

Norfolk Boreas Offshore Wind Farm

Appendix 26.1

Air Quality Construction Dust Assessment

Environmental Statement

Volume 3

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Glossary of Acronyms

HDD	Horizontal Directional Drilling
HDV	Heavy Duty Vehicle
IAQM	Institute of Air Quality Management
PM ₁₀	Particulate Matter with an aerodynamic diameter of less than 10 µm
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Site of Specific Scientific Interest

Glossary of Terminology

Onshore project area	All onshore electrical infrastructure (landfall; onshore cable route, accesses, trenchless crossing technique (e.g. Horizontal Directional Drilling (HDD)) zones and mobilisation areas; onshore project substation and extension to the Necton National Grid substation and overhead line modification)
The project	Norfolk Boreas Offshore Wind Farm, including the onshore and offshore infrastructure

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1 Construction Phase Dust and Fine Particulate Matter Assessment Methodology

1. The following section outlines criteria developed by the Institute of Air Quality Management (IAQM) (IAQM, 2014) for the assessment of air quality impacts arising from construction activities associated with Norfolk Boreas Offshore Wind Farm ('the project'). The assessment procedure is divided into five steps and is summarised below.

2 Step 1: Screening the Need for a Detailed Assessment

2. An assessment will normally be required where there are human receptors within 350m of the site boundary and/or where there are human receptors within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s). Ecological receptors within 50m of the site boundary or within 50m of the route(s) used by construction vehicles on the public highway, and up to 500m from the site entrance(s), are also considered at this stage. An ecological receptor refers to any sensitive habitat (which could be affected by dust soiling). For locations with a statutory designation, such as a Site of Specific Scientific Interest (SSSI), Special Area of Conservation (SAC) or Special Protection Area (SPA), consideration should be given as to whether the particular site is sensitive to dust. Some non-statutory sites may also be considered if appropriate.
3. Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is 'negligible'.
4. There are human receptors within 350m of the boundary of the onshore project area, there are no designated ecological receptors within 50m of the onshore construction activity or within 50m of the planned construction vehicle routes, up to 500m from the project boundary. A Detailed Assessment is therefore required to consider the potential for impacts at human receptors.

3 Step 2: Assess the Risk of Dust Impacts

5. A risk category is allocated to a site based on the scale and nature of the works (Step 2A) and the sensitivity of the area to dust impacts (Step 2B). These two factors are combined in Step 2C to determine the risk of dust impacts before the implementation of mitigation measures. The assigned risk categories may be different for each of the four construction activities outlined by the IAQM (demolition, construction, earthworks and trackout).
6. The site can also be divided into zones, for example on a large site where there are differing distances to the nearest receptors.

3.1 Step 2A: Define the Potential Dust Emission Magnitude

7. The IAQM guidance recommends that the dust emission magnitude is determined for earthworks, construction and trackout. The dust emission magnitude is based on the scale of the anticipated works. Table 3.1 describes the potential dust emission class criteria for each outlined construction activity. As no demolition would be undertaken during the construction phase, impacts associated with demolition have not been considered within the assessment.

Table 3.1 Criteria used in the determination of dust emission magnitude

Activity	Criteria used to Determine Dust Emission Class		
	Small	Medium	Large
Earthworks	Total site area <2,500m ²	Total site area 2,500 – 10,000m ²	Total site area >10,000m ²
Construction	Total building volume <25,000m ³	Total building volume 25,000 – 100,000m ³	Total building volume >100,000m ³
Trackout	<10 outward HDV trips in any one day. Unpaved road length <50m	10-50 outward HDV trips in any one day. Unpaved road length 50-100m	>50 outward HDV trips in any one day. Unpaved road length >100m

8. The potential dust emission magnitude for the project was determined using the criteria detailed in Table 3.1.

3.2 Step 2B: Define the Sensitivity of the Area

9. The sensitivity of the area takes into account the following factors and is detailed in Table 3.2:
- The specific sensitivities of receptors in the area;
 - The proximity and number of receptors;
 - The local background PM₁₀ concentration; and
 - Site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of windblown dust.

Table 3.2 Criteria for determining sensitivity of receptors

Sensitivity of Receptor	Criteria for Determining Sensitivity (Human Receptors)	
	Dust Soiling Effects	Health Effects of PM ₁₀
High	Dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms.	Residential properties, hospitals, schools and residential care homes.
Medium	Parks, places of work.	Office and shop workers not occupationally exposed to PM ₁₀ .

Sensitivity of Receptor	Criteria for Determining Sensitivity (Human Receptors)	
	Dust Soiling Effects	Health Effects of PM ₁₀
Low	Playing fields, farmland, footpaths, short-term car parks and roads.	Public footpaths, playing fields, parks and shopping streets.

10. The criteria detailed in Table 3.3 and Table 3.4 were used to determine the sensitivity of the area to dust soiling effects and human health impacts. Figure 26.6 in Chapter 26 Air Quality details the distance bands, as detailed in Table 3.3 and Table 3.4, from the site boundary for use in the construction phase assessment.

Table 3.3 Sensitivity of the area to dust soiling effects on people and property

Receptor Sensitivity	Number of Receptors	Distance from Source (m)			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table 3.4 Sensitivity of the area to human health impacts

Receptor Sensitivity	Annual Mean PM ₁₀ Concentrations	Number of Receptors	Distance from Source (m)				
			<20	<50	<100	<200	<350
High	>32µg/m ³	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	>28-32µg/m ³	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	>24-28µg/m ³	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	>24µg/m ³	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32µg/m ³ -	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	>28-32µg/m ³	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	>24-28µg/m ³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	>24µg/m ³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

3.3 Step 2C: Define the Risk of Impacts

11. The dust emission magnitude and sensitivity of the area are determined the risk of impacts from each activity (earthworks, construction and trackout) should be determined using the criteria detailed in Table 3.5 to Table 3.7.

Table 3.5 Risk of dust impacts - Earthworks

Potential Impact	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 3.6 Risk of dust impacts - Construction

Potential Impact	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 3.7 Risk of dust impacts - Trackout

Potential Impact	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

12. The dust emission magnitude is combined with the sensitivity of the area to determine the risk of impacts with no mitigation applied.

4 Step 3: Site Specific Mitigation

13. Step three of the IAQM guidance identifies appropriate site-specific mitigation. These measures are related to whether the site is a low, medium or high risk site. Mitigation for the project is detailed in Chapter 26 Air Quality.

5 Step 4: Determine Significant Effects

14. With the implementation of mitigation measures, the residual impacts from construction are expected to be **not significant**, in accordance with IAQM guidance.

6 References

Institute of Air Quality of Management (2014). Guidance on the Assessment of Dust from Demolition and Construction.

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