

APPENDIX 12.1

CONSTRUCTION IMPACT ASSESSMENT APPROACH

The IAQM has issued revised guidance on the assessment of dust from demolition and construction (Ref 13.15). Within the IAQM guidance, an 'impact' is described as a change in pollutant concentrations or dust deposition and an 'effect' is described as the consequence of an impact.

During demolition and construction, the main potential effects are dust annoyance and locally elevated concentrations of PM₁₀. The suspension of particles in the air is dependent on surface characteristics, weather conditions and on-site activities. Impacts have the potential to occur when dust generating activities coincide with dry, windy conditions, and where sensitive receptors are located downwind of the dust source.

Separation distance is also an important factor. Large dust particles (greater than 30 µm), responsible for most dust annoyance, will largely deposit within 100 m of sources. Intermediate particles (10-30 µm) can travel 200-500 m. Consequently, significant dust annoyance is usually limited to within a few hundred metres of its source. Smaller particles (less than 10µm) are deposited slowly and may travel up to 1 km; however, the impact on the short-term concentrations of PM₁₀ occurs over a shorter distance. This is due to the rapid decrease in concentrations with distance from the source due to dispersion.

The IAQM guidance recommends that the risk of dust generation is combined with the sensitivity of the area surrounding the site to determine the risk of dust impacts from construction and demolition activities. Depending on the level of risk (high, medium, low or negligible) for each activity, appropriate mitigation is selected.

In accordance with the IAQM, the dust emission magnitude is defined as either large, medium or small (**Table 12.1.1**) taking into account the general activity descriptors on site and professional judgement.

The sensitivity of the study area to construction dust impacts is defined based on the examples provided within the IAQM 2014 guidance (**Table 11.4**), taking into account professional judgement.

Table 12.1.1: Criteria for Dust Emission Magnitude

Dust Emission Magnitude	Activity
Large	Demolition >50,000 m ³ building demolished, dusty material (e.g. concrete), on-site crushing/screening, demolition >20 m above ground level
	Earthworks >10,000 m ² site area, dusty soil type (e.g. clay), >10 earth moving vehicles active simultaneously, >8 m high bunds formed, >100,000 tonnes material moved
	Construction >100,000 m ³ building volume, on site concrete batching, sandblasting

Dust Emission Magnitude	Activity
	<p>Trackout</p> <p>>50 HDVs out / day, dusty soil type (e.g. clay), >100 m unpaved roads</p>
Medium	<p>Demolition</p> <p>20,000 - 50,000 m³ building demolished, dusty material (e.g. concrete) 10-20 m above ground level</p>
	<p>Earthworks</p> <p>2,500 - 10,000 m² site area, moderately dusty soil (e.g. silt), 5-10 earth moving vehicles active simultaneously, 4 m - 8 m high bunds, 20,000 -100,000 tonnes material moved</p>
	<p>Construction</p> <p>25,000 - 100,000 m³ building volume, on site concrete batching</p>
	<p>Trackout</p> <p>10 - 50 HDVs out / day, moderately dusty surface material, 50 -100 m unpaved roads</p>
Small	<p>Demolition</p> <p><20,000 m³ building demolished, non-dusty material, <10 m above ground level, work in winter</p>
	<p>Earthworks</p> <p><2,500 m² site area, non-dusty soil, <5 earth moving vehicles active simultaneously, <4 m high bunds, <20,000 tonnes material moved</p>
	<p>Construction</p> <p><25,000 m³, non-dusty material</p>
	<p>Trackout</p> <p><10 HDVs out / day, non-dusty soil, < 50 m unpaved roads</p>

Table 12.1.2: Area Sensitivity Definitions

Area Sensitivity	People and Property Receptors	Ecological Receptors
	High	>100 dwellings, hospitals, schools, care homes within 50 m 10 - 100 dwellings within 20 m Museums, car parks, car showrooms within 50 m PM ₁₀ concentrations approach or are above the daily mean objective.
Medium	>100 dwellings, hospitals, schools, care homes within 100 m 10 - 100 dwellings within 50 m < 10 dwellings within 20 m Offices/shops/parks within 20 m PM ₁₀ concentrations below the daily mean objective.	National or Internationally designated site within 50 m with dust sensitive features / species present Nationally designated site or particularly important plant species within 20 m
Low	>100 dwellings, hospitals, schools, care homes 100 - 350m away 10 - 100 dwellings within 50 - 350 m < 10 dwellings within 20 - 350 m Playing fields, parks, farmland, footpaths, short term car parks, roads, shopping streets PM ₁₀ concentrations well below the daily mean objective.	Nationally designated site or particularly important plant species 20 - 50 m Locally designated site with dust sensitive features within 50 m

Based on the dust emission magnitude and the area sensitivity, the risk of dust impacts is then determined (Table 13.1.3), taking into account professional judgement.

Table 12.1.3: Risk of Dust Impacts

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

Based on the risk of dust impacts, appropriate mitigation is selected from the IAQM guidance using professional judgement.