

East Anglia THREE

Appendix 10

Summary of Environmental Considerations Offshore

Consultation Report

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Author – Royal HaskoningDHV
East Anglia THREE Limited
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10 SUMMARY OF ENVIRONMENTAL CONSIDERATIONS OFFSHORE

1. This appendix contains the summary of Environmental Considerations (offshore) which is a document that was requested by Suffolk County Council when responding to the consultation on the draft SoCC (see *Appendix 2*).
2. This document was made available at the Phase I Public Information Days (see section 6.3 of the Consultation Report).

East Anglia THREE

Summary of Environmental Considerations Offshore

Author – Royal HaskoningDHV
East Anglia Offshore Wind Limited
Date – September 2013
Revision History – Revision A

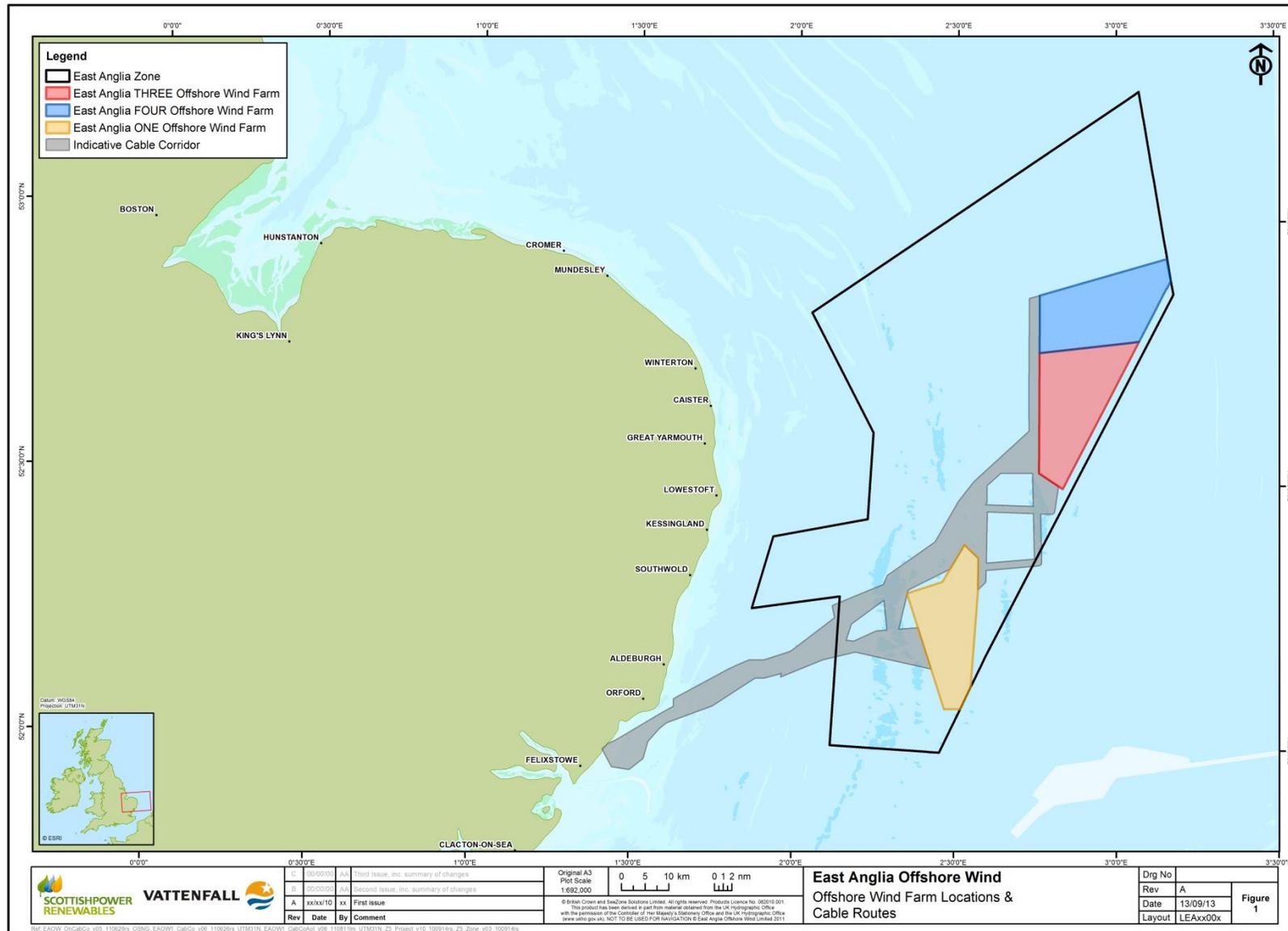


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1 INTRODUCTION

1. This section provides a high level summary for the offshore environmental factors that will be considered in the Environmental Impact Assessment (EIA) for East Anglia THREE. East Anglia THREE sits along with East Anglia FOUR in a large area of the Southern North Sea known as the East Anglia Zone as indicated in *Figure 1*.
2. The environmental factors listed below will be assessed in accordance with Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (the EIA Regulations). The results of this EIA will be published in an Environmental Statement (ES) which will accompany the application for consent for East Anglia THREE.
3. The topics below have been identified through a Scoping Report, submitted to the Planning Inspectorate in November 2012 by East Anglia THREE Ltd. A list of factors that have been scoped out through this process (and hence will not be assessed) is listed in Section 2.4 below
4. This document should be read in conjunction with the *East Anglia THREE Summary of Environmental Considerations – Onshore*. Further information can be found in the *East Anglia THREE Scoping Report*. These documents can be found on the project website, the details of which are listed in Section 4 at the end of this document.
5. This document should also be read in conjunction with the *Scoping Opinion for East Anglia THREE Offshore Windfarm*, provided by the Planning Inspectorate in December 2012. This can be found on the Planning Inspectorate website, details of which are listed in Section 4 at the end of this document.



2 TOPICS FOR ENVIRONMENTAL IMPACT ASSESSMENT

6. The following topics will be assessed in the East Anglia THREE EIA, in accordance with the Planning Inspectorate's *Scoping Opinion for East Anglia THREE Offshore Windfarm*. A list of topics that have been removed from the assessment requirement in accordance with the *Scoping Opinion* can be found in Section 2.4

2.1 Physical environment

2.1.1 Marine geology, oceanography and physical processes

7. Typical water depths of East Anglia THREE range from 35 – 45 meters (m) during lowest possible tides. The average spring tidal cycle varies between approximately 0.1 - 2.0m.
8. The waves are comprised of swell waves generated offshore and wind-waves generated locally. Since wind-waves are determined by the weather, the wave patterns are highly irregular and show strong seasonal variation. The dominant wind direction is from the southwest, and as a result this is the direction of the majority of waves.
9. Sediments of the seabed in this area originate from three main sources: the Humber the Wash and the Greater Thames estuaries.
