insurers;
- 13.2.3 to:
- (i) any bona fide potential purchaser of shares in (or the assets of) EA2 or EA1 and its external professional consultants and advisers;
- (ii) any bona fide bank or financial institution (and its external professional consultants and advisers) from whom EA2 or EA1 is seeking or obtaining finance or financial advice
- provided that in the case of disclosure under clause 13.2.3(i) and 13.2.3(ii) such third party is either bound by a professional duty of confidence or has first executed a confidentiality agreement containing confidentiality provisions no less onerous than those set out herein;
- 13.2.4 with the prior written consent of the other Party; or
- 13.2.5 to respond to a question or request for information from the Secretary of State.
- 13.3 In the event that any party considers that it is required by law or by the rules of any competent regulator to disclose any terms of this Deed such party will provide the other party with such prompt written notice of such requirement as is reasonably practicable, so that the other party

may seek appropriate injunctive relief. If no such relief is granted, or a waiver is not obtained from the other party, and if the first party is nonetheless, in the opinion of its legal advisers required to do so by law or the rules of any competent regulator, such party may disclose that portion only of the terms of this Deed which that party is advised by its legal advisers is required to be disclosed. Such party will use its reasonable endeavours to obtain assurance that confidential treatment will be accorded to any information disclosed.

- 13.4 If any party discloses the terms of this Deed to a person within clause 13.2 (excluding in accordance with clause 13.2.5) that Party will use its reasonable endeavours to obtain assurances that any information relating to the terms of this Deed will be treated by that person as confidential.

Delivered as a deed on the date of this document.

EXECUTION PAGE

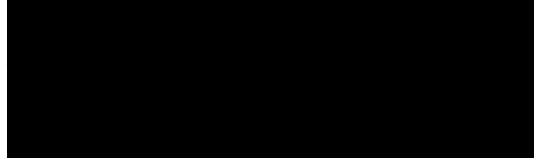
Executed as a deed by EAST ANGLIA)
TWO LIMITED acting by)
..... [name of)
first director] and
..... [name of second director
or secretary]



) Director

.....
Director/Secretary

Executed as a deed by EAST ANGLIA)
ONE LIMITED acting by)
..... [name of)
first director] and
..... [name of second director
or secretary]



) Director

.....
Director/Secretary

EXECUTION PAGE

Executed as a deed by **EAST ANGLIA**)
TWO LIMITED acting by)
..... *[name of*) Director
first director] and [REDACTED]
..... *[name of second director*
or secretary] [REDACTED]
Director/Secretary

Executed as a deed by **EAST ANGLIA**)
ONE LIMITED acting by)
..... *[name of*) Director
first director] and [REDACTED]
..... *[name of second director*
or secretary] [REDACTED]
Director/Secretary

Appendix 1

Figure 1

