

23rd June 2023

Philip Elliott
Planning Consultant,
Haringey Council,
6th Floor, River Park House,
Wood Green,
London,
N22 8HQ.

Dear Philip,

Omega B East: Wind Microclimate Peer Review

Architectural Aerodynamics Limited (ArcAero) has been appointed to carry out an independent review of the February 2023 pedestrian level wind microclimate assessment submitted in support of the planning application for the proposed Omega Works B East development, in London. The wind microclimate assessment was undertaken by Love Design Studio and is documented in Love Design Studio report dated 13th February 2023. This review is based on the contents of this document.

The review is intended to advise on the suitability of the method of assessment, the criteria used for the study, the results obtained, and the conclusions derived. Where appropriate, comments and questions are raised within sections 1, 2 and 3 below.

1. Suitability of Methodology Applied

1.1. The principles describing the assessment of suitability of wind conditions, for comfort and safety, by adopting the Lawson criteria, are accepted and are consistent with best industry practice. However, it is currently unclear if a full and proper analysis has been conducted. The following are factors that suggest that the assessment may be deficient:

1.1.1. Only 12 wind directions have been assessed for the study. General best practice is to conduct an analysis of at least 16 wind directions. **Please confirm if the assessment was conducted for every 30 degrees.**

1.1.2. A full analysis should calculate the total proportion of time (cumulatively, summed over all wind angles) that wind speeds at any given location fall beneath threshold values for their use. While the Methodology section appears to acknowledge this, the associated CFD contours do not appear to reflect this requirement.

- 1.1.3. The CFD figures present colour contours of wind speed variation within the study area at different heights above the ground for each wind direction individually. The CFD figures do not present wind comfort classifications using the Lawson criteria. If the procedure described on page 11 is being correctly implemented, the probability of exceedance of the various Lawson comfort criteria wind speed thresholds will be calculated (summed across all angles), and the comfort classification that is achieved at each location can be presented graphically, as is standard and expected practice. **It is requested that the comfort results be presented in this manner for each configuration, for all areas accessible to pedestrians and occupants.**
 - 1.1.4. Similarly, the probability of exceedance of the Lawson safety criteria wind speed threshold can be calculated (summed across all angles), and the safety classification that is achieved at each location can be presented graphically, as is standard and expected practice. **It is requested that the safety results be presented in this manner, for all areas accessible to pedestrians and occupants.**
 - 1.1.5. The comfort results / CFD contours have not been provided for at least worst season and summer seasons. **It is requested that this be provided.**
 - 1.1.6. The study refers to various comfort thresholds (i.e., 1% exceedance for sitting, 6% exceedance for entrances) for pedestrian activities and refers to the Beaufort Force as the criteria for determining the comfort level for each activity. This approach has been substantially superseded by the LDDC version of the Lawson criteria throughout the UK. The LDDC Lawson criteria specify that the larger of either mean and gust-equivalent mean (GEM) wind speeds should not be exceeded for more than 5% of the time in relevant seasons for the activity anticipated to prevail within each part of the study area. **It is requested that the comfort results be presented in accordance with the LDDC version of the Lawson criteria.**
- 1.2. Furthermore the CFD methodology presented in the report has not been provided in detail. It is requested that the following items are included / clarified.
 - 1.2.1. **Please clarify how the effects of turbulence have been accounted for in the CFD modelling analysis (i.e. confirm how a gust-equivalent mean wind speed has been derived).**
 - 1.2.2. **Please provide the targeted and simulated profiles of wind speed and turbulence intensity for the CFD simulation. Additionally, please provide simulated profiles at both the inlet and a suitable downstream position to demonstrate that the profile does not decay.**

- 1.2.3. **Please provide details of the method by which the profiles of target wind speed and turbulence intensity have been derived for the study, per wind direction.**
- 1.2.4. **Please provide at least 5 views of the mesh in critical regions (surface and volume mesh close to the proposed development) and provide the cell sizes used around corners, entrances and other areas of interest.**
- 1.2.5. **Please clarify if the CFD methodology has been validated against experiment and if so, and if possible, please demonstrate an acceptable level of agreement.**
- 1.2.6. **Please provide the images of the computational model for the Site and the surrounding area for all configurations.**
- 1.3. The proposed development stands at ~30m tall from the local ground level and does not present a substantial obstruction to wind. Therefore the CFD approach is deemed acceptable over wind tunnel testing for wind microclimate studies for this type of development.
- 1.4. A sufficient series of initial scenarios have been assessed as part of the studies. These include the existing site and surrounding condition (baseline), the proposed development within the context of existing surrounding developments and the proposed development within the context of consented surrounding developments. However, the report cites a requirement for the implementation of mitigation in places, but does not provide results post-mitigation. **It is requested that CFD results be provided to show where the introduction of mitigation has improved conditions to become suitable for anticipated activities.**
- 1.5. **The extent /radius of the study area has not been clearly described. Please provide the radius of the surrounding area modelled in the analysis.**
- 1.6. **Please state whether there are any additional significant cumulative developments fall within the study radius, apart from Omega B East? If so, please confirm if these have been modelled.**
- 1.7. The report does not set out how the effects of the wider terrain have been accounted for, either in relation to the wind approaching the site from each of the wind directions assessed, or in relation to the wind approaching the weather station selected for use in the analysis. It is specifically requested that:
 - 1.7.1. **It be confirmed that the effects of local terrain around the weather station of choice for the assessment have been accounted for, how they have been derived, and how they have been accounted for in the application of resulting Weibull parameters (specifically the 'c' parameter cited on page 11 of the report).**

- 1.7.2. **It be confirmed that the effects of local terrain around the site have been accounted for, how they have been derived, and how they have been accounted for in the application of resulting Weibull parameters (specifically the 'c' parameter cited on page 11 of the report).**

Summary

While, in principle, the broad approach to the assessment described within the report appears plausible, a significant number of questions exist in relation to its specific implementation, and how the Lawson criteria have been employed.

As a result, we are currently unable to confirm that the assessment represents an appropriate appraisal of the wind microclimate and is not accepted. Furthermore, the results presented in the report cannot be verified before the questions concerning the methodology are adequately addressed.

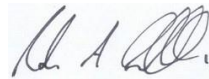
Yours Sincerely,



Ms Hayati Hashim

Line Manager

Architectural Aerodynamics



Dr Robin Stanfield

Director

Architectural Aerodynamics