EAST PARK ENERGY

East Park Energy

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Preliminary Environmental Information Report
Volume 2 – Technical Appendices

Appendix 11-1: Air Quality Assessment Methodology

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1.0 Construction Dust Assessment Methodology

1.1 Introduction

1.1.1 The assessment of the air quality impacts due to the generation and dispersion of dust and PM_{10} during the construction phase has been undertaken in accordance with the current guidance issued by the Institute of Air Quality Management (IAQM) in relation to demolition and construction dust[1]. The guidance describes a qualitative assessment methodology to assess the risks of dust and PM_{10} impacts from demolition, earthworks, and construction activities and from trackout, and provides guidance for assessing the significance of the effects. The assessment methodology is summarised below but for full details reference should be made to the IAQM guidance.

1.2 Screening Assessment

1.2.1 In accordance with the IAQM guidance, the following screening criteria are referred to indicate whether further detailed assessment is required:

- A human receptor within:
    - 250m of a site boundary; or
    - 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s).
- An ecological receptor within:
    - 50m of the boundary of the site; or
    - 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s).

1.2.2 Where the need for further assessment can be screened out it can be concluded that the level of risk is *negligible*, and any effects would not be significant.

1.3 Further Assessment

1.3.1 Where further assessment is required, this is undertaken through use of the source-pathway-receptor concept. The risk of dust arising in sufficient quantities from a site to cause annoyance and / or health or ecological impacts and resulting effects is dependent on:

- the scale and nature of the works (potential **magnitude** of dust emissions);
- the **effectiveness** of the pathway (i.e., dispersion towards a receptor; proximity of receptors); and
- the **sensitivity** of the receptors, both human and ecological.

1.3.2 A site is allocated a Potential Dust Emissions Magnitude of large / medium / small for demolition, earthworks, construction and track out taking into account factors such as the size of the site, type of soils, building volume, and vehicle movements. Examples are provided below:

Table 1.1: Examples definitions to define dust emission magnitudes for each activity

Activity	Dust Emission Magnitude		
	Large	**Medium**	**Small**
Demolition	• >75,000m^3 build volume • dusty material (e.g. concrete) • on-site crushing	• between 12,000m^3 and 75,000m^3 build volume • potentially dusty material	• <12,000m^3 build volume • low dust material • occurs in winter
Earthworks	• >110,000m^2 site area • dusty soil type (e.g. clay) • >10 active plant	• between 18,000m^2 and 110,000m^2 site area • possible dusty soil type (e.g. silt) • 5-10 active plant	• <18,000m^2 site area • large grain soil type (e.g. sand) • <5 active plant
Construction	• >75,000m^3 build volume • onsite concrete batching	• between 12,000m^3 and 75,000m^3 build volume	• <12,000m^3 build volume • low dust construction

Activity	Dust Emission Magnitude		
	Large	Medium	Small
		• dusty construction material (e.g. concrete)	material (e.g. metal)
Trackout	• >50 outward HDV movements • unpaved road 100m	• 20-50 outward HDV movements • unpaved road 50-100m	• <20 outward HDV movements • unpaved road <50m

1.3.3 The impact of generated dust will depend on the sensitivity of an area. The sensitivity of the area is determined for dust soiling, human health, and ecological impacts respectively taking into account several factors, as follows:

- the specific sensitivities of receptors in the area;
- the number of those receptors;
- the distance of the receptors from the dust source;
- in the case of PM_{10}, the local background concentrations; and
- site specific factors, such as whether there are natural shelters or screening e.g. trees to reduce the risk of wind-blown dust.

1.3.4 Examples of receptor sensitivities are summarised in the tables below.

Table 1.2: Example sensitivity of receptors to dust soiling effects

Sensitivity		
High	**Medium**	**Low**
• Users expect high level of amenity • Users continuously present • Property appearance / value would be expected to be diminished by dust soiling	• Users expect reasonable level of amenity • Users are not present continuously • Property appearance / value might be expected to be diminished by dust soiling	• Users do not expect reasonable level of amenity • Users present for limited time • Property appearance / value would not be expected to be diminished by dust soiling
Examples		

Sensitivity		
Dwellings, car showrooms, long-term car parks, sensitive horticultural land	Places of work, parks	Short-term car parks, playing fields, footpaths, non-sensitive farmland, roads

Table 1.3: Example sensitivity of receptors to PM_{10} health effects

Sensitivity		
High	**Medium**	**Low**
Exposure of members of the public for eight hours or more in a day	Exposure of workers for eight hours or more in a day	Exposure is transient
Examples		
• Members of the public • Dwellings, hospital, schools, care homes	• Workers • Offices, shops	• Playing fields, footpaths, parks, shopping streets

