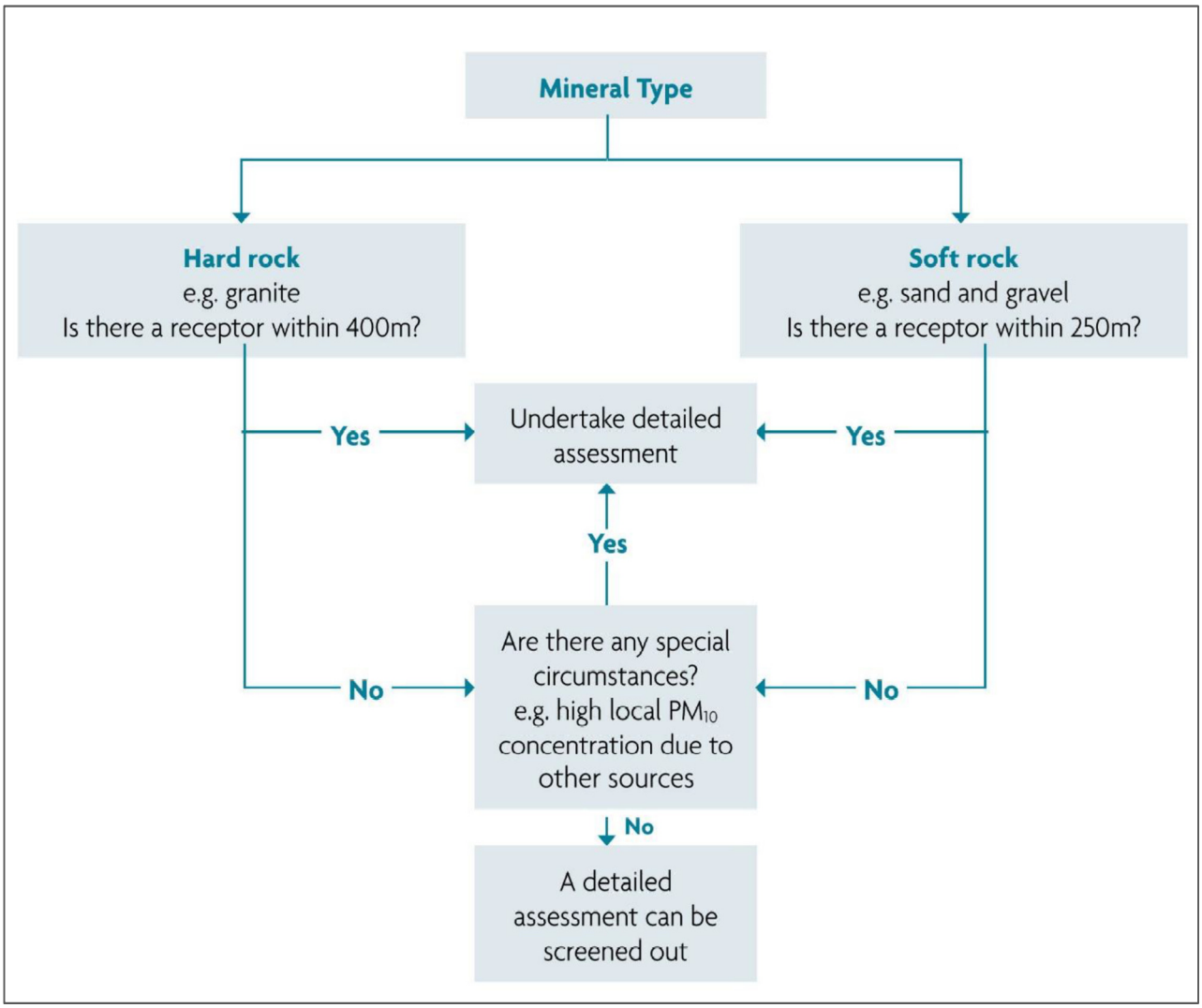
# APPENDIX 9-3

## IAQM Minerals Guidance Methodology

This appendix outlines the steps and matrices used within the IAQM methodology for further assessment of dust deposition. The screening criteria within the IAQM guidance is presented in Figure 9-3 -1, whereby it is illustrated that dust impacts from hard rock sites are considered to occur mainly within 250m of the operations.

**Figure 9-3-1: IAQM Flow Chart**




## Further Assessment: disamenity Dust

In accordance with the IAQM methodology, if there are relevant receptors within 250m then further assessment for both dust deposition and $PM_{10}$ will be required.

## 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 9-3-1 and 9-3-2 alongside professional judgement.

**Table 9-3-1: Sensitivities of People to Dust Soiling Effects**

| Sensitivity | Comments | Examples |
|---|---|---|
| **High** | Users can reasonably expect enjoyment of a high level of amenity | Dwellings, medium and |

| Sensitivity | Comments | Examples |
|---|---|---|
| | The appearance, aesthetics or value of their property would be diminished by soiling.<br>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. | 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<br>The appearance, aesthetics or value of their property could be diminished by soiling<br>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<br>There is property that would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling<br>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 9-3-2: 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 | 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<br>Locally designated site with a specific sensitivity | SSSI's or 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<br>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 9-3-3 below.

**Table 9-3-3: 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 9-3-4 is applied to the distance from each receptor to the source.

**Table 9-3-4: Categorisation of Receptor Distance from Source**

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

The 'Pathway Effectiveness' is then classified using the 'Frequency of Potentially Dusty Winds' from Table 9-3-3 and the 'Receptor Distance from Source' from Table 9-3-4, as shown in Table 9-3-5.

**Table 9-3-5: Pathway Effectiveness**

| | | Frequency of Potentially Dusty Winds | | | |
|---|---|---|---|---|---|
| | | **Infrequent** | **Moderately Frequent** | **Frequent** | **Very Frequent** |
| **Receptor Distance Category** | **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 9-3-6.

**Table 9-3-5: Estimation of Dust Impact Risk**

| | | Residual Source Emission | | |
|---|---|---|---|---|
| | | **Small** | **Medium** | **Large** |
| **Pathway Effectiveness** | **Highly Effective Pathway** | Low Risk | Medium Risk | High Risk |
| | **Moderately Effective Pathway** | Negligible Risk | Low Risk | Medium Risk |
| | **Ineffective Pathway** | 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 A/6 and the 'Receptor Sensitivity' from Tables 9-3-1 and 9-3-2, as shown in Table 9-3-7.

**Table 9-3-7: Descriptors for Magnitude of Dust Effects**

| | | Receptor Sensitivity | | |
|---|---|---|---|---|
| | | **Low** | **Medium** | **High** |
| **Dust Impact Risk** | **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 |

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