

Attachment B26(c)

**Pedestrian Wind Environment Study Part 3
– Waterloo Estate (South) – Land and
Housing Corporation**

7 IMPLEMENTATION PLAN & STRATEGY

This section will address study requirements 19.2, 19.6 and 19.8 to identify key wind sensitive ground locations within and around the site which will be quantitatively assessed by conducting a wind tunnel test of the Waterloo South massing model.

In analysing the initial wind conditions of the existing site a baseline scenario has been established, which has provided design guidance for the massing model. The existing site wind conditions as outlined in Section 6.3 and 6.4 have been considered and a proposed massing model has been developed for Waterloo South by the design team within the design parameters and principles presented during the concept design stage.

The results of a detailed investigation of the ground level wind environment conditions for the proposed massing model of the Waterloo South has been undertaken, based on the drawing package received February 2020 from Turner. Elevated pedestrian accessible areas were not tested and will be further investigated during the detailed design stage. Waterloo Metro Quarter site is also included, however it is not part of the detailed wind investigation undertaken in this report.

For areas not achieving appropriate wind conditions, treatments have been formulated and tested in the wind tunnel to ensure their effectiveness and discussed in Section 8.2.

7.1 The Wind Tunnel Model

Measurements were made in the wind tunnel at selected critical trafficable outdoor locations within and around the development from 16 wind directions at 22.5 degree increments using a 1:400 scale detailed model of the development. The Waterloo South study model incorporates all necessary architectural features on the development to ensure an accurate wind flow is achieved. Photographs of the wind tunnel model are presented in Figures 9a – 9d. Figure 9e depicts a plan view of the proximity model.

The model of the proposed development was tested in the wind tunnel without the effect of any forms of wind ameliorating devices such as screens, balustrades, awnings, etc., which are not already shown in the architectural drawings. The effect of vegetation was also excluded from the initial testing.

