



# 2A Gregory Place, Harris Park

## Updated Environmental Wind Impact - Desktop Study

### 2A Gregory Place Pty Ltd

2A Gregory Place  
Harris Park NSW 2150

Prepared by:

**SLR Consulting Australia**

SLR Project No.: 610.30838.00000

Revision: R02-v1.4

26 June 2025

## Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
R02-v1.4	26 June 2025	Dr Farzin Ghanadi	Dr Peter Georgiou	Dr Peter Georgiou
R02-v1.4	4 September 2024	Dr Farzin Ghanadi	Dr Peter Georgiou	Dr Peter Georgiou
	Click to enter a date.			

## Basis of Report

This report has been prepared by SLR Consulting Australia (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with 2A Gregory Place Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

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## **Appendices**

### **Appendix A Seasonal Wind Roses for Bureau of Meteorology Met Stations at Sydney (Kingsford Smith) Airport and Bankstown Airport**



## 1.0 INTRODUCTION

SLR Consulting Australia Pty Ltd (SLR) has been engaged by 2A Gregory Place Pty Ltd to provide a qualitative (expert opinion) study assessing the environmental wind impact of a proposed mixed-used development at 2A Gregory Place, Harris Park. This assessment is submitted to the Department of Planning, Industry and Environment (DPIE) in support of a State Significant Development Application for the development of the Project for the purposes of a mixed-use precinct with open space, retail, and residential

The assessment has been made on the basis of our best engineering judgment and on the experience gained from (decades of) scale-model Wind Tunnel Testing and CFD Simulation analysis of a range of similar scale developments

## 2.0 DEVELOPMENT – DESCRIPTION AND SITE CONTEXT

The proposed development, located at 2A Gregory Place, Harris Park, consists of three blocks: Block A, B and C. The site is bordered by Gregory Place to the east, parkland and Hassall Street to the north, and existing low-rise buildings and open spaces or natural grasslands in other directions - refer **Figure 1**.

**Figure 1 Project Site Location**



*Image: Courtesy Nearmap, July 2024*



## 2.1 Development Description

The proposed multi-building development comprises 3 blocks buildings ranging in height from 5 to 11 storeys above ground and includes the following features:

### **Block A**

- Building A1 – 2 to 4 storeys
- Building A2 – 4 to 8 storeys
- Building A3 – 6 storeys

### **Block B**

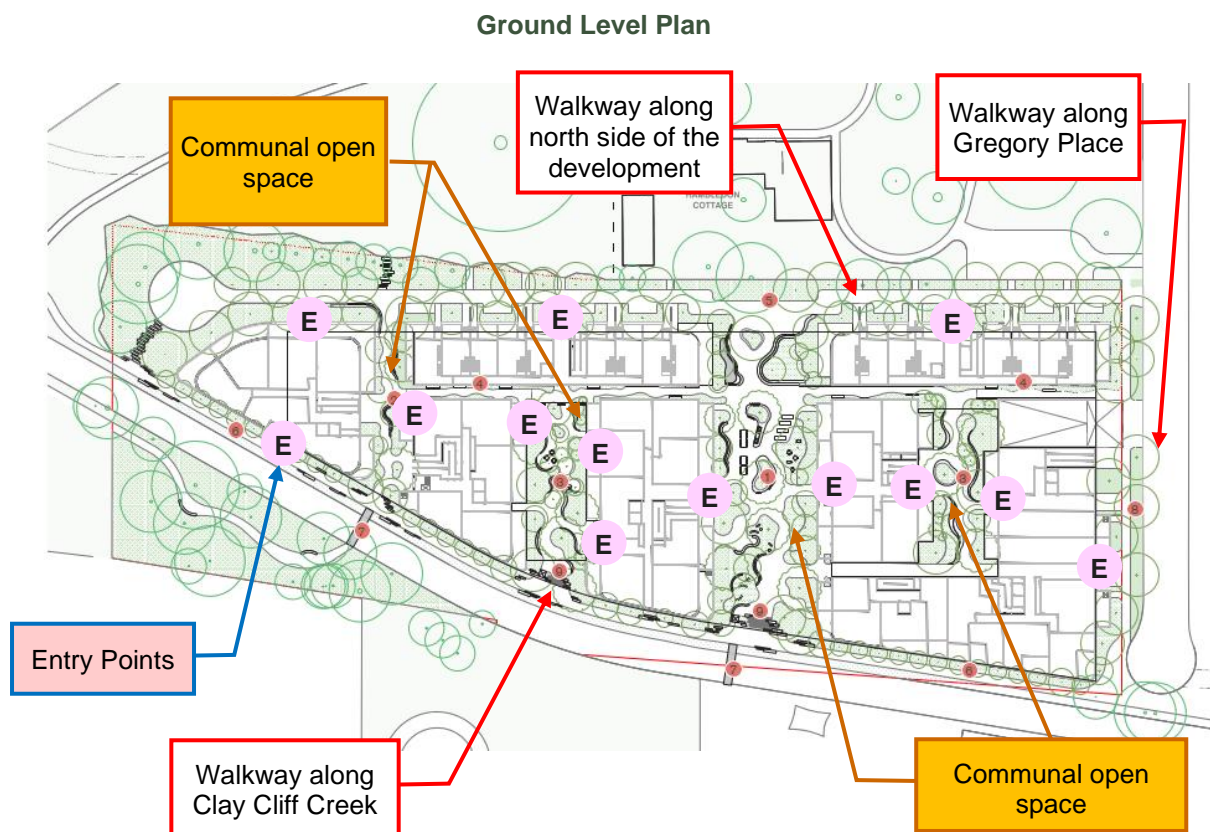
- Building B1 – 2 to 4 storeys
- Building B2 – 6 to 8 storeys
- Building B3 – 8 storeys

### **Block C**

- Building C – 4 to 6 storeys

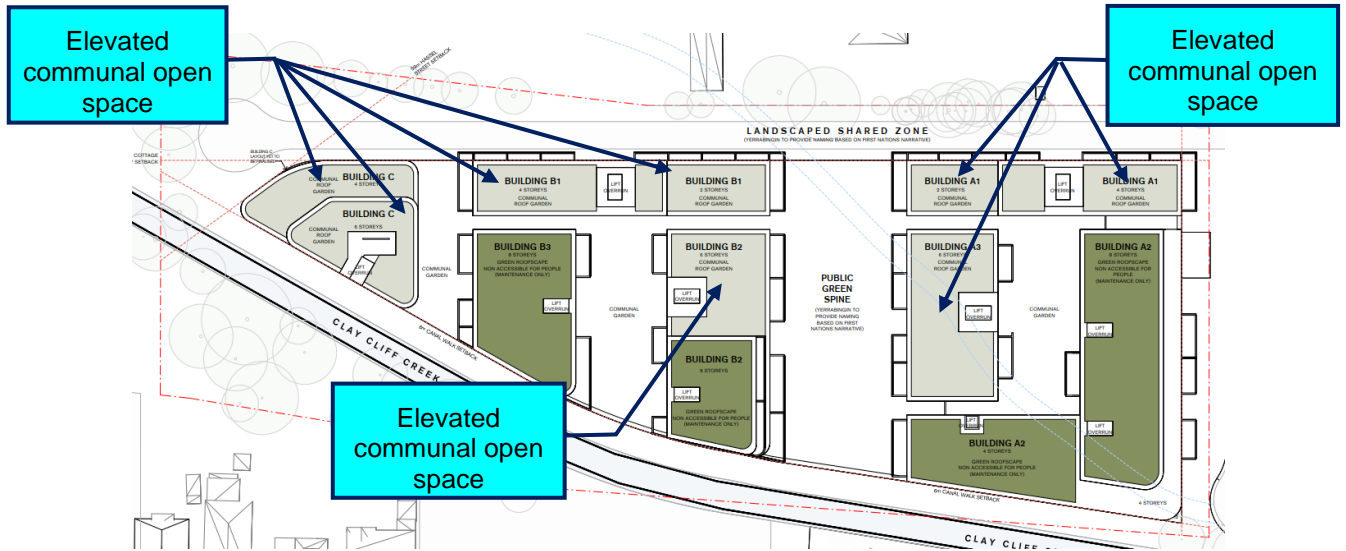
Representative ground level and roof plans of the proposed development are shown in **Figure 2**.

