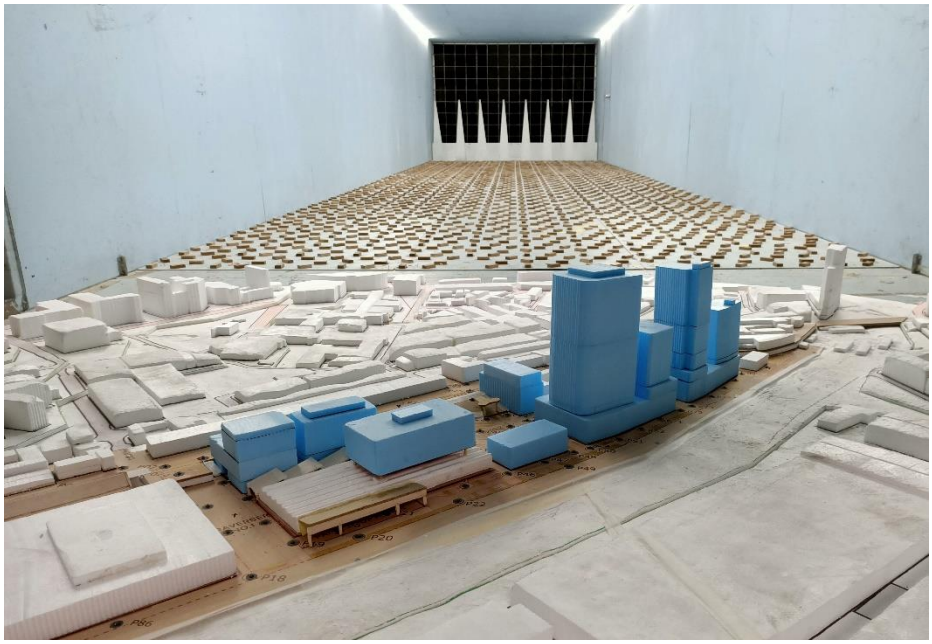
WINDTECH



PEDESTRIAN WIND ENVIRONMENT STUDY

REDFERN NORTH EVELEIGH

WG201-04F02(REV7)- WE REPORT

JULY, 2022

Prepared for:

TRANSPORT FOR NSW

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DOCUMENT CONTROL

Date	Revision History	Issued Revision	Prepared By (initials)	Instructed By (initials)	Reviewed & Authorised by (initials)
April, 2022	Draft report.	0	EV	SWR	HK
April, 2022	Updated analysis.	1	EV	SWR	HK
April, 2022	Updated discussion for existing scenario.	2	EV	SWR	RL
May, 2022	Updated to include results of study.	3	EV	SWR	RL
May, 2022	Additional commentary on results included.	4	EV	SWR	RL/HK
May, 2022	Minor updates to some figures and references.	5	EV	SWR	RL/HK
June, 2022	Updated introduction. Results of seasonal analysis included in report.	6	EV	SWR	HK
July, 2022	Minor updates to formatting.	7	EV	SWR	RL

EXECUTIVE SUMMARY

This report presents the results of a detailed investigation into the wind environment impact of the proposed Redfern North Eveleigh Paint Shop sub-precinct masterplan, located in Redfern. Testing was performed at Windtech's boundary layer wind tunnel facility. The wind tunnel has a 3.0m wide working section and a fetch length of 14m, and measurements were taken from 16 wind directions at 22.5 degree increments. Testing was carried out using a 1:400 detailed scale model of the development. The effects of nearby buildings and land topography have been accounted for through the use of a proximity model which represents an area with a radius of 600m.

Peak gust and mean wind speeds were measured at selected critical outdoor trafficable locations within and around the subject development. Wind velocity coefficients representing the local wind speeds are derived from the wind tunnel and are combined with a statistical model of the regional wind climate (which accounts for the directional strength and frequency of occurrence of the prevailing regional winds) to provide the equivalent full-scale wind speeds at the site. The wind speed measurements are compared with criteria for pedestrian comfort and safety, based on Gust-Equivalent Mean (GEM) and annual maximum gust winds, respectively.

The model was tested in the wind tunnel without the effect of any forms of wind ameliorating devices such as screens, balustrades, etc., which are not already shown in the architectural drawings. The effect of vegetation was also excluded from the testing. The existing site conditions were also tested, for comparison. In-principle treatments have been recommended for any area exposed to strong winds.

Several building scenarios were tested as part of the "Base Case" design. These are as follows:

- Case 1: With the Paint Shop Sub-Precinct developments and existing surrounding buildings. In this report, this test case is referred to as the "Paint Shop Sub-Precinct".
- Case 2: With the Paint Shop Sub-Precinct developments, existing surrounding buildings and the Clothing Store Sub-Precinct Massing. In this report, this test case is referred to as the "Paint Shop Sub-Precinct with Clothing Store Sub-Precinct".
- Case 3: With the existing surrounding buildings. In this report, this test case is referred to as the "Existing Scenario".

The results of the study for the Base Case design indicate that the wind conditions for the majority of the trafficable outdoor locations within and around the Paint Shop Sub-precinct will be suitable for their intended uses. The results of the study show that the variation in wind conditions between Case 1 and Case 2 (with and without the Clothing Store Sub-precinct) is negligible. Furthermore, it is shown that all study point locations will satisfy the safety limit of 24m/s as well as the Walking Criterion for comfort.

Localised areas within the precinct experience wind conditions which exceed the assigned comfort criterion. As a result, various wind mitigation measures were included in the design of the precinct and tested in the wind.

The first set of wind mitigation measures tested in the wind tunnel include continuous, impermeable awnings, which have been placed along the east west spine of the Paint Shop sub-precinct. Continuous awnings are required to be placed along active street frontages where there is high pedestrian activity, as stipulated in the

Department of Planning and Environment, Apartment Design Guide, 2015 - Objective 4T-1 Design Guidance (ADG). The second treatment scenario included awnings and additional vertical wind screens and vegetation. The wind mitigation measures tested are as follows:

Treatment Scenario 01:

- 3m wide impermeable awning along the northern aspect of the Building K2/L1 podium and Building P1/P2 podium. The awning extends the length of the northern aspect of the podiums (ADG requirement).
- 4m wide impermeable awning along the northern aspect of the K1 building. The awning extends the length of the northern aspect (ADG requirement).

Treatment Scenario 02:

- 3m wide impermeable awning along the northern aspect of the Building K2/L1 podium and Building P1/P2 podium. The awning extends the length of the northern aspect of the podiums (ADG requirement).
- 4m wide impermeable awning along the northern aspect of the K1 building. The awning extends the length of the northern (ADG requirement).
- 2m high impermeable localised wind screens along the northern aspect of the K1 and H2 buildings.
- Evergreen tree planting, in line with the proposed landscaping along the northern aspect of the K2/L1 buildings.

The results of the study indicate that with the inclusion of the wind mitigation measures listed in Treatment Scenario 02, the wind conditions for all locations within the proposed Redfern North Eveleigh Shop sub-precinct masterplan will be suitable for their intended uses.

A seasonal/time of day analysis was undertaken for the Redfern North Eveleigh Paint Shop Sub-Precinct masterplan. The results of the analysis are presented in the report.

CONTENTS

1 INTRODUCTION

The NSW Government is investing in the renewal of the Redfern North Eveleigh Precinct to create a unique mixed-use development, located within the important heritage fabric of North Eveleigh. The strategic underpinning of this proposal arises from the Greater Sydney Region Plan and District Plan. These Plans focus on the integration of transport and land use planning, supporting the creation of jobs, housing and services to grow a strong and competitive Sydney.

The Redfern North Eveleigh Precinct is one of the most connected areas in Sydney, and will be a key location for Tech Central, planned to be Australia's biggest technology and innovation hub. Following the upgrading of Redfern station currently underway, the Precinct's renewal is aimed at creating a connected destination for living and working, and an inclusive, active and sustainable place around the clock.

The Redfern North Eveleigh Precinct comprises three Sub-Precincts, each with its own distinct character:

- The Paint Shop Sub-Precinct which is the subject of this rezoning proposal;
- The Carriageworks Sub-Precinct, reflecting the cultural heart of the Precinct where current uses will be retained; and
- The Clothing Store Sub-Precinct which is not subject to this rezoning proposal.

This State Significant Precinct (SSP) Study proposes amendments to the planning controls applicable to the Paint Shop Sub-Precinct to reflect changes in the strategic direction for the Sub-Precinct. The amendment is being undertaken as a State-led rezoning process, reflecting its status as part of a State Significant Precinct located within the State Environmental Planning Policy (Precincts - Eastern Harbour City) 2021.

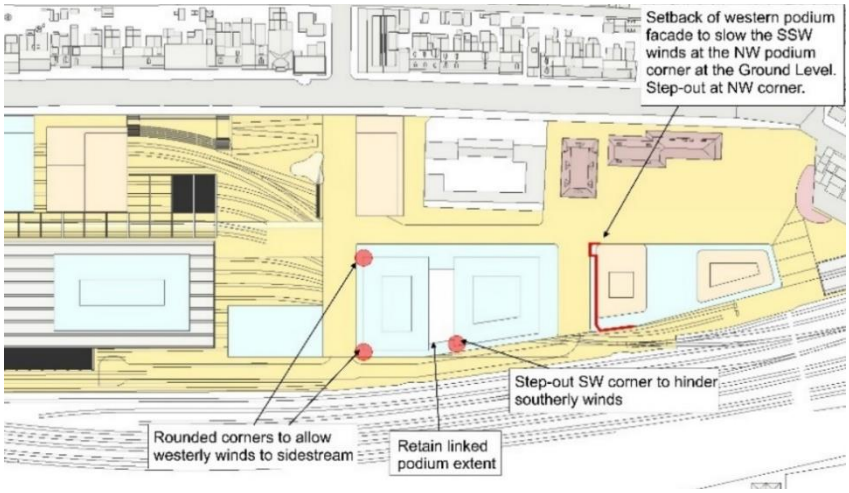
The amended development controls will be located within the City of Sydney Local Environmental Plan. Study Requirements were issued by NSW Department of Planning and Environment (DPE) in December 2020 to guide the investigations to support the proposed new planning controls.

1.1 Purpose of this report

The purpose of this report is to provide a detailed wind amenity assessment of the proposed changes, and consider any potential impacts that may result within and surrounding the Paint Shop Sub-precinct. This report addresses study requirement 3 - Amenity. The relevant study requirements, considerations and consultation requirements, and location of where these have been responded to is outlined in Table 1 below.

Table 1: Study requirements, considerations and consultation requirements

Ref.	Study Requirement	Section of this report
3. Amenity		
Study Requirement	Prepare a Wind Study that undertakes an analysis of land within the Precinct and in affected adjacent areas including surrounding streets. The study must examine wind speeds in relation to universal standards for wind safety, wind comfort including walking, standing and sitting. The study must examine wind speeds in relation to criteria set out in Study Requirement 1.	Section 6, Page 26.
	The wind study must demonstrate that the proposed scale of redevelopment of the Precinct is able to be undertaken in a manner that ensures streets, public places and walking spaces within and surrounding the precinct have wind conditions that are safe and comfortable for walking and where appropriate have conditions that are comfortable for sitting or standing and will not negatively affect any areas that do not currently meet these conditions.	Section 7.1, Page 31. Section 7.2, Page 48.
	The study must compare proposed wind conditions to other similar areas in Greater Sydney and propose wind development standards to be applied to subsequent development stages.	Section 7.3.1, Page 58. Section 7.3.2, Page 60.
	The wind study must be supported by wind modelling which may include computer modelling and/or wind tunnel testing. The selected approach must be appropriately justified.	Section 3, Page 11. Appendix B
Considerations	The studies are to demonstrate how the studies inform and support the preparation of the proposed planning framework including any recommended planning controls or DCP/Design Guideline provisions. The Wind Study should consider: • Developing an acceptable and agreed wind criteria and methodology in consultation with relevant parties to test building envelopes/massing such as: o Criteria for standing at all building entrances; o Criteria for walking for applicable areas daylight, skyview and o Criteria for sitting for applicable areas and affected adjacent areas; o Employing a methodology consistent with that set out in the Draft Central Sydney Planning Strategy and associated Draft DCP documentation; o The careful arrangement of the public domain to address wind impacts generated by the proposal; o Identifying and testing amelioration measures to address wind impacts considering building location, orientation, massing and building setbacks as the primary mitigation measure to address impacts, prior to considering any ancillary or secondary treatments to address wind; o Measures to ensure the suitability of areas for their intended use such as public space areas intended to be used for seating (i.e. outdoor dining areas on footpaths and public plazas) and standing (i.e. building entries); and	Section 6, Page 26. Section 7, Page 31.

Ref.	Study Requirement	Section of this report
	○ No generation of unacceptable wind conditions on areas within the development, and areas surrounding the development that may be wind affected as a result of the proposal.	
Consultations	• Consultation with TfNSW in establishing a methodology for assessing wind comfort and safety which is in alignment with the methodology listed in the Draft Central Sydney Planning Strategy and associated Draft Sydney DCP documentation (July, 2021). • Meeting with City of Sydney to discuss methodology for testing/test requirements (including criteria, adjustments to building massing and surrounding buildings cases). • Draft scheme prepared and tested to determine impact of initial precinct massing on pedestrian wind amenity and safety. Results presented to TfNSW and preliminary treatments drafted to be included in future massing of precinct (December, 2021). • Presentation to DPE regarding building massing/modifications to massing and the expected impact on the wind conditions. Areas identified for long duration activities (February, 2022). • Consultation with Turf and TfNSW to discuss redesigned building massing focusing on modifications to the proposed building forms to accommodate pedestrian amenity in areas that were shown to exceed the relevant criteria for comfort/safety in the tested draft scheme (February, 2022). The treatments recommended by Windtech are highlighted below in the attached figure. The outcome of the consultation was the inclusion of the proposed building chamfers/building setbacks.  • Developed criteria used for assessment with Turf and TfNSW (March, 2022). The assigned criteria were based on the Public Domain Usage plan prepared by Turf and is dependent on the usage of the area (refer to Section 6.3). • Following wind tunnel testing, wind mitigation measures were developed with Bates Smart and TfNSW (May, 2022) and tested in the wind tunnel for areas which exceeded the assigned target comfort criteria.	

1.2 Redfern North Eveleigh Precinct

The Redfern North Eveleigh Precinct is located approximately 3km south-west of the Sydney CBD in the suburb of Eveleigh (refer to Figure 1). It is located entirely within the City of Sydney local government area (LGA) on government-owned land. The Precinct has an approximate gross site area of 10.95 hectares and comprises land bounded by Wilson Street and residential uses to the north, an active railway corridor to the south, residential uses and Macdonaldtown station to the west, and Redfern station located immediately to the east of the Precinct. The Precinct is also centrally located close to well-known destinations including Sydney University, Victoria Park, Royal Prince Alfred Hospital, the University of Technology Sydney, and South Eveleigh, forming part of the broader Tech Central District.

The Precinct is located within the State Heritage-listed curtilage of Eveleigh Railway Workshops and currently comprises the Platform Apartments with 88 private dwellings, Sydney Trains infrastructure and key state heritage buildings including the Paint Shop, Chief Mechanical Engineer's Building, and the Carriageworks and Blacksmith Shop which provide shared community spaces for events including the Carriageworks Farmers Markets.

A map of the precinct and relevant boundaries is illustrated in Figure 2.

