



FIVE
ESTUARIES
OFFSHORE WIND FARM

FIVE ESTUARIES
OFFSHORE WIND FARM
VOLUME 6, PART 6, ANNEX 10.1:
CONSTRUCTION DUST ASSESSMENT
METHODOLOGY

Application Reference	EN010115
Application Document Number	6.6.10.1
Revision	A
APFP Regulation	5(2)(a)
Date	March 2024



Project	Five Estuaries Offshore Wind Farm
Sub-Project or Package	Environmental Statement
Document Title	Volume 6, Part 6, Annex 10.1: Construction Dust Assessment Methodology
Application Document Number	6.6.10.1
Revision	A
APFP Regulation:	5(2)(a)
Document Reference	005024284-01

COPYRIGHT © Five Estuaries Offshore Wind Farm Ltd

All pre-existing rights reserved.

This document is supplied on and subject to the terms and conditions of the Contractual Agreement relating to this work, under which this document has been supplied, in particular:

LIABILITY

In preparation of this document Five Estuaries Offshore Wind Farm Ltd has made reasonable efforts to ensure that the content is accurate, up to date and complete for the purpose for which it was contracted. Five Estuaries Offshore Wind Farm Ltd makes no warranty as to the accuracy or completeness of material supplied by the client or their agent.

Other than any liability on Five Estuaries Offshore Wind Farm Ltd detailed in the contracts between the parties for this work Five Estuaries Offshore Wind Farm Ltd shall have no liability for any loss, damage, injury, claim, expense, cost or other consequence arising as a result of use or reliance upon any information contained in or omitted from this document.

Any persons intending to use this document should satisfy themselves as to its applicability for their intended purpose.

The user of this document has the obligation to employ safe working practices for any activities referred to and to adopt specific practices appropriate to local conditions.

Revision	Date	Status/Reason for Issue	Originator	Checked	Approved
A	Mar-24	ES	SLR	GoBe	VE OWFL



Annex 10.1 of Volume 6, Chapter 10: Construction Dust Assessment Methodology Environmental Statement

Five Estuaries Offshore Wind Farm

Five Estuaries Wind Farm Ltd

Prepared by:

SLR Consulting Limited

Floor 3, 86 Princess Street, Manchester, M1 6NG

SLR Project No.: 404.V05356.00010

2 February 2024

Revision: 1.0

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
1.0	2 February 2024	Jamie Munro	Ben Turner	Jo Freyther

Basis of Report

This document has been prepared by SLR Consulting Ltd (SLR) with reasonable skill, care and diligence, and taking account of the timescales and resources devoted to it by agreement with Five Estuaries Wind Farm Ltd (the Client) as part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

SLR shall not be liable for the use of or reliance on any information, advice, recommendations and opinions in this document for any purpose by any person other than the Client. Reliance may be granted to a third party only in the event that SLR and the third party have executed a reliance agreement or collateral warranty.

Information reported herein may be based on the interpretation of public domain data collected by SLR, and/ or information supplied by the Client and/ or its other advisors and associates. These data have been accepted in good faith as being accurate and valid.

The copyright and intellectual property in all drawings, reports, specifications, bills of quantities, calculations and other information set out in this report remain vested in SLR unless the terms of appointment state otherwise.

This document may contain information of a specialised and/ or highly technical nature and the Client is advised to seek clarification on any elements which may be unclear to it.

Information, advice, recommendations and opinions in this document should only be relied upon in the context of the whole document and any documents referenced explicitly herein and should then only be used within the context of the appointment.



Table of Contents

1.0 Construction Dust Assessment Methodology	1
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

Tables in Text

Table A: Criteria Used for the Determination of the Dust Emission Magnitude for Each Activity	2
Table B: Criteria for Defining Sensitivity of Receptors	4
Table C: Sensitivity of Area to Dust Soiling Effects on People and Property	6
Table D: Sensitivity of Area to Human Health Impacts	6
Table E: Sensitivity of Area to Ecological Impacts	7
Table F: Risk of Dust Impacts: Demolition	7
Table G: Risk of Dust Impacts: Earthworks	7
Table H: Risk of Dust Impacts: Construction	7
Table I: Risk of Dust Impacts: Trackout	7



Acronyms and Abbreviations

Term	Definition
IAQM	Institute of Air Quality Management
HDV	Heavy Duty Vehicle
PM ₁₀	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

In accordance with Institute of Air Quality Management (IAQM) construction guidance (IAQM, 2023), a detailed construction dust assessment is required where a:

- Human receptor is located within 250 m of the Site, and/ or within 50 m of routes used by construction vehicles, up to 250 m from the Site entrance(s); and/ or
- Ecological receptor is located within 50 m of the Site, and/ or within 50 m of routes used by construction vehicles, up to 250 m from the Site entrance(s).

