

6.3 Construction Phase Assessment Methodology

Construction Phase Dust Risk Assessment

- 6.1 There is the potential for fugitive dust emissions to occur as a result of construction phase activities. These have been assessed in accordance with the methodology outlined within the Institute of Air Quality Management (IAQM) document 'Guidance on the Assessment of Dust from Demolition and Construction' Error! Bookmark not defined..
- 6.2 Activities on the Site have been divided into four types to reflect their different potential impacts. These are:
- Demolition
 - Earthworks;
 - Construction; and
 - Trackout.
- 6.3 The potential for dust emissions was assessed for each activity that is likely to take place and considered three separate dust effects:
- Annoyance due to dust soiling;
 - Harm to ecological receptors; and
 - The risk of health effects due to a significant increase in exposure to PM₁₀.

Step 1

- 6.4 Step 1 screens the requirement for a more detailed assessment. Should human receptors be identified within 350m from the Site boundary or 50m from the construction vehicle route up to 500m from the Site entrance, then the assessment should proceed to Step 2. Additionally, should ecological receptors be identified within 50m of the boundary Site or 50m from the construction vehicle route up to 500m from the Site entrance, then the assessment should also proceed to Step 2.
- 6.5 Should sensitive receptors not be present within the relevant distances then negligible impacts would be expected and further assessment is not necessary.

Step 2

- 6.6 Step 2 assesses the risk of potential dust impacts. A site is allocated to a risk category based on two factors:
- The scale and nature of the works, which determines the magnitude of dust arising as: small, medium or large (Step 2A); and
 - The sensitivity of the area to dust impacts, which can be defined as low, moderate or high sensitivity (Step 2B).
- 6.7 The two factors are combined in Step 2C to determine the risk of dust impacts without mitigation applied.
- 6.8 Step 2A defines the potential magnitude of dust emission through the construction phase. The relevant assessment criteria are summarised in **Table 6.1**.

Table 6.1 Construction Dust –Impact Magnitude of Emissions

Magnitude	Activity	Qualifying Criteria
Major	Demolition	- Total building volume greater than 50,000m³ - Potentially dusty construction material (e.g. concrete) - On-site crushing and screening - Demolition activities greater than 20m above ground level
	Earthworks	- Total site area greater than 10,000m² - Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) - More than 10 heavy earth moving vehicles active at any one time - Formation of bunds greater than 8m in height - More than 100,000 tonnes of material moved
	Construction	- Total building volume greater than 100,000m³ - On site concrete batching - Sandblasting
	Trackout	- More than 50 Heavy Duty Vehicle (HDV) trips per day - Potentially dusty surface material (e.g. high clay content) - Unpaved road length greater than 100m
Moderate	Demolition	- Total building volume 20,000m³ to 50,000m³ - Potentially dusty construction material - Demolition activities 10m to 20m above ground level
	Earthworks	- Total site area 2,500m² to 10,000m² - Moderately dusty soil type (e.g. silt) 5 to 10 heavy earth moving vehicles active at any one time - Formation of bunds 4m to 8m in height - Total material moved 20,000 tonnes to 100,000 tonnes
	Construction	- Total building volume 25,000m³ to 100,000m³ - Potentially dusty construction material (e.g. concrete) - On site concrete batching
	Trackout	10 to 50 HDV trips per day - Moderately dusty surface material (e.g. high clay content) - Unpaved road length 50m to 100m
Minor	Demolition	- Total building volume under 20,000m³ - Construction material with low potential for dust release (e.g. metal cladding or timber) - Demolition activities less than 10m above ground level - Demolition during wetter months
	Earthworks	- Total site area less than 2,500m² - Soil type with large grain size (e.g. Sand) - Less than 5 heavy earth moving vehicles active at any one time - Formation of bunds less than 4m in height - Total material moved less than 20,000 tonnes - Earthworks during wetter months
	Construction	- Total building volume less than 25,000m³ - Construction material with low potential for dust release (e.g. metal cladding or timber)
	Trackout	Less than 10 HDV trips per day

Magnitude	Activity	Qualifying Criteria
		• Surface material with low potential for dust release • Unpaved road length less than 50m

6.9 Step 2B defines the sensitivity of the area around the Site for construction, earthworks and trackout activities. The factors influencing the sensitivity of the area are shown in *Table 6.2*.