**Figure 2 Representative Plans of the Proposed Development**



(Fig 2 cont'd)

### Roof Plan



## 2.2 Surrounding Built Environment

### “Near Field”

- The “near-field” built environment comprises mainly low-rise residential, commercial and industrial in all directions, with the exception of several medium rise residential south and southeast – refer **Figure 3**. These buildings will influence the winds arriving at the site, especially from the southeast.

### “Far Field”

- The “far-field” built environment comprises the same mix of typically low to mid rise residential areas and commercial/industrial buildings, with scattered similar height residential buildings towards the northwest. To the northwest and southwest lies some parkland, with Parramatta station to the west and Parramatta River to the north.
- The surrounding topography is generally flat with no significant features (hills, ridges, escarpments, etc) influencing local wind speeds.

**Figure 3 Project Site Surrounds**



*Image: Courtesy Nearmap, July 2024*



### 3.0 SYDNEY'S WIND CLIMATE

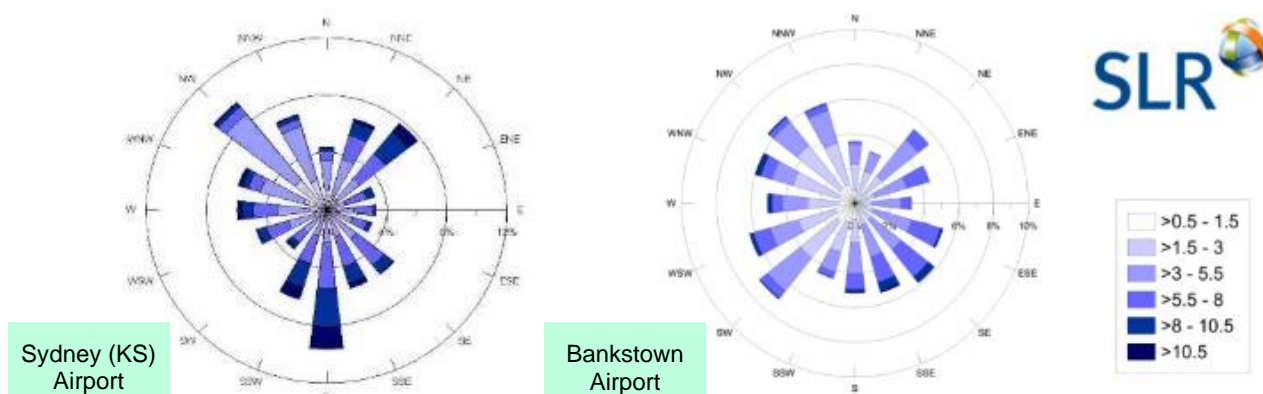
The data of interest in this study are the mean hourly wind speeds and largest gusts experienced throughout the year (especially higher, less frequent winds), how these winds vary with azimuth, and the seasonal break-up of winds into the primary Sydney Region wind seasons.

#### 3.1 Annual and Seasonal Variations

Key characteristics of Sydney's Regional Wind Climate are illustrated in two representative wind roses shown in **Figure 4** taken from Bureau of Meteorology (BoM) data recorded during the period 1999-2017 at Sydney (Kingsford Smith) Airport and Bankstown Airport. A review of the associated seasonal wind roses (refer **Appendix A**) shows that Sydney is affected by two primary wind seasons with relatively short (1-2 month) transition periods in between:

- Summer winds occur mainly from the northeast, southeast and south. While northeast winds are the more common prevailing wind direction (occurring typically as offshore land-sea breezes), southeast and southerly winds generally provide the strongest gusts during summer. Both northeast winds (as sea breezes) and stronger southerly winds associated with "Southerly Busters" and "East Coast Lows" typically have a significantly greater impact along the coastline. Inland, these systems lose strength and have altered wind direction characteristics.
- Winter/Early Spring winds occur mainly from west quadrants and to a lesser extent from the south. West quadrant winds provide the strongest winds during winter and in fact for the whole year, particularly at locations away from the coast.

**Figure 4 Annual Wind Roses for Sydney (KS) Airport and Bankstown Airport (BoM Data)**



#### 3.2 Wind Exposure at the Site – the “Local” Wind Environment

Close to the ground, the “regional” wind patterns described above are affected by the local terrain, topography and built environment, all of which influence the “local” wind environment.

- As noted in **Section 1.3**, the surrounding area primarily consists of low to medium-rise residential buildings and parkland to the north, south, and east, while taller buildings lie to the west.
- The site will therefore experience limited wind shielding from most directions, with increased sheltering, particularly at lower levels, except from the west, where moderate shielding will be available.

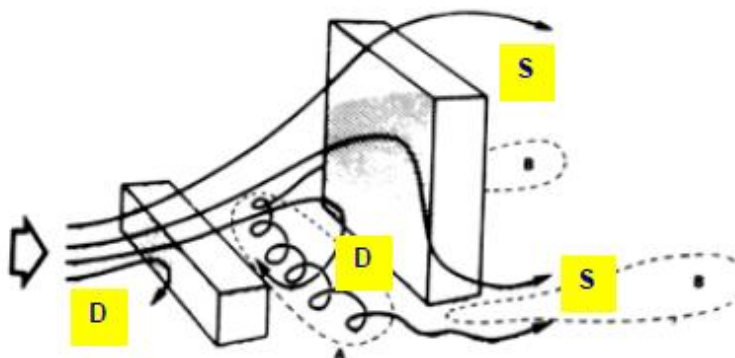


## 4.0 BUILDING-WIND INTERACTION – GENERAL OBSERVATIONS

The impact of wind flowing past buildings has well known general impacts at ground level – refer **Figure 5**. In general, the taller the building, the more pronounced the impact on ground level winds.

- **Downwash winds “D”** are the winds which impact on the windward face of a building and are then deflected downwards to Ground Level in a vertical direction; and
- Accelerating **Shearflow winds “S”** are the winds which experience acceleration as they pass by the building edges and roof as the wind flow moves around and past the building.

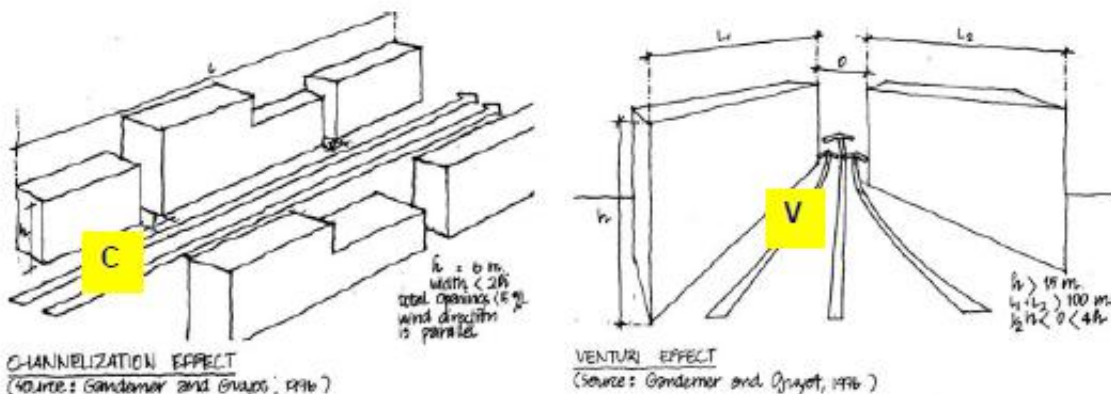
**Figure 5 Windflow Patterns Past Regular-Shaped Buildings**



The grouping of buildings can also have an impact on resulting pedestrian winds – refer to **Figure 6**.

