



FIVE  
ESTUARIES  
OFFSHORE WIND FARM

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PRELIMINARY ENVIRONMENTAL  
INFORMATION REPORT

VOLUME 5, ANNEX 10.1: CONSTRUCTION  
DUST ASSESSMENT METHODOLOGY

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# FIVE ESTUARIES OFFSHORE WIND FARM

## Preliminary Environmental Information Report

**Appendix 10.1 of Volume 3, Chapter 10:  
Construction Dust Assessment Methodology**  
Prepared for: Five Estuaries Wind Farm Ltd

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## CONTENTS

<b>1.0</b>	<b>CONSTRUCTION DUST ASSESSMENT METHODOLOGY</b> .....	<b>1</b>
1.1	Step 1: Screening the Need for a Detailed Assessment.....	1
1.2	Step 2: Assess the Risk of Dust Impacts .....	1
1.3	Step 3: Mitigation .....	8
1.4	Step 4: Determine Significant Effects.....	8

## DOCUMENT REFERENCES

### TABLES

Table 1.1	Criteria Used for the Determination of the Dust Emission Magnitude for Each Activity .....	2
Table 1.2	Criteria for Defining Sensitivity of Receptors .....	4
Table 1.3	Sensitivity of Area to Dust Soiling Effects on People and Property.....	6
Table 1.4	Sensitivity of Area to Human Health Impacts.....	6
Table 1.5	Sensitivity of Area to Ecological Impacts .....	7
Table 1.6	Risk of Dust Impacts: Demolition.....	7
Table 1.7	Risk of Dust Impacts: Earthworks .....	7
Table 1.8	Risk of Dust Impacts: Construction.....	7
Table 1.9	Risk of Dust Impacts: Trackout .....	8

## DEFINITION OF ABBREVIATIONS AND ACRONYMS

Term	Definition
IAQM	Institute of Air Quality Management
PM	Particulate Matter
SAC	Special Area of Conservation
SSSI	Site of Special Scientific Interest

## 1.0 Construction Dust Assessment Methodology

### 1.1 Step 1: Screening the Need for a Detailed Assessment

1. A detailed construction dust assessment is required where a:
  - Human receptor (any location where a person or property may experience the adverse effects of airborne dust or dust soiling) is located within 350 m of the Site, and/or within 50 m of routes used by construction vehicles, up to 500 m from the site entrance(s); and/or
  - Ecological receptor (any sensitive habitat affected by dust soiling) is located within 50 m of the Site, and/or within 50 m of routes used by construction vehicles, up to 500 m from the site entrance(s) to dust. Some non-statutory sites may also be considered if appropriate.
2. Where the need for a more detailed assessment is screened out, effects are not believed to be significant, and no further assessment is required.

### 1.2 Step 2: Assess the Risk of Dust Impacts

#### 1.2.1 Step 2a: Define the Potential Dust Emission Magnitude

3. The dust emission magnitude is defined for the following construction activities, based on anticipated works:
  - demolition;
  - earthworks;
  - construction; and
  - trackout.
4. This is determined using criteria provided within Institute of Air Quality Management (IAQM) guidance<sup>1</sup> (Table 1.1), in combination with professional judgment by a technically competent assessor.

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<sup>1</sup> IAQM, Guidance on the assessment dust from demolition and construction, v1.1, June 2016.

