East Anglia ONE North Offshore Windfarm

Appendix 28.9

Met Office Vessel Data Visibility Study

Environmental Statement
Volume 3

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Description of Revisions			
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Glossary of Acronyms

SLVIA	Seascape, Landscape and Visual Impact Assessment

Glossary of Terminology

Applicant	East Anglia ONE North Limited.
Construction operation and maintenance platform	A fixed offshore structure required for construction, operation, and maintenance personnel and activities.
Development area	The area comprising the onshore development area and the offshore development area (described as the 'order limits' within the Development Consent Order).
East Anglia ONE North project	The proposed project consisting of up to 67 wind turbines, up to four offshore electrical platforms, up to one offshore 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.
National electricity grid	The high voltage electricity transmission network in England and Wales owned and maintained by National Grid Electricity Transmission
European site	Sites designated for nature conservation under the Habitats Directive and Birds Directive, as defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017 and regulation 18 of the Conservation of Offshore Marine Habitats and Species Regulations 2017. These include candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation and Special Protection Areas.
Evidence Plan Process (EPP)	A voluntary consultation process with specialist stakeholders to agree the approach to the EIA and the information required to support HRA.
Horizontal directional drilling (HDD)	A method of cable installation where the cable is drilled beneath a feature without the need for trenching.
Inter-array cables	Offshore cables which link the wind turbines to each other and the offshore electrical platforms.
Landfall	The area (from Mean Low Water Springs) where the offshore export cables would make contact with land, and connect to the onshore cables.
Landscape character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.
Landscape effects	Effects on the landscape as a resource in its own right.
Meteorological mast	An offshore structure which contains metrological instruments used for wind data acquisition
Monitoring buoys	Buoys to monitor in situ condition within the windfarm, for example wave and metocean conditions.
Marking buoys	Buoys to delineate spatial features / restrictions within the offshore development area.
Offshore cable corridor	This is the area which will contain the offshore export cables between offshore electrical platforms and landfall.

Offshore development area	The East Anglia ONE North windfarm site and offshore cable corridor (up to Mean High Water Springs).
Offshore electrical infrastructure	The transmission assets required to export generated electricity to shore. This includes inter-array cables from the wind turbines to the offshore electrical platforms, offshore electrical platforms, platform link cables and export cables from the offshore electrical platforms to the landfall.
Offshore electrical platform	A fixed structure located within the windfarm area, containing electrical equipment to aggregate the power from the wind turbines and convert it into a more suitable form for export to shore.
Offshore export cables	The cables which would bring electricity from the offshore electrical platforms to the landfall. These cables will include fibre optic cables.
Offshore infrastructure	All of the offshore infrastructure including wind turbines, platforms, and cables.
Offshore platform	A collective term for the offshore construction, operation and maintenance platform and the offshore electrical platforms.
Platform link cable	Electrical cable which links one or more offshore platforms. These cables will include fibre optic cables.
Safety zones	A marine area declared for the purposes of safety around a renewable energy installation or works / construction area under the Energy Act 2004.
Scour protection	Protective materials to avoid sediment being eroded away from the base of the foundations as a result of the flow of water.
Seascape	Landscapes with views of the coast or seas, and coasts and adjacent marine environments with cultural, historical and archaeological links with each other.
Visual amenity	The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating or travelling through an area.
Visual effects	Effects on specific views and on the general visual amenity experienced by people.

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28.9 Met Office Vessel Data Visibility Study

28.1 Introduction

1. This study supplements the Seascape, Landscape and Visual Impact Assessment (SLVIA) and was undertaken to qualitatively assess the potential duration over which the proposed East Anglia TWO and East Anglia ONE North projects would be visible from the coast. The study used visibility data obtained from vessels and transmitted to the Met Office.

28.2 Methods and Data Analysis

2. Visibility data from vessels was obtained from the Met Office for the years 1988 to 2017. The study area was delineated by the ICES rectangles 34F1; 34F2; 33F1; 33F2; 32F1; 32F2 which constitutes a total area of 30,546km^2. The overall dataset included a total of 213,837 observations from vessels transiting through the study area. Vessels report their position when they record their observations and it is understood that these positions are subsequently gridded by the met office (see ***Figures 29.9.1*** and ***29.9.2***).

3. From this dataset, observations from within 50.8km of the coast for the proposed East Anglia TWO project and from within 57km of the proposed East Anglia ONE North project (i.e. the furthest distance of the windfarm sites from shore) were extracted.

4. Next, the data was further refined to only include those observations which recorded a visibility distance that was equal to or greater than the closest distance of the East Anglia TWO (32.6km) and East Anglia ONE North (36.0km) windfarm sites from coast. This enabled an assumption to be made that all or part of the windfarm array would have been visible from the coast on the days that these observations were made. This also enabled calculation of the number and percentage of observations, compared to the overall amount, and therefore the determination of the duration over which the proposed windfarms would have potentially been visible from the coast (see ***Plate A28.1*** (East Anglia TWO) and ***Plate A28.2*** (East Anglia ONE North) and ***Table A28.1***).