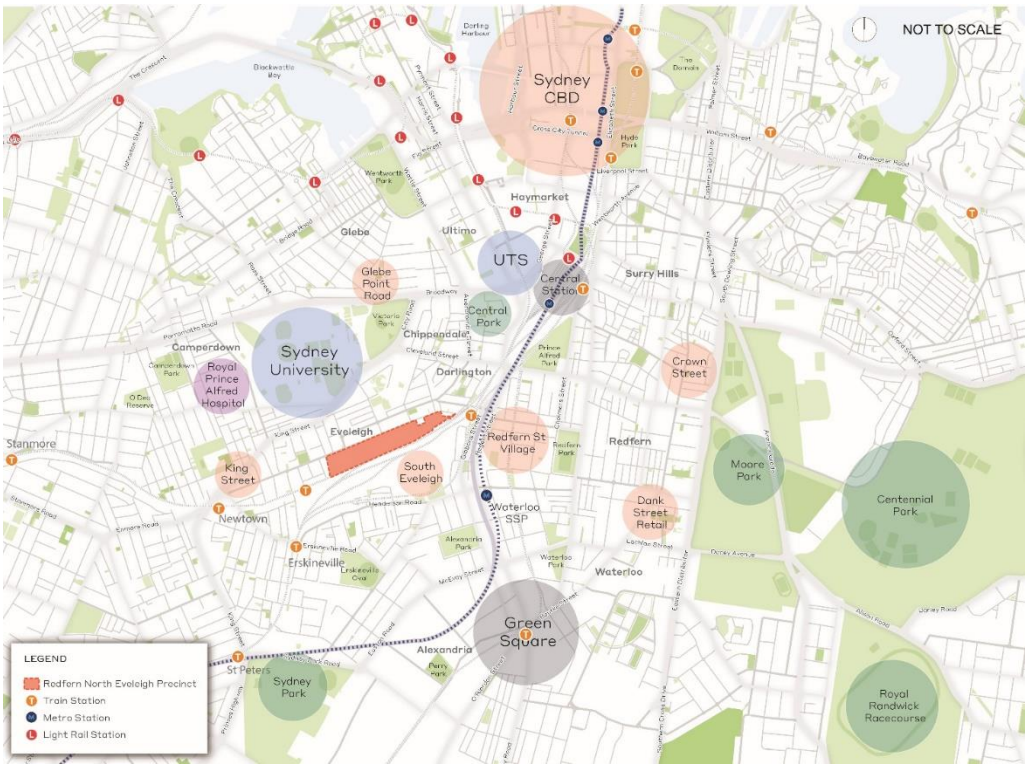


Figure 1: Location plan of Redfern North Eveleigh Precinct (Source: Ethos Urban)

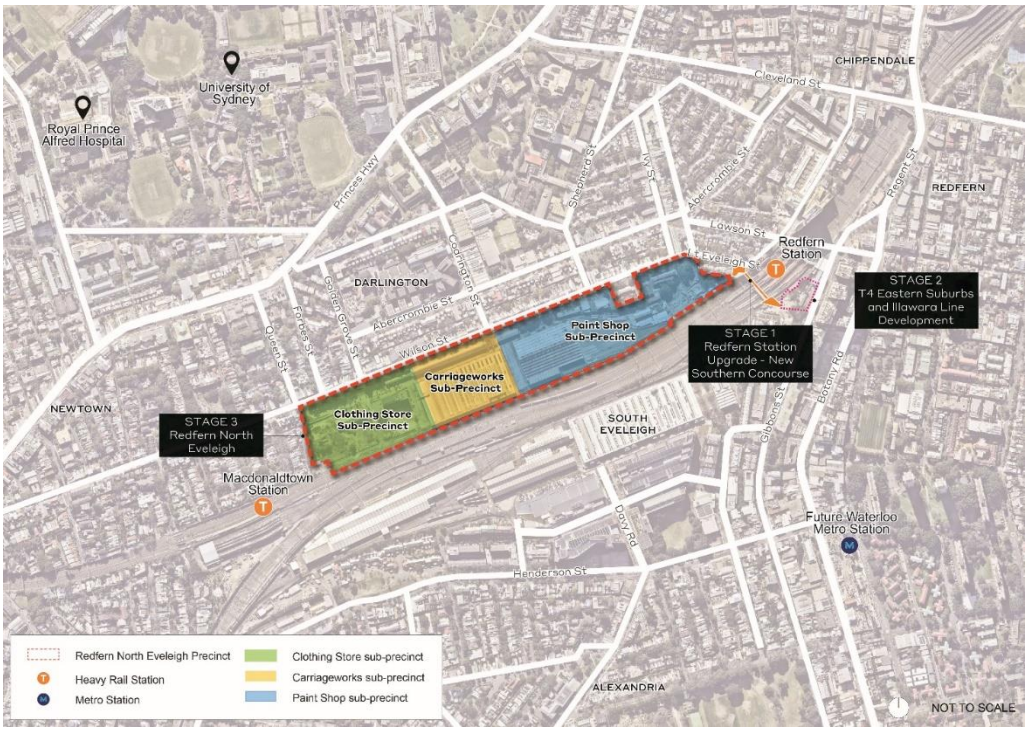


Figure 2: Redfern North Eveleigh and Sub-Precincts (Source: Ethos Urban)

1.3 Redfern North Eveleigh Paint Shop Sub-Precinct

The Redfern North Eveleigh Paint Shop Sub-Precinct is approximately 5.15 hectares and is bounded by Wilson Street to the north, residential terraces and Redfern station to the east, the Western Line rail corridor to the south and the Carriageworks Sub-Precinct to the west. The Sub-Precinct has a significant level change from a Reduced Level (RL) height of RL25 metres to RL29 metres on Wilson Street.

The Paint Shop Sub-Precinct currently hosts a number of items of heritage significance, including the Paint Shop Building, Fan of Tracks, Science Lab Building, Telecommunications Building, and Chief Mechanical Engineer's Building. The Sub-Precinct has a number of disused spaces adjacent to the rail corridor as well as functioning Sydney Trains' infrastructure, offices and operational space. Vehicle and pedestrian access to this area is used by Sydney Trains. The site has a clear visual relationship to South Eveleigh and the Eveleigh Locomotive Workshops across the active rail corridor. A map of the Paint Shop Sub-Precinct and relevant boundaries is illustrated in Figure 2.

1.4 Renewal Vision

The Redfern North Eveleigh Paint Shop Sub-Precinct will be a connected centre for living, creativity and employment opportunities that support the jobs of the future, as well as providing an inclusive, active and sustainable place for everyone, where communities gather.

Next to one of the busiest train stations in NSW, the Sub-Precinct will comprise a dynamic mix of uses including housing, creative and office spaces, retail, local business, social enterprise and open space. Renewal will draw on the past, adaptively re-using heritage buildings in the Sub-Precinct and will acknowledge Redfern's existing character and particular significance to Aboriginal peoples, culture and communities across Australia. The Sub-

Precinct will evolve as a local place contributing to a global context.

1.5 Project Description

An Urban Design and Public Domain Study has been prepared to establish the urban design framework for the Redfern North Eveleigh Paint Shop sub-precinct. The Urban Design and Public Domain Study provides a comprehensive urban design vision and strategy to guide future development of the sub-precinct and has informed the proposed planning framework of the SSP Study.

The Urban Design Framework for the Paint Shop Sub-Precinct comprises:

- Approximately 1.4 hectares of publicly accessible open space, comprising:
    - A public square – a 7,910 square metre public square fronting Wilson Street;
    - An eastern park – a 3,871 square metre park located adjacent to the Chief Mechanical Engineer's Building and the new eastern entry from Platform 1 of the Redfern station; and
    - Traverser No1 - a 2,525 square metre public square edged by Carriageworks and the Paint Shop.
- Retention of over 90% of existing high value trees.
- An overall greening coverage of 40% of the Sub-Precinct.
- A maximum of 142,650 square metre gross floor area (GFA), comprising:
    - between 103,700 - 109,550 square metres of gross floor area (GFA) for employment and community facility floor space (minimum 2,500 square metres). This will support approximately 6,200 direct jobs on the site across numerous industries including the innovation, commercial and creative sectors.
    - between 33,100 - 38,950 square metres of GFA for residential accommodation, providing for between 381 and 449 new homes (including 15% for the purposes of affordable housing).
- New active transport infrastructure and routes to better connect the Paint Shop Sub-Precinct with other parts of Tech Central and the surrounding localities.
- Direct pedestrian connections to the new Southern Concourse at Redfern station.
- Residential parking rates, comprising:
    - Studio at 0.1 per dwelling
    - 1 Bed at 0.3 per dwelling
    - 2 Bed at 0.7 per dwelling
    - 3 Bed at 1.0 per dwelling

- Non-residential car parking spaces (including disabled and car share) are to be provided at a rate of 1 space per 700 square metres of GFA.
- 66 car spaces are designated for Sydney Trains maintenance and operational use.

The key features of the Urban Design Framework, include:

- The creation of a new public square with direct pedestrian access from Wilson Street to provide a new social and urban hub to promote outdoor gatherings that will accommodate break out spaces and a pavilion structure.
- An eastern park with direct access from Redfern station and Little Eveleigh Street, which will provide a high amenity public space with good sunlight access, comfortable wind conditions and community character.
- Upgraded spatial quality of the Traverser No1 yard, retaining the heritage setting, and incorporating complementary uses and good access along Wilson Street to serve as a cultural linkage between Carriageworks and the Paint Shop Building.
- The establishment of an east-west pedestrian thoroughfare with new public domain and pedestrian links.
- A range of Water Sensitive Urban Design (WSUD) features.
- Activated ground level frontages with commercial, retail, food and beverage and community and cultural uses.
- Adaptive reuse of heritage buildings for employment, cultural and community uses.
- New buildings for the Sub-Precinct, including:
    - Commercial buildings along the rail corridor that range between 3 and 26 occupied storeys;
    - Mixed use buildings along the rail corridor, comprising a three-storey non-residential podium with residential towers ranging between 18 to 28 occupied storeys;
    - Mixed use buildings (commercial and residential uses) along Wilson Street with a four-storey street wall fronting Wilson Street and upper levels at a maximum of 9 occupied storeys that are set back from the street wall alignment;
    - A commercial building on the corner of Wilson Street and Traverser No.1 with a four-storey street wall fronting Wilson Street and upper levels at a maximum of 8 occupied storeys that are set back from the street wall alignment. There is flexibility to allow this building to transition to a mixed-use building with active uses at ground level and residential uses above; and
    - Potential options for an addition to the Paint Shop Building comprising of commercial uses. These options (all providing for the same GFA) include:

- A 5-storey commercial addition to the Paint Shop Building with a 3m vertical clearance, with the adjacent development site to the east comprising a standalone 3-storey commercial building (represented in Figure 3);
- A 3-storey commercial addition to the Paint Shop Building with a 3m vertical clearance which extends and connects to the commercial building on the adjacent development site to the east; and
- No addition to the Paint Shop Building, with the adjacent development site to the east comprising a standalone 12-storey commercial building.

- Commitment to a 5 Star Green Star Communities rating, with minimum 5 Star Green Star Buildings rating.
- All proposed buildings are below the Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS) to ensure Sydney Airport operations remain unaffected.

The proposed land allocation for the Paint Shop sub-precinct is described in Table 2 below.

Table 2: Breakdown of allocation of land within the Paint Shop Sub-precinct

Land Allocation	Existing	Proposed
Developed Area	15,723 sqm / 30% of total site area	20,824 sqm / 40% of total site area
Public open space	Area not publicly accessible	14,306 sqm / 28% of total site area
Other public domain areas (including streets, shared zones, pedestrian paths and vehicular zones)	Area not publicly accessible	15,149 sqm / 29% of total site area (Excluding privately accessible public links and private spaces ~3% of total site area)

The Indicative Concept Proposal for the Paint Shop Sub-Precinct is illustrated in Figure 3 below.

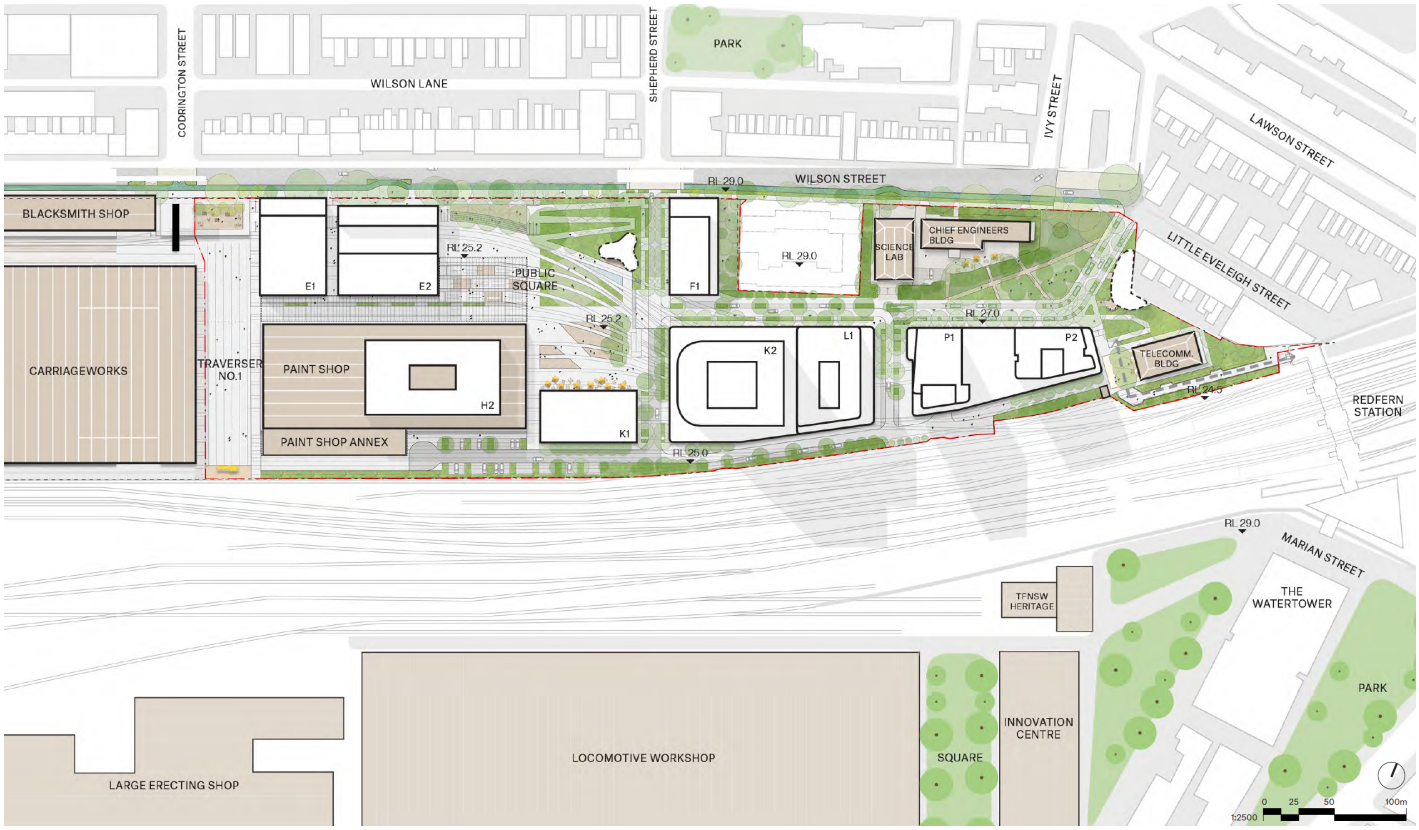


Figure 3: Indicative Concept Proposal (Source: Bates Smart and Turf)

2 WIND TUNNEL TESTING

A wind tunnel study has been undertaken to assess wind speeds at selected critical outdoor trafficable areas within and around the subject development. The test procedures followed for this wind tunnel study were based on the guidelines set out in the Australasian Wind Engineering Society Quality Assurance Manual (AWES-QAM-1-2019), ASCE 7-16 (Chapter C31), CTBUH (2013) and is in accordance with the methodology outlined within the Draft Sydney DCP 2012.

A scale model of the development was prepared, including the surrounding buildings and land topography. Testing was performed at Windtech's boundary layer wind tunnel facility. The wind tunnel has a 3.0m wide working section and a fetch length of 14m, and measurements were taken from 16 wind directions at 22.5 degree increments. The wind tunnel was configured to the appropriate boundary layer wind profile for each wind direction. Wind speeds were measured using either Dantec hot-wire probe anemometers or pressure-based wind speed sensors, positioned to monitor wind conditions at critical outdoor trafficable areas of the development.