- **Channelling Effect winds “C”** result when there are rows of parallel buildings (especially taller ones) where the gaps in between line up with prevailing wind directions.
- **Venturi Effect winds “V”** result when wind flow is forced to pass between two converging buildings or groups of buildings with a resulting increase in flow.

**Figure 6 Windflow Patterns Past Groups of Buildings**



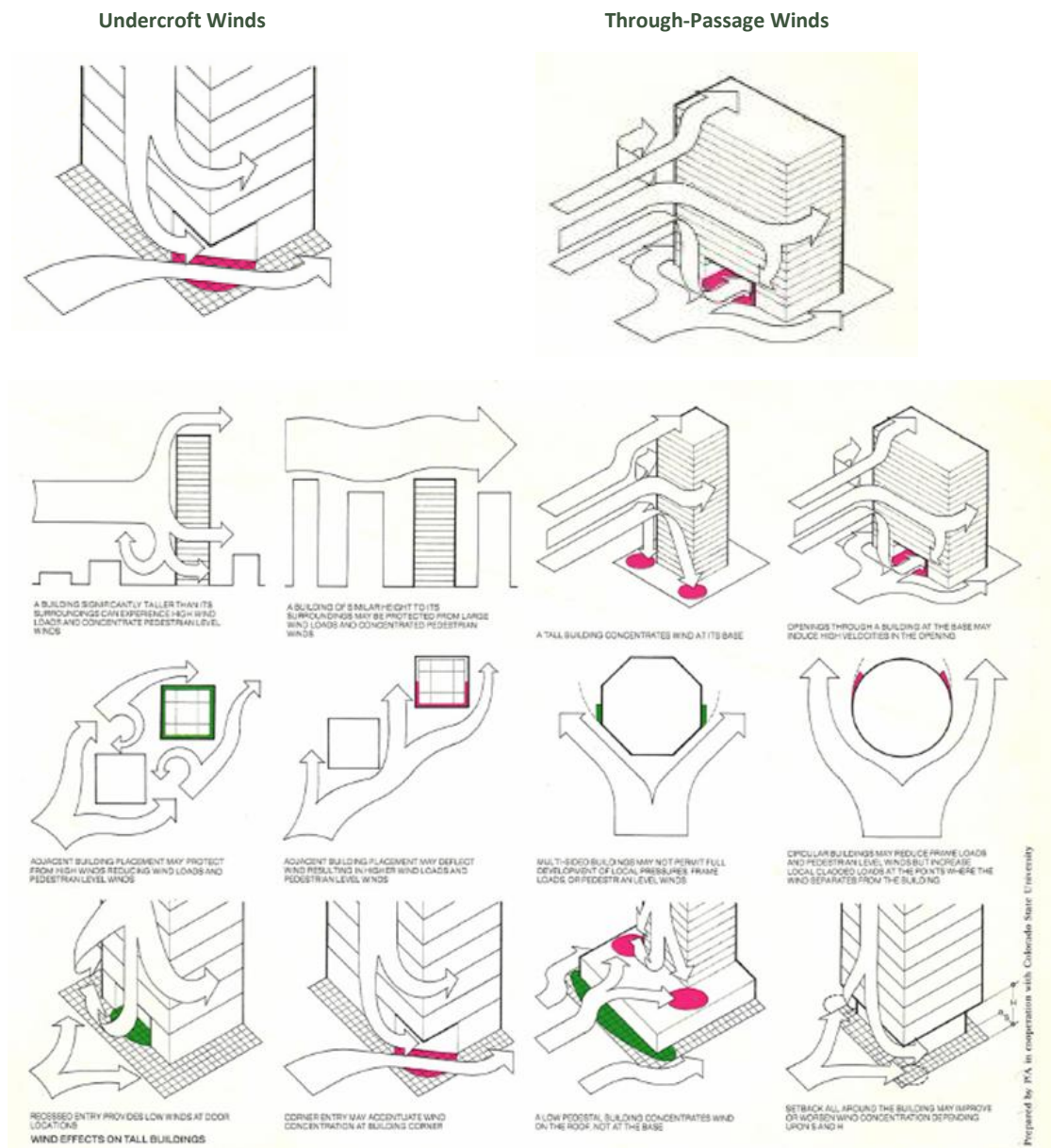
Local building details can also influence winds in the immediate vicinity – refer **Figure 7**.



The “**Undercroft**” effect is a well-known adverse building-wind characteristic as depicted in the generic building wind effect diagrams shown below. The winds are induced towards the negative pressure area within the undercroft, creating concentrated adverse wind flow through undercroft. This same pressure difference between the windward and leeward facades of a building can induce a strong wind tunnel effect through any open passage located at the base of a building – the “**Through Passage**” effect.

These and other common building-related wind impacts are depicted in **Figure 7**.

**Figure 7 Undercroft Winds and Through-Passage Winds**



## 5.0 WIND ACCEPTABILITY CRITERIA

### 5.1 Standard Local Government Criteria

The choice of suitable criteria for evaluating the acceptability of particular ground level conditions has been the subject of international research over the past few decades. One of the commonly accepted set of acceptability criteria developed from this research, currently referenced by many Australian Local Government Development Control Plans, is summarised in **Table 1**. The limiting wind speed criteria in **Table 1** are based on the maximum wind gust occurring (on average) once per year.

**Table 1 Standard Local Government Wind Acceptability Criteria**

Type of Criteria	Limiting Gust Wind Speed Occurring Once Per Year	Activity Concerned
Safety	24 m/s	Knockdown in Isolated Areas
	23 m/s	Knockdown in Public Access Areas
Comfort	16 m/s	Comfortable Walking
	13 m/s	Standing, Waiting, Window Shopping
	10 m/s	Dining in Outdoor Restaurant

The primary objectives relating to the above wind impact criteria are as follows:

- The general objective is for annual 3-second gust wind speeds to remain at or below the so-called 16 m/s “Walking Comfort” criterion. Whilst this magnitude may appear somewhat arbitrary, its value represents a level of wind intensity above which the majority of the population would find unacceptable for comfortable walking on a regular basis at any particular location.
- In many urban locations, either because of exposure to open water conditions or because of street “canyon” effects, etc, the 16 m/s “Walking Comfort” level may already be currently exceeded. In such instances a new development should ideally not exacerbate existing adverse wind conditions and, wherever feasible and reasonable, ameliorate such conditions.
- It can be seen in **Table 1** that the recommended limiting wind speeds for spaces designed for activities such as seating, outdoor dining, etc., are lower (ie more stringent) than for “walking comfort”.

### 5.2 Application of Wind Criteria

The criteria provided in **Table 1** in relation to Comfort should not be viewed as “hard” numbers as the limiting values were generally derived from subjective assessments of wind acceptability. Such assessments have been found to vary considerably with the height, strength, age, etc., of the pedestrian concerned. A further factor for consideration is the extent of windy conditions, and some relaxation of the above criteria may be acceptable for small areas under investigation provided the overall site satisfies the relevant criteria.



## **6.0 WIND IMPACT OF THE PROPOSED REDEVELOPMENT**

### **6.1 Future Wind Impact at All Areas of Interest**

The wind impact of the proposed development is described by examining the impact of key prevailing wind conditions on areas of interest within and external to the development.

The key directions analysed are:

- NE and S/SE winds for summer months and
- SW-NW (Westerly) winds for winter months.

The predicted wind environment at the site is examined in terms of both the:

- Existing Winds, and
- Future Winds with the addition of the proposed development.

The above predictions are made on the basis of our best engineering judgement and (decades of) experience in carrying out Environmental Wind Tunnel Testing and CFD Simulation Studies.

The above predictions are made without necessarily assuming any benefit from the already planned landscaping for the proposed development.



