

Ballyfeeny Green Energy Project



Environmental Impact Assessment Report Volume III

Appendix 9.2 - Construction Dust Assessment Methodology

September 2025

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RECEIVED: 15/09/2025

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1. Introduction

This appendix includes the construction dust assessment methodology used in the assessment.

Activities are distinguished from demolition; earthworks; construction; and track out, in order to assess the risk of dust effects. The classifications included in this section are derived from the IAQM construction dust guidance (IAQM, 2014).

1.1 Step 1 Screen the need for a detailed assessment

The initial step involves screening out the need for a construction dust assessment. An assessment is typically required where there is:

- a 'human receptor' within:
 - 250m of the boundary of the site; and/or
 - 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s)
- An 'ecological receptor' within:
 - 50m of the boundary of the site; and/or
 - 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s)

1.2 Step 2A: Assess the Risk of Dust Effects

1.2.1 Demolition

Examples of the potential dust emission classes are stipulated in the guidance as follows:

- **Large:** 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;
- **Medium:** Total building volume 12,000 m³ – 75,000 m³ , potentially dusty construction material, demolition activities 6-12 m above ground level; and
- **Small:** Total building volume <12,000m³ , construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6m above ground, demolition during wetter months.

1.2.2 Earthworks

Earthworks will predominantly involve excavating material, haulage, tipping and stockpiling. This may also involve levelling the site and landscaping. Example definitions for earthworks are:

- **Large:** Total site area >110,000 m² , potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >6 m in height;
- **Medium:** Total site area 18,000 m² – 110,000 m² , moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 3m - 6m in height; and
- **Small:** Total site area <18,000m², soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <3m in height.

1.2.3 Construction

Dust emission magnitude category varies for each development site in regards to building type, duration and scale. Example definition for construction are as follows:

- **Large:** Total building volume >75,000 m³ , on site concrete batching, sandblasting;
- **Medium:** Total building volume 12,000 m³ – 75,000 m³ , potentially dusty construction material (e.g. concrete), on site concrete batching; and
- **Small:** Total building volume <12,000m³, construction material with low potential for dust release (e.g. metal cladding or timber).

1.2.4 Trackout

Factors which determine the dust emission magnitude include vehicle size, vehicle speed, vehicle numbers, geology and duration. Example definitions for trackout are as follows:

- **Large:** >50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100m;
- **Medium:** 20-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50m – 100m; and
- **Small:** <20 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50m.

1.3 Step 2B: Defining the Sensitivity of the Area

The sensitivity of the area takes account of a number of factors:

- The specific sensitivities of the receptors in the area;
- The proximity and number of those receptors
- In the case of PM₁₀, the local background concentration; and
- Site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

Table 1.1 defines the sensitivity of various receptors in regard to dust soiling effects, health effects of PM₁₀ and ecological effects.

Table 1.1: Sensitivity of the area surrounding the Site

Sensitivity of Area	Dust Soiling	Human Receptors	Ecological Receptors
High	• Users can reasonably expect enjoyment of a high level of amenity; or • The appearance, aesthetics or value of their property would be diminished by soiling; and • 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. • Indicative examples include dwellings, museums and other culturally important collections, medium and long term car parks and car showrooms	• 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 maybe exposed for eight hours or more in a day) • 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.	• Locations with an international or national designation and the designated features may be affected by dust soiling; or • 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 • 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	• 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; or • The appearance, aesthetics or value of their property could be diminished by soiling; or • The people or property wouldn't reasonably be expected to be present here	• Locations where the people exposed are workersb, 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). • Indicative examples include office and shop	• Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or • Locations with a national designation where the features may be affected by dust deposition. • Indicative example is a Site of Special Scientific

	continuously or regularly for extended periods as part of the normal pattern of use of the land. • Indicative examples include parks and places of work.	workers, but will generally not include workers occupationally exposed to PM10, as protection is covered by Health and Safety at Work legislation	Interest (SSSI) with dust sensitive features
Low	• The enjoyment of amenity would not reasonably be expected ; or • Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or • 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. • Indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.	• Locations where human exposure is transient • Indicative examples include 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

Table 1-2: Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the 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 1-3 Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM ₁₀ concentration	Number of receptors	Distance form Source			
			<20	<50	<100	<250
High	>32 µg/m ³	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32 µg/m ³	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28 µg/m ³	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	24 µg/m ³	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	>32 µg/m ³	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low

Medium	28-32 µg/m ³	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	24-28 µg/m ³	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	24 µg/m ³	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low

Table 1-4 Sensitivity of the Area to Ecological Impacts

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

Table 1-5 Example of Outcome of Defining the Sensitivity of the Area

Potential Impact	Sensitivity of surrounding area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	Medium
Human Health	High	High	High	High
Ecological	Medium	Medium	Low	Low

1.4 Step 2C: Define the Risk of effects

The dust emission magnitude determined at Step 2A should be combined with the sensitivity of the area determined at Step 2B to determine the risk of effects prior to the implementation of mitigation. The following tables provide a method of assigning the level of risk for each activity.

Table 1-6 Risk of Dust Effects – Demolition

Sensitivity of Area	Dust Emissions 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 Effects - Earthworks

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

Table 1-8 Risk of Dust Effects - Construction

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

Table 1-9 Risk of Dust Effects – Trackout

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