The model was initially tested in the wind tunnel without the effect of any forms of wind ameliorating devices such as screens, balustrades, etc., which are not already shown in the architectural drawings. The effect of vegetation was also excluded from the testing. The wind speeds measured during testing were combined with a statistical model of the regional wind climate to provide the equivalent full-scale wind speeds at the site. The measured wind speeds were compared against appropriate criteria for pedestrian comfort and safety. Two treatment scenarios were proposed and tested in the wind tunnel for any area which were exposed to strong winds. The treatments for the first test scenario included awnings along the east west spine of the Paint Shop sub-precinct as is required by the Department of Planning and Environment, Apartment Design Guide, 2015 - Objective 4T-1 Design Guidance (ADG). The second treatment scenario included awnings and additional vertical wind screens and vegetation.

Note however that, in accordance with the AWES Guidelines (2014), only architectural elements or modifications are used to treat winds which represent an exceedance of the existing wind conditions and exceed the safety limit.

3 WIND TUNNEL MODEL

Wind tunnel testing was carried out using a 1:400 scale model of the development and surroundings. The study model incorporates all necessary architectural features on the façade of the development to ensure an accurate wind flow is achieved around the model, and was constructed using a Computer Aided Manufacturing (CAM) process to ensure that a high level of detail and accuracy is achieved. The effect of nearby buildings and land topography has been accounted for through the use of a proximity model, which represents a radius of 600m from the development site.

Building chamfers were proposed and included along the south-east corner of the Building L1 podium and the north-west corner of the Building P1 podium. These inclusions formed the "Base Case" design which was tested in the wind tunnel. Several building scenarios were tested as part of the "Base Case" design. These are as follows:

- Case 1: With the Paint Shop Sub-Precinct developments and existing surrounding buildings. In this report, this test case is referred to as the "Paint Shop Sub-Precinct", as shown in Figures 4.
- Case 2: With the Paint Shop Sub-Precinct developments, existing surrounding buildings and the Clothing Store Sub-Precinct Massing. In this report, this test case is referred to as the "Paint Shop Sub-Precinct with Clothing Store Sub-Precinct", as shown in Figures 5.
- Case 3: With the existing surrounding buildings. In this report, this test case is referred to as the "Existing Scenario", as shown in Figures 6.

Planview images of the proximity model scenarios listed above are provided in Figure 7.

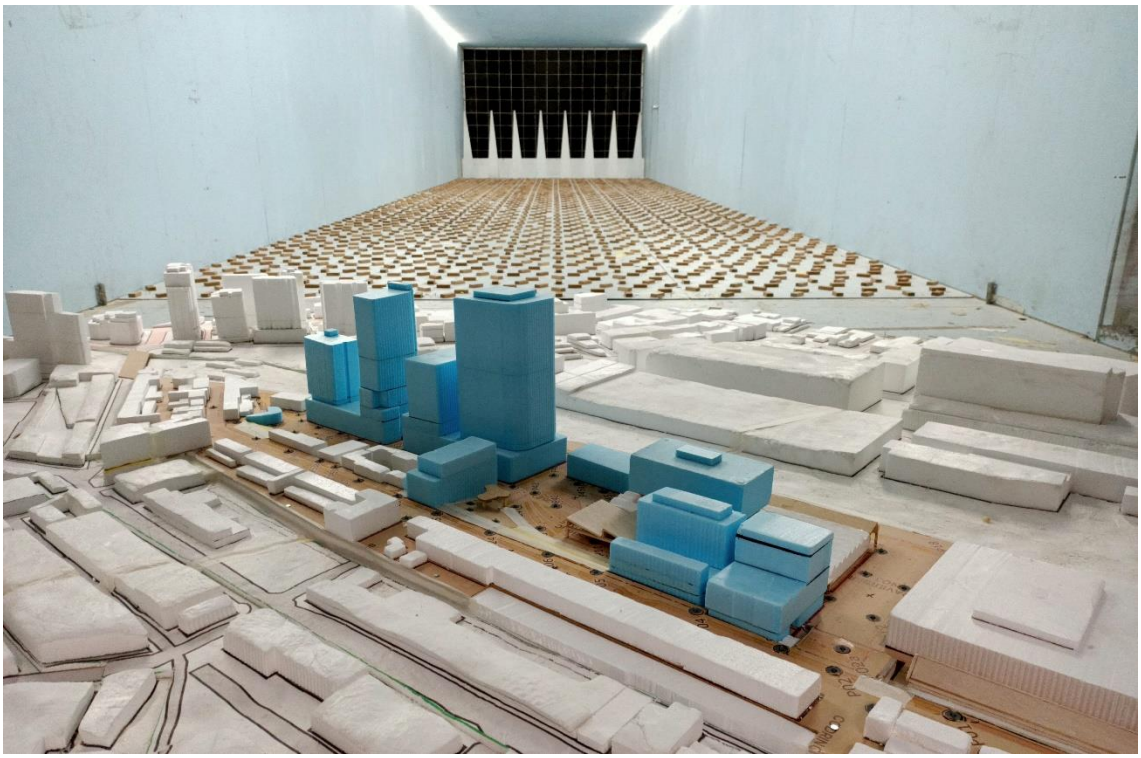


Figure 4a: Photograph of the Wind Tunnel Model (Case 1) - view from the north-west

Figure 4b: Photograph of the Wind Tunnel Model (Case 1) - view from the north

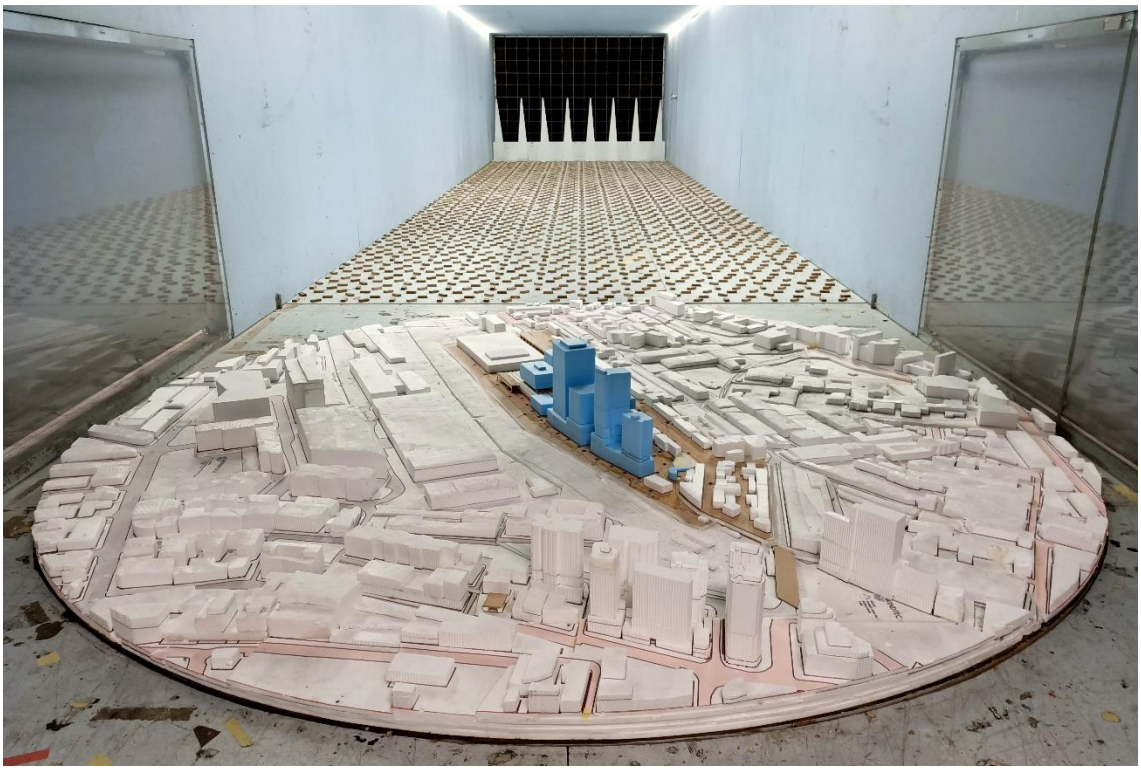


Figure 4c: Photograph of the Wind Tunnel Model (Case 1) - view from the east

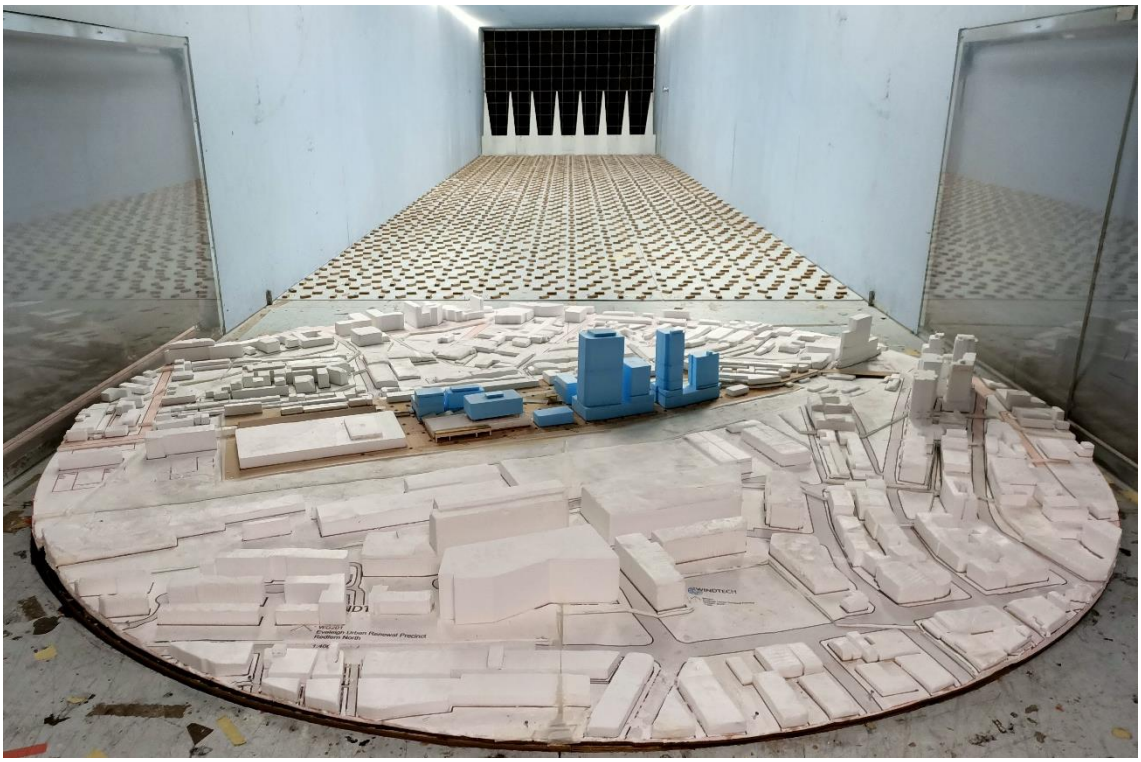


Figure 4d: Photograph of the Wind Tunnel Model (Case 1) - view from the south

Figure 4e: Photograph of the Wind Tunnel Model (Case 1) - view from the west

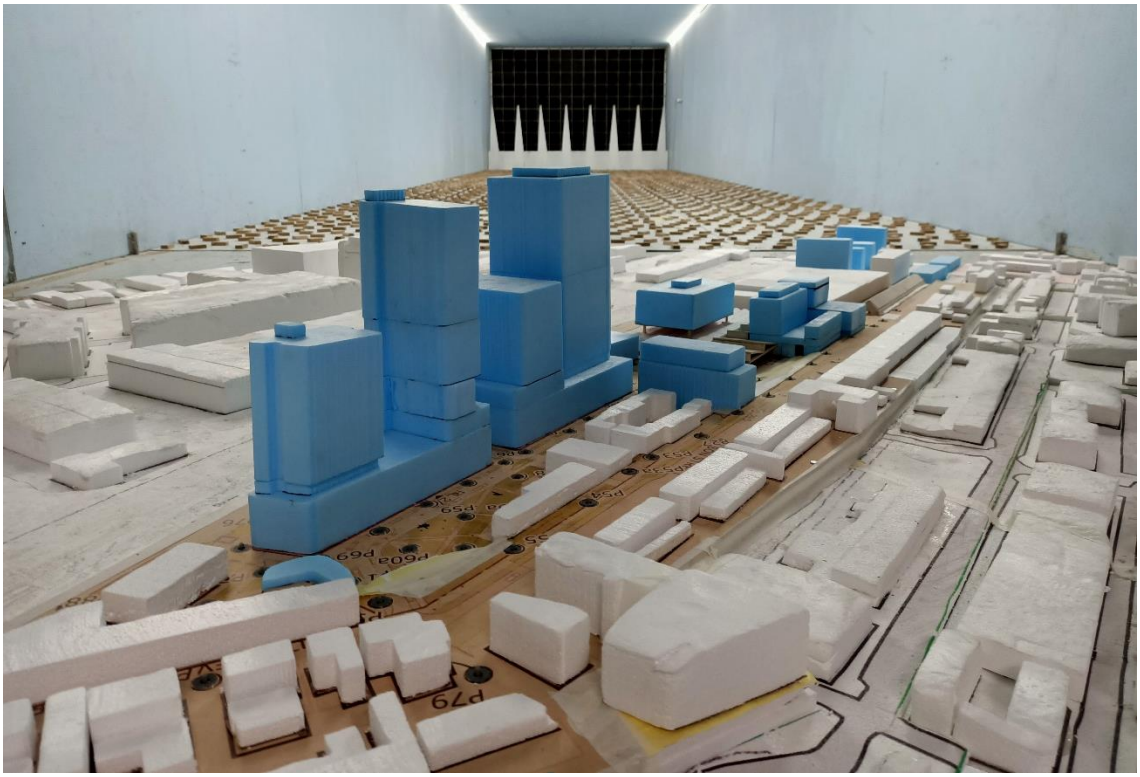


Figure 5a: Photograph of the Wind Tunnel Model with Clothing Store Sub-Precinct (Case 2) - view from north-east

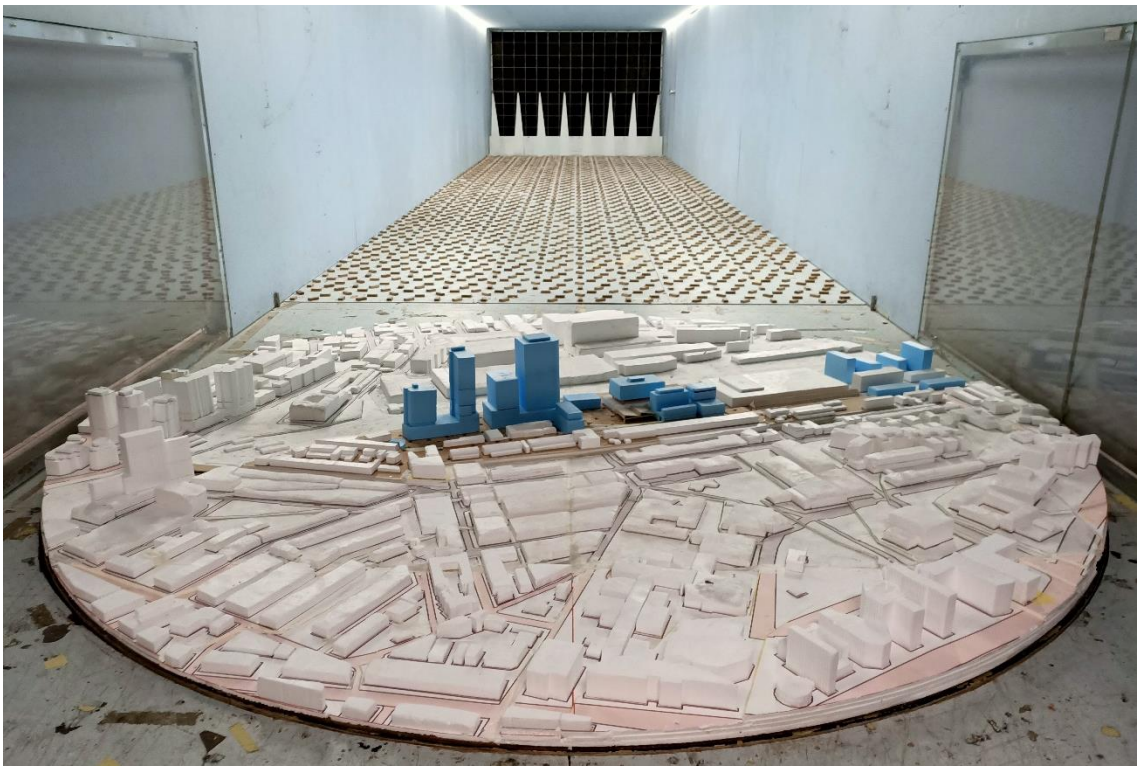


Figure 5b: Photograph of the Wind Tunnel Model with Clothing Store Sub-Precinct (Case 2) - view from the north

