



Appendix 6.3 – Construction Phase Dust Risk Assessment Methodology

Crown Street Phase 3 and Plot D

Renaker Build Limited

CRM.779.AQ.003.R.001



Contact Details:

Enzygo Ltd. (Manchester Office)
Ducie House,
Ducie Street,
Manchester
M1 2JW

tel: 0161 413 6444
email: josh.davies@enzygo.com
www: enzygo.com

Construction Phase Dust Risk Assessment Methodology

Project:	MAN.779.AQ.003.R.001
For:	Renaker Build Limited
Status:	Issue
Date:	February 2023
Author:	Josh Davies
Reviewer:	Conal Kearney

Disclaimer:

This report has been produced by Enzygo Limited within the terms of the contract with the client and taking account of the resources devoted to it by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

Enzygo Limited Registered in England No. 6525159

Registered Office: Gresham House, 5-7 St. Pauls Street, Leeds, England, LS1 2JG

Contents

Tables

Table A6.3.1: Construction Dust - Magnitude of Emission	3
Table A6.3.2: Examples of Factors Defining Sensitivity of an Area.....	4
Table A6.3.3: Sensitivity of the Area to Dust Soiling Effects on People and Property.....	4
Table A6.3.4: Sensitivity of the Area to Human Health Impacts.....	5
Table A6.3.5: Sensitivity of the Area to Ecological Impacts.....	5
Table A6.3.6: Dust Risk Category from Demolition	6
Table A6.3.7: Dust Risk Category from Earthworks and Construction	6
Table A6.3.8: Dust Risk Category from Trackout	6

Appendix 6.3 – Construction Phase Dust Assessment Methodology

Construction Phase Impacts

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 IAQM guidance. Activities are divided into four types to reflect their different potential impacts. These are:

- Demolition
- Earthworks;
- Construction; and
- Trackout.

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 and PM_{2.5}.

The assessment stages are detailed below.

Stage 1

Stage 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 Stage 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 Stage 2.

Should sensitive receptors not be present within the relevant distances then negligible impacts would be expected and further assessment is not necessary.

Stage 2

Stage 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: minor, moderate or major (Stage 2A); and
- The sensitivity of the area to dust impacts, which can be defined as minor, moderate or major sensitivity (Stage 2B).

The two factors are combined in Stage 2C to determine the risk of dust impacts without mitigation applied. Stage 2A defines the potential magnitude of dust emission through the construction phase. The relevant criteria are summarised in Table A6.3.1.

Table A6.3.1: Construction Dust - Magnitude of Emission

Magnitude	Activity	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)

Magnitude	Activity	Criteria
	Trackout	<10 HDV (3.5t) outward movements in any one day - Surface material with low potential for dust release - Unpaved road length <50m

6.1.1 Stage 2B defines the sensitivity of the area around the development site for construction, earthworks and trackout. The factors influencing the sensitivity of the area are shown in Table A6.3.2.

Table A6.3.2: Examples of Factors Defining Sensitivity of an Area

Sensitivity	Receptors	
	Human	Ecological
Major	- Users expect of high levels of amenity - High aesthetic or value property - People expected to be present continuously for extended periods 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 nationally designated site e.g. Special Area of Conservation
Moderate	- Users 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
Minor	- 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, playing fields, farmland, footpaths, short term car park and roads	Locally designated site e.g. Local Nature Reserve

6.1.2 The sensitivity of the area to dust soiling effects on people and property is shown in Table A6.3.3.

Table A6.3.3: Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		Less than 20	Less than 50	Less than 100	Less than 350
Major	More than 100	High	High	Medium	Low
	10 - 100	High	Medium	Low	Low
	1 - 10	Medium	Low	Low	Low
Moderate	More than 1	Medium	Low	Low	Low
Minor	More than 1	Low	Low	Low	Low

6.1.3 Table A6.3.4 outlines the sensitivity of the area to human health impacts.

Table A6.3.4: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM ₁₀ Concentration	Number of Receptors	Distance from the Source (m)				
			Less than 20	Less than 50	Less than 100	Less than 200	Less than 350
Major	Greater than 32µg/m ³	More than 100	High	High	High	Medium	Low
		10 - 100	High	High	Medium	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	28 - 32µg/m ³	More than 100	High	High	Medium	Low	Low
		10 - 100	High	Medium	Low	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	24 - 28µg/m ³	More than 100	High	Medium	Low	Low	Low
		10 - 100	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low
	Less than 24µg/m ³	More than 100	Medium	Low	Low	Low	Low
		10 - 100	Low	Low	Low	Low	Low
	Less than 24µg/m ³	More than 100	Medium	Low	Low	Low	Low
		10 - 100	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Moderate	Greater than 32µg/m ³	More than 10	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low
	28 - 32µg/m ³	More than 10	Medium	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	24 - 28µg/m ³	More than 10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	Less than 24µg/m ³	More than 10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Minor	-	More than 1	Low	Low	Low	Low	Low

6.1.4 Table A6.3.5 outlines the sensitivity of the area to ecological impacts.

Table A6.3.5: Sensitivity of the Area to Ecological Impacts

Receptor Sensitivity	Distance from the Source (m)	
	Less than 20	Less than 50
Major	Major	Moderate
Moderate	Moderate	Minor
Minor	Minor	Minor

6.1.5 Stage 2C combines the dust emission magnitude with the sensitivity of the area to determine the risk of unmitigated impacts.

6.1.6 Table A6.3.6 outlines the risk category from demolition activities.

Table A6.3.6: Dust Risk Category from Demolition

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
Major	Major	Moderate	Moderate
Moderate	Major	Moderate	Minor
Minor	Moderate	Minor	Neutral

6.1.7 Table A6.3.7 outlines the risk category from earthworks and construction activities.

Table A6.3.7: Dust Risk Category from Earthworks and Construction

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
Major	Major	Moderate	Moderate
Moderate	Moderate	Moderate	Moderate
Minor	Minor	Moderate	Neutral

6.1.8 Table A6.3.8 outlines the risk category from trackout.

Table A6.3.8: Dust Risk Category from Trackout

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
Major	Major	Moderate	Moderate
Moderate	Moderate	Moderate	Neutral
Minor	Moderate	Moderate	Neutral

Stage 3

6.1.9 Stage 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 Stage 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.

Stage 4

6.1.10 Once the risk of dust impacts has been determined and the appropriate mitigation measures identified, the final stage is to determine the significance of any residual impacts. For almost all construction activity, the aim should be to control effects using effective mitigation.

6.1.11 Experience shows that this is normally possible. Hence the residual effect will normally be not significant.

6.1.12 The assessment will identify specific control measures to be implemented on site which aim to reduce residual fugitive dust impacts. Appendix B details the IAQM methodology.



Enzygo specialise in a wide range of technical services:

Property and Sites

Waste and Mineral Planning

Flooding, Drainage and Hydrology

Landscape Architecture

Arboriculture

Permitting and Regulation

Waste Technologies and Renewables

Waste Contract Procurement

Noise and Vibration

Ecology Services

Contaminated Land and Geotechnical

Traffic and Transportation

Planning Services

BRISTOL OFFICE

The Byre
Woodend Lane
Cromhall
Gloucestershire GL12 8AA
Tel: 01454 269 237

SHEFFIELD OFFICE

Samuel House
5 Fox Valley Way
Stocksbridge
Sheffield S36 2AA
Tel: 0114 321 5151

MANCHESTER OFFICE

Ducie House
Ducie Street
Manchester
M1 2JW
Tel: 0161 413 6444

Please visit our website for more information.

enzygo.com