Table 6.2 Examples of Factors Defining Sensitivity of Area

Sensitivity	Receptor	
	Human	Ecological
High	• Users would expect high levels of amenity • High aesthetic or value property • People expected to be present continuously for extended period of time • Locations where members of the public are exposed over a time period relevant to the AQO for PM₁₀ e.g. residential properties, hospitals, schools and residential care homes	• Internationally or national designated site e.g. Special Area of Conservation
Moderate	• User would expect to enjoy a reasonable level of amenity • Aesthetics or value of their property could be diminished by soiling • 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 e.g. parks and places of work	• Nationally designated site e.g. Sites of Special Scientific Interest
Low	• Enjoyment of amenity would not reasonably be expected • Property would not be expected to be diminished in appearance • Transient exposure, where people would only be expected to be present for limited periods e.g. public footpaths, playing fields, shopping streets, farmland, footpaths, short term car parks and roads.	• Locally designated site e.g. Local Nature Reserve

6.10 The guidance also provides the following factors to consider when determining the sensitivity of an area to potential dust impacts during the construction phase:

- Any history of dust generating activities in the area;
- The likelihood of concurrent dust generating activity on nearby sites;
- Any pre-existing screening in between the source and the receptors;
- Any conclusions drawn from analysing local meteorological data which accurately represent the area; and if relevant the season during which works will take place;
- Any conclusions drawn from local topography;
- Duration of the potential impact, as a receptor may become more sensitive over time; and,
- Any known specific receptor sensitivities which go beyond the classifications given in the document.

6.11 These factors have been considered in the undertaking of this assessment.

6.12 The criteria to determine the sensitivity of the area to dust soiling effects on people and property is shown in *Table 6.3*.

Table 6.3 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	Moderate	Low
	10 - 100	High	Moderate	Low	Low
	1 - 10	Moderate	Low	Low	Low
Moderate	>1	Moderate	Low	Low	Low
Low	>1	Low	Low	Low	Low

6.13 Table 6.4 outlines the criteria to determine sensitivity of the area to human health impacts.

Table 6.4 Sensitivity of the Area to Health Impacts

Receptor Sensitivity	Annual Mean PM ₁₀ Concentration	Number of Receptors	Distance from the source (m)				
			<20	<50	<100	<200	<350
High	Greater than 32µg/m³	>100	High	High	High	Moderate	Low
		10 - 100	High	High	Moderate	Low	Low
		1 - 10	High	Moderate	Low	Low	Low
	23 - 32µg/m³	>100	High	High	Low	Low	Low
		10 - 100	High	Moderate	Low	Low	Low
		1 - 10	High	Moderate	Low	Low	Low
	24 - 28µg/m³	>100	High	Moderate	Low	Low	Low
		10 - 100	High	Moderate	Low	Low	Low
		1 - 10	Moderate	Low	Low	Low	Low
	Less than 24µg/m³	>100	Moderate	Low	Low	Low	Low
		10 - 100	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Moderate	-	>10	High	Moderate	Low	Low	Low
	-	1 - 10	Moderate	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

6.14 Table 6.5 details the criteria used to determine the sensitivity of the area to ecological impacts.

Table 6.5 Sensitivity of the Area to Ecological Impacts

Receptor Sensitivity	Distance from the source (m)	
	<20	>50
High	High	Moderate
Moderate	Moderate	Low
Low	Low	Low

6.15 Step 2C combines the dust emission magnitude with the sensitivity of the area to determine the risk of unmitigated impacts

6.16 *Table 6.6* outlines the sensitivity of the area to demolition activities.

Table 6.6 Dust Risk Category from Demolition

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Low
High	High	Moderate	Moderate
Moderate	Moderate	Moderate	Low
Low	Low	Low	Low

6.17 *Table 6.7* outlines the risk category from earthworks and construction activities.

Table 6.7 Dust Risk Category from Earthworks and Construction

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Low
High	High	Moderate	Moderate
Moderate	Moderate	Moderate	Low
Low	Low	Low	Low

6.18 *Table 6.8* outlines the risk category from trackout activities.

Table 6.8 Dust Risk Category from Trackout

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Low
High	High	Moderate	Moderate
Moderate	Moderate	Moderate	Low
Low	Low	Low	Low

Step 3

6.19 Step 3 requires the identification of site-specific mitigation measures within the IAQM guidance to reduce potential dust impacts based upon the relevant risk categories identified in Step 2. For sites with negligible risk, mitigation measures beyond those required by legislation are not required. However, additional controls may be applied as part of good practice.

Step 4

6.20 Once the risk of dust impacts has been determined and the appropriate mitigation measures identified, the final step is to determine the significance of any residual impacts. For almost all construction activity, the aim should be to control effects through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be 'not significant' in EIA terms. This has been described as negligible within this report to provide continuity between assessment terminologies.

6.21 The determination of significance relies on professional judgement and reasoning should be provided as far as practicable. This has been considered throughout the assessment when defining predicted impacts. .



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