



Northamptonshire County Council

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## **APPENDIX 6-2**

### Construction Phase Assessment





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### Construction Phase Assessment

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WSP

No 8 First Street

Manchester

M15 4RP

WSP.com

## 6. CONSTRUCTION PHASE ASSESSMENT

### 6.1. IAQM CONSTRUCTION ASSESSMENT METHODOLOGY

#### STEP 1 – SCREENING THE NEED FOR A DETAILED ASSESSMENT

6.1.1. An assessment will normally be required where there are:

- § ‘human receptors’ within 350m of the site boundary; or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s); and/or
- § ‘ecological receptors’ within 50m of the site boundary; or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).

6.1.2. Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is ‘negligible’.

#### STEP 2A – DEFINE THE POTENTIAL DUST EMISSION MAGNITUDE

6.1.3. The following are examples of how the potential dust emission magnitude for different activities can be defined. (Note that not all the criteria need to be met for a class). Other criteria may be used if justified in the assessment.

**Table 6-2-1 – Examples of Human Receptor Sensitivity to Construction Phase Impacts**

Dust Emission Magnitude	Activity	Criteria
Large	Demolition	>50,000m <sup>3</sup> building demolished, dusty material (e.g. concrete), on-site crushing/screening, demolition >20m above ground level
	Earthworks	>10,000m <sup>2</sup> site area, dusty soil type (e.g. clay), >10 earth moving vehicles active simultaneously >8m high bunds formed, >100,000 tonnes material moved
	Construction	>100,000m <sup>3</sup> building volume, on site concrete batching, sandblasting
	Trackout	>50 HDVs out / day, dusty surface material (e.g. clay), >100m unpaved roads
Medium	Demolition	20,000 - 50,000m <sup>3</sup> building demolished, dusty material (e.g. concrete), 10-20m above ground level
	Earthworks	2,500 - 10,000m <sup>2</sup> site area, moderately dusty soil (e.g. silt), 5-10 earth moving vehicles active simultaneously,

Dust Emission Magnitude	Activity	Criteria
		4m - 8m high bunds, 20,000 -100,000 tonnes material moved
	Construction	25,000 - 100,000m <sup>3</sup> building volume, dusty material e.g. concrete, on site concrete batching
	Trackout	10 - 50 HDVs out / day, moderately dusty surface material (e.g. clay), 50 -100m unpaved roads
Small	Demolition	<20,000m <sup>3</sup> building demolished, non-dusty material (e.g metal cladding), <10m above ground level, work during wetter months
	Earthworks	<2,500m <sup>2</sup> site area, soil with large grain size (e.g. sand), <5 earth moving vehicles active simultaneously, <4m high bunds, <20,000 tonnes material moved, earthworks during wetter months
	Construction	<25,000m <sup>3</sup> , non-dusty material (e.g. metal cladding or timber)
	Trackout	<10 HDVs out / day, non-dusty soil, < 50m unpaved roads

## STEP 2B – DEFINE THE SENSITIVITY OF THE AREA

- 6.1.4. The tables below present the IAQM assessment methodology to determine the sensitivity of the area to dust soiling, human health and ecological impacts respectively. The IAQM guidance provides guidance to allow the sensitivity of individual receptors to dust soiling and health effects to assist in the assessment of the overall sensitivity of the study area.

**Table 6-2-2 – Sensitivity of the Area to Dust Soiling Effects**

Receptor Sensitivity	Number of Receptors	Distance from the Source			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low

Receptor Sensitivity	Number of Receptors	Distance from the Source			
		<20	<50	<100	<350
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

**Table 6-2-3 – Sensitivity of the Area to Human Health Impacts**

Receptor Sensitivity	Annual Mean PM <sub>10</sub> Conc. (µg/m <sup>3</sup> )	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low

Receptor Sensitivity	Annual Mean PM <sub>10</sub> Conc. (µg/m <sup>3</sup> )	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
	24-28	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

**Table 6-2-4 – Sensitivity of the Area to Ecological Impacts**

Receptor Sensitivity	Distance from the Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

## STEP 2C – DEFINE THE RISK OF IMPACTS

- 6.1.5. The dust emissions magnitude determined at Step 2A should be combined with the sensitivity of the area determined at Step 2B to determine the risk of impacts without mitigation applied. For those cases where the risk category is ‘negligible’ no mitigation measures beyond those required by legislation will be required.

**Table 6-2-5 – Risk of Dust Impacts**

Sensitivity of the Surrounding Area	Dust Emission Magnitude		
	Large	Medium	Small
Demolition			
High	High Risk	Medium Risk	Medium Risk

Sensitivity of the Surrounding Area	Dust Emission Magnitude		
	Large	Medium	Small
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible
Earthworks and Construction			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Trackout			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

### STEP 3 – SITE SPECIFIC MITIGATION

- 6.1.6. Having determined the risk categories for each of the four activities it is possible to determine the site-specific measures to be adopted. These measures will be related to whether the site is a low, medium or high-risk site. The IAQM guidance details the mitigation measures required for high, medium and low risk sites as determined in Step 2C.

