

DOGGER BANK D WIND FARM

Preliminary Environmental Information Report

Volume 2

Appendix 20.2 Construction Dust and Particulate
Matter Assessment Methodology

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APPENDIX 20.2 CONSTRUCTION DUST AND PARTICULATE MATTER
ASSESSMENT METHODOLOGY

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Glossary

Term	Definition
Design	All of the decisions that shape a development throughout its design and pre-construction, construction / commissioning, operation and, where relevant, decommissioning phases.
Effect	An effect is the consequence of an impact when considered in combination with the receptor's sensitivity / value / importance, defined in terms of significance.
Enhancement	Measures committed to by the Project to create or enhance positive benefits to the environment or communities, as a result of the Project. All enhancement measures adopted by the Project are provided in the Commitments Register.
Environmental Impact Assessment (EIA)	A process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information and includes the publication of an Environmental Statement.
Impact	A change resulting from an activity associated with the Project, defined in terms of magnitude.
Mitigation	Any action or process designed to avoid, prevent, reduce or, if possible, offset potentially significant adverse effects of a development. All mitigation measures adopted by the Project are provided in the Commitments Register.
Onshore Development Area	The area in which all onshore infrastructure associated with the Project will be located, including any temporary works area required during construction and permanent land required for mitigation and enhancement areas, which extends landward of Mean Low Water Springs. There is an overlap with the Offshore Development Area in the intertidal zone.
The Applicant	SSE Renewables and Equinor acting through 'Doggerbank Offshore Wind Farm Project 4 Projco Limited'.
The Project	Dogger Bank D (DBD) Offshore Wind Farm Project, also referred to as DBD in this PEIR.
Trenching	Open cut method for cable or duct installation.

20.2 Construction Dust and Particulate Matter Assessment Methodology

20.2.1 Introduction

1. This appendix to the Dogger Bank D (DBD) Offshore Wind Farm (hereafter ‘the Project’) Preliminary Environmental Information Report (PEIR) supports **Volume 1, Chapter 20 Air Quality and Dust**. This appendix forms part of the PEIR for the onshore elements of the Project.
2. The purpose of this appendix is to detail the methodology used to assess dust and fine particulate matter emissions from the Project’s onshore construction activities on humans and ecological receptors. The following section outlines criteria developed by the Institute of Air Quality Management (IAQM) in the “*Guidance on the Assessment of Dust from Demolition and Construction, Version 2.2*” (IAQM, 2024) for the assessment of air quality effects arising from construction activities. The assessment procedure is divided into four steps and is summarised below.

20.2.2 Step 1: Screen the Need for a Detailed Assessment

3. An assessment will normally be required where there are human receptors within 250m of the site boundary and / or within 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s). Natural England’s “*Approach to Advising Competent Authorities on the Assessment of Road Traffic Emissions under the Habitats Regulations*” guidance (2018) recommends that designated ecological receptors within 200m of a site should be considered in a construction dust and particulate matter assessment, as opposed to only those ecological sites within 50m of a site (as stated in IAQM Guidance (2024)).
4. Therefore, to provide a conservative assessment, ecological receptors within 200 m of the site boundary are also identified at this stage. A designated ecological site refers to any sensitive habitat affected by dust soiling. For locations with a statutory designation, such as a Site of Special 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.
5. Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is ‘negligible’.

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6. The construction dust and fine particulate matter assessment was undertaken using a worst-case scenario whereby the maximum magnitude of works (e.g. cable trenching, temporary construction compound, jointing bay and link box construction) are undertaken in proximity to the greatest number of human and ecological receptors (this may not necessarily be in the same location). Recommended mitigation measures for the worst-case location(s) would then be applied to all onshore construction works to provide a conservative assessment.
7. There are a number of human receptors within 250 m and ecological receptors within 200 m of the Project's Onshore Development Area and trackout routes. Therefore, a detailed assessment of construction dust and fine particulate matter emissions was required to consider the potential for impacts at both human and ecological receptors.

20.2.3 Step 2: Assess the Risk of Dust Impacts

8. A site is allocated to a risk category 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 (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 construction activities outlined by the IAQM (i.e. demolition, construction, earthworks and trackout).

20.2.4 Step 2A: Define the Potential Dust Emission Magnitude

9. The IAQM guidance (2024) recommends that the dust emission magnitude is determined for demolition, earthworks, construction and trackout. The dust emission magnitude is based on the scale of the anticipated works. **Table 20.2-1** describes the potential dust emission magnitude criteria for each outlined construction activity., which was used to determine the potential dust emission magnitude for the Project's onshore construction activities.

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Table 20.2-1 Criteria Used in the Determination of Dust Emission Magnitude

Activity	Criteria Used to Determine Dust Emission Magnitude		
	Small	Medium	Large
Demolition	<p>Total building volume <12,000m³.</p> <p>Material with low potential for dust release.</p> <p>Demolition activities <6m above ground level.</p>	<p>Total building volume 12,000 – 75,000m³.</p> <p>Potentially dusty material.</p> <p>Height of building between 6–12m above ground level.</p>	<p>Total building volume >75,000m³.</p> <p>Potentially dusty material.</p> <p>Demolition activities >12m above ground level.</p>
Earthworks	<p>Total site area <18,000m².</p> <p><5 heavy moving earth vehicles active at any one time.</p> <p>Formation of bunds <3m in height.</p>	<p>Total site area 18,000 – 110,000m².</p> <p>5 – 10 heavy moving earth moving vehicles active at any one time.</p> <p>Formation of bunds 3 – 6m in height</p>	<p>Total site area >110,000m².</p> <p>>10 heavy earth moving vehicles active at any one time.</p> <p>Formation of bunds >6m in height.</p>
Construction	<p>Total building volume <12,000 m³.</p> <p>Construction material with low potential for dust release (e.g. metal cladding or timber).</p>	<p>Total building volume 12,000 – 75,000m³.</p> <p>Potentially dusty construction material (e.g. concrete).</p>	<p>Total building volume >75,000m³.</p> <p>On site concrete batching.</p>
Trackout	<p><20 outward Heavy Duty Vehicle (HDV) trips in any one day.</p> <p>Unpaved road length <50m.</p>	<p>20 – 50 outward HDV trips in any one day.</p> <p>Unpaved road length 50 – 100m.</p>	<p>>50 outward HDV trips in any one day.</p> <p>Unpaved road length >100m.</p>