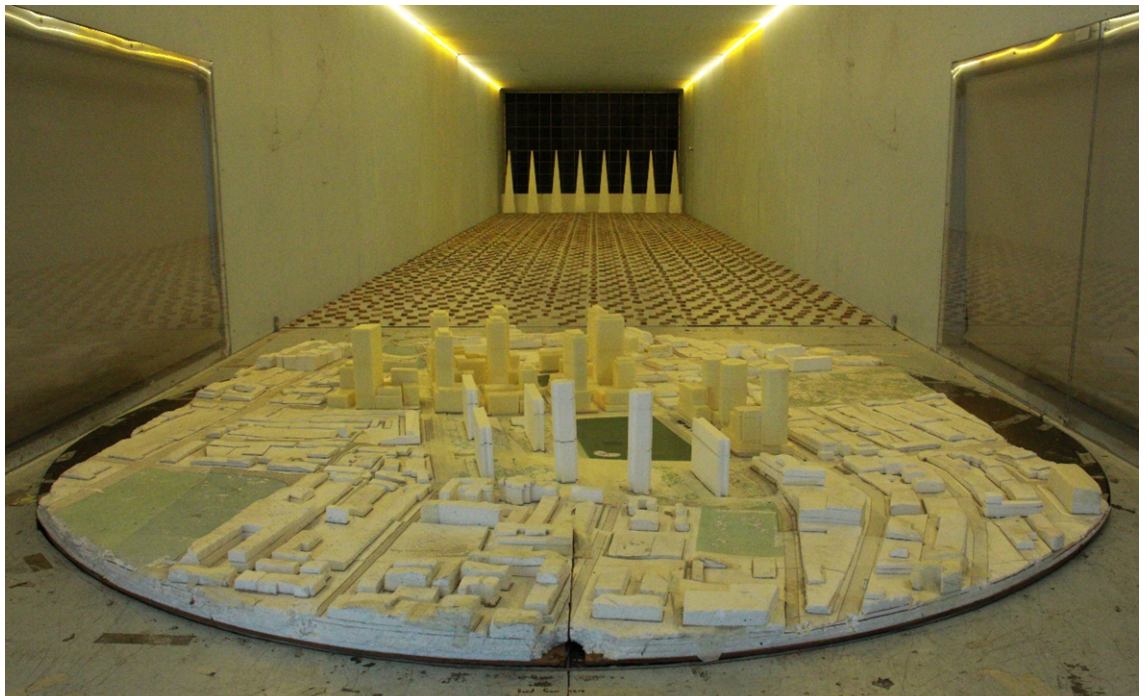


Figure 9a: Photograph of the Wind Tunnel Model – (View from the North)



Figure 9b: Photograph of the Wind Tunnel Model – (View from the East)



Figure 9c: Photograph of the Wind Tunnel Model – (View from the South)



Figure 9d: Photograph of the Wind Tunnel Model – (View from the West)

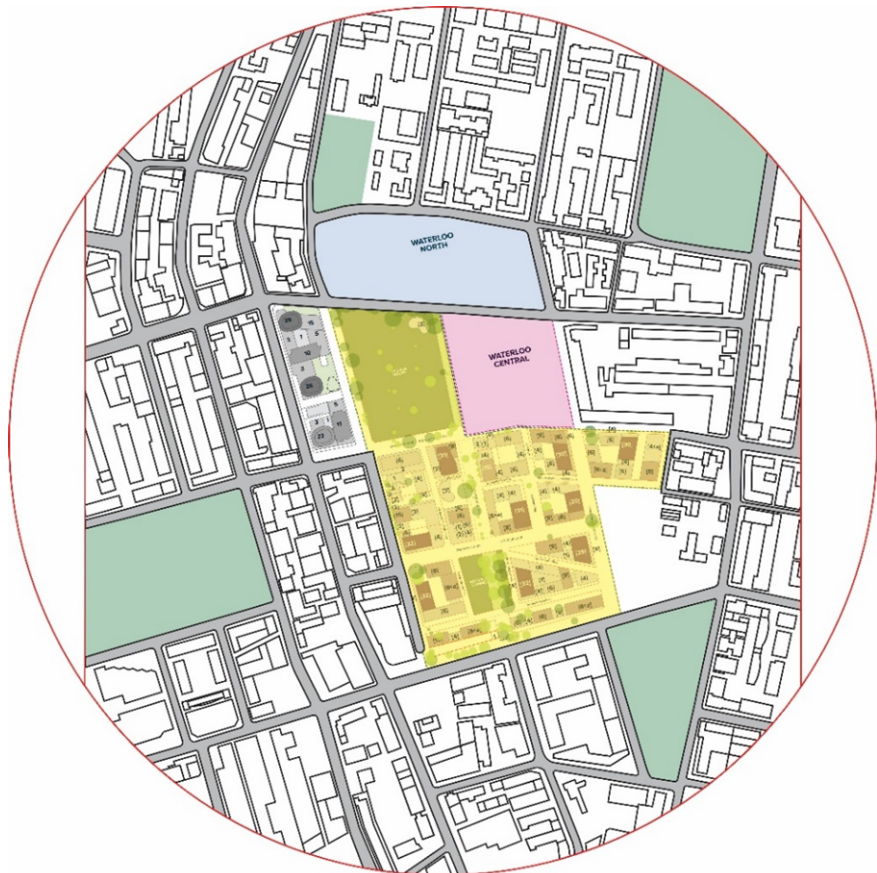


Figure 9e: Map of Proximity Model

7.2 Layout of Study Points, and Relevant Wind Speed Criteria

For this study a total of 125 ground level study points have been selected for analysis in the wind tunnel located within and around various locations of the Waterloo South site.

The locations of the study points tested for this study are presented in Figures 10a – 10g in the form of marked-up plan drawings. The target wind speed criteria for the outdoor trafficable areas within and around the development is also indicated in these figures.

