

Appendix 18.1: IAQM Guidance on the Assessment of Mineral Dust Impacts for Planning – Methodology

This appendix outlines the steps and matrices used within the IAQM methodology for further assessment of dust deposition.

Step 1 – Site Characteristics and Baseline Conditions

This is site specific and has been presented within the dust assessment. When identifying receptors in the locale of the development, the sensitivities of people and ecological sites can be determined using the general principles in Tables A1 and A2 alongside professional judgement.

Table A1: Sensitivities of People to Dust Soiling Effects

Sensitivity	Comments	Examples
High	Users can reasonably expect enjoyment of a high level of amenity The appearance, aesthetics or value of their property would be diminished by soiling. 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.	Dwellings, medium and long-term car parks, car show rooms
Medium	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 The appearance, aesthetics or value of their property could be diminished by soiling People or property would reasonably be expected to be present continuously, or regularly for extended periods as part of the normal pattern of use of the land	Parks, places of work
Low	The enjoyment of amenity would not reasonably expected There is property that would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling 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.	Playing fields, farmland (unless commercially sensitive horticultural), footpaths, short term car parks and roads

Table A2: Sensitivities of Receptors to Ecological Effects

Sensitivity	Comments	Examples
High	Locations with an international designation and the designated features may be affected by dust soiling	Special Area of Conservation (SAC) designated for acid heathlands adjacent to a mineral development releasing alkaline dusts
Medium	Nationally designated site with designated features potentially affected by dust soiling Locally designated site with a specific sensitivity	Site of Special Scientific Interest (SSSIs) or Local Wildlife Sites (LWS's) with specific sensitivities
Low	Designated site for which the features of interest are insensitive to dust soiling, but potential remains for impacts on other features Undesignated sites with potential to be affected by dust soiling	Amenity grassland, playing fields, parks

Step 2 – Estimation of Dust Impact Risk

Step 2 provides a series of assessment matrices which are used to estimate the ‘Pathway Effectiveness’ and the estimation of ‘Dust Impact Risk’.

Estimation of Residual Source Emissions

The ‘Dust Impact Risk’ is determined for each of the following operational activities:

- Site preparation and restoration;
- Mineral extraction (including blasting);
- Materials handling;
- On-site transportation (e.g. conveyors and haul roads);
- Mineral processing (e.g. crushing and screening);
- Stockpiles and other exposed surfaces; and
- Off-site transportation (e.g. onto external road network).

The ‘Residual Source Emission’ is based upon the scale of anticipated operations and is classified as Small, Medium or Large for each relevant operational activity, taking into account designed-in mitigation.

Estimation of Pathway Effectiveness

The site specific factors considered to determine the ‘Effectiveness of the Pathway’ are distance and direction of receptors relative to the prevailing wind directions. For each receptor within the defined screening criteria distance, the wind directions from each source are calculated, with the resulting frequency of moderate to high wind speeds assigned to the categories in Table A3 below.

Table A3: Categorisation of Frequency of Potentially Dusty Winds

Frequency Category	Criteria
Infrequent	Frequency of winds (>5m/s) from the direction of the dust source on all days are less than 5%
Moderately Frequent	Frequency of winds (>5m/s) from the direction of the dust source on all days are between 5% and 12%
Frequent	Frequency of winds (>5m/s) from the direction of the dust source on all days are between 12% and 20%
Very Frequent	Frequency of winds (>5m/s) from the direction of the dust source on all days are greater than 20%

The categorisation shown in Table A4 is applied to the distance from each receptor to the source.

Table A4: Categorisation of Receptor Distance from Source

Distance Category	Criteria
Distant	Receptor is between 200 m and 400 m from the dust source
Intermediate	Receptor is between 100 m and 200 m from the dust source
Close	Receptor is less than 100 m from the dust source

The ‘Pathway Effectiveness’ is then classified using the ‘Frequency of Potentially Dusty Winds’ from Table A3 and the ‘Receptor Distance from Source’ from Table A4, as shown in Table A5.

Table A5: Pathway Effectiveness

Receptor Distance	Frequency of Potentially Dusty Winds			
	Infrequent	Moderately Frequent	Frequent	Very Frequent
Close	Ineffective	Moderately Effective	Highly Effective	Highly Effective
Intermediate	Ineffective	Moderately Effective	Moderately Effective	Highly Effective
Distant	Ineffective	Ineffective	Moderately Effective	Moderately Effective

Estimation of Dust Impact Risk

The 'Residual Source Emissions' and the 'Pathway Effectiveness' are combined to predict the 'Dust Impact Risk' as shown in Table A6.

Table A6: Estimation of Dust Impact Risk

Pathway Effectiveness	Residual Source Emission		
	Small	Medium	Large
Highly Effective	Low Risk	Medium Risk	High Risk
Moderately Effective	Negligible Risk	Low Risk	Medium Risk
Ineffective	Negligible Risk	Negligible Risk	Low Risk

Step 3 – Estimation of Magnitude of Disamenity Effects

The likely disamenity effect at each receptor is determined using the 'Dust Impact Risk' from Table A6 and the 'Receptor Sensitivity' from Tables A1 and A2, as shown in Table A7.

Table A7: Estimation of Dust Impact Risk

Dust Impact Risk	Receptor Sensitivity		
	Low	Medium	High
High Risk	Slight Adverse Effect	Moderate Adverse Effect	Substantial Adverse Effect
Medium Risk	Negligible	Slight Adverse Effect	Moderate Adverse Effect
Low Risk	Negligible	Negligible	Slight Adverse Effect
Negligible Risk	Negligible	Negligible	Negligible