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Joe Santangelo  
 The University of New South Wales

## UNSW Tyree Building

This letter provides preliminary advice concerning likely wind effects in and around the Tyree Building at UNSW, in connection with the comfort of pedestrians and building users. UNSW have engaged AECOM to conduct a Wind Effects Report. This advice is preliminary and is intended to serve as initial guidance only. It is based on available Bureau of Meteorology data; sketch drawings and other documentation supplied (Table 1); and engineering experience.

**Table 1: Supplied drawings and other documents used in forming this advice.**

Drawing	Date
091013 ETB - fjmt Focus Group Presentation	13/10/2009
SK-02 Lower Ground	25/11/2009
SK-03 Ground Floor	25/11/2009
SK-04 Level One	25/11/2009
SK-05 Level Two	25/11/2009
SK-04 Level Three	25/11/2009
SK-04 Level Four	25/11/2009
SK-08 Level Five Roof	25/11/2009
SK-09 Section A	02/10/2009
SK-11 Section B	02/10/2009

Data from the closest representative weather station<sup>1</sup> were sub-sampled to include 75<sup>th</sup> percentile wind speeds<sup>2</sup> during typical hours of occupation of the proposed building and its surrounds (0800h – 1800h). Annually, southerly winds are most common, followed by winds from generally westerly/north-westerly and easterly/north-easterly headings (Figure 1). During summer, southerly and easterly/north-easterly winds predominate (Figure 2). During winter, westerly/north-westerly winds predominate over southerlies (Figure 3).

## External Effects

The proposed building is unlikely to be significantly exposed to southerlies. Southerlies may be steered along Anzac Parade, but are likely to be mitigated downstream by the high-rise developments in Kingsford, and blocked by the adjacent New College and Warrane College. It is possible that adverse wind effects may occur at ground level, depending on the detailed layout of the building in relation to the nearby colleges, and the proposed disposition of foliage and other external features. AECOM will work with FJMT on the design of these features to mitigate wind effects during the design development phase.

Winter westerly/north-westerly winds are typically variable in both speed and direction, and it is likely that occasional pedestrian discomfort will occur. It is noted that pedestrian discomfort is not uncommon in the University Mall during winter, and the terrace seating on the northern side of the building may be exposed under

<sup>1</sup> Sydney Aero (BOM station number 066037), data from 10/10/1948–present.

<sup>2</sup> These are winds having speeds not less than the speeds recorded in 75% of existing hourly records.

some conditions. Careful attention to landscaping may act to mitigate these effects. AECOM will work with FJMT on the design of these features to mitigate wind effects during the design development phase. Aside from areas exposed to the Mall, however, the building is reasonably well disposed to winter winds and pedestrian discomfort in the immediate vicinity is not likely to be more frequent than for other nearby buildings.

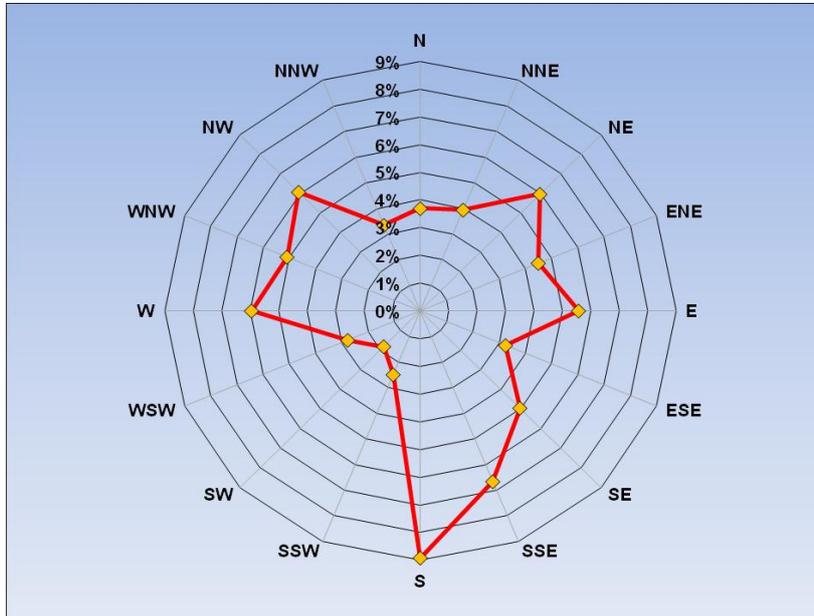


Figure 1: Annual distribution of 75<sup>th</sup> percentile winds during working hours (0800-1800).