It should also be noted that only the most critical outdoor locations of the development have been selected for analysis. The areas identified are the large open spaces, public open spaces, pedestrian laneways and the corner areas of the proposed development site due to the alignment of the city street grid coinciding with two of the prevailing winds for the Sydney region, which are the southerly and westerly winds.

Elevated pedestrian accessible areas were not tested and will be investigated at a later detailed design stage.

Target Criteria

- City of Sydney DCP in accordance with Sydney DCP 2012 - Central Sydney Planning Review Amendment:
 - Wind Comfort Standard for Walking criterion of 8m/s (5% exceedance)
 - Safety criterion of 24m/s (gust - 0.1% exceedance) for safety
- City of Sydney DCP in accordance with Sydney DCP 2012 - Central Sydney Planning Review Amendment:
 - Wind Comfort Standard for Standing criterion of 6m/s (5% exceedance)
 - Safety criterion of 24m/s (gust - 0.1% exceedance) for safety

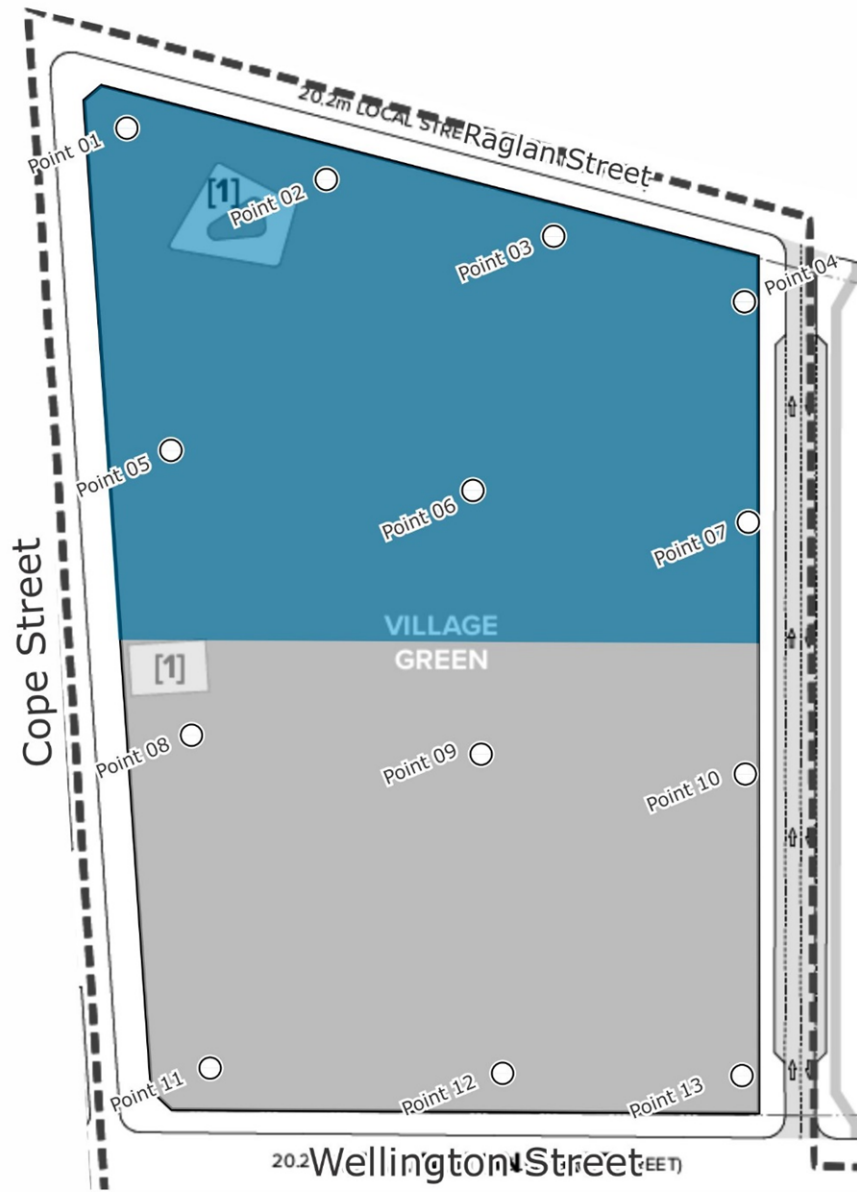
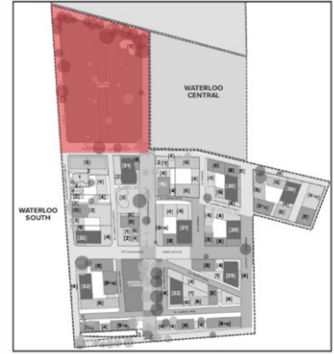


