



Pedestrian Wind Environment Statement

for the proposed development known as

Epping Park Residential Stage 1,
61 Mobbs Lane, Epping

Prepared for
Sydney Broadcast Property Pty Ltd

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1.0 Introduction

This report is in relation to the proposed Stage 1 residential development for Epping Park at 61 Mobbs Lane, Epping. This report presents an opinion on the likely impact of proposed development on the wind environment within and around the various outdoor areas of the site. The effect of Stage 2 of the development on Stage 1 is also discussed

The effect of wind activity within and around the proposal is examined for the three predominant wind directions for Sydney; north-east, south and west. The analysis of the wind effects relating to the proposal was carried out in the context of the local wind climate, building morphology and land topography.

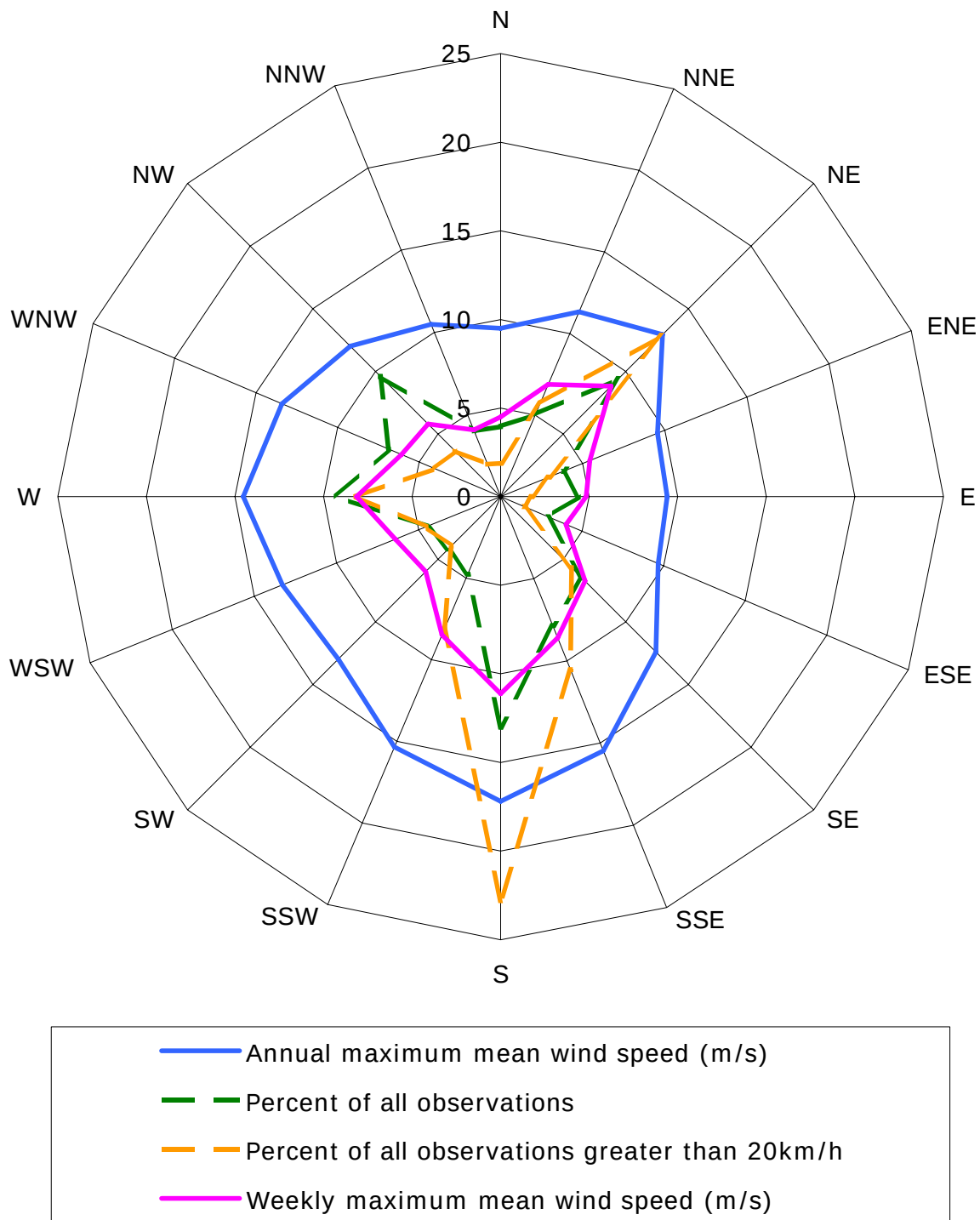
The conclusions of this report are drawn from our extensive experience in this field and are based on an examination of the architectural drawings prepared by PTW and Aspect Studios, received on March 20, 2009. No wind tunnel tests have been undertaken for the subject development. As such, this report addresses only the general wind effects and any localised effects that are identifiable by visual inspection. Any recommendations in this report are made only in-principle and are based on our extensive experience in the study of wind environment effects.