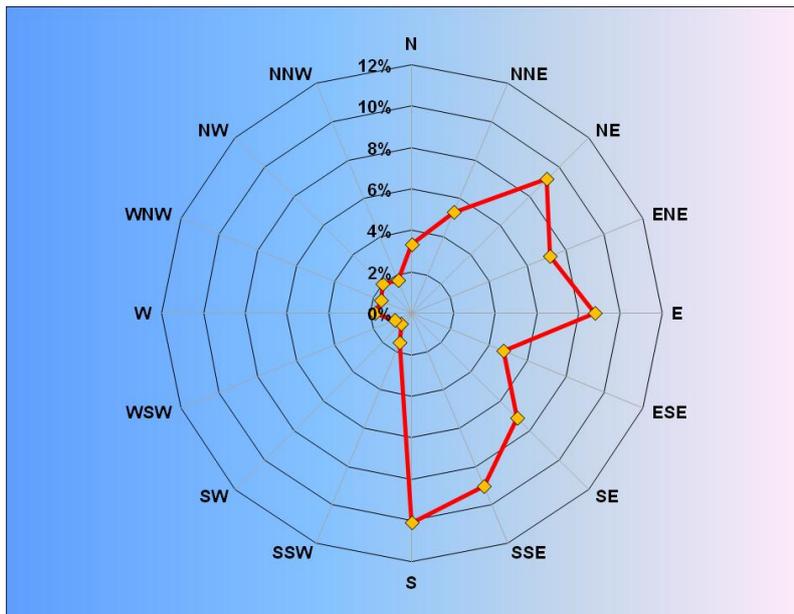


Figure 2: Summer (Dec-Jan-Feb) distribution of 75<sup>th</sup> percentile winds during working hours.

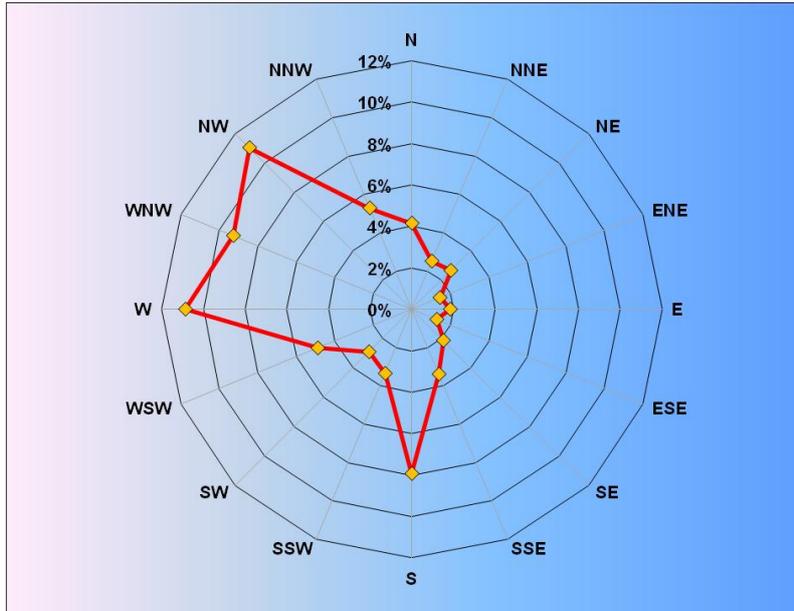


Figure 3: Winter (Jun-Jul-Aug) distribution of 75<sup>th</sup> percentile winds during working hours.

In summer, the existing UNSW buildings are likely to mitigate the effects of easterly/north-easterly winds. Anecdotally, some swirling, dumping winds occasionally occur in the University Mall. These may occur due to lee downwash and lee circulation from the buildings on the northern side of the Mall. While the likelihood of this effect is beyond the scope of this study, low-level foliage along the northern fringe of the building may be required to protect the terrace if the effect is later found to occur.

The proposed building is higher than many of its neighbours to the east and north-east (with the possible exception of the UNSW Law building), and some local downwash of winds captured at high level may occur. The mature trees to the north should reduce the probability of this effect. However, shade sails or other overhead protection may be required on the terrace in the future, should downwash later be identified.

**Internal Effects**

No pressure calculations or detailed small-scale circulation studies have yet been performed. However, it does not appear likely that any pressure-difference effects, strong internal winds or other adverse effects will occur.

In summary, it is AECOM's view that the building will not significantly increase local existing pedestrian wind effects and that any local wind effects can be mitigated with a combination of foliage and other external features during the design development phase.

Yours faithfully

Simon Evans  
Principal Scientist-Applied Research  
simon.evans@aecom.com

Direct Dial: +61 2 6275 1832  
Direct Fax: +61 2 6247 9233

cc: Jason Veale