10. The sea bed geology and adjacent coast has been largely shaped by the last ice melt (which occurred approximately 10,000 years ago) and associated rapid increases in sea level. Geology in East Anglia THREE is mostly sedimentary rocks formed from clay deposits covered in a thin layer of sand. Along the export cable corridor the geology becomes a Mudstone (compressed fine grained clays and muds).
11. Potential impacts which will be considered for the offshore physical environment include:
- effects to hydrodynamic regime (waves and tidal currents);
 - effects on sediments and sedimentary structures;
 - effects on suspended sediment concentrations and transport;
 - interactions with other wind farms; and
 - interactions with other activities.

2.1.2 Water and sediment quality

12. Marine water and sediment quality will be considered within the EIA as if reduced could negatively impact fish or seabed organisms and by extension, commercial fisheries.

13. Suspended sediment and contaminant levels (e.g. hydrocarbons and heavy metals) are indicators of water quality both in the near-shore and offshore environments. Disturbing sea bed sediments so that they are released into the water will make the water cloudier and may also release contaminants held within those sediments, which can potentially reduce water quality.
14. The sediments across the East Anglia THREE site are coarse and are not considered likely to contain contaminants. The East Anglia THREE site does not overlap any disposal sites and the oil and gas wells within the site are plugged and abandoned. However, the offshore cable corridor passes through a large closed disposal site known as the Warren Springs Environmental Research Laboratory site which was used between 1987 and 1995 to test oil dispersants. Tests have shown that the area is now clear of contamination.
15. Potential impacts which will be considered for water and sediment quality include:
 - changes in suspended sediment concentrations;
 - release of contaminated sediments;
 - spillage of contaminants;
 - interactions with other windfarms; and
 - interactions with other activities.

2.2 Biological environment

2.2.1 Seabed ecology

16. A broad scale survey of the seabed ecology of the East Anglia Zone was conducted from June 2010 to January 2011, with further surveys being undertaken on the cable corridor from August 2010 to January 2011. These studies included a combination of samples taken from the seabed using a grabbing device, fishing gear which was trawled across the seabed and underwater video imagery.
17. The analysis defined four distinct sediment types across the East Anglia Zone based upon the quantities of sand, gravel and silt within each sample. The sediments in East Anglia THREE are mainly gravelly sand. Two protected habitats potentially occur within East Anglia THREE, sandbanks and reefs formed by marine worms.
18. The habitat at the location where the cable corridor will make landfall is predominantly shingle. At the southern end of the landfall site the shingle runs into larger cobbles and rock higher up the shore.
19. Potential impacts which will be considered for the offshore seabed environment include:

- physical disturbance;
- smothering;
- disturbance and distribution of contaminated sediments;
- underwater noise and vibration;
- loss of habitat;
- colonisation of foundations;
- cumulative impacts from other windfarms; and
- cumulative impacts from other activities.