2.0 Local Wind Climate

Three principal wind directions potentially affect the development. These winds prevail from the north-east, south and west, Table 1 is a summary of the principal time of occurrence of these winds. This summary is based on data obtained by the Bureau of Meteorology from Sydney Airport, between 1939 and 1992. Table 1 presents a summary of the principal time of occurrence of these winds.

Table 1: Principal Time of Occurrence of Winds – Sydney Region

Month	Wind Direction		
	North-Easterly	Southerly	Westerly
January	X	X	
February	X	X	
March	X	X	
April		X	X
May			X
June			X
July			X
August			X
September		X	X
October	X	X	
November	X	X	
December	X	X	



**Figure 1: Reference Wind Speeds and Frequencies for Sydney
(based on 3 hourly mean observations at Kingsford
Smith Airport, from 1939 to 1992, corrected for
10m height in open terrain)**

3.0 Wind Effects on People

The acceptability of wind in any area is dependent upon its use. For example, people walking or window-shopping will tolerate higher wind speeds than those seated at an outdoor restaurant.

The following table, developed by Penwarden (1975), is a modified version of the Beaufort Scale, and describes the effects of various wind intensities on people. Note that the applicability column related to wind conditions occurring frequently (exceeded approximately once per week on average). Higher ranges of wind speeds can be tolerated for rarer events.

Table 2: Summary of Wind Effects on People (after Penwarden, 1975)

Type of Winds	Beaufort Number	Gust Speed (m / s)	Effects	Applicability
Calm, light air	1	0 - 1.5	Calm, no noticeable wind	Generally acceptable for Stationary, long exposure activities such as in outdoor restaurants, landscaped gardens and open air theatres.
Light breeze	2	1.6 - 3.3	Wind felt on face	
Gentle breeze	3	3.4 - 5.4	Hair is disturbed, Clothing flaps	
Moderate breeze	4	5.5 - 7.9	Raises dust, dry soil and loose paper - Hair disarranged	Generally acceptable for walking & stationary, short exposure activities such as window shopping, standing or sitting in plazas.
Fresh breeze	5	8.0 - 10.7	Force of wind felt on body	Acceptable as a main pedestrian thoroughfare
Strong breeze	6	10.8 - 13.8	Umbrellas used with difficulty, Hair blown straight, Difficult to walk steadily, Wind noise on ears unpleasant.	Acceptable for areas where there is little pedestrian activity or for fast walking.
Near Gale	7	13.9 - 17.1	Inconvenience felt when walking.	
Gale	8	17.2 - 20.7	Generally impedes progress, Great difficulty with balance.	Unacceptable as a public accessway.
Strong gale	9	20.8 - 24.4	People blown over by gusts.	Completely unacceptable.

4.0 Description of the Proposed Development

The master plan of Epping Park consists of 17 buildings, a child care centre, recreational facilities and extensive landscaping.

