

Appendix 6.1 – IAQM Construction Dust Risk Assessment Methodology

Factors defining the sensitivity of a receptor to dust impacts are presented in Table 6.1A.

Table 6.1A: Receptor Sensitivity

Pollutant	Human Health	Dust Soiling	Ecological
High	- Locations where members of the public are exposed over a time period relevant to the air quality objectives for PM₁₀. (a) - Examples include residential dwellings, hospitals, schools and residential care homes.	- Regular exposure - High level of amenity expected. - Appearance, aesthetics or value of the property would be affected by dust soiling. - Examples include residential dwellings, museums, medium and long-term car parks and car showrooms.	- Nationally or Internationally designated site with dust sensitive features. (b) - Locations with vascular species. (c)
Medium	- Locations where workers are exposed over a time period relevant to the air quality objectives for PM₁₀. (a) - Examples include office and shop workers. (d)	- Short-term exposure - Moderate level of amenity expected. - Possible diminished appearance or aesthetics of property due to dust soiling. - Examples include parks and places of work.	- Nationally designated site with dust sensitive features. (b) - Nationally designated site with a particularly important plant species where dust sensitivity is unknown.
Low	- Transient human exposure. - Examples include public footpaths, playing fields, parks and shopping streets.	- Transient exposure - Enjoyment of amenity not expected. - Appearance and aesthetics of property unaffected. - Examples include playing fields, farmland (e), footpaths, short-term car parks and roads.	- Locally designated site with dust sensitive features. (b)

- (a) In the case of the 24-hour objective, a relevant location would be one where individuals may be exposed for eight hours or more in a day.
- (b) Ecosystems that are particularly sensitive to dust deposition include lichens and acid heathland (for alkaline dust, such as concrete).
- (c) Cheffing C. M. & Farrell L. (Editors) (2005), The Vascular Plant. Red Data List for Great Britain, Joint Nature Conservation Committee.
- (d) Does not include workers' exposure to PM₁₀ as protection is covered by Health and Safety at Work legislation.
- (e) Except commercially sensitive horticulture.

The sensitivity of the area as a whole is dependent on the number of receptors within each sensitivity class and their distance from the source. Human health impacts are also dependent on the existing PM₁₀ concentrations in the area.

Table 6.1B, 6.1C and 6.1D summarise the criteria for determining the overall sensitivity of the area to dust soiling, health impacts and ecological impacts respectively.

Table 6.1B: 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	<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 6.1C: Sensitivity of the Area to Health Impacts from Dust (H = High, M = Medium, L = Low)

Receptor Sensitivity	Annual Mean PM ₁₀ Concentration (µg/m ³)	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
High	<32	>100	H	H	H	M
		10-100	H	H	M	L
		1-10	H	M	L	L
	28 - 32	>100	H	H	M	L
		10-100	H	M	L	L
		1-10	H	M	L	L
	24 - 28	>100	H	M	L	L
		10-100	H	M	L	L
		1-10	M	L	L	L
	<24	>100	M	L	L	L
		10-100	L	L	L	L

		1-10	L	L	L	L
Medium	<32	>10	H	M	L	L
		1-10	M	L	L	L
	28 - 32	>10	M	L	L	L
		1-10	L	L	L	L
	24 - 28	>10	L	L	L	L
		1-10	L	L	L	L
	<24	>10	L	L	L	L
		1-10	L	L	L	L
Low	-	>1	L	L	L	L

Table 6.1D: Sensitivity of the Area to Ecological Impacts from Dust

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

The magnitude of the dust impacts for demolition, earthworks, construction and trackout is classified as small, medium or large depending on the scale of the proposed works as detailed in Table 6.1E.

Table 6.1E: Dust Emission Magnitude

Receptor Sensitivity	Large	Medium	Small
Demolition	- Total building volume >75,000m³. - Potentially dusty material (e.g., concrete). - Onsite crushing and screening - Demolition activities >12m above ground level.	- Total building volume 12,000 - 75,000m³. - Potentially dusty material - Demolition activities 6 - 12m above ground level.	- Total building volume <12,000m³. - Construction material with low potential for dust release. - Demolition activities <6m above ground level. - Demolition during wetter months.
Earthworks	- Total site area >110,000m²	- Total site area 18,000 - 110,000m².	- Total site area <18,000m².

	- Potentially dusty soil. type (e.g., clay). - >10 heavy earth moving vehicles active at any one time. - Formation of bunds >6m in height.	- Moderately dusty soil type (e.g., silt). - 5 - 10 heavy earth moving vehicles active at any one time. - Formation of bunds 3 - 6m in height.	- 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
Construction	- Total building volume >75,000m³. - On site concrete batching. - Sandblasting.	- Total building volume 12,000 - 75,000m³. - Potentially dusty construction material (e.g., concrete). - On site concrete batching.	- Total building volume <12,000m³. - Material with low potential for dust release (e.g., metal cladding or timber).
Trackout	- >50 HDV movements in any one day (a). - Potentially dusty surface material (e.g., high clay content). - Unpaved road length >100m.	- 10 - 50 HDV movements in any one day (a). - Moderately dusty surface material (e.g., silt). - Unpaved road length 50 - 100m.	- <10 HDV movements in any one day (a). - Surface material with low potential for dust release. - Unpaved road length <50m.
(a) HDV movements refer to outward trips (leaving the site) by vehicles of over 3.5 tonnes.			

For each dust emission source, the worst-case area sensitivity is used in combination with the dust emission magnitude to determine the risk of dust impacts prior to mitigation as illustrated in Tables 6.1F and 6.1G.

Table 6.1F: Risk of Dust Impacts from Demolition

Receptor Sensitivity	Distance from the Source (m)		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible Risk

Table 6.1G: Risk of Dust Impacts from Earthworks, Construction and Trackout

Receptor Sensitivity	Distance from the Source (m)		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible Risk