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Re: Bridgewater Place Tower - On-Site Verification of Wind Microclimate Conditions

RWDI 1900495

PURPOSE

Wind effects play a key role in the comfort and safety of pedestrians in public spaces. Excessive wind conditions created by tall buildings could affect the usability of external areas, and in severe cases may pose a safety risk for pedestrians.

RWDI has been requested by Leeds City Council (LCC) to peer-review the wind studies that have been carried out to-date for Bridgewater Place (BWP) Tower. The most recent report prepared by the Buro Happold acting for BWP is attached at the end of this letter for reference.

This letter provides an overview of RWDI's peer-review and recommendations.

BACKGROUND

- BWP team originally carried out extensive wind tunnel tests to quantify the wind conditions and develop suitable mitigation options. This has been reviewed in the past, and the wind mitigation measures have since been built and implemented,
- There were also protocols for measuring the real on-site wind conditions prior to and subsequent to the construction of wind mitigation measures. This on-site monitoring assessed whether the Lawson safety criteria was exceeded in any critical areas, and identified two areas – one in the service yard of BWP and another on the south side – where the on-site measured conditions exceeded Lawson safety limits.
- Since then, BWP team carried out Computational Fluid Dynamic (CFD) simulations, to help identify further wind mitigation to resolve the safety condition to the south of the site. A large porous screen is proposed to the south of the site, as described in reports attached to this letter. For the safety exceedance in the service yard, a management approach is mentioned, although it is noted that no further details of this management protocol have been provided.



- During the latest CFD studies, an area on Back Row was identified as being marginally above the Lawson safety criteria. This area was not part of the on-site monitoring programme, so it is not yet clear of the conditions predicted by CFD are verified on-site

RWDI REVIEW AND RECOMMENDATIONS

We concur with the overall summary and conclusions of the report titled “BwP – Final Summary” by Buro Happold dated 3rd of October 2019 (rev04 Final). This includes the following key actions that will be taken;

- A porous screen (50% porous) will be installed to the south of Bridgewater Place Tower to improve the wind conditions at the edge of the road. This is expected to eliminate the safety risks at location 18.
 - o LCC should agree the timescales for implementation of this screen, and consider using temporary/interim safety measures (e.g. warning signs) before the screens are built to protect pedestrians.
- A management protocol will be used to eliminate the safety risks associated with the service yard, locations 22 and 88.
 - o No details of this management protocol have been presented to RDWI to-date. LCC should seek to verify the details of this management protocol, and a timeline for its implementation. Should the area be kept open for pedestrian access in the interim period, temporary measures as noted above may be used to reduce safety risks.
- At location 86 (Back Row) where CFD predictions indicate a safety concern, an on-site monitoring campaign will be carried out to verify the as-built wind conditions.
 - o LCC should seek to provide a temporary/interim safety measures as noted above until such time that the on-site monitoring is carried out, or until further wind mitigation measures are implemented if required.

Attachments:

- 1) Report titled “BWP – Final Summary” by Buro Happold, dated 3rd of October 2019 (rev04 Final).