**Table 1.1**  
**Criteria Used for the Determination of the Dust Emission Magnitude for Each Activity**

Activity	Dust Emission Magnitude		
	Small	Medium	Large
Demolition	<ul style="list-style-type: none"> <li>Total building volume &lt;20,000m<sup>3</sup></li> <li>Construction material with low potential for dust release (e.g. metal cladding or timber)</li> <li>Demolition activities &lt;10m above ground or demolition during wetter months</li> </ul>	<ul style="list-style-type: none"> <li>Total building volume 20,000 – 50,000m<sup>3</sup></li> <li>Potentially dusty construction material</li> <li>Demolition activities 10-20m above ground level</li> </ul>	<ul style="list-style-type: none"> <li>Total building volume &gt;50,000m<sup>3</sup></li> <li>Potentially dusty construction material (e.g. concrete)</li> <li>On-site crushing and screening demolition activities &gt;20m above ground level</li> </ul>
Earthworks	<ul style="list-style-type: none"> <li>Total site area &lt;2,500m<sup>2</sup></li> <li>&lt;5 heavy earth moving vehicles active at any one time</li> </ul>	<ul style="list-style-type: none"> <li>Total site area 2,500 to 10,000m<sup>2</sup></li> <li>5-10 heavy earth moving vehicles active at any one time</li> </ul>	<ul style="list-style-type: none"> <li>Total site area &gt;10,000m<sup>2</sup></li> <li>&gt;10 heavy earth moving vehicles active at any one time</li> </ul>
Construction	<ul style="list-style-type: none"> <li>Total building volume &lt;25,000m<sup>3</sup></li> <li>Construction material with low potential for dust release (e.g. metal cladding or timber)</li> </ul>	<ul style="list-style-type: none"> <li>Total building volume 25,000 to 100,000m<sup>3</sup></li> <li>Potentially dusty construction material (e.g. concrete)</li> <li>On site concrete batching</li> </ul>	<ul style="list-style-type: none"> <li>Total building volume &gt;100,000m<sup>3</sup></li> <li>On site concrete batching; sandblasting</li> </ul>
Trackout	<ul style="list-style-type: none"> <li>&lt;10 outward heavy-duty vehicles (HDV) trips in any one day</li> <li>Unpaved road length &lt;50m</li> </ul>	<ul style="list-style-type: none"> <li>10-50 outward HDV trips in any one day</li> <li>Unpaved road length 50-100m</li> </ul>	<ul style="list-style-type: none"> <li>&gt;50 outward HDV trips in any one day</li> <li>Unpaved road length &gt;100m</li> </ul>



### 1.2.2 Step 2b: Define the Sensitivity of the Area

5. The sensitivity of the area is defined in relation to each assessed impact. This is informed by several parameters such as the proximity and number of receptors in relation to construction activities, as well as their individual sensitivity.
6. Receptors can demonstrate different sensitivities to changes in their environment, dependant on location, use and perceived value. The sensitivities for individual receptors are determined using the approach outlined in Table 1.2. Sensitivities are provided for each assessed impact.
7. Once the sensitivity of each individual receptor has been established, this is used to determine the sensitivity of the surrounding area.
8. Table 1.3 to Table 1.5 illustrates how the sensitivity of the area may be determined for dust soiling, human health and ecosystem impacts, respectively. The highest level of sensitivity from each table should be recorded.
9. The quoted distances relate to the nearest dust emission source(s). In the context of construction, demolition and earthworks these activities will occur on-site. Where these activities are not known, receptor distances are determined from the site boundary.
10. Given that trackout relates to the resuspension of dust from HDV on the public road network, these distances relate to proximity to likely routes constructions traffic will use. The extent of those links affected by trackout relates is determined by the calculated trackout dust emission magnitude as per Section 1.2. Without site-specific mitigation, trackout may occur along the public highway up to 500 m from large sites, 200 m from medium sites and 50 m from small sites, as measured from the site exit(s).

**Table 1.2**  
**Criteria for Defining Sensitivity of Receptors**

Sensitivity of Area	Human Receptors		Ecological Receptors <sup>(A)</sup>
	Dust Soiling Effects	Health Effects of Particulate Matter (PM <sub>10</sub> )	
High	<ul style="list-style-type: none"> <li>• Users can reasonably expect an enjoyment of a high level of amenity;</li> <li>• The appearance, aesthetics or value of their property would be diminished by soiling;</li> <li>• The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land; and</li> <li>• Indicative examples include dwellings, museums and other culturally important collections-, medium- and long-term car parks and car showrooms.</li> </ul>	<ul style="list-style-type: none"> <li>• Locations where members of the public are exposed over a time period relevant to the air quality objective for PM<sub>10</sub> (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day); and</li> <li>• Indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.</li> </ul>	<ul style="list-style-type: none"> <li>• Locations with an international or national designation and the designated features may be affected by dust soiling;</li> <li>• Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain; and</li> <li>• Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.</li> </ul>
Medium	<ul style="list-style-type: none"> <li>• Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home;</li> <li>• The appearance, aesthetics or value of their property could be diminished by soiling;</li> <li>• The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land; or</li> </ul>	<ul style="list-style-type: none"> <li>• Locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM<sub>10</sub> (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day); and</li> <li>• Indicative examples include office and shop workers but will generally not include workers occupationally exposed to PM<sub>10</sub>, as protection is covered by Health and Safety at Work legislation.</li> </ul>	<ul style="list-style-type: none"> <li>• Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown;</li> <li>• Locations with a national designation where the features may be affected by dust deposition; or</li> <li>• Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.</li> </ul>