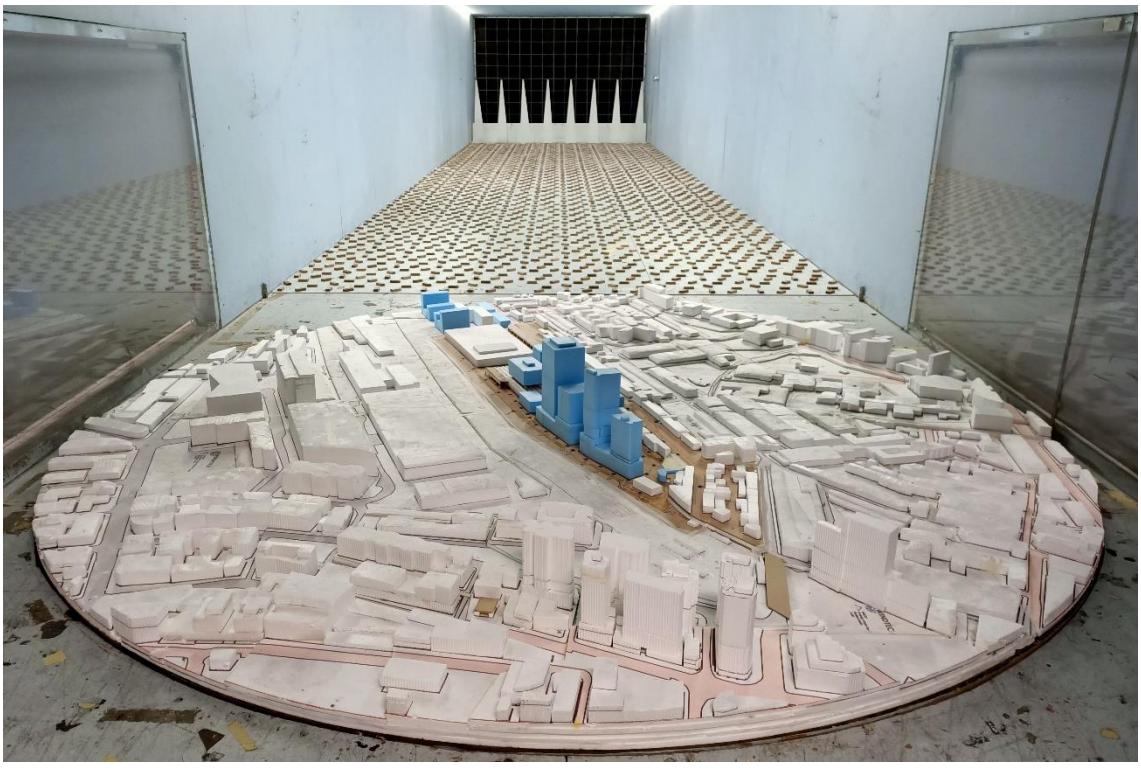


Figure 5c: Photograph of the Wind Tunnel Model with Clothing Store Sub-Precinct (Case 2) - view from the east

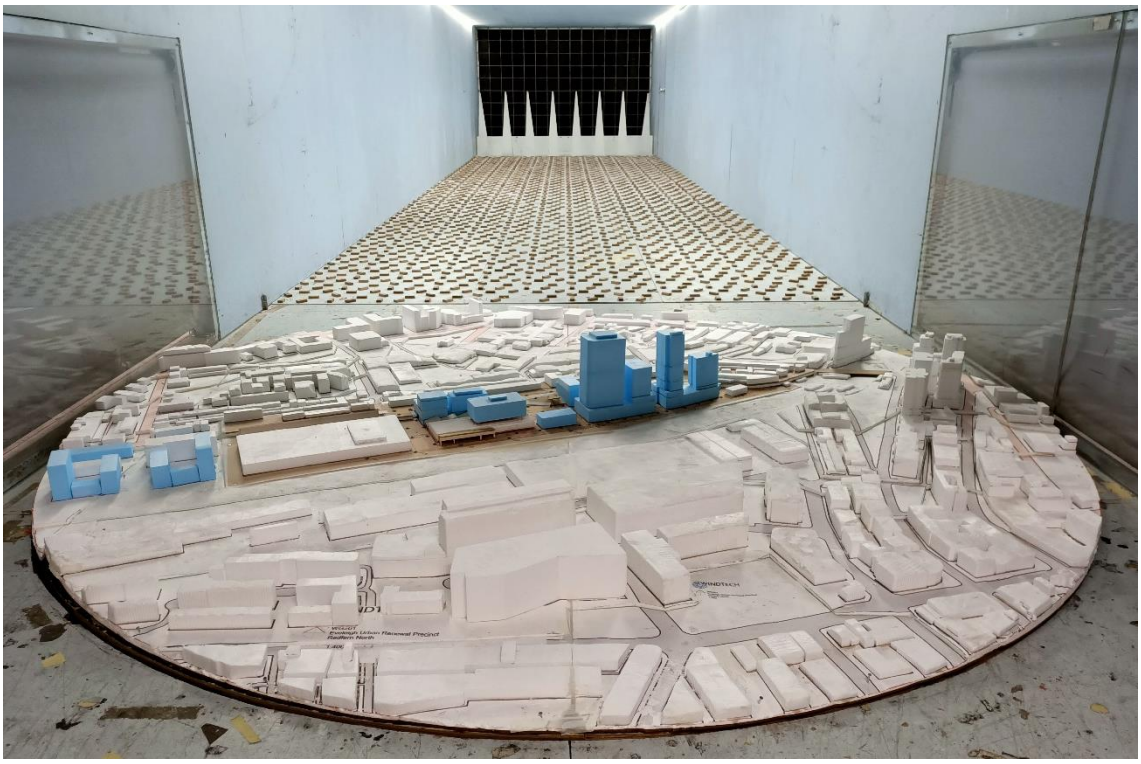


Figure 5d: Photograph of the Wind Tunnel Model with Clothing Store Sub-Precinct (Case 2) - view from the south

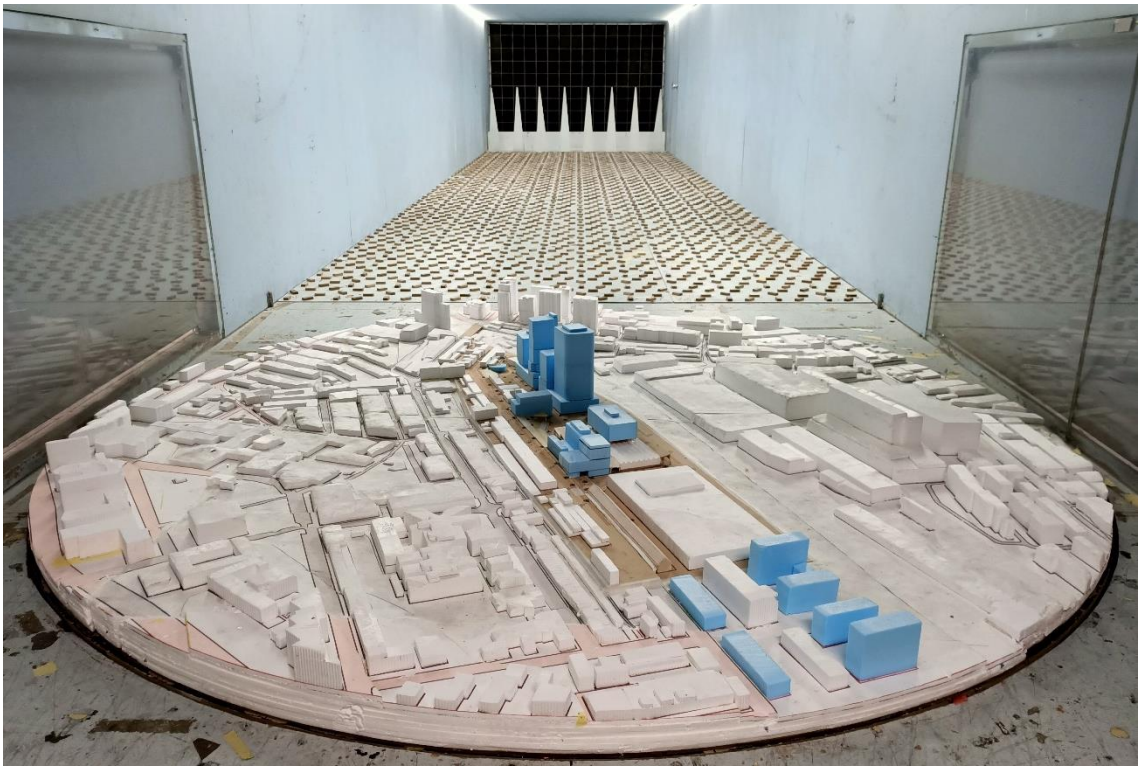


Figure 5e: Photograph of the Wind Tunnel Model with Clothing Store Sub-Precinct (Case 2) - view from the west

Figure 6a: Photograph of the Wind Tunnel Model – Existing Site (Case 3) - view from the north

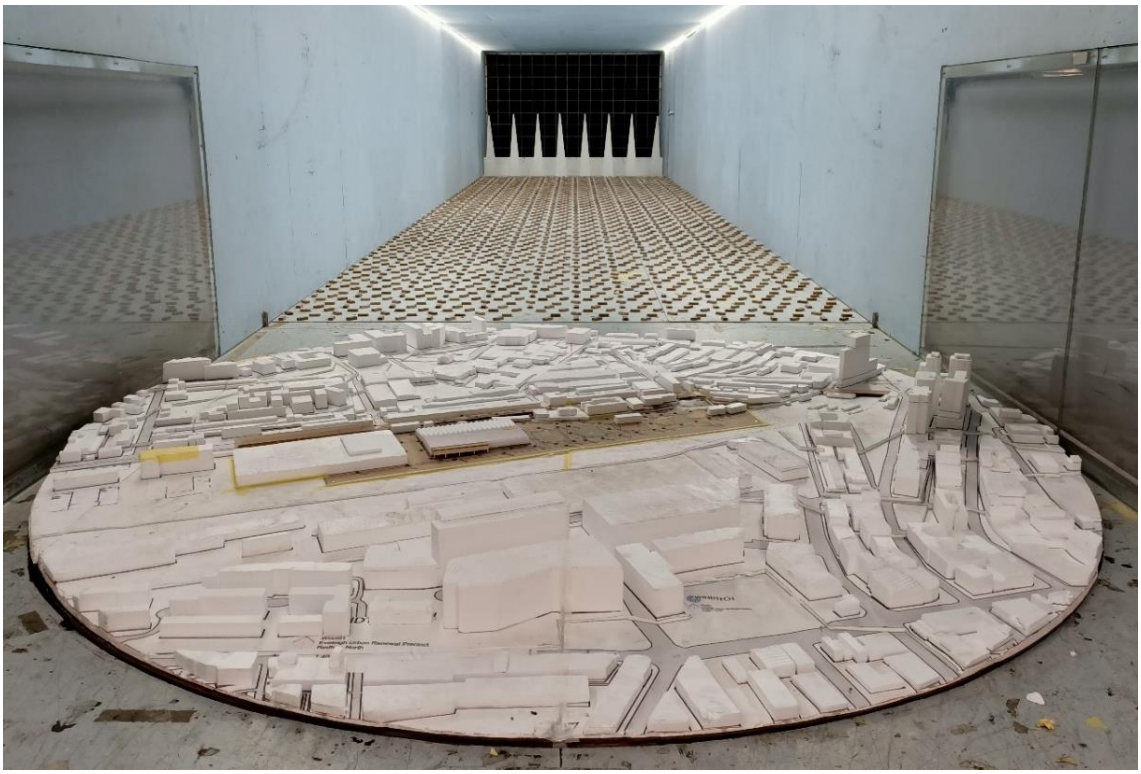


Figure 6b: Photograph of the Wind Tunnel Model – Existing Site (Case 3) - view from the south