Figure 10a: Study Point Locations and Target Criteria – Village Green

Target Criteria

- City of Sydney DCP in accordance with Sydney DCP 2012 - Central Sydney Planning Review Amendment:
- Wind Comfort Standard for Walking criterion of 8m/s (5% exceedance)
- Safety criterion of 24m/s (gust - 0.1% exceedance) for safety

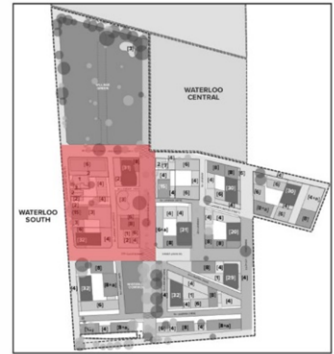


Figure 10b: Study Point Locations and Target Criteria – Lot L, M, PS, R and Q

Target Criteria

- City of Sydney DCP in accordance with Sydney DCP 2012 - Central Sydney Planning Review Amendment:
 - Wind Comfort Standard for Walking criterion of 8m/s (5% exceedance)
 - Safety criterion of 24m/s (gust - 0.1% exceedance) for safety

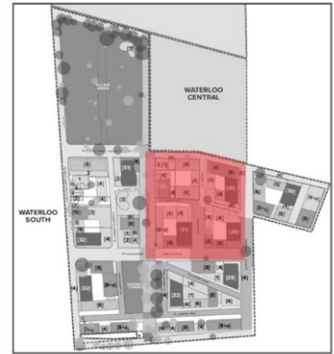


Figure 10c: Study Point Locations and Target Criteria – Lot PS, O, S and T

Target Criteria

- City of Sydney DCP in accordance with Sydney DCP 2012 - Central Sydney Planning Review Amendment:
 - Wind Comfort Standard for Walking criterion of 8m/s (5% exceedance)
 - Safety criterion of 24m/s (gust - 0.1% exceedance) for safety

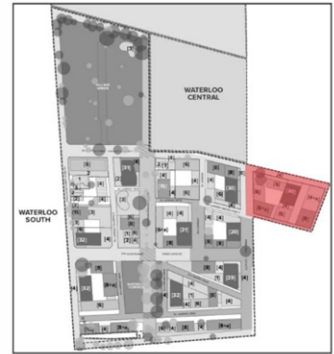


Figure 10d: Study Point Locations and Target Criteria – Lot P

Target Criteria

- City of Sydney DCP in accordance with Sydney DCP 2012 - Central Sydney Planning Review Amendment:
 - Wind Comfort Standard for Walking criterion of 8m/s (5% exceedance)
 - Safety criterion of 24m/s (gust - 0.1% exceedance) for safety