**Prevailing Wind Direction:  
 NORTHEAST Winds**

**Period of Annual Cycle:  
 Summer**

Location	Existing Compliance	Future Compliance	Key Factors
Gregory Place Footpath	Likely comply	Likely comply	The potential exists for the proposed developments to induce wind channelling onto this walkway during NE winds. This impact can be alleviated by the large trees with a generous canopy and landscaping along the street footpath.
Footpath along north side of the development	Likely comply	Minimal Increase Likely comply	Due to the limited upstream shielding this area could encounter heightened winds from the NE. Additionally, the proposed buildings may create some channelling and downwash onto this area. This impact can be alleviated by the large trees with a generous canopy and landscaping along the footpath.
Clay Cliff Creek Footpath	Likely comply	Likely comply	While the alignment of the development will limit the influence of prevailing winds, there is a possibility of high-speed winds swirling around the corners of the proposed building. This impact can be alleviated by the large trees with a generous canopy and landscaping along the footpath.
Ground level Communal open spaces	Likely comply	May not comply without appropriate mitigation	NE winds are generally mild, however the proposed buildings may create some channelling and downwash onto these areas. This impact can be alleviated by the large trees with a generous canopy and landscaping along the footpath.
Pedestrian walkways along the new street/laneway within the development	Likely comply	Likely comply	The upcoming developments could cause wind channelling along these Pathways. To further minimize the impact of high-speed winds on the footpaths, the strategic placement of landscaping and sizable trees in the vicinity will be instrumental in enhancing wind reduction efforts.
Building Entries	May not comply	Borderline Compliance (NE facing entries)	Although NE winds are generally mild, downwash from building facades above may create wind conditions that are close to limits for building entry points (standing comfort) facing east or north.
Elevated communal open areas	Locations not relevant to "existing" built environment	May not comply without appropriate mitigation	The communal open spaces are exposed to strong winds from NE with insufficient shielding. Consequently, some vertical windbreaks on the outer perimeter of this area are required to restrict the impact of the prevailing winds.
Upper Level Corner Balconies		May not comply without appropriate mitigation	Due to the exposure of this balcony to strong winds from the prevailing winds without adequate shielding, an effective wind mitigation strategy is necessary to minimize the impact of prevailing winds and reduce their effects on this area.



**Prevailing Wind Direction: SOUTHEAST (& SOUTH) Winds** **Period of Annual Cycle: Summer (Southeast) All-Year-Round (South)**

Location	Existing Compliance	Future Compliance	Key Factors
Gregory Place Footpath	Likely comply	Borderline Compliance	The orientation of Gregory Place allows for wind channelling of S and SE winds in the existing built environment. However, the proposed Development's Gregory Place façades are set back from the footpath.
Footpath along north side of the development	Likely comply	Likely comply	The walkway is shielded from direct winds coming from S/SE. Moreover, the existence of the planned building serves as a protective barrier, ensuring minimal exposure to these winds in the pedestrian pathways.
Clay Cliff Creek Footpath	May not comply	May not comply without appropriate mitigation	SE wind downwash and channelling may create adverse wind conditions onto this walkway. This impact can be alleviated by the large trees with a generous canopy and landscaping along the street footpath.
Ground level Communal open spaces	May not comply	May not comply without appropriate mitigation	The upcoming developments could cause wind channelling and downwash within the communal open space. To minimize the impact of high-speed winds on the proposed siting/dining/standing areas, the strategic placement of landscaping and sizable trees in the vicinity will be instrumental in enhancing wind reduction efforts.
Pedestrian walkways along the new street/laneway within the development	May not comply	May not comply without appropriate mitigation	High-speed S/SE winds swirling around the corners of the proposed building can increase the wind level in this area. This impact can be alleviated by the large trees with a generous canopy and landscaping along the footpath.
Building Entries	May not comply	Borderline Compliance (S/SE facing entries)	Downwash from building facades above may create wind conditions that are close to limits for building entry points (standing comfort) facing south or east.
Elevated Communal open areas	Locations not relevant to "existing" built environment	May not comply without appropriate mitigation	SE and S winds may experience accelerated shearflow as they pass through the elevated communal spaces. Consequently, some vertical windbreaks on the outer perimeter of this area are required to restrict the impact of the prevailing winds.
Upper Level Croner Balconies		May not comply without appropriate mitigation	Due to the exposure of this balcony to strong winds from the prevailing winds without adequate shielding, an effective wind mitigation strategy is necessary to minimize the impact of prevailing winds and reduce their effects on this area.



**Prevailing Wind Direction:  
 WESTERLY Winds (SW-NW)**

**Period of Annual Cycle:  
 Winter / Early Spring**

Location	Existing Compliance	Future Compliance	Key Factors
Gregory Place Footpath	<b>May not comply</b>	<b>Likely comply</b>	The existence of the planned building serves as a protective barrier, ensuring minimal exposure to SW/NW winds in the pedestrian pathways. However, there is a possibility of high-speed winds swirling around the corners of the proposed building. This impact can be alleviated by the large trees with a generous canopy and landscaping along the footpath
Footpath along north side of the development	<b>May not comply</b>	<b>May not comply without appropriate mitigation</b>	The potential exists for the proposed developments to induce wind channelling onto this walkway during NW winds. This impact can be alleviated by the large trees with a generous canopy and landscaping along the street footpath.
Clay Cliff Creek Footpath	<b>May not comply</b>	<b>May not comply without appropriate mitigation</b>	While there is some upstream shielding from the southwest direction, the proposed developments could still cause wind channelling onto the walkway during southwest winds. However, this impact can be mitigated by the large trees with their expansive canopies and the landscaping along the street footpath
Ground level Communal open spaces	<b>May not comply</b>	<b>May not comply without appropriate mitigation</b>	The potential for wind channelling onto this area exists with the proposed development. Consequently, effective wind mitigation strategies are essential in this zone to diminish the wind levels. Landscaping planned for this area will assist in mitigating these winds.
Pedestrian walkways along the new street/laneway within the development	<b>May not comply</b>	<b>May not comply without appropriate mitigation</b>	This pathway could encounter heightened winds from SW-NW. Additionally, the proposed buildings may create some wind channelling onto this area. Therefore, additional measures such as integrating trees and landscaping are necessary to provide adequate shielding for this area.
Building Entries	<b>May not comply</b>	<b>May not comply without appropriate mitigation for west facing entries</b>	Downwash from building facades above may create wind conditions that are close to limits for building entry points (standing comfort) facing west (SW-NW).
Elevated Communal open areas	<b>Locations not relevant to "existing" built environment</b>	<b>May not comply without appropriate mitigation</b>	SW and NW winds may experience accelerated shearflow as they pass through the elevated communal spaces. Consequently, some vertical windbreaks on the outer perimeter of this area are required to restrict the impact of the prevailing winds.
Upper Level Corner Balconies	<b>Locations not relevant to "existing" built environment</b>	<b>May not comply without appropriate mitigation</b>	Due to the exposure of this balcony to strong winds from the prevailing winds without adequate shielding, an effective wind mitigation strategy is necessary to minimize the impact of prevailing winds and reduce their effects on this area.



## 7.0 MITIGATION AND TREATMENT RECOMMENDATIONS

Based on the updated design many aspects of the proposed development have been designed in such way as to avoid direct exposure to the stronger prevailing winds impacting the site. The previous section provided guidance as to the areas where the adopted wind acceptability criteria had the potential to be exceeded and an indication as to the likely local optimum wind treatment strategy, eg whether the wind condition of interest is likely to arise from accelerating winds which require vertical windbreaks (such as landscaping) or downwash winds which require horizontal windbreaks (such as awnings, canopies).