Stage 1 of the Epping Park development, which this report focuses on, consists of 4 buildings located on the eastern side of the main site as shown in Figure 2. Building 3 is a series of 12 townhouses, the most northern and southern townhouses are 3 stories and the remaining townhouses are 2 stories. Buildings 4 and 5 range in height from 4 to 6 stories and have rooftop terraces. Building 7 at the northern part of Stage 1 is a 6 storey building. Extensive tree planting is proposed on the ground level of the Stage 1 development.

It is proposed that Buildings 1 and 2 will consist of 2 to 3 storey terrace houses and that Buildings 6 and 8 to 17 will consist of 4 to 6 storey buildings. Stage 2 of the development was taken to be any building not included in Stage 1 of the development.



Figure 2: Site Plan of the Proposed Development showing building names and Stage 1

5.0 Site Analysis

The site is located at 61 Mobbs Lane Epping, near the intersection of Mobbs Lane and Edenlee Street. It is located between Middson Street and Marsden Road. The north-east corner of the site adjoins Ryde TAFE. An aerial photograph of the site is presented in Figure 3.

To the west of the site is Mobbs Lane Reserve, which includes open areas as well as mature trees. To the south-east is the old Eastwood brickworks which it is proposed will be subject to a future residential development. To the north-east is the Ryde TAFE site which includes several low-rise buildings. The site is adjoined by low-rise residential dwellings in the remaining directions. Further away in all directions are low-rise residential dwellings.

The site and the surrounding areas slope downward from east to west and north to south which leaves the site exposed to westerly and southerly winds.