20.2.5 Step 2B: Define the Sensitivity of the Area

10. The sensitivity of the area takes into account the following factors and is detailed in **Table 20.2-2**.

- 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 the presence of natural shelters, such as trees, to reduce the risk of wind-blown dust.

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Table 20.2-2 Criteria for Determining Sensitivity of Receptors

Sensitivity of Receptors	Criteria for Determining Sensitivity		
	Dust Soiling Effects	Health Effects of PM ₁₀	Ecological Effects
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.	Locations with an international or national designation and the designated features may be affected by dust soiling. Indicative examples include an SAC designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.
Medium	Parks, places of work.	Office and shop workers not occupationally exposed to PM ₁₀ .	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown. Indicative example is an SSSI with dust sensitive features.
Low	Playing fields, farmland, footpaths, short-term car parks and roads.	Public footpaths, playing fields, parks and shopping streets.	Locations with a local designation where the features may be affected by dust deposition. Indicative example is a Local Nature Reserve with dust sensitive features.

11. The criteria detailed in **Table 20.2-3** to **Table 20.2-5** were used to determine the sensitivity of the area to dust soiling, human health and ecological impact. **Figure 26-2** in **Volume 1, Chapter 26 Air Quality and Dust** illustrates the distance bands from the Onshore Development Area used in the assessment.

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Table 20.2-3 Sensitivity of the Area to Dust Soiling Impacts on People and Property

Receptor Sensitivity	Number of Receptors	Distance from Source (m)			
		<20	<50	<100	<250
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 20.2-4 Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM10 Concentrations	Number of Receptors	Distance from Source (m)			
			<20	<50	<100	<250
High	>32 $\mu\text{g.m}^{-3}$	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	>28 - 32 $\mu\text{g.m}^{-3}$	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low

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Receptor Sensitivity	Annual Mean PM10 Concentrations	Number of Receptors	Distance from Source (m)			
			<20	<50	<100	<250
	24 -28 $\mu\text{g.m}^{-3}$	1-10	High	Medium	Low	Low
		>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
	<24 $\mu\text{g.m}^{-3}$	1-10	Medium	Low	Low	Low
		>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
	<24 $\mu\text{g.m}^{-3}$	1-10	Low	Low	Low	Low
		>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
Medium	>32 $\mu\text{g.m}^{-3}$	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	>28-32 $\mu\text{g.m}^{-3}$	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	24-28 $\mu\text{g.m}^{-3}$	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	<24 $\mu\text{g.m}^{-3}$	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low

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Table 20.2-5 Sensitivity of the Area to Ecological Impacts.

Receptor Sensitivity	Distance from Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

20.2.6 Step 2C: Define the Risk of Impacts

- 12.** The dust emission magnitude and sensitivity of the area are combined to determine the risk of impacts from each activity (demolition, earthworks, construction and trackout) before mitigation is applied. These criteria are detailed in **Table 20.2-6** to **Table 20.2-8**.

Table 20.2-6 Risk of Dust Impacts – Demolition

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

Table 20.2-7 Risk of Dust Impacts – Earthworks and Construction

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

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Table 20.2-8 Risk of Dust Impacts – Trackout

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

20.2.7 Step 3: Determine Site-Specific Mitigation

- Step three of the IAQM guidance (IAQM, 2024) identifies appropriate site-specific mitigation based on the findings of Step two of the assessment methodology. These measures are related to whether the site is a low, medium or high risk site. The aim of these mitigation measures is to achieve a residual effect that is not significant. Mitigation measures for construction dust and fine particulate emissions for the Project are identified in **Table 20-8** of **Volume 1, Chapter 20 Air Quality and Dust**.

20.2.8 Step 4: Determine Residual Impacts

- As shown in Step two above, in assessing the significance of construction dust impacts using the IAQM guidance (2024), the dust emission magnitude is combined with the sensitivity of the area to determine the risk of impacts prior to mitigation. Step three identifies appropriate site-specific mitigation depending on the risk of impact. This topic-specific assessment methodology deviates slightly from the overarching methodology set out in **Volume 1, Chapter 6 Environmental Impact Assessment Methodology**, as the IAQM guidance (2024) does not assign a significance before applying mitigation measures.
- Once appropriate mitigation measures have been identified as required, the significance of construction phase impacts can be determined. The IAQM considers it to be most appropriate to only assign significance post-mitigation as it assumes mitigation is inherent in the design / construction approach. The IAQM guidance (2024) states that with the implementation of mitigation measures, the residual impacts with respect to construction dust and fine particulate matter emissions would be not significant.

References

Institute of Air Quality Management (2024). Guidance on the assessment of dust from demolition and construction. Version 2.2.

Natural England (2018). Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations, Version: June 2018.

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List of Acronyms

Term	Definition
DBD	Dogger Bank D Offshore Wind Farm Project
EIA	Environmental Impact Assessment
IAQM	Institute of Air Quality Management
PEIR	Preliminary Environmental Information Report
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest