

03 April 2023

Philip Elliot,
Haringey Council,
Planning Service Level 5,
Alexandra House, 10 Station Road,
London
N22 7TR

Dear Philip,

Berol Quarter: Wind Microclimate Peer Review

Architectural Aerodynamics Limited (ArcAero) has been appointed to carry out an independent review of the November 2022 pedestrian level wind microclimate assessment submitted in support of the planning application for the proposed Berol Quarter development (Planning Reference No. HGY/2023/0261), in the London Borough of Haringey. The wind microclimate assessment was undertaken by WSP and is documented in WSP report dated 8 November 2022 (Project No 70094918 rev 003). 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 wind microclimate assessment employs CFD study in order to conduct a quantitative assessment of the expected suitability of wind conditions based on the Lawson criteria for pedestrian comfort and safety. The CFD methodology employed is considered plausible for the current study, however the following would be worth clarifying:
 - a. Please clarify if and how a gust-equivalent mean wind speed has been derived.
 - b. Please provide the simulated and targeted profile for the CFD simulation.
- 1.2. It is of this reviewer's judgement that, given the height of this scheme (108m), rising above 100m and representing one of the taller developments in its immediate vicinity, wind tunnel studies would have provided a more robust assessment. Whilst there are no guidelines within the London Borough of Haringey recommending wind tunnel testing above a certain height, it is noted that the City of London's Wind Microclimate Guidelines (which this scheme does not fall under, and hence is not required to conform to), would recommend both CFD and wind tunnel testing for any schemes above 50m in height. Clarification is sought as to why a CFD only approach was selected for this assessment. In addition, it would provide some confidence in the assessment if

a comparison between CFD results and wind tunnel results could be provided, using the same methodology as the current study and for a building of similar height and exposure, and including the effects of gust wind speeds.

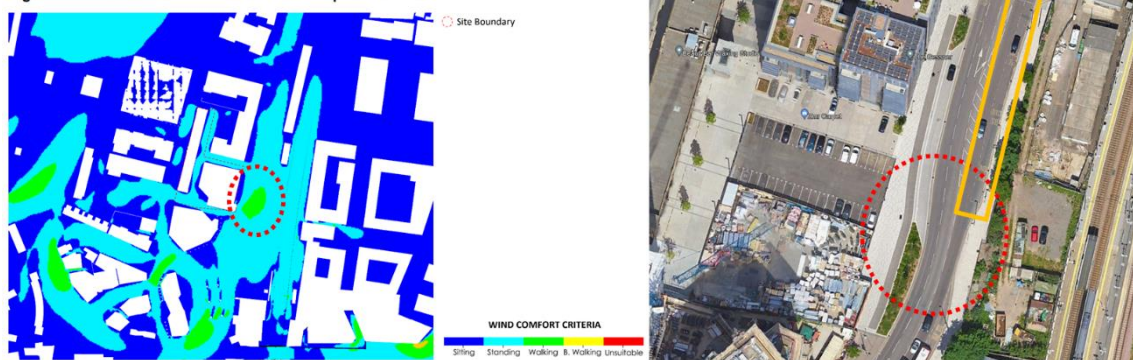
- 1.3. A sufficient series of scenarios have been assessed as part of the studies. These include the existing site and surrounding condition (baseline), the Proposed Development within the context of existing surrounding developments and the Proposed Development within the context of cumulative surrounding developments.
- 1.4. Clarification is sought on whether soft and / or hard landscaping was modelled within the assessment scenarios.
- 1.5. The study derives the suitability of wind conditions via the Lawson criteria for pedestrian comfort and safety. This is considered appropriate.
- 1.6. It is understood that the Weibull parameters used in the assessment are based on weather data at Heathrow Airport, transposed to open country terrain and subsequently transposed to a reference height of 108 m at the Proposed Development site. This is considered to be an acceptable approach.
- 1.7. It is noted that more prevailing wind directions (particularly from the south-west) have been simulated at 10-degree intervals, and thus this approach is acceptable. However, paragraph 3.6.18 of the assessment also states that “The grouping methodology is such that the frequency of grouped wind directions should generally not exceed that of the most frequent (prevailing) wind directions” – it is noted that the simulated direction of 0° (representative of the 0, 10, and 350° bins), which represents the highest combined frequency of 7.131%, is higher than the frequency of any individual prevailing directions. Ideally, this specific wind direction should have a lesser number of bins included.
- 1.8. Additionally, please clarify if the “Combined frequency [%]” values in Table 3-6 correspond to the “p” values within paragraph 3.6.4, and please clarify the methodology used to select the c and k values for the simulated wind directions that consist of grouped wind directions (ie, was it the maximum / minimum / average of the c and k values that were selected?).