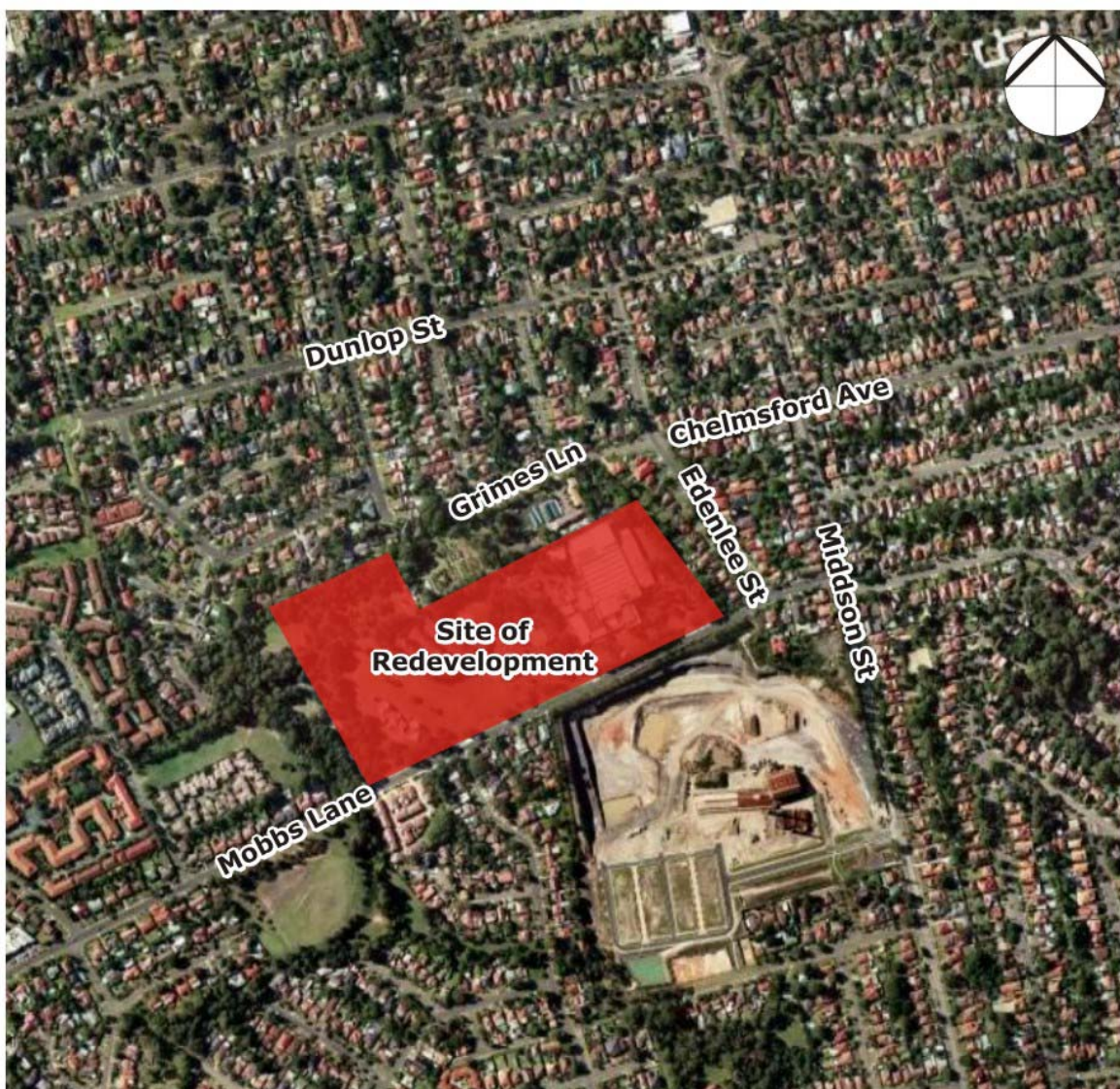


Figure 3: Aerial Image of the Proposed Development

6.0 Results

For each of the three predominant wind directions, the interaction between the wind and the building morphology in the area was considered. Important features taken into account include the distances between the proposed building forms, their overall heights and bulk as well as the landform. Only the potentially critical wind effects for the site are discussed in this report.

6.1 North-Easterly Winds

Stage 1 only

The ground level pedestrian areas within and around the site, including the open space between Buildings 4 and 5, are generally well shielded from north-easterly winds by the other proposed Stage 1 buildings on the site, and the adjacent residential buildings to the north-east of the site. The park at the north-east corner of the site may be subjected to adverse north-easterly wind conditions. However, with the implementation of a planting scheme similar to that shown in the landscaping plans shown in Figure 4, it is expected that this area will be suitable for its intended use. For trees to be effective in wind mitigation they should be of a densely foliating species.

The wind conditions on the various balconies of Buildings 4, 5 and 7 of the proposed development are expected to be acceptable due to the effective use of blade walls and building setbacks in the proposed design. Wind condition on the balconies will be further enhanced with the inclusion of impermeable balustrades. With the inclusion in the final design of the raised planters and central blade walls on the roof top terraces of Buildings 4 and 5 it is expected that the wind conditions at these locations will be suitable for their intended use.

It is not expected that the proposed development will have any adverse effects to the wind conditions in the local surrounding streets and pedestrian footpaths.

Additional effects caused by Stage 2

As Stage 2 is located to the south and west of Stage 1, Stage 2 will not affect the wind conditions in Stage 1 due to the north-easterly winds.

6.2 Southerly Winds

The ground level pedestrian areas within and around the site, including the open space between Buildings 4 and 5 and the park in the north-east corner, are generally well shielded from southerly winds by the other proposed Stage 1 buildings on the site. The open space at the south-eastern corner between Buildings 4 and 5 and the street to the west of Building 5 may be subjected to adverse southerly wind conditions. However, with the implementation of a planting scheme similar to that shown in the landscaping plans in Figure 4, it is expected that this area will be suitable for its intended use. For trees to be effective in wind mitigation they should be of a densely foliating variety.

The wind conditions on the various balconies of Buildings 4, 5 and 7 of the proposed development are expected to be acceptable due to the

effective use of blade walls and building setbacks in the proposed design. Wind condition on the balconies will be further enhanced with the inclusion of impermeable balustrades as shown in the architectural drawings. With the inclusion in the final design of the raised planters and central blade wall on the roof top terraces of Buildings 4 and 5 as shown in Figure 5, it is expected that the wind conditions at these locations will be suitable for their intended use.

It is not expected that the proposed development will have any adverse effects to the wind conditions in the local surrounding streets and pedestrian footpaths.