Sensitivity of Area	Human Receptors		Ecological Receptors <sup>(A)</sup>
	Dust Soiling Effects	Health Effects of Particulate Matter (PM <sub>10</sub> )	
	<ul style="list-style-type: none"> <li>Indicative examples include parks and places of work.</li> </ul>		
Low	<ul style="list-style-type: none"> <li>The enjoyment of amenity would not reasonably be expected;</li> <li>Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling;</li> <li>There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land; or</li> <li>Indicative examples include playing fields, farmland (unless commercially sensitive horticultural), footpaths, short term car parks and roads.</li> </ul>	<ul style="list-style-type: none"> <li>Locations where human exposure is transient; and</li> <li>Indicative examples include public footpaths, playing fields, parks and shopping streets.</li> </ul>	<ul style="list-style-type: none"> <li>Locations with a local designation where the features may be affected by dust deposition; and</li> <li>Indicative example is a local Nature Reserve with dust sensitive features.</li> </ul>
<p>Notes:</p> <p><sup>(A)</sup> Only applicable if ecological habitats are present which may be sensitive to dust effects.</p>			

**Table 1.3**  
**Sensitivity of 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	Medium	Medium	Low	Low
	1 – 10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	<1	Low	Low	Low	Low

**Table 1.4**  
**Sensitivity of Area to Human Health Impacts**

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

**Table 1.5**  
**Sensitivity of Area to Ecological Impacts**

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

### 1.2.3 Define the Risk of Impacts

11. The risk of dust effects arising is based upon the relationship between the dust emission magnitude and the sensitivity of the area.
12. Table 1.6 to Table 1.9 illustrates how the dust emission magnitude should be combined with the sensitivity of the area to determine the risk of impacts with no mitigation measures applied.

**Table 1.6**  
**Risk of Dust Impacts: Demolition**

Sensitivity of Area	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 1.7**  
**Risk of Dust Impacts: Earthworks**

Sensitivity of Area	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

**Table 1.8**  
**Risk of Dust Impacts: Construction**

Sensitivity of Area	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

**Table 1.9**  
**Risk of Dust Impacts: Trackout**

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

### 1.3 Step 3: Mitigation

13. Mitigation, as provided within the IAQM guidance is then recommended based upon the calculated risks i.e. low, medium or high-risk.

### 1.4 Step 4: Determine Significant Effects

14. Following the effective application of the recommended mitigation measures, residual effects from construction dust are considered to be not significant, in accordance with the IAQM guidance.
15. As per IAQM guidance, significance is only assigned to the effect after considering the construction activity with mitigation. This is because for almost all construction activities, the aim is to prevent significant effects on receptors through the use of effective mitigation. The IAQM guidance therefore recommends that the significance of the unmitigated effect is not defined, as is not considered appropriate nor relevant in this context.

## EUROPEAN OFFICES

### United Kingdom

#### AYLESBURY

T: +44 (0)1844 337380

#### BELFAST

belfast@slrconsulting.com

#### BRADFORD-ON-AVON

T: +44 (0)1225 309400

#### BRISTOL

T: +44 (0)117 906 4280

#### CARDIFF

T: +44 (0)29 2049 1010

#### CHELMSFORD

T: +44 (0)1245 392170

#### EDINBURGH

T: +44 (0)131 335 6830

#### EXETER

T: + 44 (0)1392 490152

#### GLASGOW

glasgow@slrconsulting.com

#### GUILDFORD

T: +44 (0)1483 889800

#### LONDON

T: +44 (0)203 805 6418

#### MAIDSTONE

T: +44 (0)1622 609242

#### MANCHESTER

T: +44 (0)161 872 7564

#### NEWCASTLE UPON TYNE

T: +44 (0)191 261 1966

#### NOTTINGHAM

T: +44 (0)115 964 7280

#### SHEFFIELD

T: +44 (0)114 245 5153

#### SHREWSBURY

T: +44 (0)1743 23 9250

#### STIRLING

T: +44 (0)1786 239900

#### WORCESTER

T: +44 (0)1905 751310

### Ireland

#### DUBLIN

T: + 353 (0)1 296 4667

### France

#### GRENOBLE

T: +33 (0)6 23 37 14 14



F I V   
ESTUARIES  
OFFSHORE WIND FARM

PHONE  
EMAIL  
WEBSITE  
ADDRESS

COMPANY NO

0333 880 5306

[fiveestuaries@rwe.com](mailto:fiveestuaries@rwe.com)

[www.fiveestuaries.co.uk](http://www.fiveestuaries.co.uk)

Five Estuaries Offshore Wind Farm Ltd  
Windmill Hill Business Park  
Whitehill Way, Swindon, SN5 6PB  
Registered in England and Wales  
company number 12292474