In the absence of dedicated wind mitigation solutions, the wind conditions of potential concern in relation to the proposed development include (see **Figure 2**):

- The adjacent pedestrian walkways
- Pedestrian walkways along the new street/laneway within the development
- Communal open space on ground level
- The elevated communal open areas
- Elevated corner balconies

The following recommendations for wind amelioration features are made in areas where winds are expected to approach or exceed the relevant 10 m/s, 13 m/s or 16 m/s criteria depending on the designed use for that area.

### Ground Level– refer Figure 8

- Maintain the proposed trees/landscaping within and on the sides of the development to mitigate the impact of local wind speeds. It is recommended that all proposed landscaping to be evergreen and densely foliating to maintain its effectiveness throughout the year.
- Maintain setbacks on ground level building entries to diminish wind speeds potentially caused by downwash and redirecting airflow on the pathways.
- It is recommended to install awnings above the building entrances where a setback has not been incorporated.
- Retain or relocate any ground-level public seating beneath trees with a generous canopy to help mitigate building facade downwash effects.

### Elevated Communal open areas on ground level – refer Figure 9

- It is recommended to incorporate 1.8m high vertical windbreaks around the perimeter of elevated communal spaces in Buildings A3, B2 and C. These windbreaks may consist of balustrades or a combination of walls and planters/trees of equivalent height, strategically placed around the edges.
- It is also recommended to incorporate 1.5m high vertical windbreaks around the perimeter of elevated communal spaces in Buildings A1, B1 and C. These windbreaks may consist of balustrades or a combination of walls and planters/trees of equivalent height, strategically placed around the edges.
- It is recommended to position the designated seating area within the elevated communal open space, ideally beneath the proposed trees that offer a generous



canopy, to enhance user comfort by providing shade and some protection from wind exposure.

**Figure 8 Wind Mitigation for the Development – Ground level**

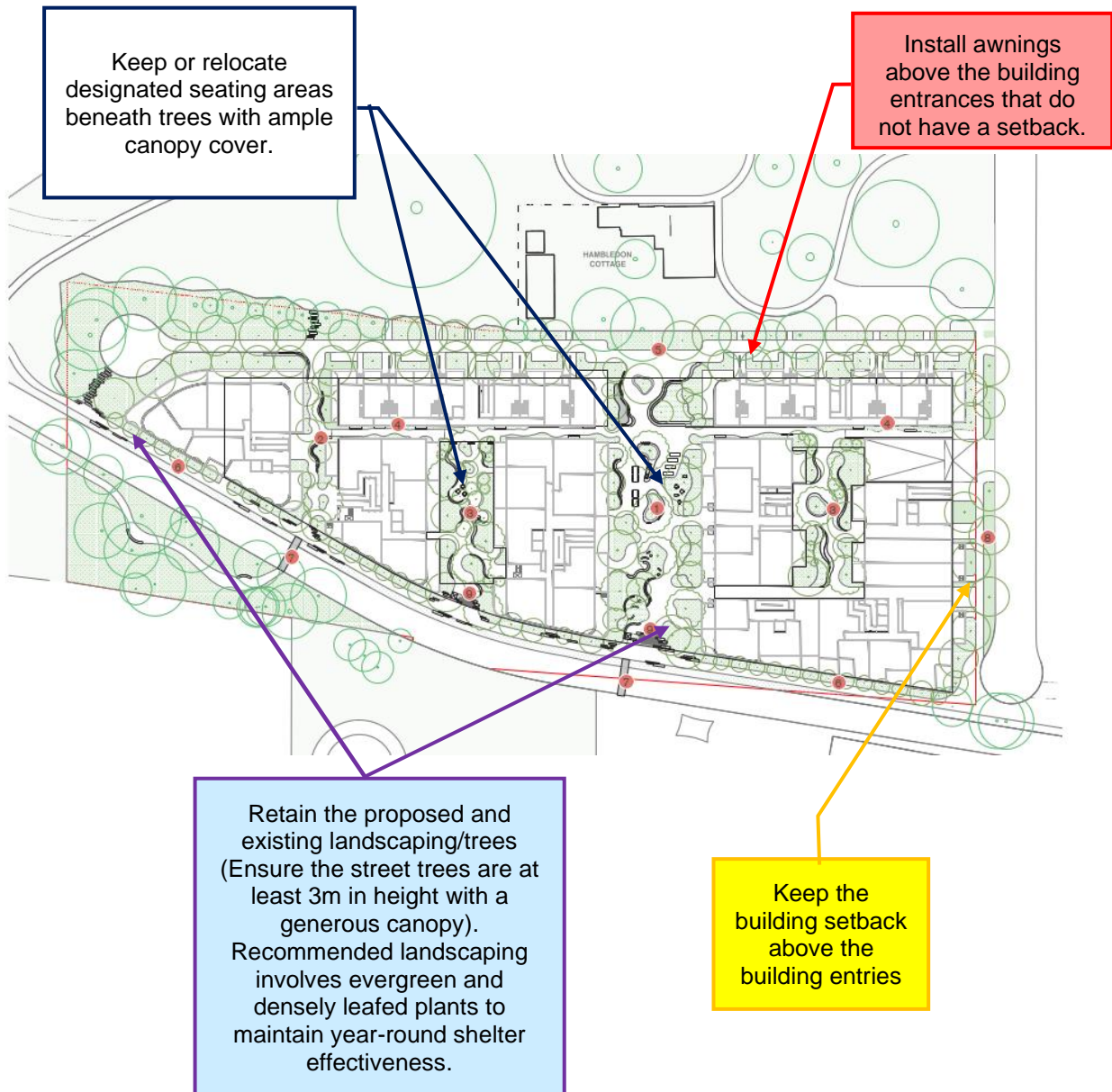
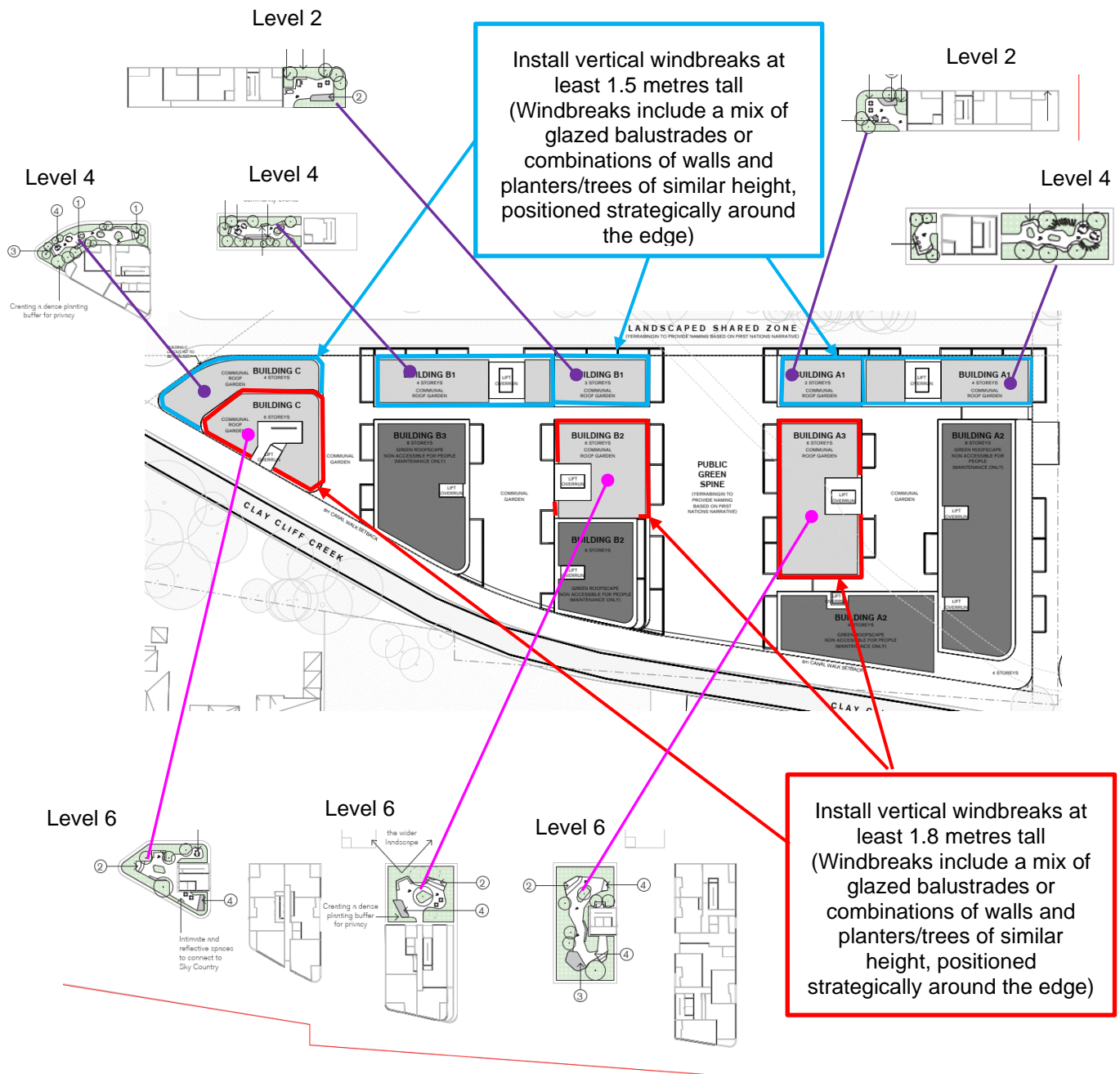


