

[Note: the example dust risk assessment below is intended to demonstrate some of the issues which may be considered for a particular (theoretical) development scheme.

It is a requirement of the IAQM Construction Dust Impacts guidance that the assessor presents evidence for dust emission and risk category classification for their scheme.

This example should therefore not be used as a template or as an example of what would be considered acceptable in relation to any other (actual) scheme.]

Example A

Plan

See attached.

Description

A large residential development scheme (450 units) on greenfield land in the South West of England to be built over 3 phases. It is the intention of the builder to construct phases 1 and 2 in subsequent years and phase 3 some time in the future (yet to be determined). The development lies laterally along a road with existing receptors only at the southern end.

Key points / issues:

- residential development scheme, 450 units: construction materials will be timber frame with brick walls; occupation will be phased (i.e. moving receptors), total developable land area = 18,000m²;
- Greenfield land (i.e. no demolition);
- Sandy loam soils, flat topography;
- The closest existing residences are >30m to the public highway, as are those of new occupiers;
- 1971 - 2000 Rainfall 724.5mm/a, 121 days of rainfall >1mm (month of Feb 55.6 mm, 10.2 days of rainfall >1mm);
- built over 3 phases (two in consecutive years, one later), duration of earthworks 1 month per phase. Project commencement in February. Earth bunds of 6m required on eastern boundary.
- receptors only at the southern end: 50m from phase 1, 300m from phase 2, 450m from phase 3;
- access directly onto main road (one per zone): 120m from phase 1 to receptor, 280m from phase 2 to receptor, 430m from phase 3 to receptor;
- Existing background PM₁₀ = 18µg/m³;
- Access is directly onto the road network from each development Phase, with paved haul roads. During the most active stages of construction, 34 HGV trips will be made per day; and
- There are no sites of ecological / horticultural interest within 2km.

Assessment

Description of the Site and Surroundings

The existing background PM₁₀ is 18µg/m³ and as the scheme is in England this is 'well below' the annual objective for this pollutants.

A key consideration in relation to this scheme is the treatment of the phases (or 'zones'). In this case it is the intention of the developer to allow occupation of the phase 1 as the building progresses in phase 2. The closest receptor locations for each additional phase will then become the occupiers of the previous phase and the assessment must be completed on this basis. However, if a new occupier of a development phase is fully aware of the subsequent development phases it may be argued by the assessor that the occupiers would be more tolerant of the short term dust implications associated with the Phase 2 build. In this example, the duration of the build is 1 year per phase hence occupiers of the first phase would be exposed to building works from the second phase for less than 1 year after occupation (i.e. once the phase 1 homes are completed, then sold and occupied). This is not the case for Phase 3 which will be developed some time later (yet to be determined).

Summary: It is the judgement of the assessor that, in this case, the dust assessment should assume 2 'zones':

- Zone 1: Phases 1 and 2
- Zone 2: Phase 3.

The assessment has been completed on this basis (i.e. effectively considering 2 distinct developments).

Assessment Step 1 - Screen the Requirement for a More Detailed Assessment

There are (existing) receptors within 350m of the boundary of the Zone 1 development site and within 100m of the route used by construction vehicles on the public highway.

There will be (Zone 1) receptors within 350m of the boundary of the Zone 2 development site and within 100m of the route used by construction vehicles on the public highway.

Summary: A detailed assessment for each Zone is required to determine potential dust impacts.

Assessment Step 2 – Assess the Risk of Dust Effects¹

1) Demolition

The entire development site (both Zones) is on greenfield land. No demolition is required. There is therefore no requirement to define a dust **emission class**.

Summary: Demolition phase **Risk category** is **Not applicable (for either Zone)**.

¹ For each activity, an 'emission class' must first be selected. Once the distance to receptors has been identified, the activity may be placed into one of 4 'risk categories'.

2) Earthworks

A key consideration in relation to this scheme is the level of detail available to the assessor. In this case, a GANTT chart has been made available detailing a February project start date for Phase 1 (This would be unusual in reality and there also needs to be an awareness that project schedules may change). Given annual phasing, Phase 2 earthworks will also be completed the following February. The schedule for Phase 3 earthworks is unknown and could therefore be during the summer months.

Excavation earth works are required over approximately 18,000m² (across the 2 Zones) with sandy loam soils presenting a soil type with average / low potential for dust release. The duration of earthworks 1 month per phase, Zone 1 earthworks in June, Zone 2 earthworks unknown. Potentially 8 heavy earth moving vehicles will be active at any one time.

Based on the detailed information above, it is the view of the experienced assessor that the **emission class** during Earthworks should be 'medium'.

