



EIA VOLUME 2
Chapter 6 Technical Appendices 6.1



Appendix 6.1

Construction Dust Assessment Methodology, Kilfinnan Road

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Acronyms and Abbreviations

HDV	Heavy Duty Vehicles
IAQM	Institute of Air Quality Management
PM10	Particulate Matter ($\leq 10 \mu\text{G}$)
SAC	Special Area of Conservation
HDV	Heavy Duty Vehicles

Glossary

TERM	DEFINITION
Construction	Any activity involved with the provision of a new structure (or structures), its modification or refurbishment. A structure will include a residential dwelling, office building, retail outlet, road, etc..
Demolition	Any activity involved with the removal of an existing structure (or structures). This may also be referred to as de-construction, specifically when a building is to be removed a small part at a time.
Earthworks	Covers the processes of soil-stripping, ground-levelling, excavation and landscaping.
Trackout	The transport of dust and dirt from the construction/demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy duty vehicles leave the construction/demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site.
Special Area of Conservation	Area of protected habitats and species as defined in the European Union's Habitat Directive (92/43/EEC).



1.0 Construction Dust Assessment Methodology

The purpose of this annex is to inform the extent of the construction dust assessment methodology applied.

1.1 Step 1: Screening the need for a detailed assessment.

A detailed construction dust assessment is required where a:

- human receptor is located within 350m of the Site, and/or within 50m of routes used by construction vehicles, up to 500m from the site entrance(s); and/or
- ecological receptor is located within 50m of the Site, and/or within 50m of routes used by construction vehicles, up to 500m from the site entrance(s).to dust. Some non-statutory sites may also be considered if appropriate.

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: 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 guidanceⁱ (Table 7. 1) in combination with professional judgment.

ⁱ IAQM (2016). Guidance on the Assessment of Dust from Demolition and Construction.



Table 7. 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"> Total building volume <20,000 m³ Construction material with low potential for dust release (e.g. metal cladding or timber) Demolition activities <10 m above ground or demolition during wetter months 	<ul style="list-style-type: none"> Total building volume 20,000 – 50,000 m³ Potentially dusty construction material Demolition activities 10-20 m above ground level 	<ul style="list-style-type: none"> Total building volume >50,000 m³ Potentially dusty construction material (e.g. concrete) On-site crushing and screening demolition activities >20 m above ground level
Earthworks	<ul style="list-style-type: none"> Total site area <2,500 m² <5 heavy earth moving vehicles active at any one time 	<ul style="list-style-type: none"> Total site area 2,500 to 10,000 m² 5-10 heavy earth moving vehicles active at any one time 	<ul style="list-style-type: none"> Total site area >10,000 m² >10 heavy earth moving vehicles active at any one time
Construction	<ul style="list-style-type: none"> Total building volume <25,000 m³ Construction material with low potential for dust release (e.g. metal cladding or timber) 	<ul style="list-style-type: none"> Total building volume 25,000 to 100,000 m³ Potentially dusty construction material (e.g. concrete) On site concrete batching 	<ul style="list-style-type: none"> Total building volume >100,000 m³ On site concrete batching; sandblasting
Trackout	<ul style="list-style-type: none"> <10 outward heavy duty vehicles (HDV) trips in any one day Unpaved road length <50 m 	<ul style="list-style-type: none"> 10-50 outward HDV trips in any one day 	<ul style="list-style-type: none"> <10 outward HDV trips in any one day Unpaved road length <50 m



1.3 Step 3: 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 7. 2. Sensitivities are provided for each assessed impact.



Table 7. 2: 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. 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). 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. 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; 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 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. 	<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); 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; or locations with a national designation where the features may be affected by dust deposition; 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; 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. 	<ul style="list-style-type: none"> locations where human exposure is transient; 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; indicative example is a local Nature Reserve with dust sensitive features.
Notes:			
(A) Only applicable if ecological habitats are present which may be sensitive to dust effects.			



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

Table 7. 3 to Table 7. 5 present the criteria for defining 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 7. 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 7. 4: Sensitivity of area to human health impacts.

Receptor Sensitivity	Annual Mean PM ₁₀ Concentration	Number of Receptors	Distance from Source (m)			
			<20	<50	<100	<350
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

Receptor Sensitivity	Annual Mean PM ₁₀ Concentration	Number of Receptors	Distance from Source (m)			
			<20	<50	<100	<350
Medium	>32 µg/m ³	>10	High	Medium	Low	Low
		1 – 10	Medium	Low	Low	Low
	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 7. 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

1.4 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 7. 6 to Table 7. 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 7. 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 7. 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

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

Table 7. 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 7. 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

1.5 Mitigation

Mitigation, as provided within the IAQM guidance (IAQM, 2016), is then recommended based upon the calculated risks i.e. low, medium or high-risk.

1.6 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 guidance (IAQM, 2016).

As per IAQM guidance (IAQM, 2016), 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 (IAQM, 2016) therefore recommends that the significance of the unmitigated effect is not defined, as is not considered appropriate nor relevant in this context.



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