### STEP 4 – DETERMINE SIGNIFICANT EFFECTS

- 6.1.7. Once the risk of dust impacts has been determined in Step 2C and the appropriate dust mitigation measures identified in Step 3, the final step is to determine whether there are significant effects arising from the construction phase. For almost all construction activities, the application of effective mitigation should prevent any significant effects occurring to sensitive receptors and therefore the residual effect will normally be negligible.

## 6.2. CONSTRUCTION PHASE ASSESSMENT

### ASSESSMENT OF POTENTIAL DUST EMISSION MAGNITUDE

- 6.2.1. The IAQM assessment methodology has been used to determine the potential dust emission magnitude for the following four different dust and PM<sub>10</sub> sources: demolition, earthworks, construction and trackout. The findings of the assessment are presented below.

### Demolition

6.2.2. Upon review of the site and discussions with the client, there are no notable standing structure of any volume that upon demolition would cause any significant contribution to dust concentrations. As such, it is considered in our professional judgement that no demolition is to be taken place and as such is not considered further in the assessment.

### Earthworks

6.2.3. The total area of the Application Site is greater than 10,000m<sup>3</sup> which falls within the IAQM range for large sites. It is expected that between 5 and 10 heavy earth moving vehicles may be present on site at any one time. Therefore, the potential dust emission magnitude is considered to be large for construction activities.

### Construction

6.2.4. The total volume of road to be constructed on the Application Site will be more between 25,000 to 100,000m<sup>3</sup> with site concrete batching and sand blasting activities being undertaken. Therefore, the potential dust emission magnitude is considered to be medium for construction activities.

### Trackout

6.2.5. Some information on the number of Heavy Duty Vehicles (HDVs) associated with this phase of the Proposed Scheme has been provided. It is estimated that there will be between 10-50 outward HDV movements in any one day. This is relatively low in comparison with flows on surrounding roads. There is no unpaved road surface due to the existing concrete paving and road nearby. It is considered that the potential dust emission is medium for trackout.

**Table 6-2-6** provides a summary of the potential dust emission magnitude determined for each construction activity considered.

**Table 6-2-6 – Potential Dust Emission Magnitudes**

Activity	Dust Emission Magnitude
Earthworks	Large
Construction Activities	Medium
Trackout	Medium

### ASSESSMENT OF THE SENSITIVITY OF THE STUDY AREA

6.2.6. Taking into account receptors in the areas adjacent to the site and following IAQM assessment methodology, the sensitivity of the area to changes in dust and PM<sub>10</sub> has been derived for each of the construction activities considered. The results are shown in Table 6-2-7.

**Table 6-2-7 – Sensitivity of the Study Area**

Potential Impact	Sensitivity of the Surrounding Area
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	Earthworks	Construction	Trackout
Dust Soiling	High	High	High
Human Health	Low	Low	Low

6.2.7. These are the relevant modelled receptor points, each point equates to three receptors as an average indicator of the inhabitants in a dwelling:

- § Within 20m – 1
- § Within 50m – 98
- § Within 100m – 121
- § Within 350m – 790

6.2.8. The ecological site is over 5 km away from the Application Site, therefore it is not considered to be affected by the Construction Phase of this Proposed Development. In Table 6-2-3 within the ES Chapter, all concentrations of PM<sub>10</sub> are below 24µg/m<sup>3</sup>.

### RISK OF IMPACTS

6.2.9. The predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the construction phase, prior to mitigation. Table 6-2-8 below provides a summary of the risk of dust impacts for the Proposed Scheme. The risk category identified for each construction activity has been used to determine the level of mitigation required.

**Table 6-2-8 – Summary Dust Risk Table to Define Site Specific Mitigation**

Potential Impact	Sensitivity of the Surrounding Area		
	Earthworks	Construction	Trackout
Dust Soiling	High	Medium	Medium
Human Health	Low	Low	Low

### CONSTRUCTION VEHICLES AND PLANT

6.2.10. The greatest impact on air quality due to emissions from vehicles and plant associated with the construction phase will be in the areas immediately adjacent to the Site access. Due to the size of the Site, it is considered likely that the construction traffic will be low in comparison to the existing traffic flows on this road.

6.2.11. Final details of the exact plant and equipment likely to be used on Site will be determined by the appointed contractor but are considered likely to comprise a range of vehicles tracked excavators, diesel generators, and cranes. The number of plant and their location within the Site are likely to be variable over the construction period.

6.2.12. Based on the current local air quality in the area, the proximity of sensitive receptors to the roads likely to be used by construction vehicles and the likely numbers of construction vehicles and plant that will be used, the impacts are considered to be of negligible significance according to the significance criteria published by EPUK/IAQM.



No 8 First Street  
Manchester  
M15 4RP

[wsp.com](http://wsp.com)