Existing receptors are 50m from phase 1 working and 300m from phase 2 working. Although existing receptors are 450m from phase 3 workings, phase 2 receptors will be immediately adjacent to phase 3 workings when these are commenced (i.e. within 20m).

Table A

Receptor	Risk
Existing receptors	Medium Risk during phase 1 of Zone 1 earthworks
Existing receptors	Low Risk during phase 2 of Zone 1 earthworks
New Occupiers (Zone 1)	High Risk during Zone 2 earthworks

Summary: Earthworks phase **Risk category** is **Medium for Zone 1** and **High for Zone 2**

3) Construction

Construction activities on-site include the use of concrete batching which will be regulated by the local authority. No piling is required. Construction would be completed for each phase within 1 year. Therefore, a 'medium' **emission class** would be associated with construction activities for both phases.

Existing receptors are 50m from phase 1 working and 300m from phase 2 working. Although existing receptors are 450m from phase 3 workings, phase 2 receptors will be immediately adjacent to phase 3 workings when these are commenced (i.e. within 20m).

Table B

Receptor	Risk
Existing receptors	Medium Risk during phase 1 of Zone 1 construction
Existing receptors	Low Risk during phase 2 of Zone 1 construction
New Occupiers (Zone 1)	High Risk during Zone 2 construction

Summary: Construction phase **Risk category** is **Medium for Zone 1** and **High for Zone 2**.

4) Trackout

All haul routes within the development site for each phase will be paved. At the busiest stages of construction there are predicted to be an additional 34 heavy duty vehicle (HDV) trips per day. The soil type is of low risk, having a high sand content.

Despite the number of vehicle movements, the paved haul roads and soil type result in the assessor considering that the dust **emission class** for 'trackout' is therefore 'small' for both Zones in relation to this particular scheme.

The development site access roads (3 Phases) and main highway are >30m of receptors (within 500m of each phase access).

Summary: Trackout **Risk category** is **Low Risk for both Zones**

Risk Category Summary Tables

The Risk Category Summary Tables for each Zone with standard (basic) mitigation are therefore as follows

Table C: Zone 1 (Phases 1 and 2):

Source	Risk of Dust Soiling and PM ₁₀	
	Effects	Risk of Vegetation Effects*
Demolition	N/A	N/A
Earthworks	Medium Risk	N/A
Construction	Medium Risk	N/A
Trackout	Low Risk	N/A

Table D: Zone 2 (Phase 3):

Source	Risk of Dust Soiling and PM ₁₀	
	Effects	Risk of Vegetation Effects*
Demolition	N/A	N/A
Earthworks	High Risk	N/A
Construction	High Risk	N/A
Trackout	Low Risk	N/A

[*N/A – Not Applicable in this case]

Assessment Step 3 – Identify the Need for Site Specific Additional Mitigation

On the basis of the risk category additional mitigation measures have been identified on the basis of GLA guidance (not listed here). Required mitigation would therefore be as follows:

- During the Zone 1 development (phases 1 and 2) the developer would be expected to apply **mitigation appropriate for a site with 'medium' dust risk effects**; and
- During the Zone 2 development (phase 3) the developer would be expected to apply **mitigation appropriate for a site with 'high' dust risk effects**.*

**The requirement for a higher level of mitigation is primarily a result of the greater uncertainty in relation to the phase 3 development and the cautious approach suggested by the IAQM assessment guidance. It would be suggested in this case that the risk assessment is revisited prior to Phase 3 work being commenced as this may result in a lower mitigation requirement. This may be particularly the case if the majority of dust generating activities are not undertaken at the Zone 2 development site boundary and therefore the distance to the sensitive area would be greater than those used in the assessment.*

In the absence of such mitigation the risk of the site giving rise to dust effects would be classified as a 'slight' (Zone 1) or 'moderate' (Zone 2) adverse impact.

Assessment Step 4 – Define Post Mitigation Effects and their Significance

The sensitivity of the area would be defined as 'medium' as it is semi-rural with low PM₁₀ concentrations and no sites of ecological interest.

The **significance of effects** for both Zones with mitigation in place is therefore 'negligible', as follows:

Table E: Both Zones

Source	Risk of Dust Soiling Effects	Risk of Vegetation Effects	Risk of PM₁₀ Effects
Demolition	N/A	N/A	N/A
Earthworks	Negligible	N/A	Negligible
Construction	Negligible	N/A	Negligible
Trackout	Negligible	N/A	Negligible
Overall Significance		Negligible	

For purposes of compliance with standard Environmental Impact Assessment methods, the assessor may chose to present Tables C and D (pre mitigation) and Table E (post mitigation).