Date: February 6, 2017

Reference: WA567-17F03(rev3)- WE Letter

Lend Lease
Tower Three, International Towers Sydney
Exchange Place, 300 Barangaroo Avenue
Sydney NSW 2000

Attn: Mr Greg Smith

RE: ONE SYDNEY HARBOUR, BARANGAROO
Wind Environment Commentary

Dear Greg,

This letter is in regards the wind environment conditions and associated design considerations proposed to reduce any adverse wind effects experienced with the One Sydney Harbour development in Barangaroo. Extensive and detailed wind tunnel testing has been undertaken for the three tower development from the concept design stage, to ensure design guidance is provided on the wind conditions experienced within and around the site. The initial assessment of the built form of the development indicated the exposure of the site to the prevailing westerly winds due to the location of the site being adjacent to Darling Harbour and the funnelling of the southerly winds along the eastern and western aspects of the site due to the street alignment of the Sydney CBD.

1.1 Tower Design

The three towers being relatively tall and slender in form is advantageous in minimising the downwash effects to the streetscape below as the flow passes around the tower form due to the narrow aspect exposed to the prevailing winds. The inclusion of a podium component at the south-western corner of the site, which is most exposed to the south-westerly to westerly winds, minimises the effect where the main downwash was present, however the wind conditions around the site are generally governed by the direct wind effects due to the sites location on the harbour foreshore. The separation of the towers was noted in preliminary studies to be an important aspect in minimising the downwash effect as flow was able to pass between and around the towers. Had a large floorplate design been proposed, especially between R4a and R4b, there would be a notable increase in the downwash effect to the ground plane below, hence the current design is beneficial in reducing this potentially adverse effect associated with the development site location.

1.2 Strada Precinct

The alignment of the Strada has been noted from the conceptual stage as an area which would need to be properly accounted for in terms of wind comfort to provide a suitable space for use by pedestrians.

The pressure differential experienced at either end of the Strada due to the site exposure especially to the westerly and north-easterly winds, is most effectively combatted with the inclusion of Strada Doors and as such recommended to provide suitable amenity. A detailed study which tested the wind conditions for the Strada when open, partially open and enclosed by doors was carried out prior to reaching this conclusion as the most suitable outcome. In each instance where there was a significant opening present at either or both ends of the Strada, the space was found to be exposed to adverse wind impacts making the area unusable for retail trade and seating, thereby reducing the potential for activation and public interface with the space. The inclusion of the Strada canopy further enhances the comfort levels for patrons, providing a barrier to inhibit downwashed winds to the ground plane below.

1.3 Public Domain and Staging

The recommended landscaping associated with the residential component has been developed with the proposed Public Domain Design (SSD7944) to ensure an integrated approach for the overall area which provides the most suitable outcome in terms of wind conditions for the precinct. Mod 8 Approval Condition B12 stipulates that 'Prior to the issue of any occupation certificate within Block 4A, 4B or Y, the foreshore promenade (to the full extent mapped in the SEPP Amendment), Pier, Watermans Cove and Hickson Park (other than the temporary construction road corridor on the alignment of the former Barton St) shall be constructed, landscaped and publicly accessible.' As such no temporary landscaping will be required as the Public Domain will be in place from the completion and operational commencement of either one or all of the towers, ensuring public comfort and wind mitigation is maximised at the ground plane. As such the current proposed design provides adequate wind amelioration to mitigate the wind conditions and maximise public comfort at the ground plane. As such, Windtech perceives that the current design provides suitable wind amelioration to mitigate any adverse wind conditions and maximise public comfort at the ground plane.

1.4 Natural Ventilation for the Apartments

Natural cross ventilation for the apartments located in the first 9 levels of the building has been achieved through the inclusion of corner apartments with dual-aspect window openings, and the inclusion of natural ventilation ducting to enable dual aspect openings for apartment type LA-06, LB-06 and L5-03. The ducting achieves a minimum free area of $0.4m^2$ for suitable flow within the apartment, while input from the mechanical, acoustic and fire consultants has been provided to minimise any pressure (flow) drop along the length and account for noise and fire requirements. This arrangement is presented in the Supplementary Design Report.

Regards,

Windtech Consultants Pty Ltd

Kevin Peddie
Associate Director