Figure 9 Wind Mitigation for the Development – Elevated communal spaces

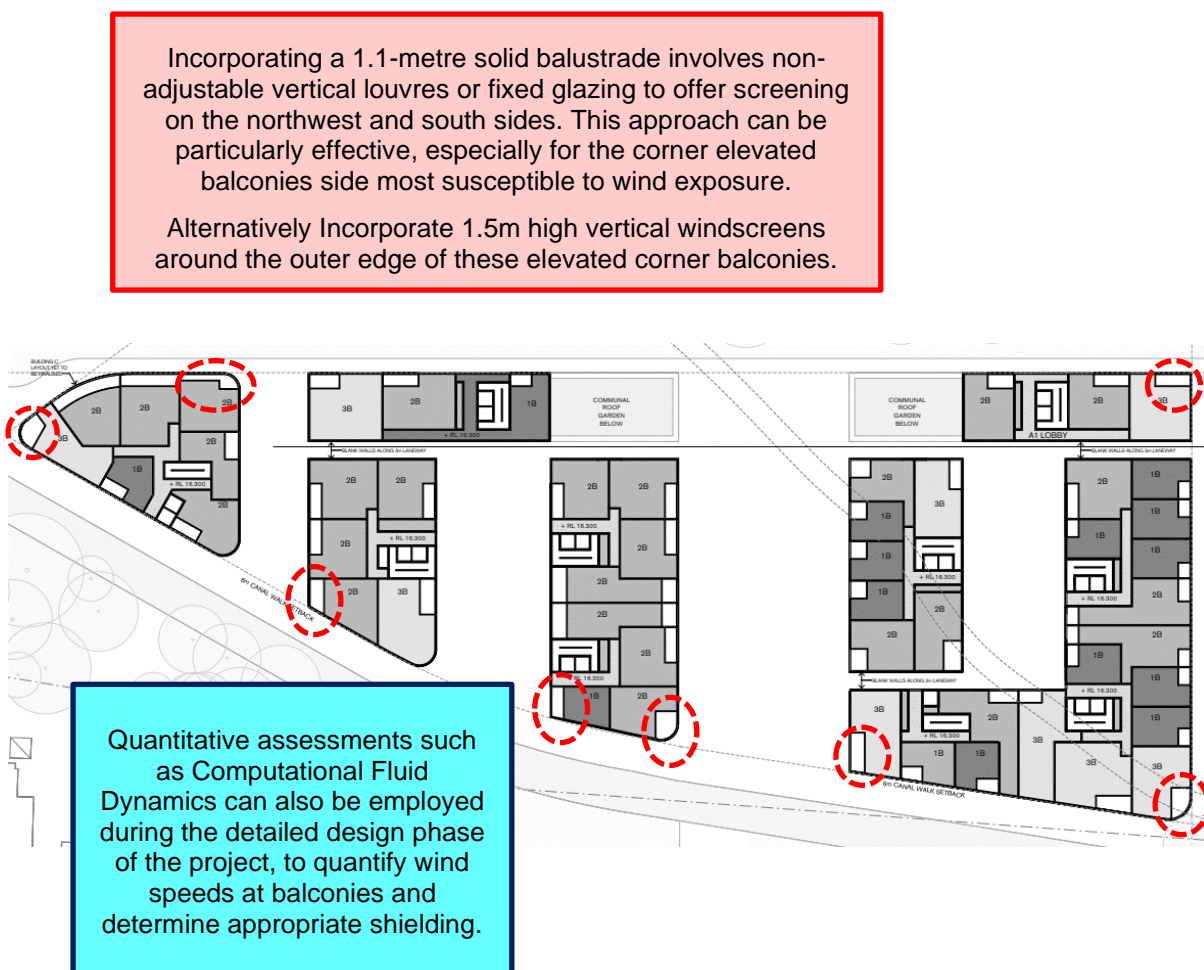


### Elevate Private Balconies – refer Figure 10

- Ensure vertical windbreaks are installed around the edges of individual balconies. Additionally, retain a single open aspect for the elevated balconies.
- Incorporating a 1.1-metre solid balustrade involves non-adjustable vertical louvres or fixed glazing to offer screening on the northwest and south sides. This approach can be particularly effective, especially for the corner elevated balconies side most susceptible to wind exposure (Alternatively Incorporate 1.5m high vertical windscreens around the outer edge of these elevated corner balconies)

During the Detailed Design phase of the project, once the design of the various building facades is finalised, further modelling could be carried out to confirm zones of the building, by height and by plan view location (eg which building corners), where wind mitigation (ie beyond the standard balustrade height) may be beneficial IF it is intended for balconies to be used all-year-round. The preference here would be for detailed 3D CFD Simulation Modelling rather than Wind Tunnel Testing, given the issue of balcony scaling at typical 1:400 wind tunnel test scales.

**Figure 10 Wind Mitigation for the Development Elevated Corner Balconies (Above level 3)**



## 8.0 Conclusion

SLR Consulting Australia Pty Ltd (SLR) has been engaged by 2A Gregory Place Pty Ltd to assess the wind impact on the immediate surrounds of a proposed Mixed-Use Development (herein the Project) located at 2A Gregory Place, Harris Park. This assessment is submitted to the Department of Planning, Industry and Environment (DPIE) in support of a State Significant Development Application for the development of the Project for the purposes of a mixed-use precinct with open space, retail, and residential uses, for a Build to Rent and Affordable Housing residential development.

This initial assessment has been made on the basis of our best engineering judgment and on the experience gained from (decades of) scale-model Wind Tunnel Testing and CFD Simulation Modelling of a range of similar scale developments.

The proposed development at 2A Gregory Place, Harris Park, comprises three blocks —A, B, and C —bordered by Gregory Place to the east, parkland and Hassall Street to the north, and low-rise buildings and open spaces in other directions. The near field primarily features low-rise residential, commercial, and industrial structures, with some medium-rise residential buildings to the south and southeast that will influence winds, especially from the southeast. In the far field, the environment includes a mix of low to mid-rise buildings, with scattered residential structures to the northwest, parkland to the northwest and southwest, Parramatta station to the west, and the Parramatta River to the north, all within a generally flat topography.

