

APPENDIX 14.5 – PROPOSED DEVELOPMENT CONSTRUCTION DUST RISK ASSESSMENT

The main air quality impacts associated with construction activities relate to the potential release of particulate matter of both PM₁₀ size fractions. There is also the potential for the evolution of other air quality pollutants (known as secondary pollutants). The sources of potential construction impacts specifically associated with the Proposed Development are set out below:

- Potential for generation of airborne dusts from exposure and movement of soils and construction materials;
- Generation of fumes on-site by construction plant and tools throughout the construction phase;
- Increase in vehicle emissions (smoke/fumes) from vehicles (and potentially as a result of slow-moving traffic, should local congestion ensue); and
- Re-suspension of dust as a result of vehicle tyres travelling over dusty surfaces.

A construction dust assessment has been undertaken in line with the IAQM (2023) guidance methodology as set out in Appendix 7.1 and a summary of the process is provided below.

Screening for a Full Assessment

Having reviewed the Site location, it is evident that there are a number of human receptors within 350 m of the Site, therefore a detailed dust impact assessment is required.

A review of the DEFRA Magic website indicates that the Dearne Valley SSSI is present within the immediate surrounding area. The ecological site sits approximately 80 m south west of the Site. However, as per box 1 of the IAQM (2023) guidance, it is not within 50 m of the boundary of the Site or construction vehicular routes (up to 500 m from the Site), therefore, an assessment of the impact of the construction phase on this receptor has been scoped out.

Potential Dust Emission Magnitude

Demolition

A review of the Site indicates that the Site is vacant and undeveloped, therefore the demolition part of this assessment can be scoped out.

Earthworks

The total area where earthworks will occur is greater than 10,000 m². It is anticipated that the soil existing in the ground has a 'Loamy and Clayey' texture, which is defined as:

"Loamy soils have a mix of sand, silt and clay-sized particles and are intermediate in character."

Therefore, in line with Table 14.2.1 as set out in Appendix 14.2, and professional judgment, the magnitude of potential dust release from earthworks activities is classified as Large.

Construction

The total building volume to be constructed is unknown, however it is expected to be > 100,000 m². Furthermore, based on the number of units being created, and the material used anticipated to be of high dust potential, in line with Table 14.2.1 as set out in Appendix 14.2, and professional judgement, the magnitude of potential dust release from construction activities is classified as Large.

Trackout

During the construction year (2024) there is expected to be 257 two-way heavy duty vehicle (HDV) movements on the local highway network, therefore it is reasonable to assume that for a typical day, the number of outward HDV movements will be 129. Therefore, in line with Table 14.2.1 as set out in Appendix 14.2 and professional judgment, the magnitude of potential dust release from trackout activities is classified as Large.

Summary

Table 14.5.1: Summary of Dust Emission Magnitude

Activity	Dust Emission Magnitude
Demolition	Negligible
Earthworks	Large
Construction	Large
Trackout	Large

Sensitivity of Area

Having established the emission magnitude for dust above, the sensitivity of the area is considered to establish the significance of effects. The effect of the dust (i.e. the result of the change in dust levels) depends on the sensitivity of the receptor to change. High sensitivity human receptors include residential dwellings, schools and hospitals.

The impacts of dust emissions from the sources discussed above have the potential to cause an annoyance to human receptors living in the local area. Within distances of 20 m of the Site boundary there is a high risk of dust impacts, regardless of the prevailing wind direction. Up to 100 m from the construction site there may still be a high risk, particularly if the receptor is downwind of the dust source.

With the exponential decline in dust with distance from dust generating activities, it is considered that for receptors more than 350 m from the Proposed Development boundary, the risk is negligible. Furthermore, the risks at over 100 m are only likely to be significant in certain weather conditions, e.g. downwind of the source during dry periods.

The approximate number of high sensitivity human receptors in the vicinity of the Proposed Development boundary is detailed in Table 14.5.2 below and are highlighted in Figure(s) 14.6 and 14.7 for earthworks and construction and for trackout.

Table 14.5.2: High Sensitive Human Receptors

Distance to Site (m)	No. of High Sensitivity Receptors	Details
< 20	> 100	-Residential dwellings located to the south east of the site along Billingley View. -Laceywood Primary School -Dearne Community Children Centre -Heather Garth Primary Academy
20 – 100	> 100	-Aldi warehouse to the east of the Site. -Residential Dwellings to the south east of the Site in Bolton upon Dearne.

The prevailing wind is from the south-west, as indicated by the Emley Moor wind rose in Figure 14.1. The Site boundary is surrounded with sensitive receptors to the north, east and south of the Site. Some areas are potentially upwind of the prevailing south-westerly wind. Due to the number of high sensitive receptors in such close proximity to the Site, the risk of dust soiling effects in line with IAQM (2023) are considered 'High' for earthworks and construction and 'Medium' for trackout.

The background annual mean concentration of PM₁₀ is well below the annual mean objective. Based upon this and the number of receptors within 20 m being over 100, the potential health impacts in line with IAQM (2023) are considered as 'Medium' for earthworks and construction and 'Low' for trackout.

Risk and Significance

Having established the likely dust emission magnitude and sensitivity of the area, the risk of impacts can be determined in accordance with the IAQM (2023) guidance; these are summarised in Table 14.5.3.

Table 14.5.3: Summary of Dust Risk to Define Site-Specific Mitigation

	Demolition	Earthworks	Construction	Trackout
Dust Soiling	N/A	High Risk	High Risk	Medium Risk
Human Health	N/A	Medium Risk	Medium Risk	Low Risk