



04 April 2025

244191

Heritage Victoria  
GPO Box 2392  
Melbourne  
Victoria 3001

Attention: Nicola Stairmand

## **Former Cable Tram Engine House & Tram Substation**

### **Wind Impacts Letter**

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Dear Nicola,

A wind assessment has been undertaken by TTW in accordance with AS1170.2 – Wind Actions to evaluate the potential wind impacts of the proposed student accommodation tower on the Former Cable Tram Engine House and Tram Substation located at 253-263 Brunswick Road, Brunswick. The proposed development involves the construction of a 6-storey high student accommodation tower at the existing cable tram engine house. The new tower is structurally independent from the heritage building, except at the north-west zone, where the existing brick walls of the Engine House will be laterally restrained by the new structure to ensure stability.

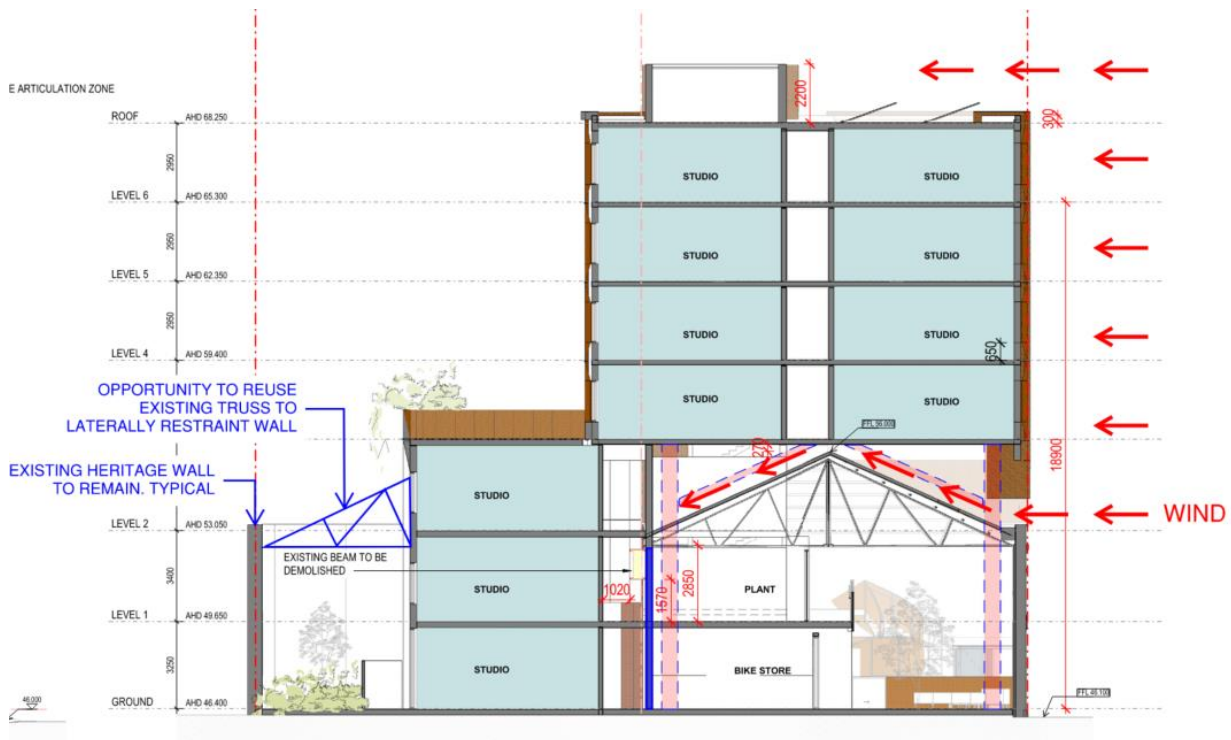
TTW has assessed the wind impact both before and after the construction of the new tower, with specific focus on the heritable building as originally constructed in the 1880s. Two scenarios were analysed:

- Design wind speed at the height of the original heritage building
- Design wind speed at the height of the new 6-storey tower

The design wind speed acting at the height of the original heritage structure was determined to be 38m/s while for the proposed 6-storey tower, the design wind speed was found to be 44 m/s. Based on these wind speeds, the critical uplift pressures were calculated as 0.7 kPa for the original heritage building and 0.9 kPa for the new accommodation tower. The increase in pressure is experienced by the roof of the tower and does not impact the original heritage structure. The presence of the accommodation tower effectively blocks the passage of wind across, and we are left with a small zone of internal pressure.

Further analysis was carried out in accordance with AS1170.2 Clause 5.3.4. Internal Walls and Ceilings to understand the potential wind impact at the interface between the roof of the original heritage building and the proposed accommodation tower. Currently, perforated screens have been proposed to be installed at the interface. This clause addresses situations where internal walls or ceilings do not form a permanent seal and suggests that differential pressures may be calculated using a net pressure coefficient of  $\pm 0.3$ , where appropriate.

In both wind scenarios (before and after the tower construction), TTW has assessed the structures according to the net pressure coefficient mentioned earlier and have assumed that the walls will be equally permeable. Under this assumption, wind flow can pass through the interface (Figure 1), which mitigates the development of differential pressures and therefore eliminates any additional wind loading on the roof of the heritage structure.



*Figure 1 Wind flow through interface between heritage building and proposed accommodation tower*

Clause 5.3.4 also notes that differential pressures may be relieved by the provision of appropriate venting, which supports the design intent of using permeable interfaces in this case.

Based on the above assessment, TTW concludes that the proposed development will not result in any increase in wind forces on the Former Cable Tram Engine House, and the heritage significance of the building will remain unaffected in terms of structural wind load.

Should you require anything further please contact the undersigned.

Yours faithfully,  
**TTW (VIC) PTY LTD**

*Cindy*

**Cindy Li**  
**Structural Engineer**