5. This study should be considered in the context of a number of caveats as follows:

   - The size and number of turbines is not considered in ascertaining whether or not the they would be visible;
   - The potential visibility of the wind turbines at night is not considered (as data are all from daylight hours);

- The behaviour of the observer i.e. whether or not they are actively scanning the landscape; and
- The horizontal extent of the windfarm arrays.

6. ***Figures 29.9.1*** and ***29.9.2*** show the locations from which observations were made, together with the windfarm sites and buffers of the furthest distance of the windfarm sites to the coast for the proposed East Anglia TWO and East Anglia ONE North projects respectively.

28.3 Results

7. ***Appendix 28.8*** sets out a framework for assessing the visibility of offshore windfarms at set distances, including information on the weather conditions that are likely required in order for them to be visible. This information is not repeated in detail here however it states that the met office definitions for visibility indicate that in order for the proposed East Anglia TWO and East Anglia ONE North projects to be visible from the coast, 'very good visibility' (range 20 – 40km) or 'excellent visibility' (range over 40km) would be required.

8. ***Table A28.1*** and ***Plate A28.1*** and ***Plate A28.2*** show, by month, the percentage of the total observations within 50.8km for the proposed East Anglia TWO project and 57km for the proposed East Anglia ONE North project respectively where visibility was either:

- Greater than or equal to 32.6km for the proposed East Anglia TWO project; and
- Greater than or equal to 36.0km for the proposed East Anglia ONE North project).

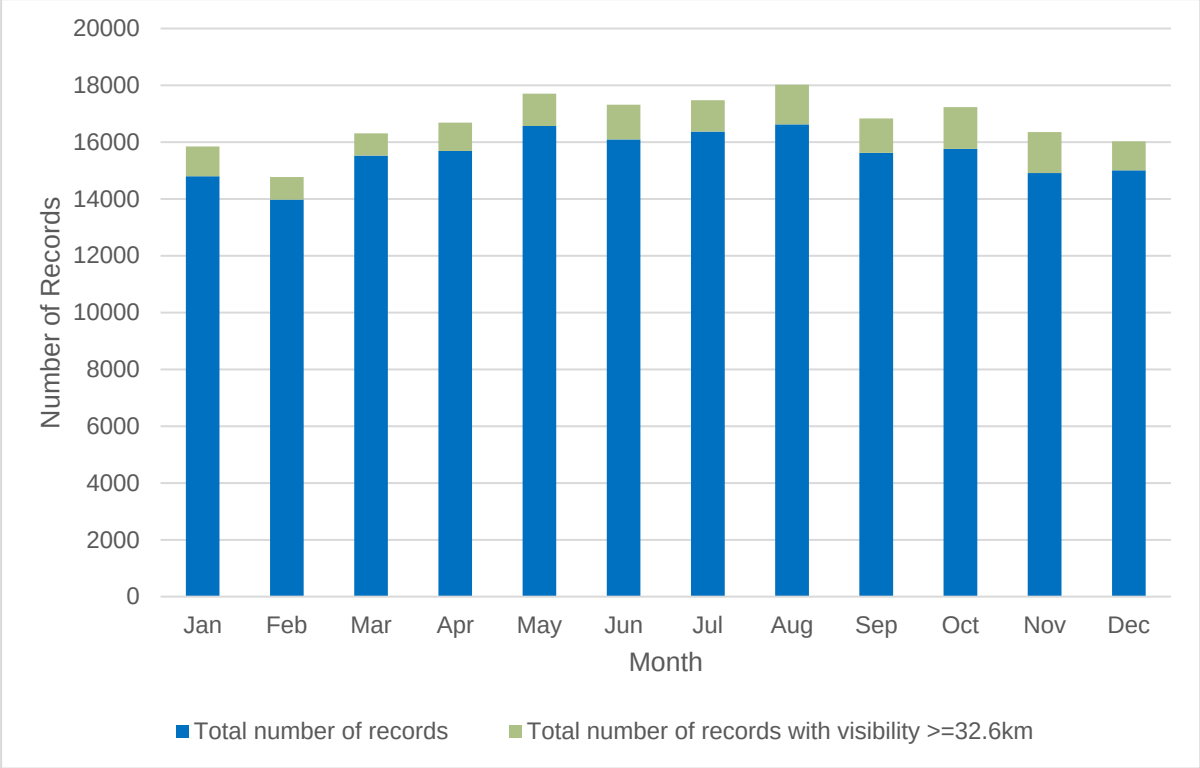

Plate A28.1 East Anglia TWO number of sightings, including those with visibility greater than 32.6km visibility (green) and those with visibility less than 32.6km (blue)

