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Reading Borough Council
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Bridge Street,
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9th June 2020

Our Ref. P117633-1001

Dear Mr Markwell

Review of RWDI response to BRE peer review of RWDI report #1901994 Pedestrian Level Wind Comfort Assessment of 55 Vasten Road, Reading

1. Introduction

BRE provided an independent peer review (BRE Report P117633-1000) of RWDI report #1901994 Pedestrian Level Wind Comfort Assessment of 55 Vasten Road, Reading. Following this review RWDI provided a response to the points raised in a letter dated 24th May 2020 titled 'Peer Review Responses – Vasten Road, Reading, UK'

This letter provides BRE's reply to the RWDI responses.

Appendix A contains a table giving the RWDI responses to the points raised by BRE in the original peer review. The text in this table is taken verbatim from the RWDI reply. Included in this table is the BRE response to the RWDI reply and the residual action points.

2. Summary of Residual Issues

BRE are satisfied with the majority of the RWDI responses to the points raised. However, for completeness, the RWDI report should be updated to include the RWDI responses as suggested in the table in Appendix A.

There are three outstanding residual issues. These are:



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.

i, The failure by RWDI to consider the upper 20m/s safety threshold. If this threshold is not considered then appropriate mitigation measures cannot be developed. Without this, it will be necessary to carry out a full quantitative assessment of mitigation measures. This could potentially be conditioned by Reading Borough Council.

ii, The use of a limited seasonal approach to wind conditions on balconies. This matter results from a fundamental disagreement between BRE and RWDI on best practice. The appropriateness of the RWDI approach needs to be considered by RBC and the developer.

iii, The RWDI response indicates that the wind conditions at the entrance to Sovereign House will remain unsuitable for entrances. This is unacceptable. Appropriate mitigation measures need to be developed to reduce the wind speeds in this area.

Yours sincerely



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For and on behalf of BRE

Appendix A -

Original BRE Comment	RWDI Response	BRE Reply and Action Required
<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>As noted, CFD modelling provided mean wind speeds for the predicted wind microclimate around the Proposed Development. For the Lawson LDDC criteria Lawson states a 5% exceedance of equivalent hourly average (i.e. mean) wind speed. In areas where winds speeds would be highest, experience of wind tunnel tests around the UK and more specifically in Reading, has been used to make a judgement on the effect of the GEM/gusts in these areas. As such, we do not expect there to be a change in wind conditions due to the GEM/gusts in these areas and that the overall wind conditions would be as presented from the CFD modelling.</p>	<p>Although no quantitative testing has been carried out by RWDI to assess the GEM wind speeds, we agree that in this case a desk based assessment is reasonable.</p> <p>We accept the RWDI opinion that the wind comfort assessment is unlikely to change significantly when the GEM wind speeds are considered.</p> <p>Action required: For completeness and to comply with the Lawson Criteria the RWDI judgement with respect to the GEM wind speeds needs to be included in the report.</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>Section 4 states that surrounding building models were included within a 400m radius of the centre of the Site and a computational grid composed of approximately 20 million cells was used. Further to this, the computational domain extended to at least 1000m from the centre of the Site and a height of 600m above the ground plane.</p>	<p>Accepted. No action required</p>
<p>This assessment uses 'informed engineering judgement' to 'determine the potential for strong winds leading to potential safety issues'. The assumption is that strong winds are generally associated with areas which would be classified as acceptable for walking or as uncomfortable. However, the assessment appears to assume that only the lower 15m/s safety threshold can be exceeded in these areas. The possibility of exceedance of the 20m/s threshold appears to have been totally ignored.</p>	<p>As any exceedance of the lower safety threshold (winds exceeding 15m/s for more than 0.025% of the time) within pedestrian accessible areas of the Proposed Development would highlight the requirement for wind mitigation measures, and has been considered universally in this assessment, the 20m/s threshold becomes superfluous (the lower threshold would have to be breached to reach the higher threshold).</p>	<p>Exceedance of the 20m/s threshold is likely to require more extensive mitigation measures than exceedance of the 15m/s threshold. As the RWDI assessment does not consider the 20m/s threshold then appropriate mitigation measures cannot be determined. Therefore, providing an additional quantitative wind mitigation study is carried out to assess solutions at all locations where the 15m/s threshold is expected to be exceeded then we agree that the 20m/s threshold does not need to be considered in the current assessment.</p> <p>Required Action: A quantitative assessment of mitigation measures should be carried out.</p>
<p>Section 6.2. Figure 6 shows an area where wind conditions are suitable for walking. This location appears to be a footpath along Vasten Road. This is not specifically discussed in the report.</p>	<p>There would indeed be a small area (approx. 1.5m²) of conditions suitable for walking use on Vasten Road south-east of Building B. As noted in Configuration 3 (6.3.1.1), wind mitigation measures would be required. Section 7 details that the proposed landscaping scheme (in particular those elements to the south of the Proposed Development) would be expected to improve wind conditions such that they would be suitable of the intended use in this area.</p>	<p>We agree that this is a very localised windy area and the proposed landscaping measures are likely to provide some mitigation.</p> <p>Action: The RWDI report should specifically discuss this windy area and the proposed mitigation.</p>
<p>The discussion of wind conditions in amenity areas and on balconies is limited to the summer season. (this comment also applies to Section 6.3)</p>	<p>Assessment of the suitability of balconies for amenity use is limited to the summer season, as is RWDI's standard practice. Balcony locations are expected to be most frequently used during the summer season. Outwith the summer season other factors, such as</p>	<p>It is BRE's view that a limited seasonal approach is not best practice when assessing balcony usage. However, providing all parties, i.e. the Council, the developer and the owner/occupier are content that the balconies are only intended for amenity use during the</p>