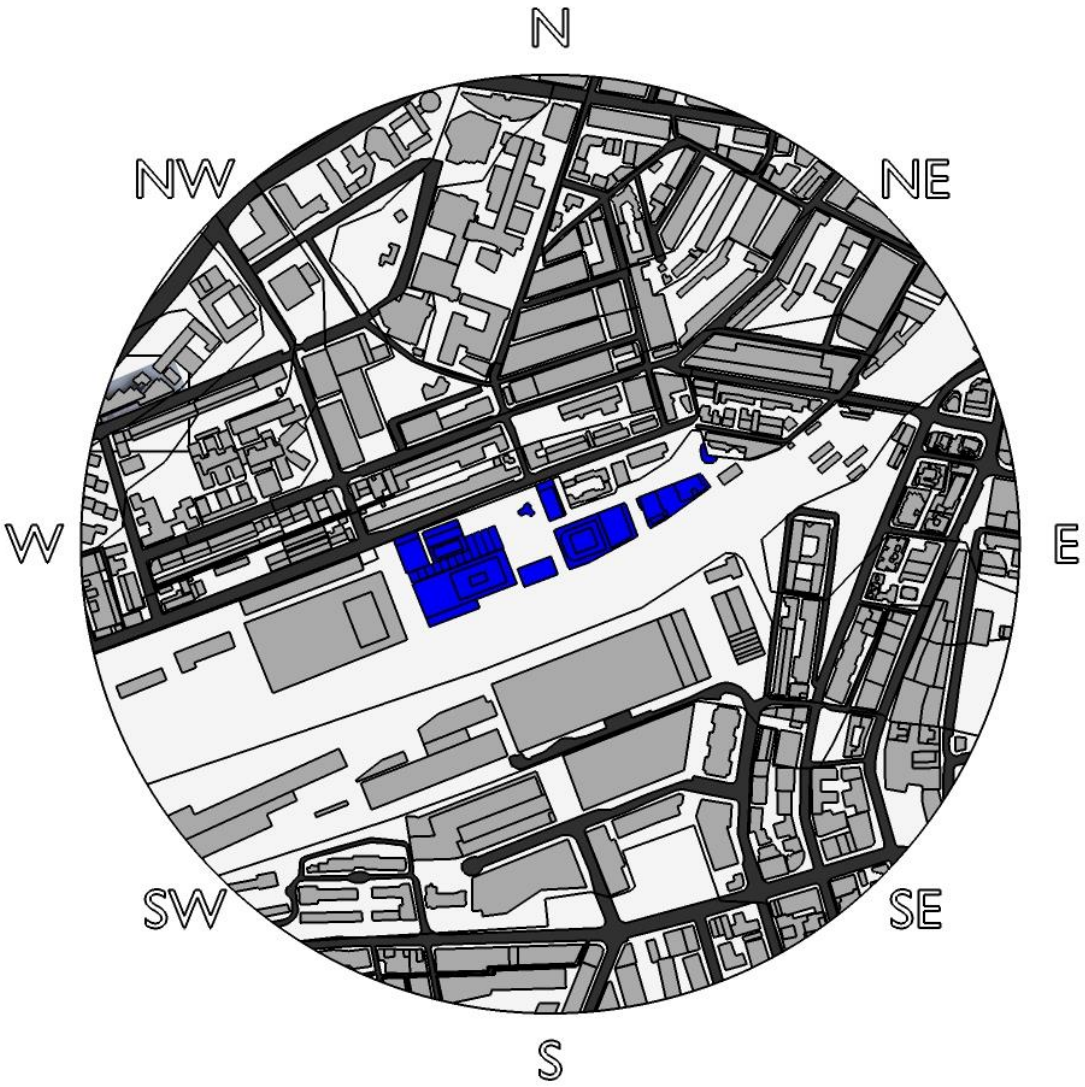


Figure 7a: Proximity Model Plan – Case 1: Paint Shop Sub-Precinct

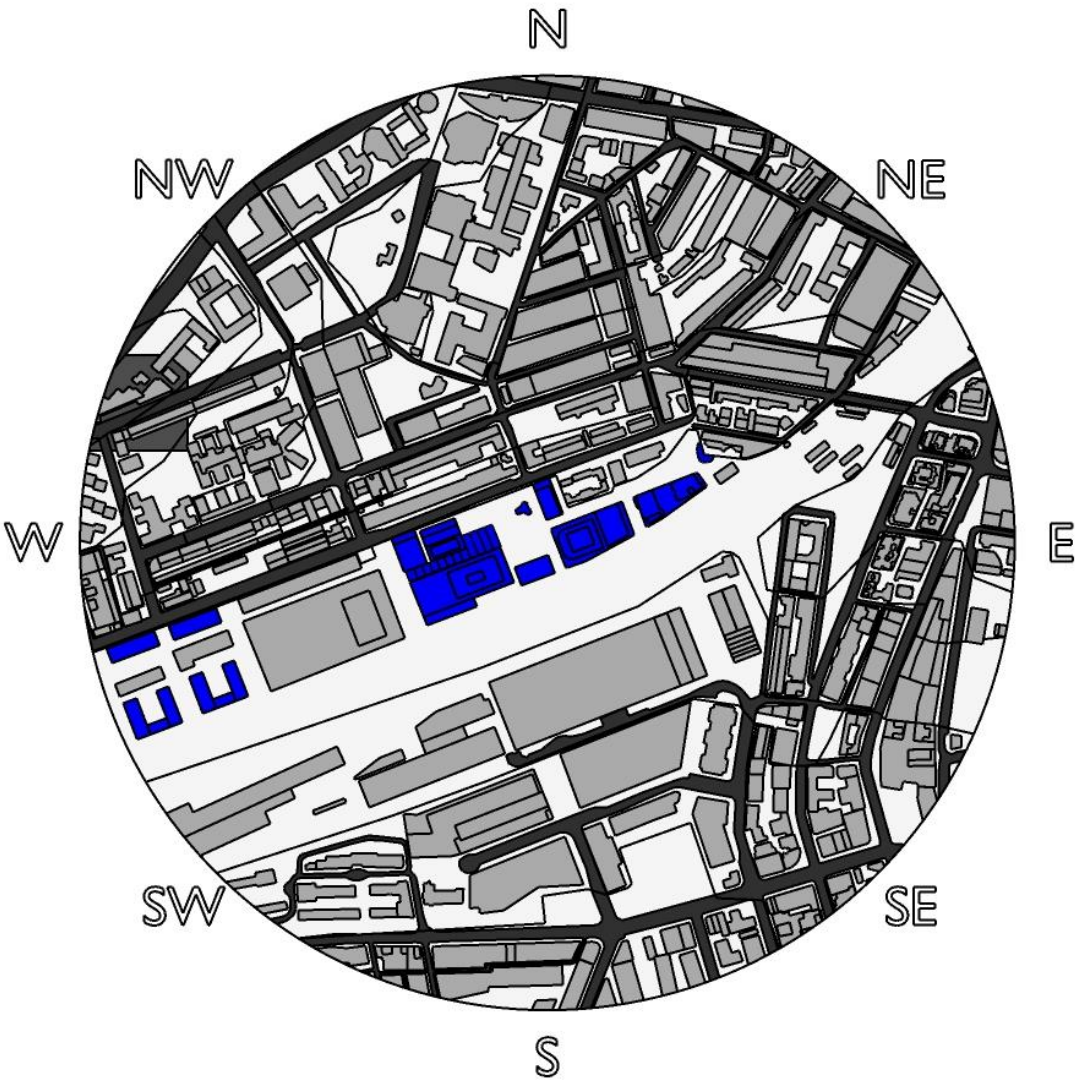


Figure 7b: Proximity Model Plan – Case 2: Paint Shop Sub-Precinct with Clothing Store Sub-Precinct

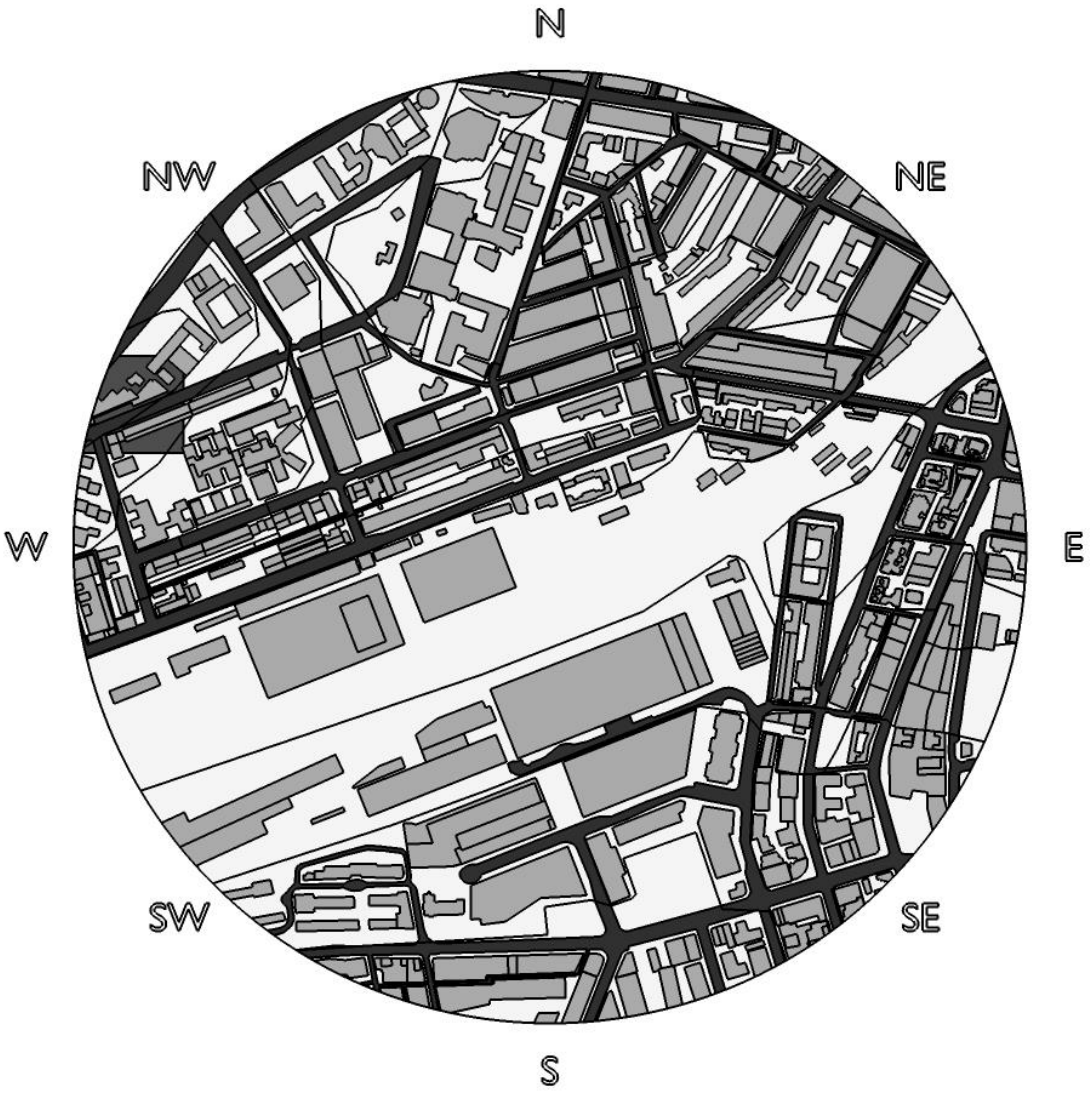


Figure 7c: Proximity Model Plan – Case 3: Existing Site

4 BOUNDARY LAYER WIND PROFILES AT THE SITE

The roughness of the surface of the earth has the effect of slowing down the wind near the ground. This effect is observed up to the boundary layer height, which can range between 500m to 3km above the earth's surface depending on the roughness of the surface (ie: oceans, open farmland, etc). Within this range the prevailing wind forms a boundary layer wind profile.

Various wind codes and standards and other publications classify various types of boundary layer wind flows depending on the surface roughness z_0. Descriptions of typical boundary layer wind profiles, based on D.M. Deaves and R.I. Harris (1978), are summarised as follows:

- Flat terrain (0.002m < z_0 < 0.003m). Examples include inland water bodies such as lakes, dams, rivers, etc, and the open ocean.
- Semi-open terrain (0.006m < z_0 < 0.01m). Examples include flat deserts and plains.
- Open terrain (0.02m < z_0 < 0.03m). Examples include grassy fields, semi-flat plains, and open farmland (without buildings or trees).
- Semi-suburban/semi-forest terrain (0.06m < z_0 < 0.1m). Examples include farmland with scattered trees and buildings and very low-density suburban areas.
- Suburban/forest terrain (0.2m < z_0 < 0.3m). Examples include suburban areas of towns and areas with dense vegetation such as forests, bushland, etc.
- Semi-urban terrain (0.6m < z_0 < 1.0m). Examples include centres of small cities, industrial parks, etc.
- Urban terrain (2.0m < z_0 < 3.0m). Examples include centres of large cities with many high-rise towers, and also areas with many closely-spaced mid-rise buildings.

The boundary layer wind profile does not change instantly due to changes in the terrain roughness. It can take many kilometres (at least 100km) of a constant surface roughness for the boundary layer wind profile to achieve a state of equilibrium. Hence an analysis of the effect of changes in the upwind terrain roughness is necessary to determine an accurate boundary layer wind profile at the development site location.

The proximity model accounts for the effect of the near field topographic effects as well as the influence of the local built forms. To account for further afield effects, an assessment of the upwind terrain roughness has been undertaken based on the method given in AS/NZS1170.2:2011, using a fetch ranging from 20 to 60 times the study reference height (as per the recommendation by AS/NZS1170.2:2011). An aerial image showing the surrounding terrain is presented in Figure 8 for a range of 2.4km from the edge of the proximity model used for the wind tunnel study. The resulting mean and gust terrain and height multipliers at the site location are presented in Table 3, referenced to the study reference height (which is approximately half the height of the subject development since typically we are most interested in the wind effects at the ground plane). Details of the boundary layer wind profiles at the site are combined with the regional wind model (see Section 5) to determine the site wind speeds.

Table 3: Approaching Boundary Layer Wind Profile Analysis Summary (at the study reference height)

Wind Sector (degrees)	Terrain and Height Multiplier $k_{tr,T=1hr}$ (hourly)	$k_{tr,T=10min}$ (10min)	$k_{tr,T=3s}$ (3sec)	Turbulence Intensity I_v	Equivalent Terrain Category (AS/NZS1170.2:2011 naming convention)
0	0.63	0.67	1.06	0.229	3.1
30	0.48	0.52	0.95	0.333	3.8
60	0.57	0.61	1.02	0.263	3.4
90	0.63	0.67	1.06	0.230	3.1
120	0.61	0.65	1.04	0.243	3.2
150	0.55	0.59	1.00	0.277	3.5
180	0.55	0.59	1.00	0.277	3.5
210	0.65	0.69	1.08	0.217	3.0
240	0.66	0.69	1.08	0.216	3.0
270	0.66	0.69	1.08	0.216	3.0
300	0.60	0.64	1.04	0.246	3.3
330	0.68	0.72	1.09	0.205	2.9

NOTE: These terrain and height multipliers are to be applied to a basic regional wind speed averaged over 3-seconds. Divide these values by 1.10 for a basic wind speed averaged over 0.2-seconds, 0.69 for a basic wind speed averaged over 10-minutes, or 0.66 for a basic wind speed averaged over 1-hour.

For each of the 16 wind directions tested in this study, the approaching boundary layer wind profiles modelled in the wind tunnel closely matched the profiles listed in Table 3. Plots of the boundary layer wind profiles used for the wind tunnel testing are presented in Appendix D of this report.

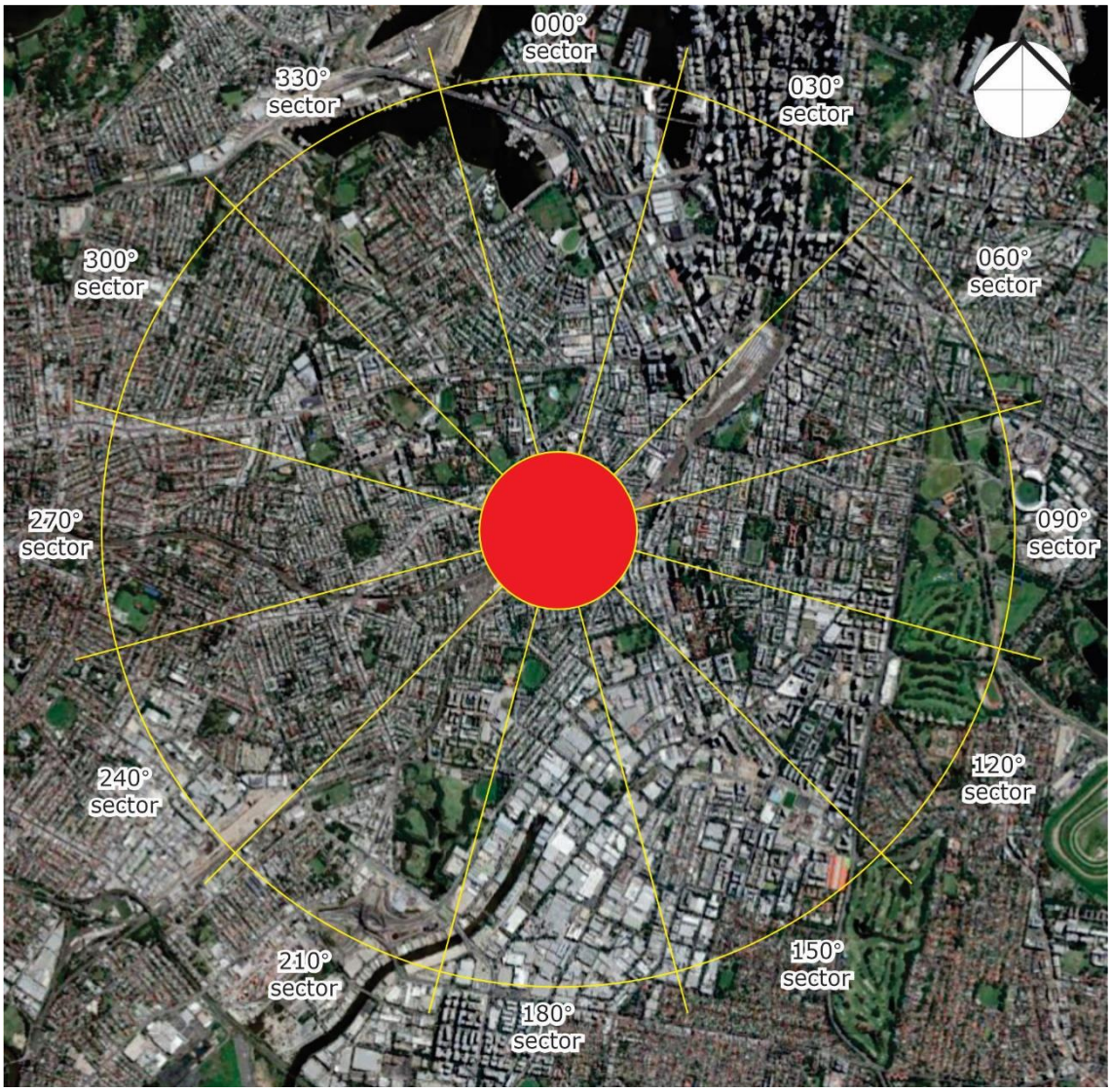


Figure 8: Aerial Image of the Surrounding Terrain (radius of 2.4km from the edge of the proximity model)

5 REGIONAL WIND MODEL

The regional wind model used in this study was determined from an analysis of measured directional mean wind speeds obtained at the meteorological recording station located at Kingsford Smith Airport (Sydney Airport). Data was collected from 1995 to 2016 and corrected so that it represents winds over standard open terrain at a height of 10m above ground for each wind direction. From this analysis, directional probabilities of exceedance and directional wind speeds for the region are determined. The directional wind speeds are summarised in Table 4. The directional wind speeds and corresponding directional frequencies of occurrence are presented in Figure 9.

