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Civic Offices,  
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10<sup>th</sup> June 2020

Our Ref. P117633-1002

Dear Mr Markwell

**Independent Peer Review of the Technical Addendum to the Microclimate Assessment for Planning Application 200188 at 53-55 Vasten Road, Reading, RG1 8BU**

**1. Introduction**

BRE have been appointed by Reading Borough Council (RBC) to undertake an independent peer review of the technical addendum to RWDI report #1901994 Pedestrian Level Wind Comfort Assessment of 55 Vasten Road, Reading, dated 19<sup>th</sup> May 2020.

This review was carried out with particular reference to the following points:

- a) Is the level and nature (including the methodology) of information submitted sufficient and proportionate to the proposed level of development sought in this instance?
- b) Is the analysis and conclusion reached by the microclimate report reasonable and robust, set within the adopted local policy context of:  
Relevant components of Policies CC3 (Adaption to Climate Change) and CC8 (Safeguarding Amenity) of the Reading Borough Local Plan (Adopted November 2019).
- c) If it is considered that the analysis / conclusions are not reasonable and robust, guidance as to what measures (e.g. alternative mitigation measures) / information would be required to address any concerns raised (if any)?

This report provides BRE's review of the technical addendum to RWDI report #1901994 Pedestrian Level Wind Comfort Assessment of 55 Vasten Road, Reading which considers:

Configuration 4: Proposed Development with Cumulative Surrounding Buildings (including 182252 – 80 Cavesham Road and 200328 – Vastern Court Schemes).



BRE's Quality Management System is approved to BS EN ISO9001:2008, certificate number LRQ 10000513.

BRE's Environmental Management System is approved to BS EN ISO14001:2004, certificate number LRQ 10000536.

## 2. Background

BRE previously reviewed the main RWDI report #1901994 Pedestrian Level Wind Comfort Assessment of 55 Vastern Road, Reading, as reported in BRE report P117633-1000. RWDI subsequently provided a response to the issues raised by BRE in a Memorandum - Peer Review Responses, Vastern Road, Reading, UK, dated 24<sup>th</sup> April 2020.

Many of the issues noted in this review are similar to those previously raised in BRE's review of the main RWDI report #1901994 and addressed in the RWDI response. Where issues have previously been addressed by RWDI then this is noted in the following BRE review.

## 3. Peer Review of Technical Addendum to RWDI report #1901994

Issue Considered	BRE Comments	Action Required
<b>Compliance with RBC Policies CC3 and CC8</b>	<p>The proposed development is below the 12 storey height limitation of Policy CR10. However, Policy CC8 requires wind impacts to be considered for buildings &gt;8 storeys tall.</p> <p>The submitted wind microclimate assessment fulfils the requirement of Policy CC8.</p>	No action required.
<b>Compliance with Appropriate Methodology</b>	<p>The report provides a quantitative CFD assessment of the wind microclimate around the proposed development. The assessment is based on the 'Lawson' LDDC criterion for pedestrian comfort. However, the RWDI analysis only presents the mean wind speed effects. The Lawson approach requires a gust equivalent mean wind speed (GEM) analysis to be carried out. See for example Ref 1, which presents best practice guidelines for CFD studies.</p>	<p>The Lawson methodology is appropriate, however, the RWDI assessment should include an assessment of GEM wind speeds in order to comply with the Lawson criteria.</p> <p>RWDI have previously confirmed for the main study that judgement on the effect of the GEM/gusts has been used and they expect 'that the overall wind conditions would be as presented from the CFD modelling'.</p> <p>We expect that this will also apply to this study, but this should be confirmed by RWDI. In which case no further action is required.</p>
<b>Level and Nature of Information Submitted</b>	<p>The report is generally well written and easy to understand and provides an acceptable level of detail and information, subject to the clarifications and omissions described below.</p>	No action required
<b>Scope of Assessment</b>	<p>The scope of the assessment is as expected for a CFD study of this type</p>	No action required
<b>Assumptions</b>	<p>In line with standard methodology, and consistent throughout the report.</p>	No action required

Ref 1 Wind Microclimate Guidelines for Developments in the City of London, August 2019