2. Review of Conditions Predicted

- 2.1. Winter and summer comfort criteria contour plots have been presented to show the results of the assessment. Clarification is sought if the winter comfort criteria contour plots are representative of the worst-case seasonal comfort criteria at all locations – this is assumed as such, within this review of the conditions predicted.
- 2.2. WSP is also requested to provide comfort criteria contour plots of elevated terraces in winter (or worst-case seasonal), to assess the conditions at the entrances to the elevated terrace areas.
- 2.3. Conditions for the existing site within existing surroundings are generally suitable for pedestrian safety, with the sole exception lying near receptor 35. As for pedestrian comfort, conditions on site are suitable, a number of off-site comfort exceedances are noted. These findings are considered plausible and accepted.

- 2.4. With the introduction of the Proposed Development into existing surrounds, the assessment states that the off-site safety near receptor 35 remains present from the Baseline scenario and is not caused by the Proposed Development. This finding is considered plausible.
- 2.5. At the podium, lower levels terraces and Berol House's terraces, wind conditions are within the recommended criteria for safety. At the level 30 terrace and some of the upper level balconies, some areas exceed the criteria for safety, and mitigation is recommended. These findings are considered plausible.
- 2.6. In terms of pedestrian comfort, it is noted that wind conditions at pedestrian level are generally suitable for intended uses, but with a number of off-site areas where the comfort criteria were not met, similar to the Baseline, thus not requiring mitigation. This result, as presented, is considered plausible, with the exception of a single area. There is an area along Watermead Way (nearby receptor 23) that appears to be coincident with a nearby bus stop (highlighted in an orange box in the image below) where leisure strolling conditions appear. Please clarify if this region of leisure strolling conditions overlap with this bus stop area, and if such, mitigation measures will need to be recommended and validated for this area.

Figure 4-6 – Winter Comfort Criteria for the Proposed scenario



- 2.7. Elevated amenity spaces were noted to require mitigation should outdoor seating arrangements be allocated to areas where standing conditions persist in summer. It is also the level 30 terrace requires mitigation. These findings are considered plausible, and accepted.
- 2.8. With the introduction of the future schemes to represent the Cumulative scenario, the wind conditions from a wind safety perspective are similar to that of the Proposed scenario. These findings are considered plausible, and accepted.
- 2.9. In terms of comfort, wind conditions are similar to the Proposed scenario, with a few changes noted. The assessment notes that where changes cause an area to become windier, these areas still fall within the recommended comfort criteria, and thus require no mitigation. If WSP are able to demonstrate that the business walking area adjacent to location 26 is not due to a contribution from the Proposed Development, the results as presented will be considered as plausible and will be accepted.

3. Review of Mitigation Measures

- 3.1. With wind safety exceedances predicted on the level 30 terrace (receptor B) and the upper level balconies, clarification is sought if any form of balustrade (whether porous or solid) was modelled on any of the elevated terraces or balconies within this current assessment. Wind conditions at these areas will need to be mitigated to the point where safety exceedances no longer persist and that conditions are considered comfortable for proposed usages, and validated quantitatively.
- 3.2. At the podium (receptor A) and terraces (receptors C, E and F), where seating furniture is located outside the areas rated as suitable for 'sitting', mitigation measures appear to be broadly appropriate – however, these will need to be validated quantitatively, as per the below paragraph.
- 3.3. With the likely need for mitigation measures, a study put forward in support of a planning submission would also be expected to demonstrate, quantitatively, the validity and viability of wind mitigation measures. Please clarify if the mitigation measures have been validated quantitatively either via further CFD modelling or wind tunnel testing, which is the industry standard methodology for a robust assessment of this nature.

Summary

The assessment represents a plausible appraisal of the wind microclimate upon the introduction of the proposed development. A number of queries and requests for clarification have been raised, but the assessment and associated predictions appear reasonable, and as such it is expected that provided satisfactory clarification and / or further details are provided, the conclusions can be considered to be robust. However, it is also recommended that further quantitative assessments be carried out to validate mitigation of on-site wind safety exceedances on the elevated levels.

Yours Sincerely,



Yoong Jie Pang
Senior Engineer
Architectural Aerodynamics



Alex Turpitt
Director
Architectural Aerodynamics