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

The dust emission magnitude is defined for the following construction activities, based on anticipated works:

- Demolition;
- Earthworks;
- Construction; and
- Trackout.

This is determined using criteria provided within the IAQM construction guidance (IAQM, 2023) (Table A), in combination with professional judgment by a technically competent assessor.



Table A: 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"> Total building volume <12,000 m³ construction Material with low potential for dust release (e.g. metal cladding or timber) Demolition activities <6 m above ground, demolition during wetter months 	<ul style="list-style-type: none"> Total building volume 12,000 – 75,000 m³ Potentially dusty construction material Demolition activities 6-12 m above ground level 	<ul style="list-style-type: none"> Total building volume >75,000 m³ Potentially dusty construction material (e.g. concrete) On-site crushing and screening demolition activities >12 m above ground level
Earthworks	<ul style="list-style-type: none"> Total site area <18,000 m² <5 heavy earth moving vehicles active at any one time 	<ul style="list-style-type: none"> Total site area 18,000 to 110,000 m² 5-10 heavy earth moving vehicles active at any one time 	<ul style="list-style-type: none"> Total site area >110,000 m² >10 heavy earth moving vehicles active at any one time
Construction	<ul style="list-style-type: none"> Total building volume <12,000 m³ Construction material with low potential for dust release (e.g. metal cladding or timber) 	<ul style="list-style-type: none"> Total building volume 12,000 to 75,000m³ Potentially dusty construction material (e.g. concrete) On site concrete batching 	<ul style="list-style-type: none"> Total building volume >75,000 m³ On site concrete batching; sandblasting
Trackout	<ul style="list-style-type: none"> <20 outward heavy-duty vehicles (HDV) trips in any one day Unpaved road length <50 m 	<ul style="list-style-type: none"> 20-50 outward HDV trips in any one day Unpaved road length 50-100 m 	<ul style="list-style-type: none"> >50 outward HDV trips in any one day Unpaved road length >100 m



1.2.2 Step 2b: Define the Sensitivity of the Area

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.

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 B. Sensitivities are provided for each assessed impact.

Once the sensitivity of each individual receptor has been established, this is used to determine the sensitivity of the surrounding area.

Table B to Table D 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.

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.

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 B: Criteria for Defining Sensitivity of Receptors

Sensitivity of Area	Human Receptors		Ecological Receptors ^(A)
	Dust Soiling Effects	Health Effects of Particulate Matter (PM ₁₀)	
High	<ul style="list-style-type: none"> Users can reasonably expect an enjoyment of a high level of amenity; The appearance, aesthetics or value of their property would be diminished by soiling; 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 Indicative examples include dwellings, museums and other culturally important collections-, medium- and long-term car parks and car showrooms. 	<ul style="list-style-type: none"> Locations where members of the public are exposed over a time period relevant to the air quality objective for PM₁₀ (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 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. 	<ul style="list-style-type: none"> Locations with an international or national designation and the designated features may be affected by dust soiling; 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 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.
Medium	<ul style="list-style-type: none"> 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; The appearance, aesthetics or value of their property could be diminished by soiling; 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 Indicative examples include parks and places of work. 	<ul style="list-style-type: none"> Locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM₁₀ (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 Indicative examples include office and shop workers but will generally not include workers occupationally exposed to PM₁₀, as protection is covered by Health and Safety at Work legislation. 	<ul style="list-style-type: none"> Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; Locations with a national designation where the features may be affected by dust deposition; or Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.



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



Table C: 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	Low	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 D: Sensitivity of Area to Human Health Impacts

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



Table E: 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

The risk of dust effects arising is based upon the relationship between the dust emission magnitude and the sensitivity of the area.

Table F to Table I 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 F: 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 G: 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 H: 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 I: Risk of Dust Impacts: Trackout

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



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

1.3 Step 3: Mitigation

Mitigation, as provided within the IAQM construction guidance (IAQM, 2023) is then recommended based upon the calculated risks i.e. low, medium or high-risk.

1.4 Step 4: Determine Significant Effects

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 construction guidance (IAQM, 2023).

As per IAQM construction 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 construction guidance therefore recommends that the significance of the unmitigated effect is not defined, as is not considered appropriate nor relevant in this context.



References

IAQM (2023), Guidance on the Assessment of Dust from Demolition and Construction.