2.2.2 Fish and shellfish

20. Records of fish landed at UK and foreign ports provide a good understanding of what species occur in the region. Another key source of information is the International Bottom Trawl Survey (IBTS). This survey is carried out annually twice a year by eight countries and covers the entire North Sea and Skagerrak/Kattegat with the principle objectives of looking at patterns in fish populations.
21. The landings data show that the most common species landed from the East Anglia Zone are (in order): plaice, sprat, cod and sole, with flounder, horse mackerel, dab, and herring also often landed.
22. Shellfish landings within the East Anglia Zone are very low, with the majority consisting of edible crab.
23. Potential impacts which will be considered for fish and shellfish ecology include:
 - physical disturbance;
 - increased suspended sediment and smothering;
 - disturbance and distribution of contaminated sediments;
 - underwater noise and vibration disturbance;
 - loss of habitat;
 - fish aggregations;
 - electromagnetic Fields (EMF);
 - cumulative impacts with windfarms; and
 - cumulative impacts with other activities.

2.2.3 Marine mammals

24. All whales and dolphins within UK waters are protected by international laws. Surveys for marine mammals (whales, dolphins and seals) were conducted across the East Anglia Zone in conjunction with the bird surveys by observers placed on boats (boat based) and in planes (aerial).

25. These include 17 months of aerial surveys for the Zone and 12 months of boat-based surveys by trained Marine Mammal Observers (MMOs) at the East Anglia ONE site which is located within the East Anglia Zone.
26. Low numbers of whales and dolphins were recorded across the East Anglia Zone, with only 108 individuals identified from the 17 months of data. The majority of these were positively identified as harbour porpoise, which accounted for 38% of sightings.
27. Two species of seal (grey and harbour) may potentially use the East Anglia THREE site and cable corridor. No seals have been identified in the aerial surveys however seals have been seen during the boat based surveys conducted in the East Anglia ONE site.
28. Potential impacts which will be considered for marine mammals include:
 - underwater noise;
 - impacts upon prey species;
 - vessel interactions;
 - barrier effects;
 - cumulative impacts with windfarms; and
 - cumulative with other activities.
29. In order to help assess these impacts a further 24 months of aerial data is being collected across the East Anglia THREE site.



Grey seal

2.2.4 Birds

30. 17 months of aerial data have been collected across the East Anglia Zone and 12 months on boat based data have been collected in EA ONE another windfarm site within the East Anglia Zone.
31. The key findings of the surveys were that there are generally low numbers of most species of bird across the Zone (and in particular East Anglia THREE).
32. Potential impacts which will be considered for birds include:
 - disturbance;
 - impacts upon prey species;
 - collision risk (with wind turbines);
 - barrier effects;
 - cumulative impacts with windfarms; and
 - cumulative with other activities.
33. In order to help assess these impacts a further 24 months of aerial data are being collected across the East Anglia THREE site.



Fulmar

2.3 Human Environment

2.3.1 Commercial fisheries

34. The majority of fishing that occurs within the East Anglia THREE site is conducted by Dutch registered fishing vessels with a few Belgian and UK registered vessels. These vessels are mainly beam trawlers aiming to catch sole and plaice in autumn and winter. Cod is caught by longlines (baited hooks attached to a fishing line) in the winter and spring. The longliners also catch rays, spurdog and bass throughout the year.
35. The inshore fishery along the export cable route is dominated by longliners, gillnets and potting. Species targeted include sole, cod, plaice, skate and cockles.
36. Potential impacts which will be considered for commercial fisheries include:
 - impacts on commercially exploited species;
 - loss or restricted access to traditional fishing grounds;
 - displacement of fishing activity;
 - loss or damage to fishing gear;
 - increased collision risk;
 - increased steaming times;
 - cumulative impacts with other windfarms; and
 - cumulative impacts with other activities.

2.3.2 Shipping and navigation

37. Shipping activity in the East Anglia Zone includes the passage of merchant vessels, ferries, fishing vessels, recreational craft, military vessels, and vessels engaged on specialist operations such as aggregate dredgers.
38. Traffic within East Anglia THREE and the eastern part of the offshore cable corridor mainly consists of merchant vessels travelling between Rotterdam and north eastern UK ports such as Immingham, Hull and Teesport as well as P&O ferry routes between Hull and Rotterdam.
39. Fishing and recreational vessels can often be found in the cable corridor with areas to the western part of the cable corridor classed as RYA sailing and racing areas.
40. Potential impacts which will be considered for shipping and navigation include:
 - vessel routing;
 - increased risk of collision during construction; and
 - maritime radar interference.