Additional effects caused by Stage 2

With the addition of Buildings 1, 2 and 6 and associated tree planting it is expected that the pedestrian ground level conditions at the various locations around Stage 1 will be enhanced due to the additional shielding from the southerly winds.

6.3 Westerly Winds

The ground level pedestrian areas within and around the site, including the open space between Buildings 4 and 5, are generally well shielded from westerly winds by the proposed buildings, and the adjacent TAFE buildings to the west of the site. The park at the north-east corner of the site and the pedestrian area between Building 5 and 7 may be subjected to adverse wind conditions. However, with the implementation of a planting scheme similar to that shown in the landscaping plan in Figure 4, it is expected that this area will be suitable for its intended use.

For trees to be effective in mitigating westerly winds which predominately occur during the winter months for Sydney (Table 1) they should be of a densely foliating and evergreen species.

The planting scheme provided by Aspect Studio and reproduced in Figure 4 indicates that the trees marked as parkland spires, secondary street trees and screening trees are all evergreen. The private garden trees may be selected from a list of trees which may be evergreen or deciduous. The highlighted private trees should be evergreen to be effective in mitigating westerly winds which predominately occur during the winter months.

The wind conditions on the various balconies of Buildings 4, 5 and 7 of the proposed development are expected to be acceptable due to the effective use of blade walls and building setbacks in the proposed design. Wind condition on the balconies will be further enhanced with the inclusion of impermeable balustrades as shown in the architectural drawings. With the inclusion in the final design of raised planters and the central blade walls on the roof top terraces of Buildings 4 and 5 as shown in Figure 5, it is expected that the wind conditions at these locations will be suitable for their intended use.

It is not expected that the proposed development will have any adverse effects to the wind conditions in the local surrounding streets and pedestrian footpaths.

Additional effects caused by Stage 2

With the addition of Buildings 6 and 8 and associated tree planting on Stage 2, it is expected that the pedestrian ground level wind conditions around Stage 1 will be enhanced due to the additional shielding from the westerly winds.