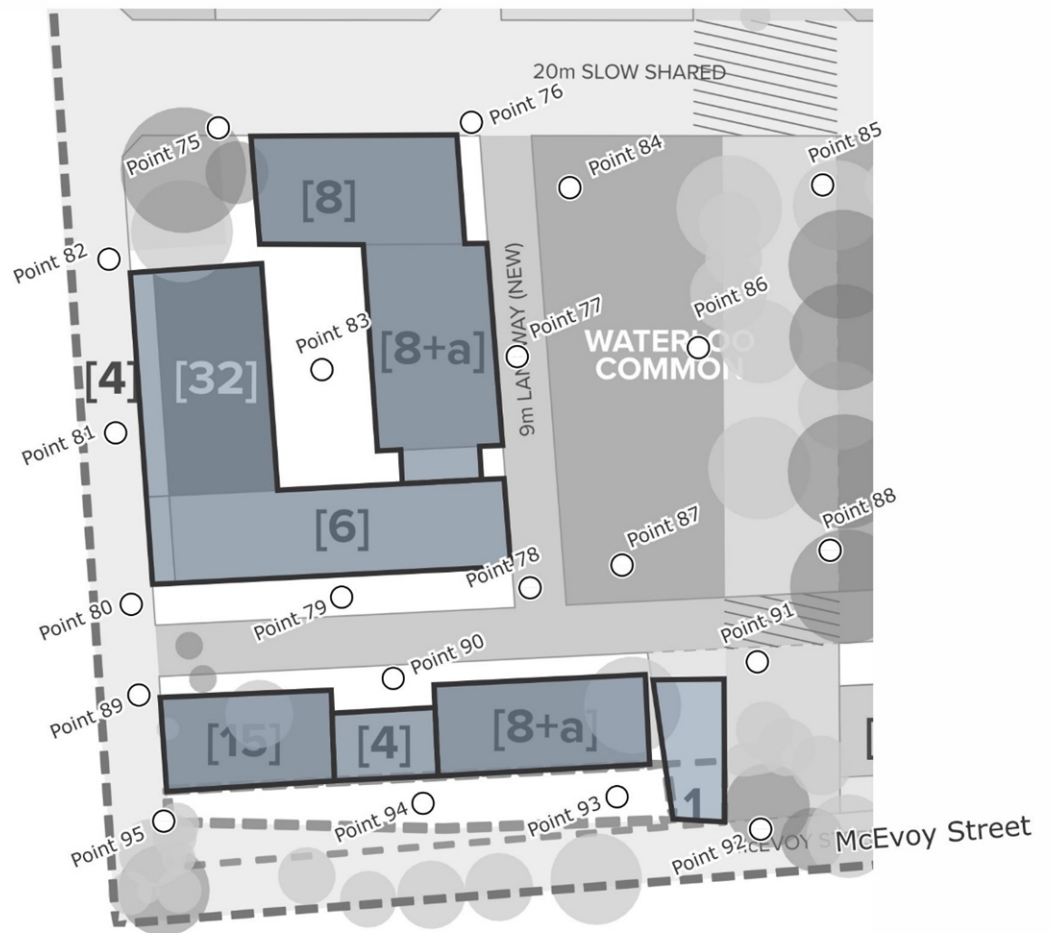
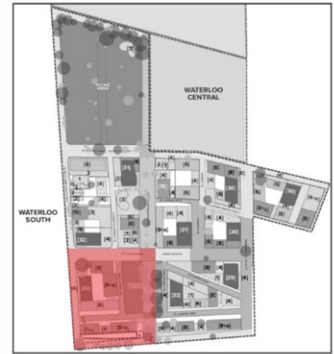


Figure 10e: Study Point Locations and Target Criteria – Lot U and Y

Target Criteria

- City of Sydney DCP in accordance with Sydney DCP 2012 - Central Sydney Planning Review Amendment:
 - Wind Comfort Standard for Walking criterion of 8m/s (5% exceedance)
 - Safety criterion of 24m/s (gust - 0.1% exceedance) for safety