Note: assessment of sensitivity also takes into account local background PM_{10} concentrations

Table 1.4: Example sensitivity of receptors to ecological effects

Sensitivity		
High	**Medium**	**Low**
Locations with international or national designation where the designated feature may be affected by dust soiling Locations with communities of dust-sensitive species	Locations with national designation where the designated feature may be affected by dust soiling Locations with important species where dust sensitivity is uncertain	Locations with local designation where the designated feature may be affected by dust soiling

Note: assessment of sensitivity also takes into account local background PM_{10} concentrations

1.3.5 Receptors are considered up to the following distances:

Table 1.5: Summary of Distances to Receptors Considered

	Dust Soiling	Human Health	Ecological
Demolition, earthworks, and construction	up to a distance of 250m from a site		up to a distance of 50m from a site

	Dust Soiling	Human Health	Ecological
Trackout	up to a distance of 50m from the edge of a road used for construction traffic and up to 250m from the site exit along that road		

1.3.6 The overall sensitivity of an area to dust soiling effects can therefore be assessed as summarised in the example table below.

Table 1.6: Example Summary of the Outcome of the Sensitivity of the Area

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

1.3.7 The overall risk of impacts and effects for each activity considers the derived sensitivity of the area and the dust emission magnitude for each phase of the development, as summarised in the matrix below.

Table 1.6: Risk of Dust Impacts

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
Demolition			
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible
Earthworks			
High	High Risk	Medium Risk	Low Risk

Sensitivity of Area	Dust Emission Magnitude		
	Large	**Medium**	**Small**
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
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	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

1.11. Other factors such as local topography and prevailing wind direction are also considered.

2.0 Vehicle Emissions Assessment Methodology

2.1 Introduction

2.1.1 The assessment of vehicle emissions associated with the Proposed Development has been undertaken in accordance with the IAQM planning guidance in relation to planning, air quality and human health[2], and ecological receptors[3]. Relevant receptors include residential dwellings, schools and hospitals, areas of leisure use, and ecologically sensitive sites.

2.2 Screening Assessment

2.2.1 The level of assessment required was determined through an initial screening review considering the predicted vehicle movements in association with the proposed activities, the routing of vehicles along the roads within the transport assessment study area and locations of sensitive receptors.

2.2.2 The following criteria were used to determine potentially affected roads:

- LDV (Light Duty Vehicle) flow change by 500 AADT (annual average daily traffic) or more outside an AQMA (Air Quality Management Area), or 100 AADT or more within or adjacent to an AQMA;
- HDV (Heavy Duty Vehicle) flows change by 100 AADT or more outside an AQMA, or 25 AADT or more within or adjacent to an AQMA;
- Road alignment changing by 5m or more;
- Introduction or removal of a junction.

2.2.3 Where these criteria are met and there are relevant receptors present further assessment is required. This may take the form of a Simple or Detailed Assessment. The IAQM guidance does not specify at what distance a receptor should be to an affected road to indicate the need for further assessment. However, pollution concentrations fall rapidly away from the roadside and are expected to return to background levels within 100m of a road source[4]. For the purposes of the assessment reference is made to

Highways England (now National Highways) DMRB guidance[5] which requires assessment of receptors within 200m of affected roads.

2.2.4 Where there are no receptors within 200m of affected roads, these roads have not been considered further and potential impacts of vehicle emissions can be considered negligible and as having an insignificant effect.

2.2.5 Separate guidance is provided by Natural England (NE) in relation to ecological sites and is re-iterated in IAQM guidance[6].

2.2.6 To assess whether further assessment in relation to ecological receptors was required reference was initially made to the following screening criteria:

- Total vehicle flow change by 1,000 AADT or more; or HDV flows change by 200 HGV AADT or more, where an ecological receptor is located within 200m of the affected road.

2.2.7 With regards to the DCO application the screening assessment concluded that further consideration of vehicle emissions encompassing atmospheric dispersion modelling was not required.

[1] Institute of Air Quality Management (2024). *Guidance on the Assessment of Dust from Demolition and Construction*. Version 2.2.
[2] Institute of Air Quality Management (2017). *Land-use Planning & Development Control: Planning for Air Quality*. Version 1.2.
[3] Institute of Air Quality Management (2019). *A guide to the assessment of air quality impacts on designated nature conservation sites*. Version 1.0.
[4] Air Quality Consultants (2008). *NO_2 Concentrations and Distance from Roads.* Job no.: J504.
[5] Highways England (2019). *Design Manual for Roads and Bridges (DMRB)*, *LA 105 Air Quality*. Revision 0.
[6] Natural England (2018*). Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations*. Version 1.4.