

Air Quality

Construction Phase: Construction Dust Assessment Methodology

1. Introduction

- 1.1. The assessment of the air quality impacts due to the generation and dispersion of dust and PM₁₀ during the construction phase has been undertaken in accordance with the current guidance issued by the IAQM¹. The guidance describes a qualitative assessment methodology to assess the risks of dust and PM₁₀ impacts from demolition, earthworks and construction activities and from trackout, and provides guidance for assessing the significance of the effects. The assessment methodology is summarised below but for full details reference should be made to the IAQM guidance.

2. Step 1: Screening Assessment

- 2.1. In accordance with the IAQM guidance, the following screening criteria are referred to to indicate whether further detailed assessment is required:
- A human receptor within:
 - 350m of a site boundary; or
 - 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s);
 - An ecological receptor within;
 - 50m of the boundary of the site; or
 - 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).
- 2.2. Where the need for further assessment can be screened out it can be concluded that the level of risk is *negligible* and any effects would not be significant.

3. Step 2: Further Assessment

- 3.1. Where further assessment is required this is undertaken through use of the source-pathway-receptor concept. The risk of dust arising in sufficient quantities from a site to cause annoyance and / or health or ecological impacts and resulting effects is dependent on:
- the scale and nature of the works (potential **magnitude** of dust emissions);

¹ Institute of Air Quality Management (2014), *Guidance on the Assessment of Dust from Demolition and Construction*. v1.1.

- the effectiveness of the pathway (i.e. dispersion towards a receptor; proximity of receptors); and
- the sensitivity of the receptors, both human and ecological.

3.2. A site is allocated a Potential Dust Emissions Magnitude of large / medium / small for demolition, earthworks, construction and track out taking into account factors such as the size of the site, type of soils, building volume and vehicle movements. Examples are provided below:

Table C1: Examples definitions to define dust emission magnitudes for each activity

Activity	Dust Emission Magnitude		
	Large	Medium	Small
Demolition	• >50,000m³ build volume • dusty material (e.g. concrete) • on-site crushing	• between 20,000m³ and 50,000m³ build volume • potentially dusty material	• <20,000m³ build volume • low dust material • occurs in winter
Earthworks	• >10,000m³ site area • >100,000 tonnes material moved • dusty soil type (e.g. clay) • >10 active plant	• <10,000m³ site area • <100,000 tonnes material moved • possible dusty soil type (e.g. silt) • 5-10 active plant	• <2,500m³ site area • <20,000 tonnes material moved • large grain soil type (e.g. sand) • <5 active plant
Construction	• >100,000m³ build volume • onsite concrete batching	• <100,000m³ build volume • dusty construction material (e.g. concrete)	• <25,000m³ build volume • low dust construction material (e.g. metal)
Trackout	• >50 outward HDV movements • unpaved road 100m	• 10-50 outward HDV movements • unpaved road 50-100m	• <10 outward HDV movements • unpaved road <50m

3.3. The impact of generated dust will depend on the sensitivity of an area. The sensitivity of the area is determined for dust soiling, human health and ecological impacts respectively taking into account several factors, as follows:

- the specific sensitivities of receptors in the area;
- the number of those receptors;
- the distance of the receptors from the dust source;
- in the case of PM₁₀, the local background concentrations; and
- site specific factors, such as whether there are natural shelters or screening e.g. trees to reduce the risk of wind-blown dust.

3.4. Examples of receptor sensitivities are summarised in the tables below.

Table C2: Example sensitivity of receptors to dust soiling effects

Sensitivity		
High	Medium	Low
people and property		
- Users expect high level of amenity - Users present continuously - Property appearance / value would be expected to be diminished by dust soiling	- Users expect reasonable level of amenity - Users not present continuously - Property appearance / value might be expected to be diminished by dust soiling	- Users do not expect reasonable level of amenity - Users present for limited time - Property appearance / value would not be expected to be diminished by dust soiling
examples		
Dwellings, car showrooms, long-term car parks, sensitive horticultural land	Places of work, parks	Short-term car parks, playing fields, footpaths, non-sensitive farmland, roads

Table C3: Example sensitivity of receptors to PM₁₀ health effects

Sensitivity		
High	Medium	Low
Exposure of members of the public for eight hours or more in a day	Exposure of workers for eight hours or more in a day	Exposure is transient
examples		
- Members of the public - Dwellings, hospitals, schools, care homes	- Workers - Offices, shops	Playing fields, footpaths, parks, shopping streets

Note: assessment of sensitivity also takes into account local background PM₁₀ concentrations

Table C4: Example sensitivity of receptors to ecological effects

Sensitivity		
High	Medium	Low
Locations with international or national designation where the designated feature may be affected by dust soiling	Locations with national designation where the designated feature may be affected by dust soiling	Locations with local designation where the designated feature may be affected by dust soiling
Locations with communities of dust-sensitive species	Locations with important species where dust sensitivity is uncertain	

3.5. Receptors are considered up to the following distances:

Table C6: Summary of Distances to Receptors Considered

	dust soiling	human health	ecological
demolition, earthworks and construction	up to a distance of 350m from a site		up to a distance of 50m from a site
trackout	up to a distance of 50m from the edge of a road used for construction traffic and up to 500m from the site exit along that road		

- 3.6. The overall sensitivity of an area to dust soiling effects can therefore be assessed as summarised in the example table below.

Table C7: Example Summary of the Outcome of 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

- 3.7. The overall risk of impacts and effects for each activity considers the derived sensitivity of the area and the dust emission magnitude for each phase of the development, as summarised in the matrix below.

Table C6: Risk of Dust Impacts

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
Demolition			
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible
Earthworks			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Construction			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Trackout			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

- 3.8. Other factors such as local topography and prevailing wind direction are also considered.