The data indicates that the southerly winds are by far the most frequent winds for the Sydney region, and are also the strongest. The westerly winds occur most frequently during the winter season for the Sydney region, and although they are typically not as strong as the southerly winds, they are usually a cold wind and hence can be a cause for discomfort for outdoor areas. North-easterly winds occur most frequently occur during the warmer months of the year for the Sydney region, and hence are usually welcomed within outdoor areas since they are typically not as strong as the southerly or westerly winds.

The recurrence intervals examined in this study are for exceedances of 5% (per 90 degree sector) of the pedestrian comfort criteria using Gust-Equivalent Mean (GEM) wind speeds, and annual maximum wind speeds (per 22.5 degree sector) for the pedestrian safety criterion. Note that the 5% probability wind speeds presented in Table 4 are only used for the directional plot presented in Figure 9 and are not used for the integration of the probabilities.

Table 4: Regional Directional Wind Speeds (hourly means, at 10m height in standard open terrain) (m/s)

Wind Direction	5% Exceedance	Annual Maximum
N	5.9	9.9
NNE	9.9	12.9
NE	9.7	12.3
ENE	7.5	10.0
E	6.3	9.3
ESE	6.2	9.1
SE	7.0	10.1
SSE	8.5	12.2
S	10.3	13.9
SSW	10.0	14.1
SW	6.9	11.9
WSW	9.3	13.6
W	9.8	14.4
WNW	8.8	14.3
NW	6.7	12.6
NNW	5.5	10.7

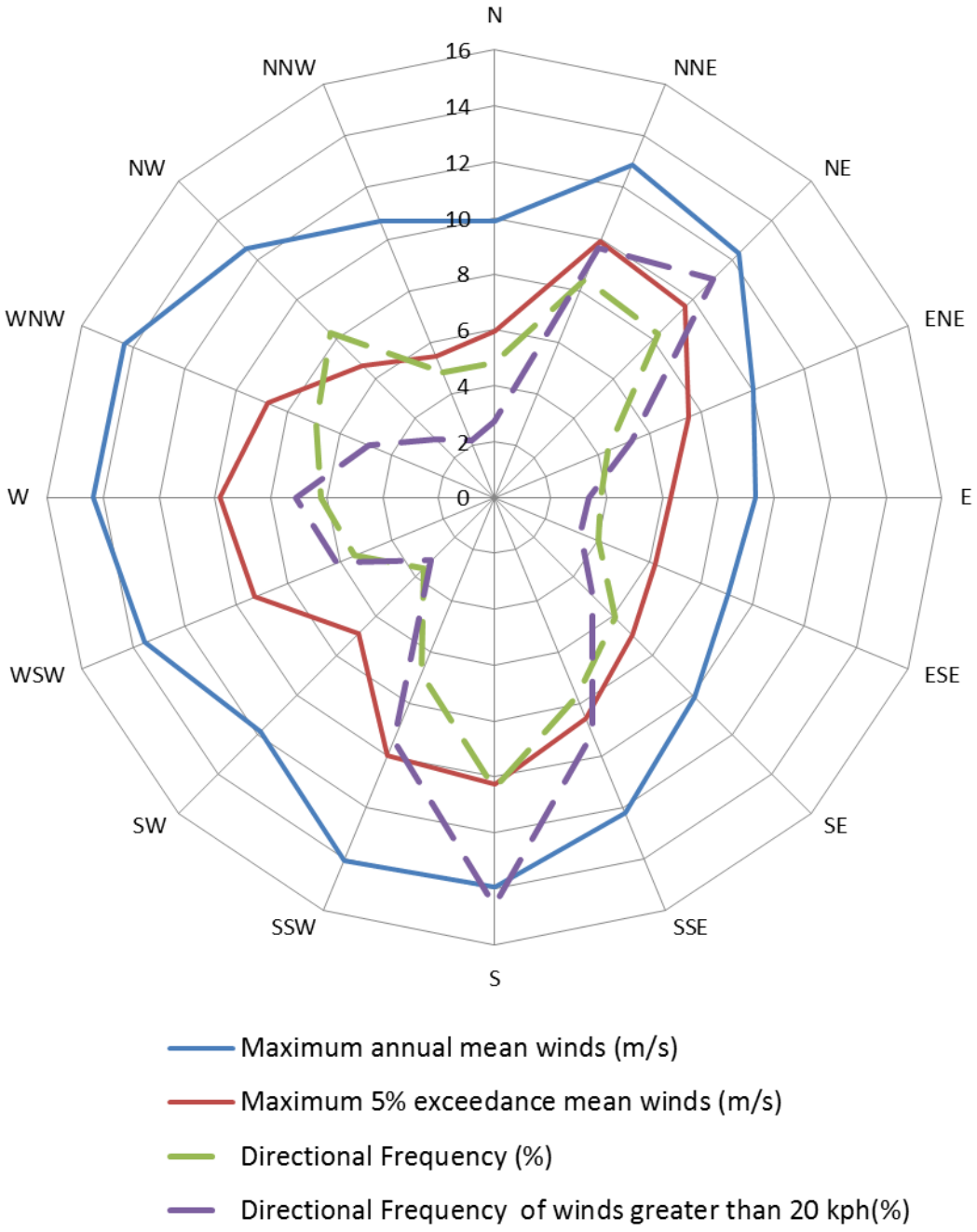


Figure 9: Annual and 5% Exceedance Hourly Mean Wind Speeds, and Frequencies of Occurrence, for the Sydney Region (at 10m height in standard open terrain)

6 PEDESTRIAN WIND COMFORT AND SAFETY

The acceptability of wind conditions for an area is determined by comparing the measured wind speeds against an appropriate criteria. This section outlines how the measured wind speeds were obtained, the criteria considered for the development, as well as the critical trafficable areas that were assessed and their corresponding criteria designation.

6.1 Measured Wind Speeds

Wind speeds were measured using either Dantec hot-wire probe anemometers or pressure-based wind speed sensors, positioned to monitor wind conditions at critical outdoor trafficable areas of the development. The reference mean free-stream wind speed measured in the wind tunnel, which is at a full-scale height of 200m and measured 3m upstream of the study model.

Measurements were acquired for 16 wind directions at 22.5 degree increments using a sample rate of 1,024Hz. The full methodology of determining the wind speed measurements at the site from either the Dantec Hot-wire probe anemometers or pressure-based wind speed sensors is provided in Appendix B. Based on the results of the analysis of the boundary layer wind profiles at the site (see Section 4), and incorporating the regional wind model (see Section 5), the data sampling length of the wind tunnel test for each wind direction corresponds to a full-scale sample length ranging between 30 minutes and 1 hour. Research by A.W. Rofail and K.C.S. Kwok (1991) has shown that, in addition to the mean and standard deviation of the wind being stable for sample lengths of 15 minutes or more (full-scale), the peak value determined using the upcrossing method is stable for sample lengths of 30 minutes or more.

6.2 Wind Speed Criteria Used for This Study

For this study, the measured wind conditions for the various critical outdoor trafficable areas around the subject development are compared against the criteria presented in the Draft Sydney Development Control Plan 2012 - Central Sydney Planning Review Amendment, which supersedes the criteria detailed in the City of Sydney Development Control Plan 2012 (SDCP2012).

For pedestrian comfort, the Draft Sydney DCP 2012 requires that the hourly mean wind speed, or Gust-Equivalent Mean (GEM) wind speed (whichever is greater for each wind direction), must not exceed 8m/s for walking, 6m/s for standing, and 4m/s for sitting. These are based on a 5% probability of exceedance.

For pedestrian safety, the Draft Sydney DCP 2012 defines a safety limit criterion of 24m/s, based on an annual maximum 0.5 second gust wind speed, which applies to all areas.

Furthermore, in accordance with the provisions of the Draft Sydney DCP 2012, the existing conditions for the pedestrian footpaths around the site are also analysed as part of this study to determine the impact of the subject development. If it is found that the existing conditions exceed the relevant criteria, then the target wind speed for that area with the inclusion of the proposed development is to at least match the existing site conditions.

In accordance with the provisions of the Draft Sydney DCP 2012, the wind speed assessment is undertaken for winds occurring between 6am and 10pm (AEST).

A more detailed comparison of published criteria for pedestrian wind comfort and safety is provided in Appendix A.

For this study the measured wind conditions of the selected critical outdoor trafficable areas are compared against two sets of criteria; one for pedestrian safety, and one for pedestrian comfort. The safety criterion is applied to the annual maximum gust winds, and the comfort criteria is applied to Gust Equivalent Mean (GEM) winds. In accordance with ASCE (2003), the GEM wind speed is defined as follows:

$$GEM = max\left(\bar{V}, \frac{\hat{V}}{1.85}\right) \quad (6.1)$$

where:

$\bar{V}$ is the mean wind speed.

$\hat{V}$ is the gust wind speed.

The criteria considered in this study are summarised in Tables 5 and 6 for pedestrian comfort and safety, respectively. The results of the wind tunnel study are presented in the form of directional plots attached in Appendix C and in tabulated format in Tables 7 and 8 of this report. For each study point there is a plot of the GEM wind speeds using the comfort criteria, and a plot for the annual maximum gust wind speeds using the safety criterion.

Table 5: Pedestrian Comfort Criteria (Draft Sydney DCP 2012)

Classification	Description	Maximum 5% Exceedance GEM Wind Speed (m/s)
Sitting	Outdoor areas that involve seating such as parks, dining areas in restaurants, amphitheatres, etc.	4
Standing	Short duration stationary activities (generally less than 1 hour), including window shopping, waiting areas, etc.	6
Walking	For pedestrian thoroughfares, private swimming pools, most communal areas, private balconies and terraces, etc.	8

Table 6: Pedestrian Safety Criterion (Draft Sydney DCP 2012)

Classification	Description	Annual Maximum Gust Wind Speed (m/s)
Safety	Safety criterion applies to all trafficable areas.	24

The criteria listed above are applicable for the majority of areas within the City of Sydney LGA, and it is proposed that these criteria be applied as the wind development standards for subsequent development stages.

6.3 Layout of Study Points and Assigned Target Criteria

For this study a total of 95 study points were selected for analysis in the wind tunnel. The Australasian Wind Engineering Society – Quality Assurance Manual 2019 (AWES-QAM) recommends that considerations be made for pedestrian safety and comfort when determining the location of the study points.

From a pedestrian safety perspective, the study points locations are concentrated in areas where wind environment problems are typically known to occur, e.g. near corners, in front of exposed windward faces and in open arcades linking leeward and windward faces. For pedestrian comfort, the intended use of the space for a specific activity has also influenced study point locations. In addition, study points were also placed outside of the site boundary, on adjacent blocks. This is to ensure that the proposed development does not substantially affect the wind amenity on neighbouring street frontages. The study point locations selected for analysis are presented below in Figure 10.

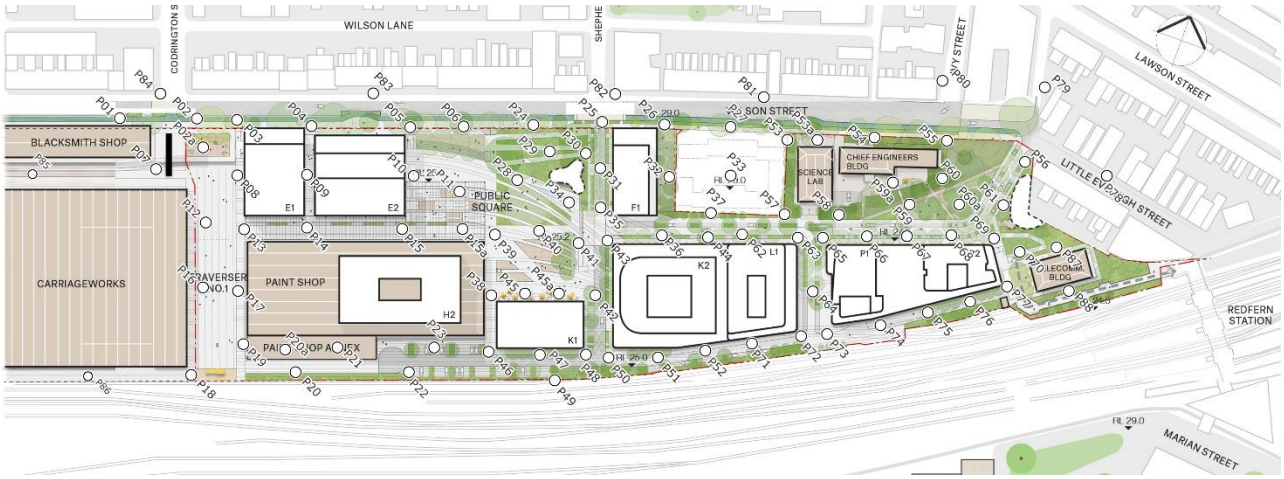


Figure 10: Study Point Locations (Entire Precinct)

As mentioned in Section 6.2, the various critical outdoor trafficable areas around the subject development are compared against the criteria presented in the Draft Sydney Development Control Plan 2012 - Central Sydney Planning Review Amendment and are assessed for pedestrian comfort and safety.

For pedestrian safety, the Draft Sydney DCP 2012 defines a safety limit criterion of 24m/s, based on an annual maximum 0.5 second gust wind speed, which applies to all areas.

For pedestrian comfort, the target criteria were established alongside TfNSW and Turf. The Public Domain Usage Plan (sourced by Turf) was used as a basis for developing the criteria (refer to Figure 11). Each study point location is assigned a target criterion of Sitting, Standing or Walking based on the expected usage of the area.

The usage of each public area within the precinct and its relevant target criterion are listed below:

- Sitting: Long duration activities sensitive to wind. These include fine dining areas building Buildings H2 and E2 and along the northern aspect of Building K1.
- Standing: Short duration stationary activities such as waiting areas, main building entrances, café seating along the northern aspect of Buildings K2, L1, P1 and P2.
- Walking: For pedestrian thoroughfares and most communal spaces/private balconies/terraces and recreational areas where wind is generally welcomed. This generally applies at all other public spaces not listed within the Sitting or Standing criteria.

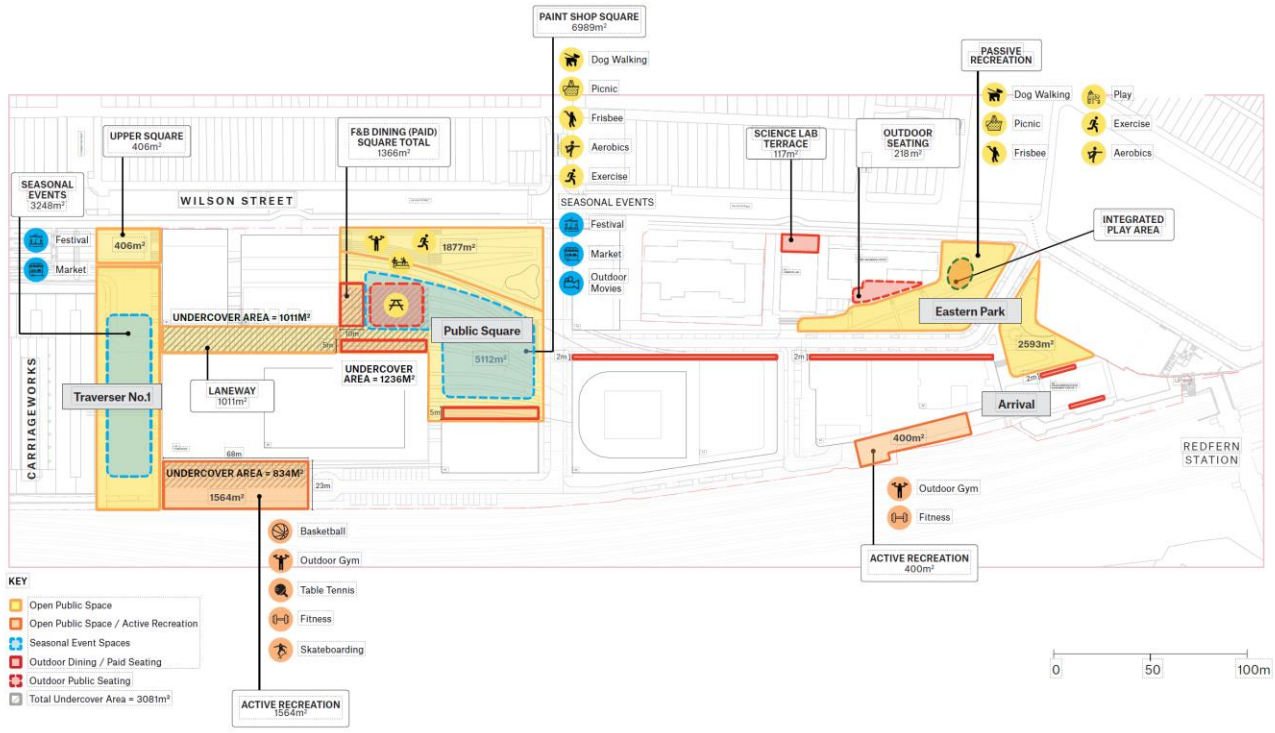


Figure 11: Public Domain Usage (Source: Turf)

The assigned target wind speed criteria for the various outdoor trafficable areas of the development, to be used for assessment of pedestrian wind comfort and safety, are presented in Figure 12 in the form of a marked-up plan.