2.3.3 Aviation and MOD

41. The airspace within East Anglia THREE is used both by civil and military aircraft. The nearest airport to East Anglia THREE is at Norwich, approximately 100km away. Amsterdam Schiphol Airport is approximately 120km from the eastern boundary of East Anglia THREE. There are also a number of Helicopter main routes in the vicinity of East Anglia THREE.
42. There are five Royal Air Force stations within the East Anglian region, but all are over 100km away from East Anglia THREE. The nearest air defence radar is located in Trimmingham and East Anglia THREE lies partly within a military training area – Lakenheath North Aerial Tactics Area.
43. Potential impacts which will be considered for civil and military aviation and radar include:
 - impacts on radar systems;
 - increased collision risk;
 - impacts on helicopter main routes; and
 - impacts on military training areas.

2.3.4 Marine archaeology and cultural heritage

44. Archaeological features include maritime sites (wrecks and wreckage from prehistory to the present), aviation sites and submerged prehistoric archaeological sites. Archaeological features were identified through a combination of interpretation of different seabed survey types, records held by national inventories and other sources.
45. These revealed that wrecks and anomalies are spread relatively evenly across the East Anglia Zone with the number of wrecks and anomalies within East Anglia THREE relatively low.
46. Potential impacts which will be considered for marine archaeology and cultural heritage include:
 - direct physical disturbance; and
 - indirect physical disturbance.

2.3.5 Infrastructure and other users

47. East Anglia THREE is quite distant from any operational UK offshore windfarms, with the nearest being Scroby Sands Offshore Windfarm, approximately 50km away. The closest international windfarm developments are Dutch *Ljmuiden Development Zone*

and the *Breeveertien II* Offshore Windfarms which are situated approximately 40km from East Anglia THREE.

48. Within East Anglia THREE there are two oil and gas wells which are plugged and abandoned. There are no aggregate dredging areas within East Anglia THREE windfarm or offshore cable corridor, nor does the area overlap with any aggregate disposal sites. There are currently two Ministry of Defence (MoD) identified explosives dumping grounds to the west and south west of East Anglia Zone and no Military practice and exercise areas (PEXAs) overlap with East Anglia THREE or the offshore cable corridor.
49. Potential impacts which will be considered for infrastructure and other users include:
- interference with other windfarms;
 - interference with oil and gas operation;
 - physical impacts on subsea cables and pipelines;
 - impacts on aggregate dredging activities;
 - impacts on disposal sites;
 - initiation of UXO; and
 - impacts on MoD activities

2.4 Topics removed from the assessment

50. Having considered the following topics, it was agreed that they could be scoped out of the assessment and consequently these will not be assessed within the East Anglia THREE Environmental Impact Assessment:
- Air Quality (offshore); and
 - Airborne noise (offshore)
51. Further detail on these topics, and the reasons for removing them from the assessment, can be found in the *East Anglia THREE Scoping Report*, and the *Planning Inspectorate Scoping Opinion for East Anglia THREE Offshore Windfarm*.

3 YOUR VIEWS

52. East Anglia THREE Limited are interested to hear your views on the project, and invite you to provide your opinions through the contact details listed in Section 4. Whilst the project team are keen to receive comments on all topics, some suggested questions have been provided below.
1. Are the suggested topics for assessment adequate for the purposes of East Anglia THREE?
 2. Have the most likely and significant potential effects been identified? Are there any other potential effects that should be considered for inclusion in the full assessment process?
 3. We are continuing to develop the design of East Anglia THREE, if you have any questions about what the project will look like and how it will be constructed feel free to contact us.

4 CONTACT US

53. This document provides a brief summary of the issues we will be looking at as part of our Environmental Impact Assessment for East Anglia THREE. If you wish to see more detailed information, the East Anglia THREE Scoping Report and the Planning Inspectorate Scoping Opinion for East Anglia THREE are available online at the following link:

<http://infrastructure.planningportal.gov.uk/projects/eastern/east-anglia-three-offshore-wind-farm/>

54. If you have any further questions on the Environmental Impact Assessment process and areas we will be considering please feel free to get in touch:

- Visit our project website: <http://eastangliathree.eastangliawind.com/>
- Email: eastangliathree@eastangliawind.com
- Call (general enquiries): Keith Morrison on 0141 6140400

Appendix 10 Ends Here