### Local Wind Climate

Using long-term wind records obtained from nearby Bureau of Meteorology stations at Bankstown Airport and Sydney Kingsford Smith Airport, SLR has determined that Harris Park has local winds characteristics somewhat closer to Bankstown Airport than Sydney (KS) Airport. Accordingly, key prevailing wind directions of interest are the northeast and south/southeast for summer/early autumn and west quadrant winds for winter/early spring.

### Existing Wind Environment

Close to the ground, the “regional” wind patterns described above are affected by the local terrain, topography and built environment, all of which influence the “local” wind environment.

- As noted in **Section 1.3**, The surrounding area primarily consists of low to medium-rise residential buildings and parkland to the north, south, and east, while higher-rise buildings are situated to the west.
- The site will therefore experience limited wind shielding from most directions, with increased sheltering, particularly at lower levels, except from the west, where shielding is modest.

### Future Wind Environment

In terms of the *future* wind environment with the proposed Development, the following features of the development are noted as being of most significance:



### Ground Level (refer to Figure 8)

- Keep the proposed trees and landscaping within and along the sides of the development to help reduce local wind speeds. It is recommended that all proposed landscaping be evergreen with dense foliage to maintain year-round effectiveness.
- Maintain setbacks and install awnings at ground-level building entries to reduce wind speeds that may result from downwash and to redirect airflow along pathways.
- For seating areas within publicly accessible ground-level spaces, it is recommended to retain or relocate them beneath the proposed trees with a generous canopy to help mitigate the downwash effects generated by the building façade.

### Elevated communal open spaces (refer to Figure 9)

- It is recommended to incorporate 1.8m vertical windbreaks around the perimeter of elevated communal spaces in Buildings A3, B2 and C. These windbreaks could be balustrades or a combination of walls and planters/trees of similar height, strategically positioned around the edges.
- It is recommended to incorporate 1.5m vertical windbreaks around the perimeter of elevated communal spaces in Buildings A1, B1 and C. These windbreaks could be balustrades or a combination of walls and planters/trees of similar height, strategically positioned around the edges.
- It is recommended that the designated seating area be located within the elevated communal open space, preferably beneath the proposed trees with a generous canopy, as this will improve user comfort by offering both shade and a degree of shelter from wind exposure.

### Elevated Private Balconies (refer to Figure 10)

- Ensure that vertical windbreaks are installed around the edges of individual balconies, while retaining a single open aspect for the elevated balconies.
- Incorporate a 1.1m solid balustrade with fixed vertical louvres or glazing to provide wind screening on the northwest and south sides, which is particularly effective for corner balconies most exposed to wind (Alternatively, consider installing 1.5-metre-high vertical windscreens around the outer edge of these elevated corner balconies)

With the incorporation of proposed windbreak mitigation treatments, all amenity locations within the proposed development including ground and all terrace level locations are expected to achieve the target Lawson Comfort Criteria and Melbourne Safety Criterion established for the project.

The above analysis has been made on the basis of our best engineering judgment and on the experience gained from scale model wind tunnel testing or computational fluid dynamics analysis of a range of developments. The conclusions of this SLR report can be quantified using wind tunnel testing or computational fluid dynamics analysis.

### Summary

On the basis of the above, the overall effect of the proposed development on the local wind microclimate is predicted to be “not significant” (refer **Section 3.2**) and the proposed development should satisfy the nominated Wind Acceptability criteria for the project.



## 9.0 Feedback

At SLR, we are committed to delivering professional quality service to our clients. We are constantly looking for ways to improve the quality of our deliverables and our service to our clients. Client feedback is a valuable tool in helping us prioritise services and resources according to our client needs.

To achieve this, your feedback on the team's performance, deliverables and service are valuable and SLR welcome all feedback via <https://www.slrconsulting.com/en/feedback>.

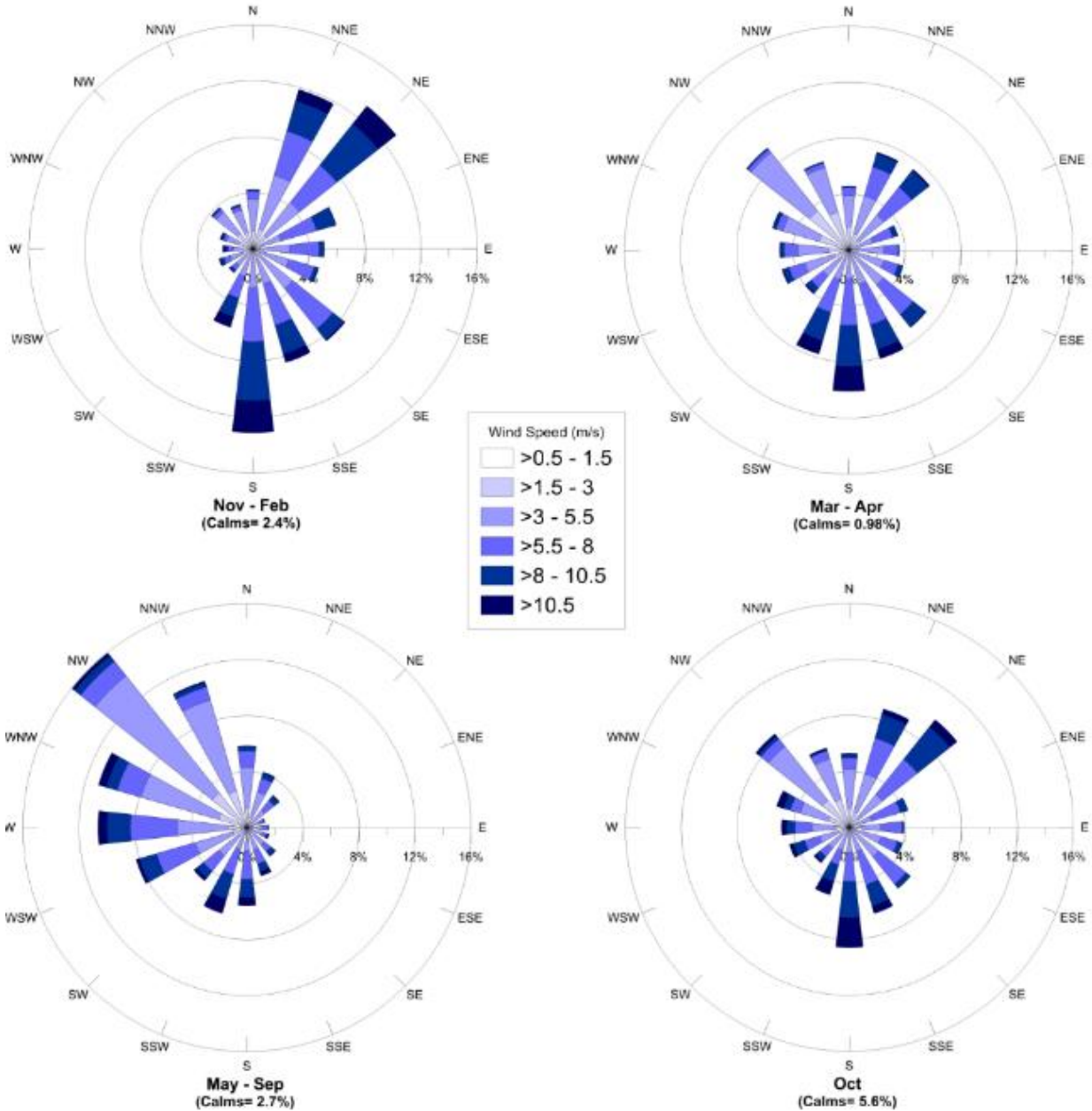
We recognise the value of your time and we will make a \$10 donation to our Charity Partner - Lifeline, for every completed form.