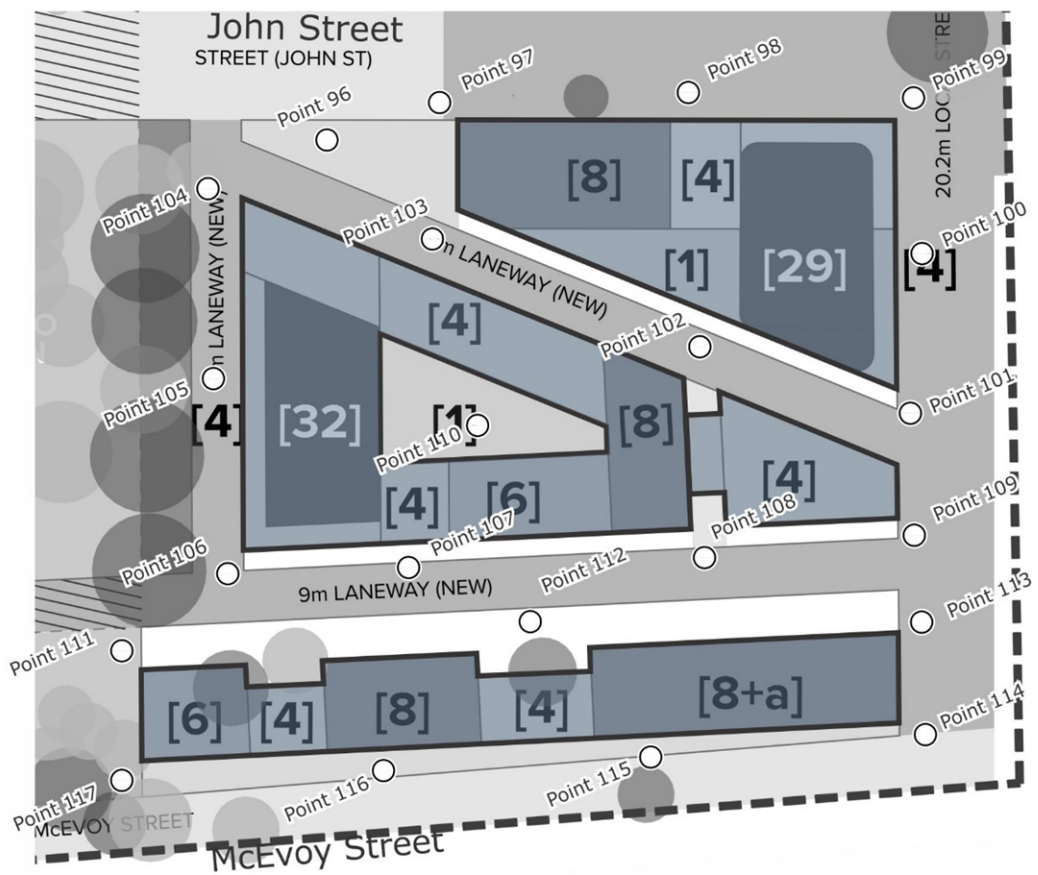
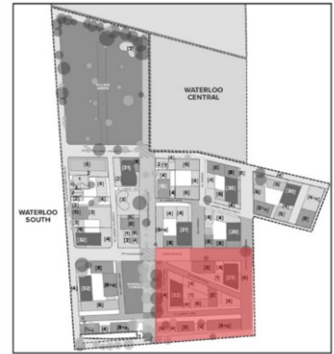


Figure 10f: Study Point Locations and Target Criteria – Lot W, X and Z

Target Criteria

- City of Sydney DCP in accordance with Sydney DCP 2012 - Central Sydney Planning Review Amendment:
- Wind Comfort Standard for Walking criterion of 8m/s (5% exceedance)
- Safety criterion of 24m/s (gust - 0.1% exceedance) for safety