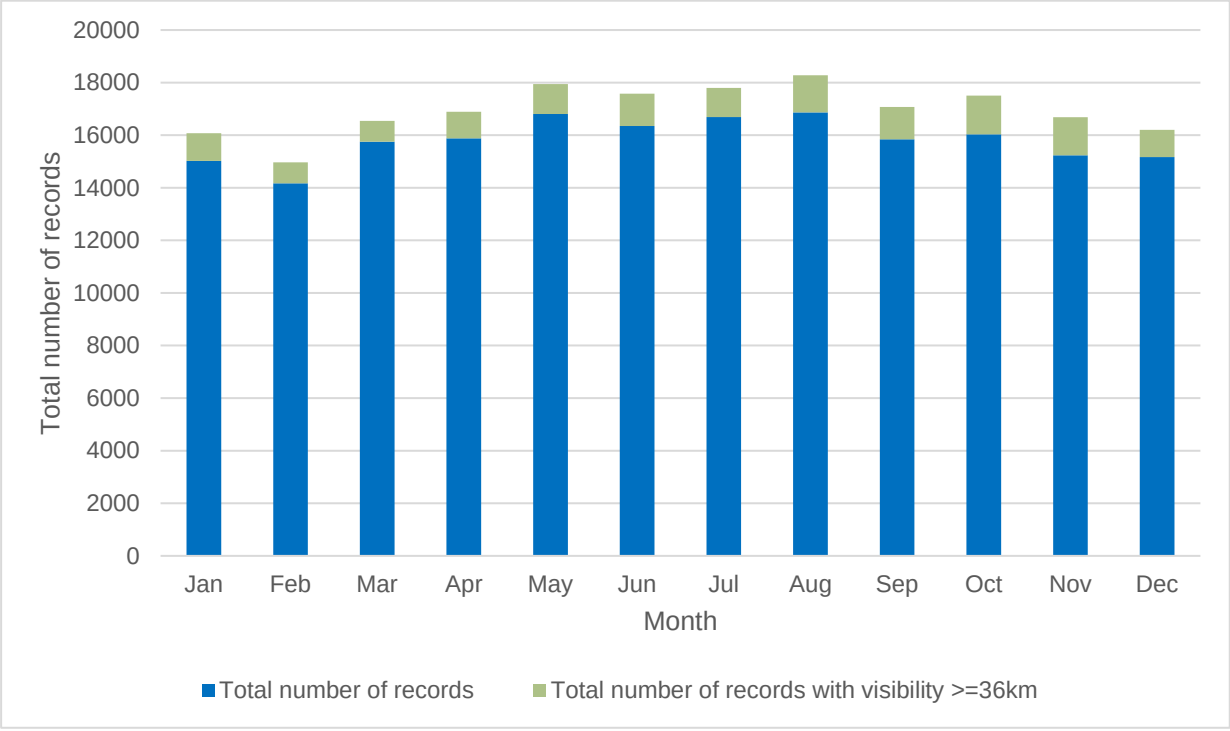

Plate A28.2 East Anglia ONE North number of sightings, including those with visibility greater than 36.0km visibility (green) and those with visibility less than 36.0km (blue)

Table A28.1 Percentage of Total Observations within the Furthest Distance of the Windfarm Sites from the Coast where Visibility was Greater than or Equal to the Closest Distance of the Windfarm Sites from the Coast

Month	Observations where visibility was ≥ the Closest Distance of the Windfarm Sites to the Coast (%)	
	East Anglia TWO (≥ 32.6km)	East Anglia ONE North (≥ 36.0km)
January	7.1	7.0
February	5.7	5.6
March	5.0	5.0
April	6.3	6.3
May	6.9	6.8
June	7.6	7.5
July	6.7	6.6
August	8.4	8.4
September	7.8	7.7
October	9.3	9.2
November	9.7	9.5
December	6.8	6.8

9. Analysis of the data obtained from the Met Office shows that the proposed East Anglia TWO and East Anglia ONE North projects would only potentially be visible from the coast for less than 10% of the year.

10. There is no distinct monthly or seasonal pattern of visibility in the data.

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Legend

- East Anglia TWO Windfarm Site
- 50.8km Buffer (Furthest Distance of East Anglia TWO Windfarm Site from Shore)
- Location from which Observations were made

Rev	Date	By	Comment		
				Prepared:	FC
1	11/06/2019	FC	First Issue.	Checked:	PM
				Approved:	PP

1:1,000,000
Scale @ A3

0 10 20 40 Km

East Anglia TWO

Met Office Visibility Point Source Data used in the Assessment

Drg No	EA2-DEV-DRG-IBR-000725
Rev	1
Date	11/06/19
Figure	28.9.1

Datum: WGS 1984
Projection: Zone 31N

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Legend

- East Anglia ONE North Windfarm Site
- 57km Buffer (Furthest Distance of East Anglia ONE North Windfarm Site from Shore)
- Location from which Observations were made

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Rev	Date	By	Comment
1	13/06/2019	FC	First Issue.

Prepared: FC
Checked: PM
Approved: PP

1:1,000,000
Scale @ A3

0 10 20 40 Km

East Anglia ONE North

Met Office Visibility Point Source Data used in the Assessment

Drg No	EA2-DEV-DRG-IBR-000729
Rev	1
Date	13/06/19
Figure	28.9.2

Datum: WGS 1984
Projection: Zone 31N

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