# **Appendix A      Seasonal Wind Roses for Bureau of Meteorology Met Stations at Sydney (Kingsford Smith) Airport and Bankstown Airport**

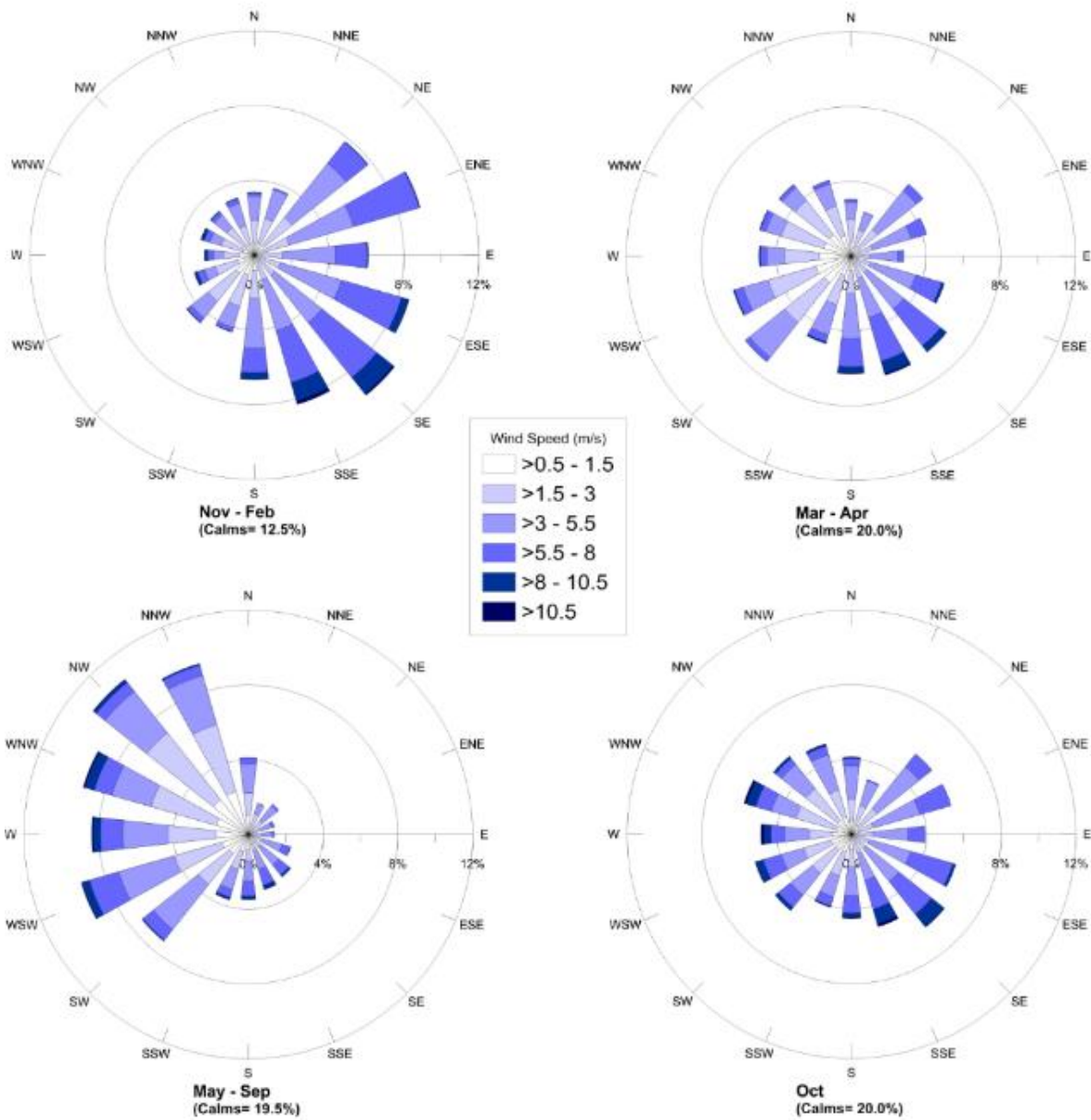


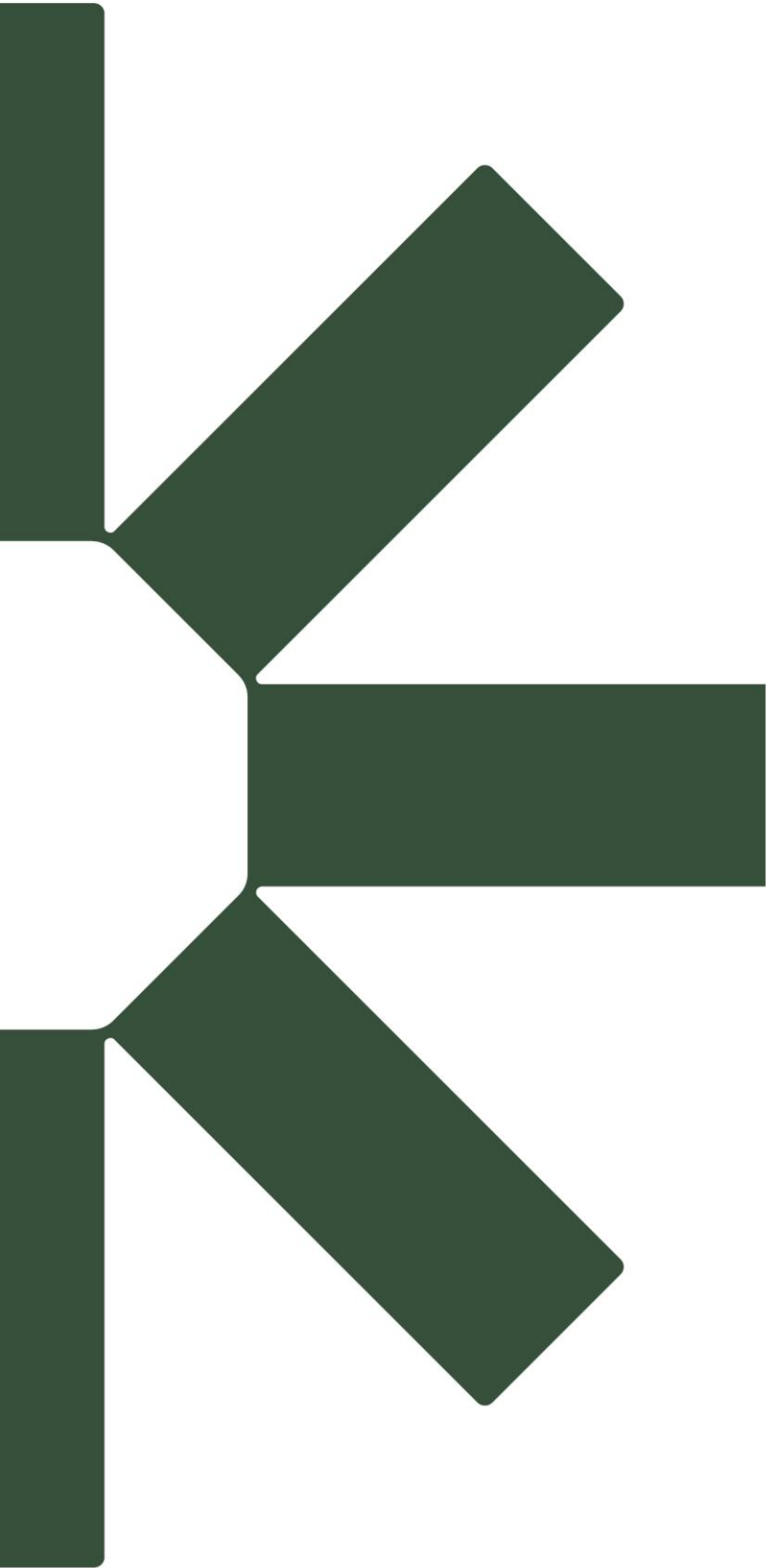
Sydney Airport AWS  
(Observations)  
1999-2017  
600.09300



Bankstown Airport AWS  
(Observations)

Bankstown Airport AWS  
(Observations)  
1999-2017  
600.09300





Making Sustainability Happen