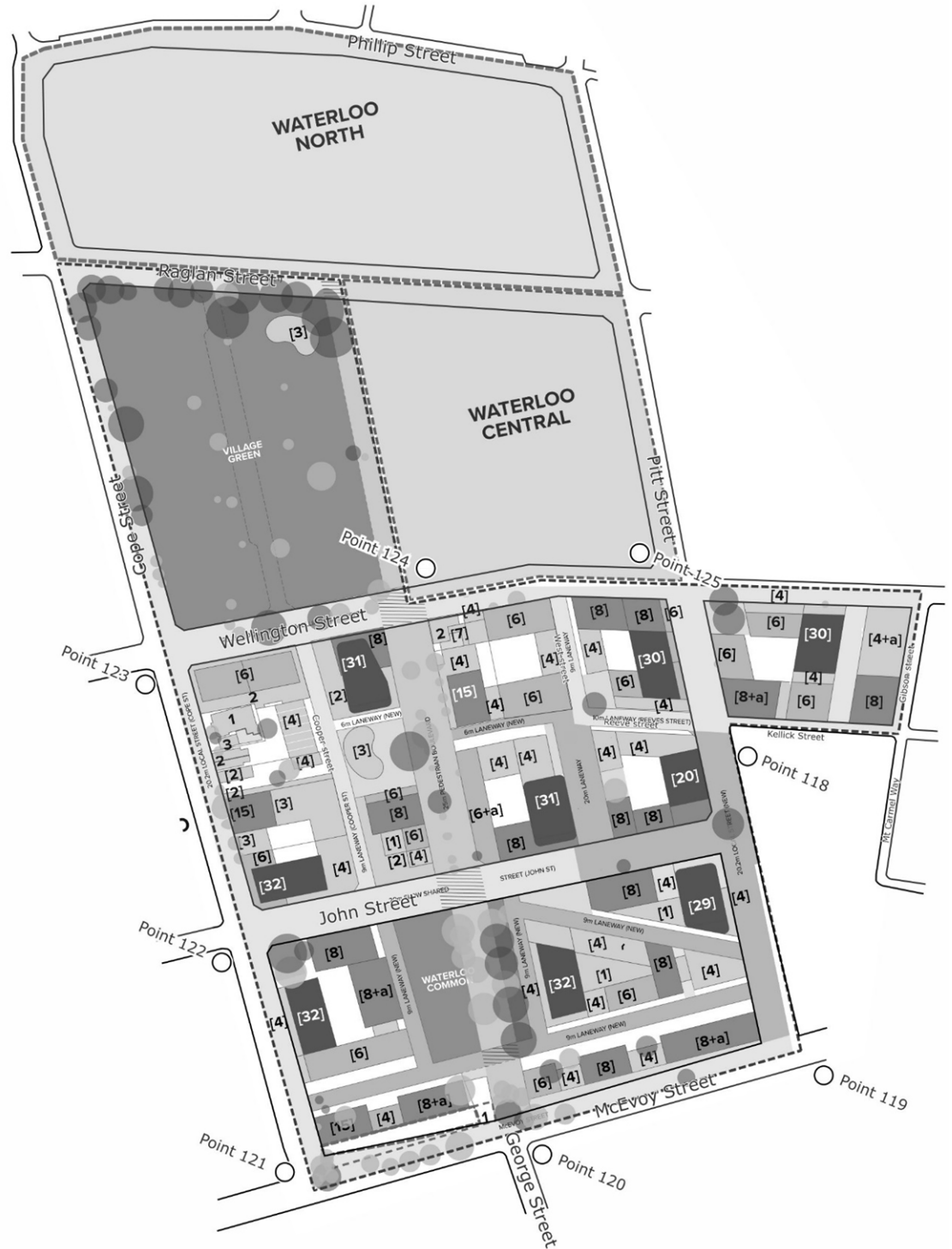


Figure 10g: Study Point Locations and Target Criteria – Surrounding Areas

7.3 Discussion

This section addressed study requirements 19.2, 19.6 and 19.8 by conducting a detailed wind environment test of the massing model to identify the key wind sensitive areas within and around the development site. The results allow the opportunity to design and develop the proposed Waterloo South site to further improve the wind conditions within and around the public, pedestrian and communal areas to achieve the comfort and safety criterion.