<b>General</b>	First sentence of Section 3 refers to 'Configuration 1 shown in Figure 2'	Should this be Configuration 4, which is the subject of this addendum?
<b>Analysis</b>	<p>The assessment uses meteorological data from Heathrow Airport. These data appear to be appropriate for this assessment.</p> <p>The Lawson methodology requires an assessment of both mean and gust windspeeds (where the gust wind speeds are presented as gust equivalent values, GEM). The report only presents mean wind speed results.</p> <p>There is limited information provided regarding the CFD modelling, such as, for example, the extent of the calculation domain, the calculation grid size, etc.</p> <p>The assessment has been carried out for 18 wind directions. Current best practice is to use 36 wind directions.</p> <p>It is stated that the CFD RANS simulation used in this assessment does not have the ability to predict the fluctuating or gusty nature of the wind. This is justified by the argument that '<i>As comfort is a function of average conditions, this model is more suited to help analyse this</i>'.</p>	<p>No action required</p> <p>See previous comments on GEM wind speed assessment</p> <p>RWDI have previously confirmed for the main study that the CFD modelling complies with best practice. No further action required</p> <p>Given the massing and height of the proposed development, 18 wind directions is considered reasonable in this case. No further action required.</p> <p>This is an erroneous argument. Pedestrian comfort is not just a function of average conditions. In regions where highly turbulent flow occurs, for example near building corners, then pedestrian comfort tends to be dominated by gust wind speeds. A GEM analysis should be carried out. See previous comments on GEM wind speed assessment</p>
<b>Results</b>	<p>There are no areas around the development that have been identified as having walking use or windier conditions. The report states that therefore there would not be any exceedances of the lower Lawson 15m/s distress threshold.</p> <p>The results indicate that the wind conditions at ground level and podium level will be suitable for the intended pedestrian activity at all locations except for the podium café seating area where conditions during the summer in one area will be suitable for standing. It is stated that with the proposed landscaping scheme the conditions would be expected to become suitable for sitting. This has not been demonstrated.</p>	<p>Due to the predicted relatively benign wind conditions in and around the Site, this assertion is reasonable.</p> <p>The café is at podium level overlooking the River Thames. The landscaping in the vicinity appears to be at ground level and consist of scattered isolated trees; no measures appear to be specifically aimed at providing mitigation to the café area. It is our opinion that the proposed landscaping will be inadequate to provide the required mitigation at the cafe. Other solutions, such as local screens or revised landscaping should be considered, or this should be demonstrated from a quantitative assessment.</p> <p>Action: Consider alternative mitigation for the windy part of the café seating area.</p>

	The wind conditions at balcony and terrace level are mainly suitable for sitting during the summer. There are, however, several balconies where the conditions are only suitable for standing use during the summer. Where balconies are provided, then it is reasonable to expect people to be able to comfortably sit out on them during the summer.	It is BRE's opinion that having balconies which are unsuitable for sitting use during the summer months due to strong winds is unacceptable.  Action: Consider mitigation measures to improve wind conditions on these balconies such that they become suitable for sitting use during the summer.
<b>Omissions</b>	Failure to include a GEM windspeed analysis	See previous comments on GEM wind speed assessment
<b>Mitigation</b>	The report states that no mitigation is required.	It is BRE's opinion that mitigation should be considered for the café seating area and for selected windy balconies as discussed above.
<b>Conclusions</b>	The conclusions reached with regard to the expected wind comfort effects around the proposed development are reasonable and robust, except for: <ul style="list-style-type: none"> <li>the third bullet point which suggests that the windy area of the outdoor café will be adequately mitigated by the proposed landscaping.</li> <li>No mention of several balconies being unsuitable for sitting during the summer months</li> </ul>	Action as previously discussed  Action as previously discussed

#### 4. General Summary

Many of the issues identified in this review of the addendum report were also identified in the BRE review of the main report and have been addressed by RWDI.

The development site is shown to be well sheltered by the four large cumulative developments to the southwest. This is predicted to lead to a relatively benign wind microclimate at the development site; leading to wind conditions which are expected to be suitable for the intended pedestrian activities at most locations. BRE has two residual concerns which, these are:

- The seating area of the open-air café where a localised area has conditions which are unsuitable for sitting. It is BRE's opinion that the proposed general landscaping is unlikely to provide the required level of mitigation at the café. It is suggested that improved mitigation measures be considered for this location.
- There are several balconies which are expected to be unsuitable for sitting use during the summer. Where balconies are provided then people expect to be able to use them and comfortably sit out on them at least during the summer. It is suggested that mitigation measures be considered to ensure wind conditions are suitable for sitting on all windy balconies.

Yours sincerely



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