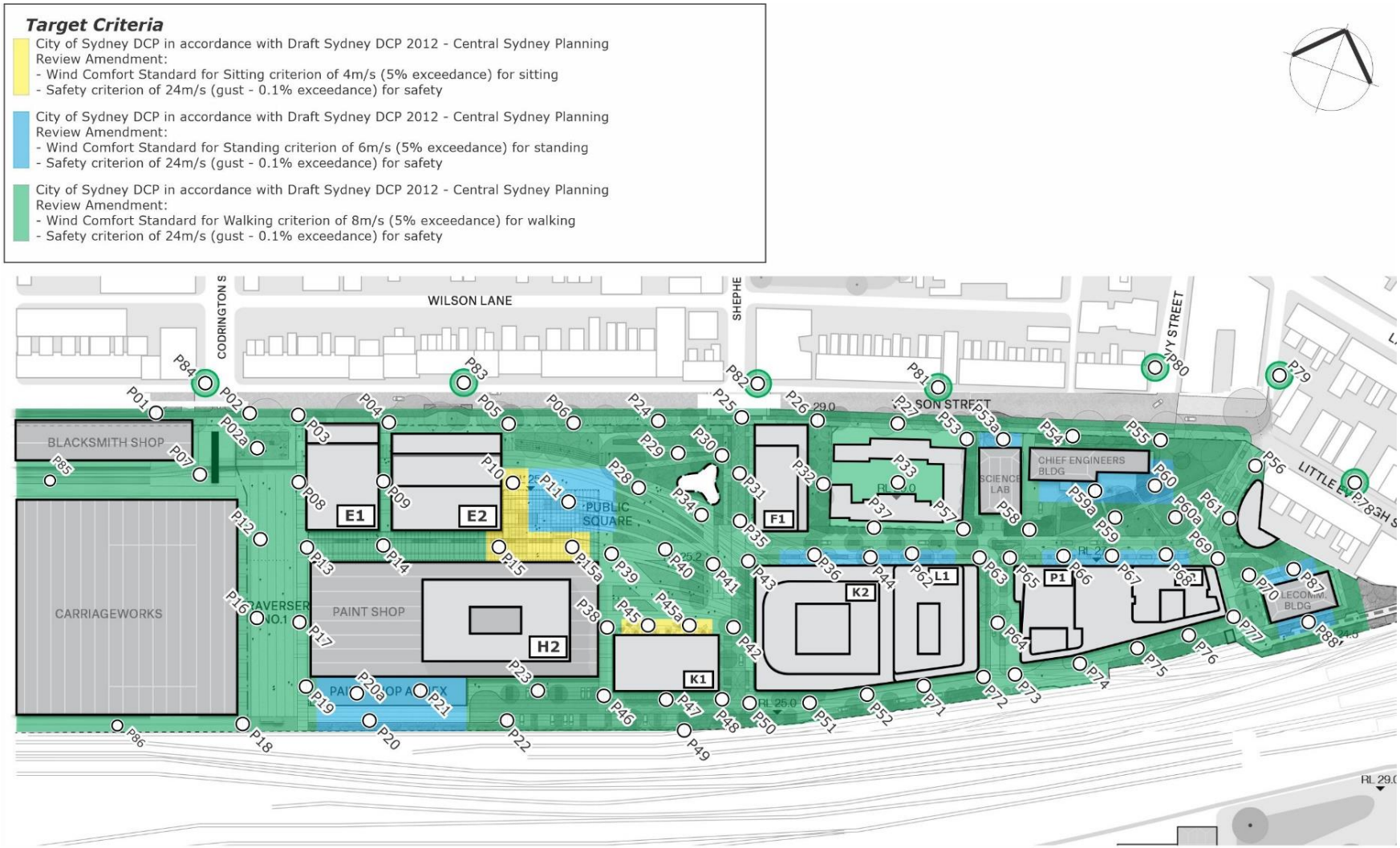


Figure 12: Study Point Locations and Target Wind Speed Criteria

7 RESULTS AND DISCUSSION

7.1 Wind Tunnel Results Summary – Base Case

The results of the Base Case design of the wind tunnel study are presented in the form of directional plots in Appendix C for all study points locations, summarised in Tables 7 and 8, and shown on marked-up plans in Figures 13. Marked-up plans of the pedestrian comfort criteria that is achieved for each study point location is shown in Figures 14 and the pedestrian safety criteria that is achieved for each study point locations is shown in Figures 15.

Several building scenarios were tested as part of the "Base Case" design. These are as follows:

- Case 1: With the Paint Shop Sub-Precinct developments and existing surrounding buildings. In this report, this test case is referred to as the "Paint Shop Sub-Precinct".
- Case 2: With the Paint Shop Sub-Precinct developments, existing surrounding buildings and the Clothing Store Sub-Precinct Massing. In this report, this test case is referred to as the "Paint Shop Sub-Precinct with Clothing Store Sub-Precinct".
- Case 3: With the existing surrounding buildings. In this report, this test case is referred to as the "Existing Scenario".

The results of the study for Case 3 (existing scenario) indicate that the majority of the wind conditions satisfy the Standing criterion. The existing site consists of low-rise industrial buildings and empty lots and therefore is not expected to experience any significant adverse wind conditions which are typically expected within mid to high-rise precincts such as downwashing, corner accelerated flow and wind shearing.

The results of the study for Case 1 and Case 2 indicate that the wind conditions for the majority of the trafficable outdoor locations within and around the Paint Shop Sub-precinct will be suitable for their intended uses. The results of the study show that the variation in wind conditions between Case 1 and Case 2 (with and without the Clothing Store Sub-precinct) is negligible. Furthermore, it is shown that for the Base Case test (for Cases 1, 2 and 3), all study points will satisfy the safety limit of 24m/s as well as the Walking Criterion for comfort.

It is demonstrated that most locations will experience suitable wind conditions, and this is primarily due the shielding provided by the taller buildings within the precinct (K2, K1, P1, P2). Various design elements such as curved corners, tower offset from the podium are shown to be effective in reducing the impact of adverse wind flow mechanisms such as corner accelerated flow and wind downwashing and should be retained.

Some locations exceed the assigned comfort criterion:

- The locations immediately to the north of Buildings K1, L1 and P2 fail the Standing Criterion where minor wind side-streaming is observed.
- Various locations which are targeting the Sitting Criterion (north of Building K1, between Buildings H2 and E2), exceed this criterion primarily due to the lack of direct shielding within those areas. However, it should be noted that satisfying the Sitting Criterion with modifications to building massing alone is extremely difficult. As a result, it is strongly recommended that architectural elements such as awnings/screens, and vegetation be used to satisfy the Sitting Criterion (noting that continuous awnings

are required to be placed along active street frontages where there is high pedestrian activity, as stipulated in the ADG).

Wind mitigation measures were tested in the wind tunnel to resolve the abovementioned locations which exceeded the comfort criterion. These are detailed in Section 7.2.

Figure 13a: Wind Tunnel Results – Case 1: With Paint Shop Sub-Precinct Massing
(results shown without treatments applied)

Figure 13b: Wind Tunnel Results – Case 2: With Paint Shop Sub-Precinct and Clothing Store Sub-Precinct Massing
(results shown without treatments applied)

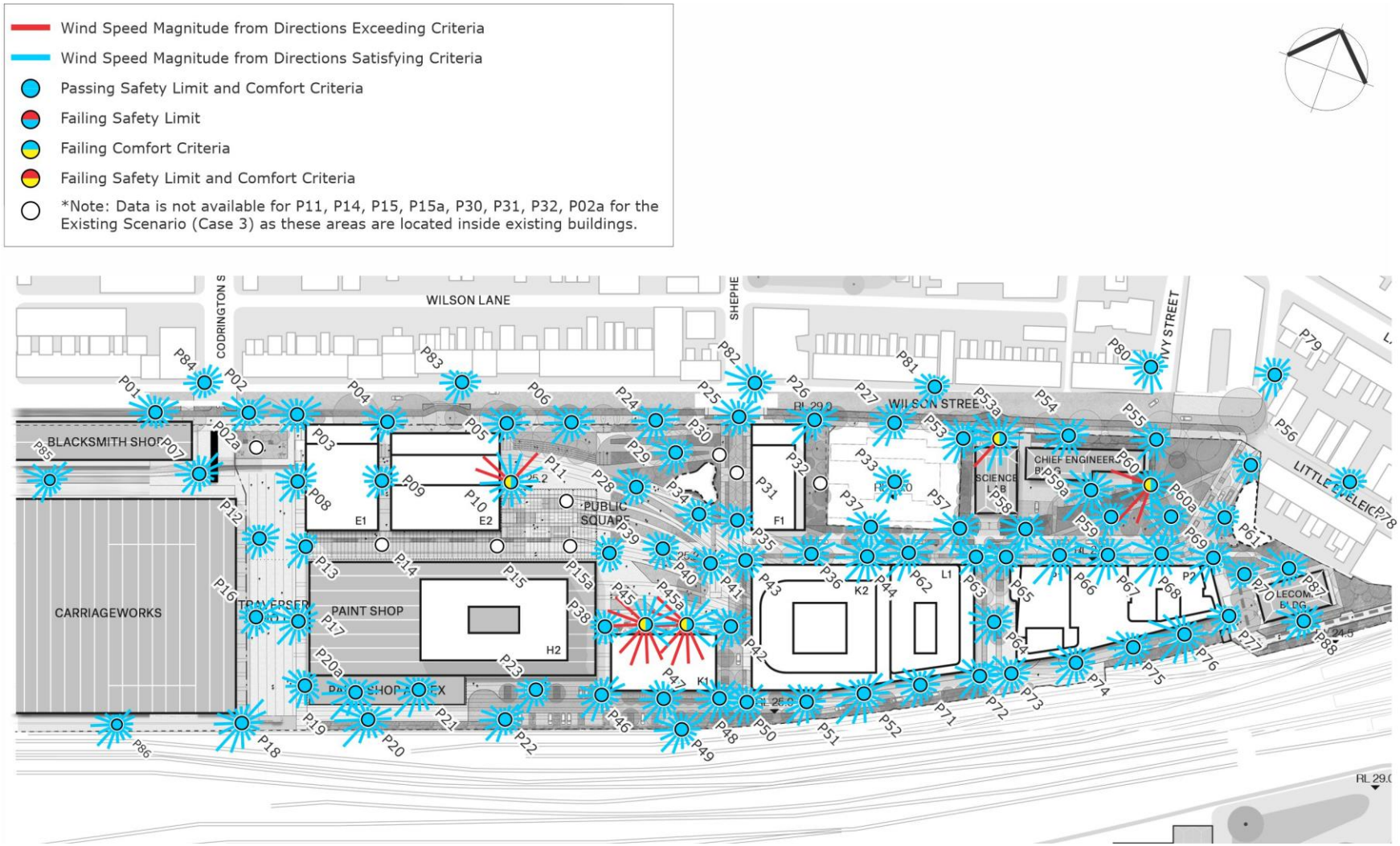


Figure 13c: Wind Tunnel Results – Case 3: Existing Case
(results shown without treatments applied)

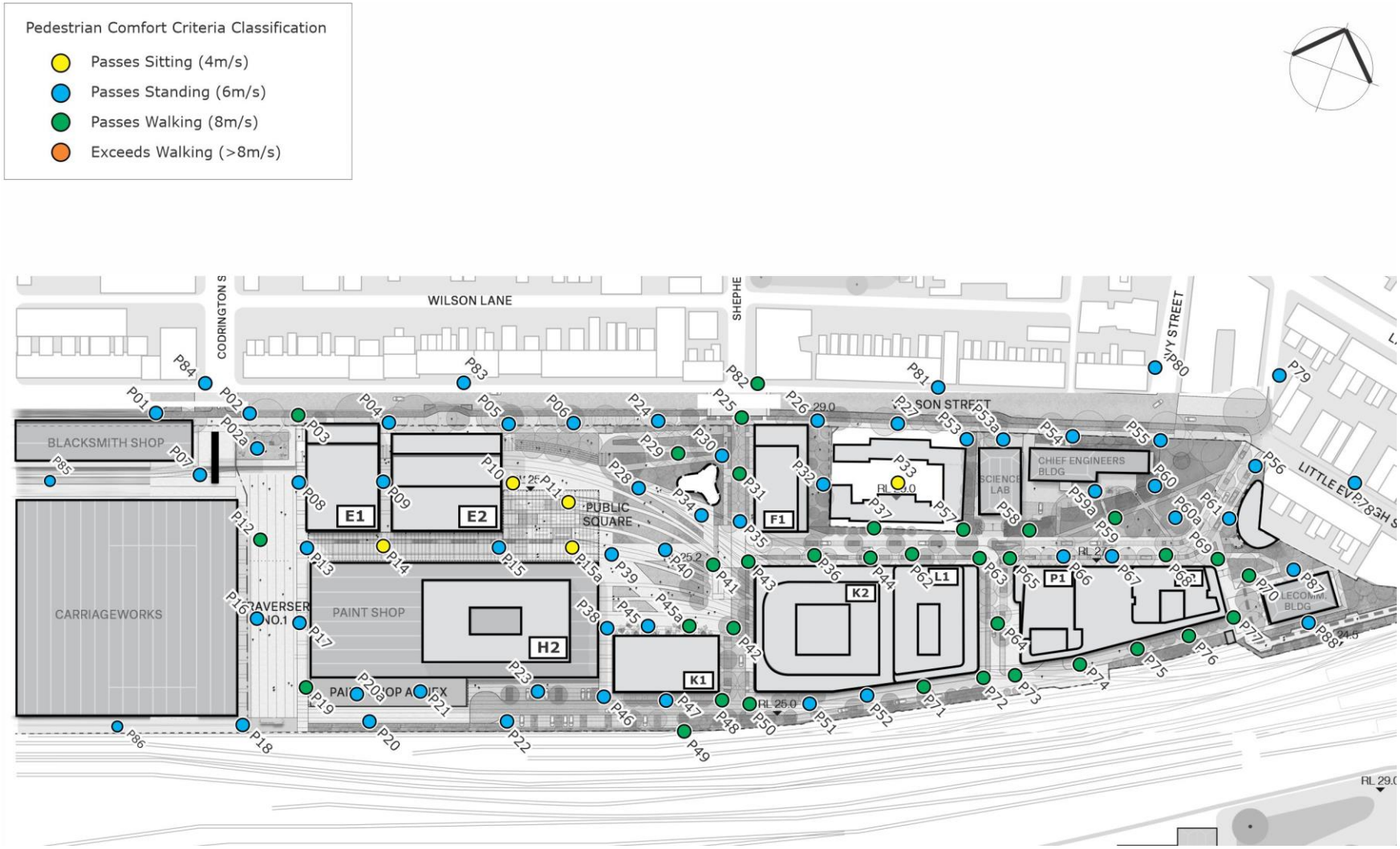


Figure 14a: Wind Tunnel Results, Pedestrian Comfort Criteria Classification – Case 1: With Paint Shop Sub-Precinct Massing
(results shown without treatments applied)