Figure 4: Aspect Studio Landscape Plan for Stage 1

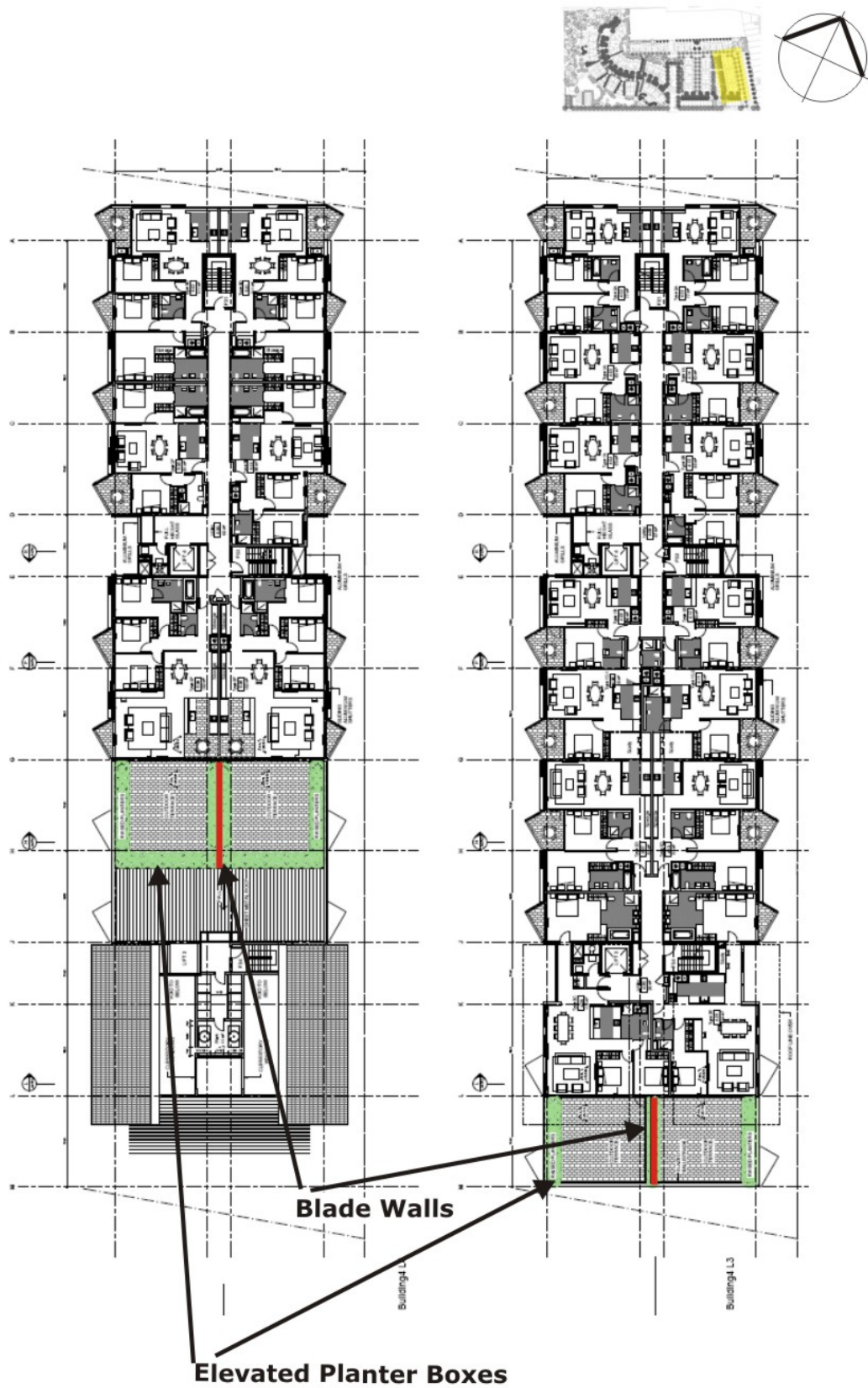


Figure 5: Building 4 and 5 Terrace Example

7.0 Conclusions

An analysis of the wind environment impact with respect to the principal wind directions for Sydney has been completed for the proposed development known as Stage 1 – Mobbs Lane, Epping.

The conclusions of this report are drawn from our extensive experience in this field and are based on an examination of the architectural drawings prepared by PTW and Aspect Studios, received on March 20, 2009. No wind tunnel tests have been undertaken for the subject development. As such, this report addresses only the general wind effects and any localised effects that are identifiable by visual inspection. Any recommendations in this report are made only in-principle and are based on our extensive experience in the study of wind environment effects.

The results of this study indicate that the site is generally well shielded from the prevailing winds by the surrounding buildings and the layout of the existing and proposed trees within and around the site. With the implementation of a tree planning scheme similar to that shown in the landscape plans by Aspect Studio, the wind conditions are expected to be suitable for their intended uses.

Note that for trees to be effective in enhancing adverse wind conditions, they should be of a densely foliating variety, and of an evergreen species to ensure their effectiveness during the winter months.

The wind conditions on the various balconies of the proposed development are expected to be acceptable due to the effective use of blade walls, privacy screens and building setbacks in the proposed design. It is expected that the roof top terraces will be suitable for their intended use with the inclusion in the final design of the raised planters and central blade walls.

It is not expected that Stage 2 of the development will have any adverse effects to the wind conditions on the Stage 1 site.