	<p>temperature and precipitation would be likely to limit the use of these spaces. Likely exceedance of the safety threshold as specified by Lawson on balconies as has been assessed throughout the year as discussed in sections 6.2.2 and 6.3.2.</p>	<p>summer then we have no further comment. If however, if any party would expect the balconies to be accessible for amenity use during other seasons, such as spring or autumn than a full seasonal assessment should be carried out.</p>
<p>Section 6.3.1 This section states: 'Wind conditions around the Proposed Development during the windiest season would range from suitable for sitting to walking use. These conditions would be suitable for all entrance locations as they would have conditions suitable for standing use or calmer'.</p>	<p>This statement is incorrect. As stated in section 6.3.1.2, wind conditions at entrances would be suitable for strolling use. Section 7 details wind mitigation measures and the application of the proposed landscaping scheme to improve conditions such that entrances would be suitable for standing use or calmer.</p>	<p>Accepted. No action required</p>
<p>Section 6.3.1.1 This section states: 'an area to the south-east of Building B would have walking use wind conditions during the windiest season'.</p>	<p>It is true to say cumulative interactions would result in walking use conditions outside the entrance building to Sovereign House. While this is not a frequently accessible pedestrian area (the entrance to Sovereign House would have sitting use conditions on the eastern side of the reception block) and as such would be suitable for the intended use, provided there were no strong winds likely to occur, as the assessment was undertaken devoid of landscaping in order to assess a worst-case scenario, it would be expected that inclusion of the substantial existing landscaping west of the reception block would reduce the occurrence of walking use conditions in this area.</p>	<p>It is stated that the proposed landscaping is expected to reduce the occurrence of walking use conditions outside of the entrance to Sovereign House; which we accept. However, the occurrence of walking use conditions should be completely eliminated at the entrance, not just reduced; otherwise the wind conditions could remain unsuitable for entrances.</p> <p>Action: Appropriate mitigation should be considered and stated in the RWDI report to ensure that the conditions at the entrance to Sovereign House improve to become acceptable for entrances.</p>