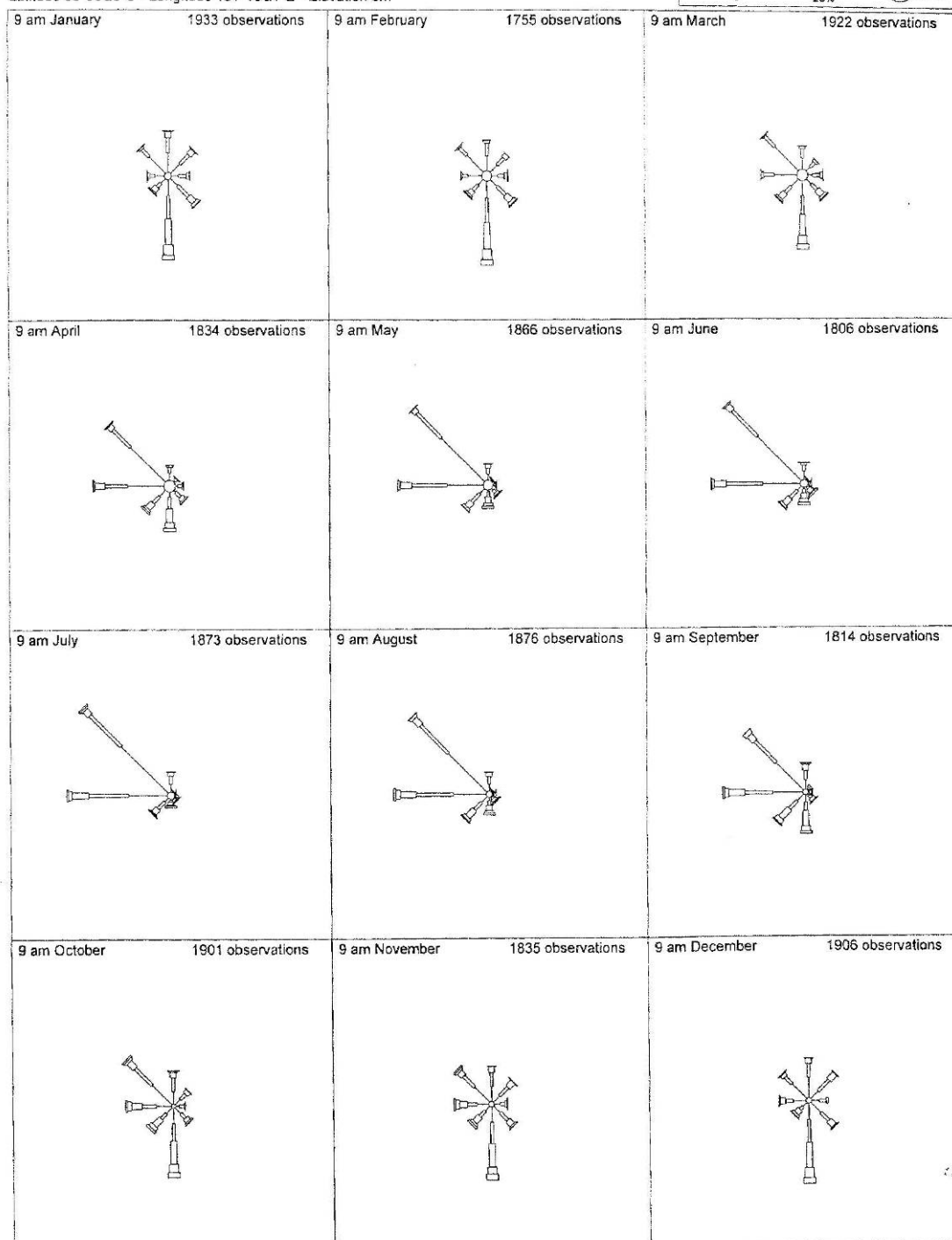
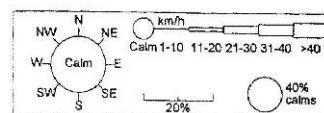
It is not expected that the proposed development will have any adverse effects on the wind conditions to the local surrounding streets and pedestrian footpaths and thoroughfares.

Appendix

Wind Roses for Kingsford Smith
(Sydney) Airport, 1939-2000

Wind Roses using available data between 1939 and 2000 for SYDNEY AIRPORT AMO

Site Number 066037 • Locality: SYDNEY AIRPORT • Opened Jan 1929 • Still Open
Latitude 33°56'28"S • Longitude 151°10'21"E • Elevation 6m

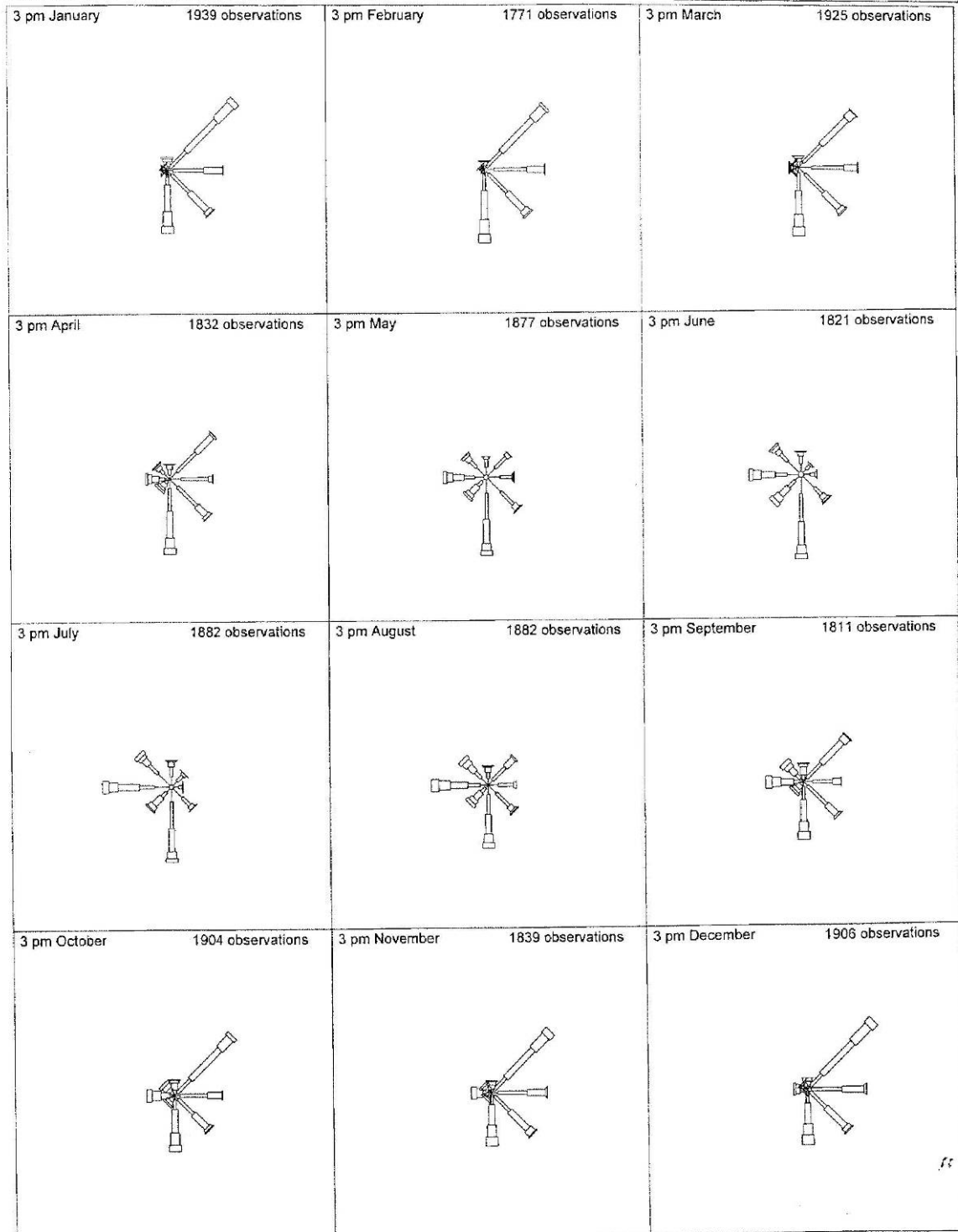
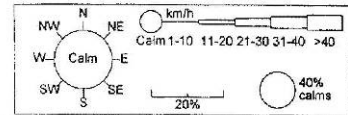


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