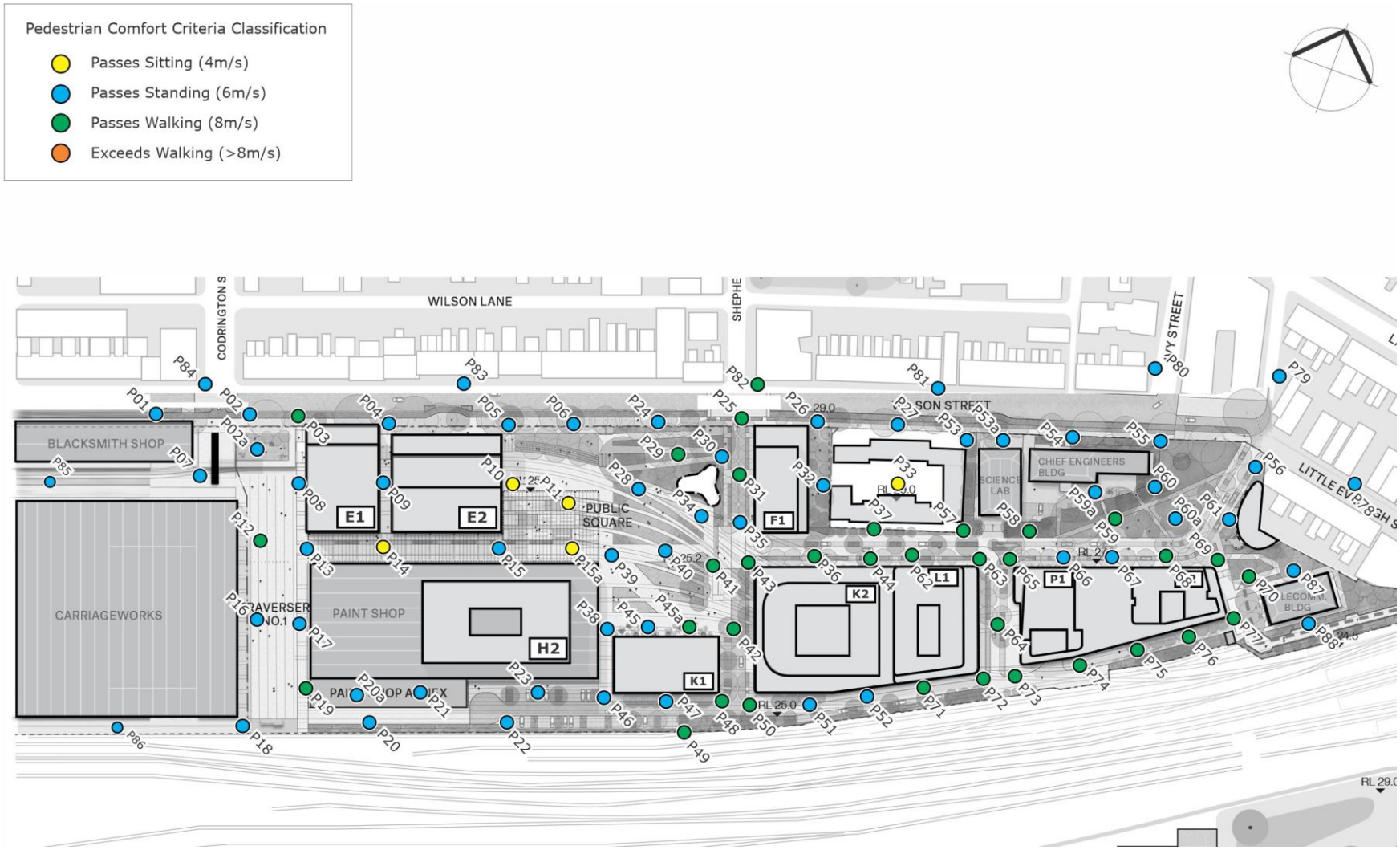


Figure 14b: Wind Tunnel Results, Pedestrian Comfort Criteria Classification – Case 2: With Paint Shop Sub-Precinct and Clothing Store Sub-Precinct Massing (results shown without treatments applied)

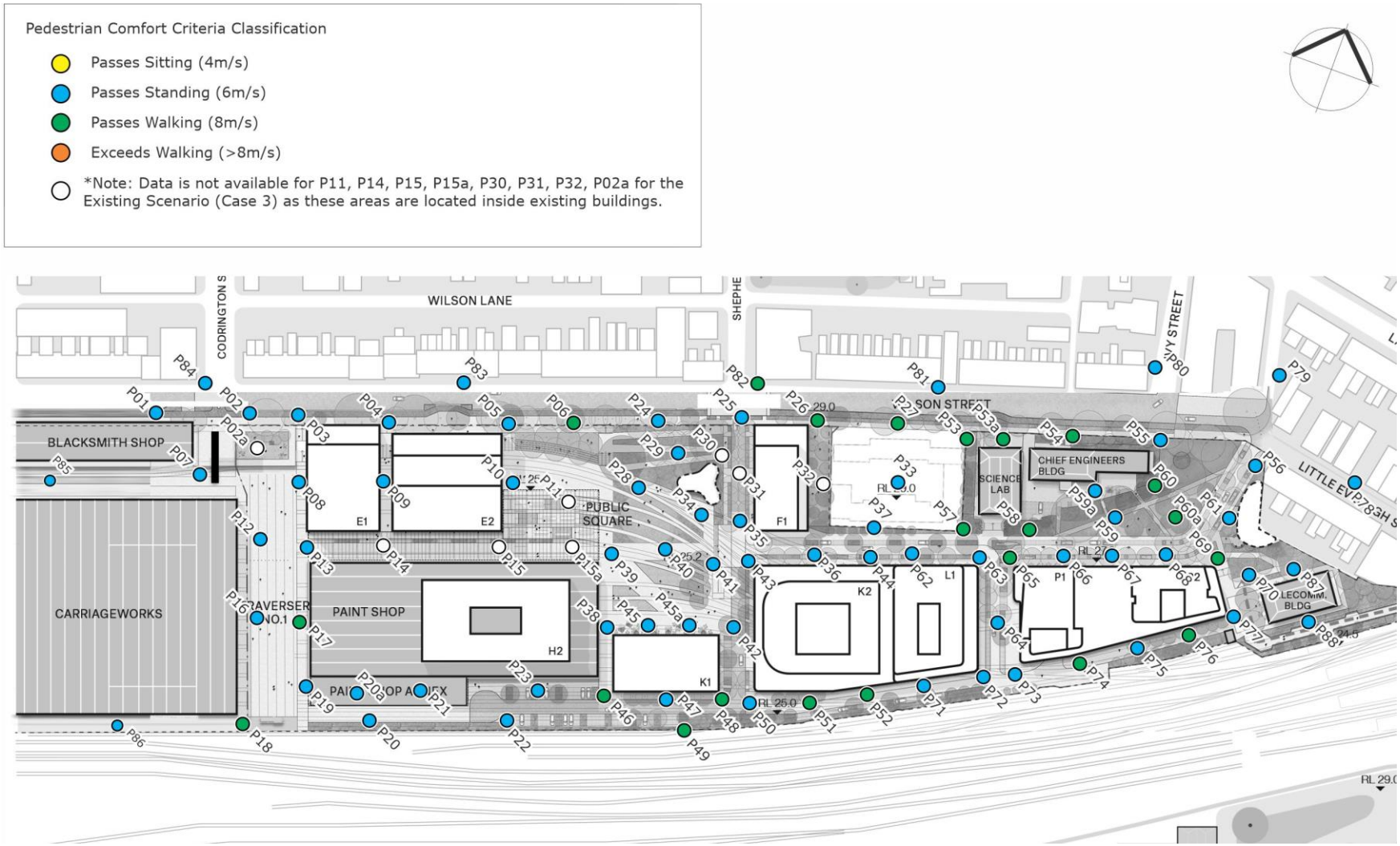


Figure 14c: Wind Tunnel Results, Pedestrian Comfort Criteria Classification – Case 3: Existing Case
(results shown without treatments applied)

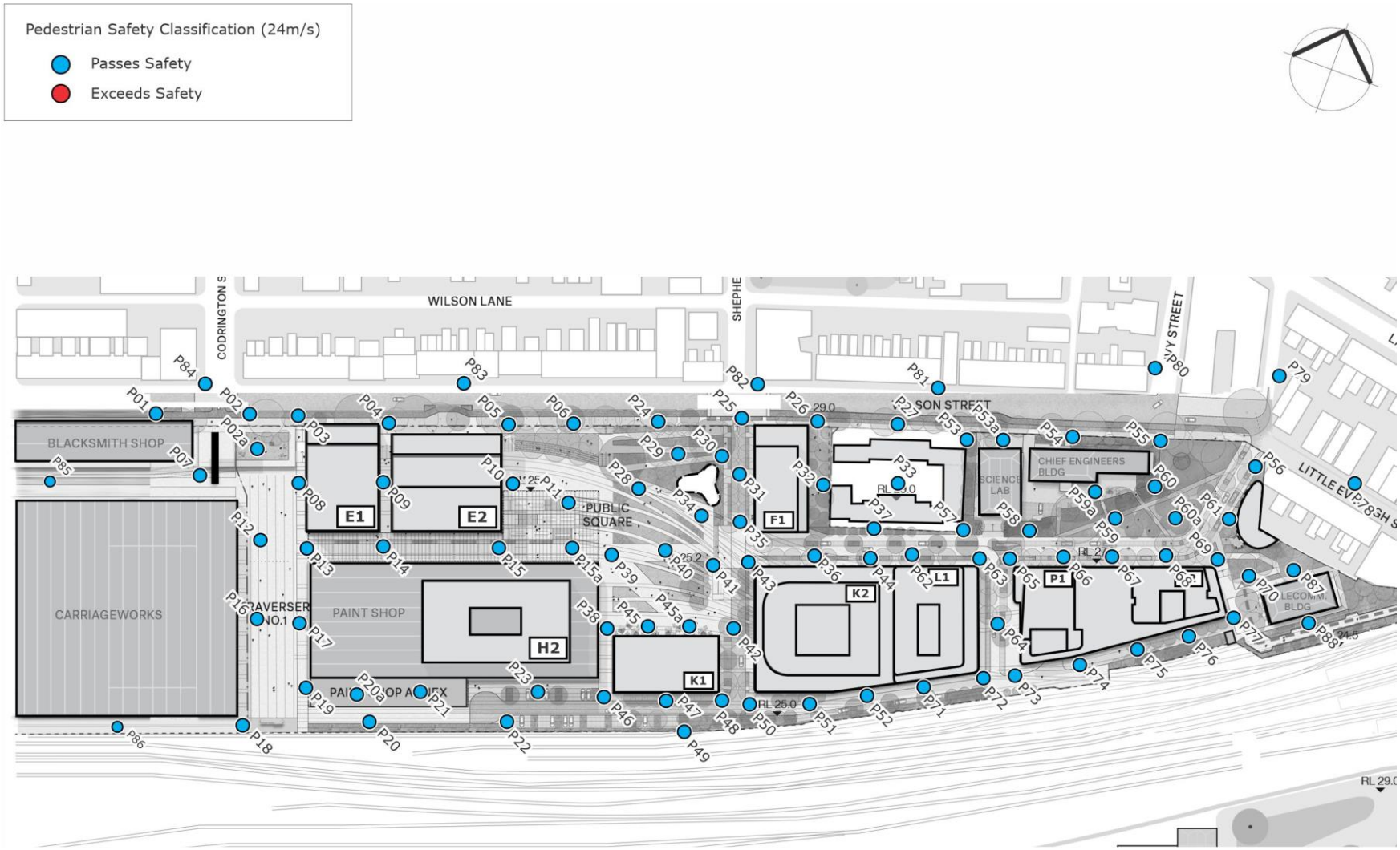


Figure 15a: Wind Tunnel Results, Safety Criteria Classification – Case 1: With Paint Shop Sub-Precinct Massing
(results shown without treatments applied)

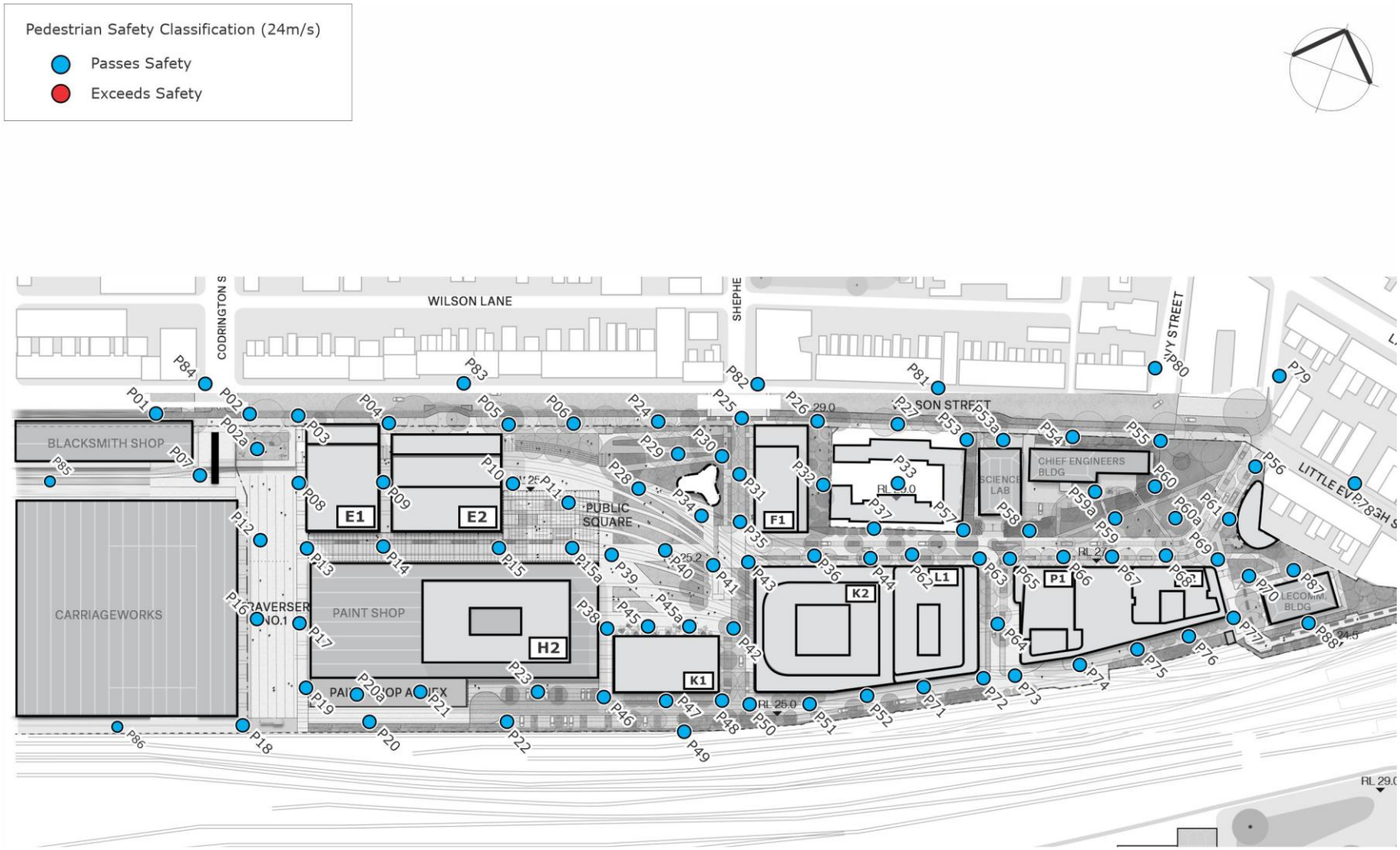


Figure 15b: Wind Tunnel Results, Safety Criteria Classification – Case 2: With Paint Shop Sub-Precinct and Clothing Store Sub-Precinct Massing (results shown without treatments applied)

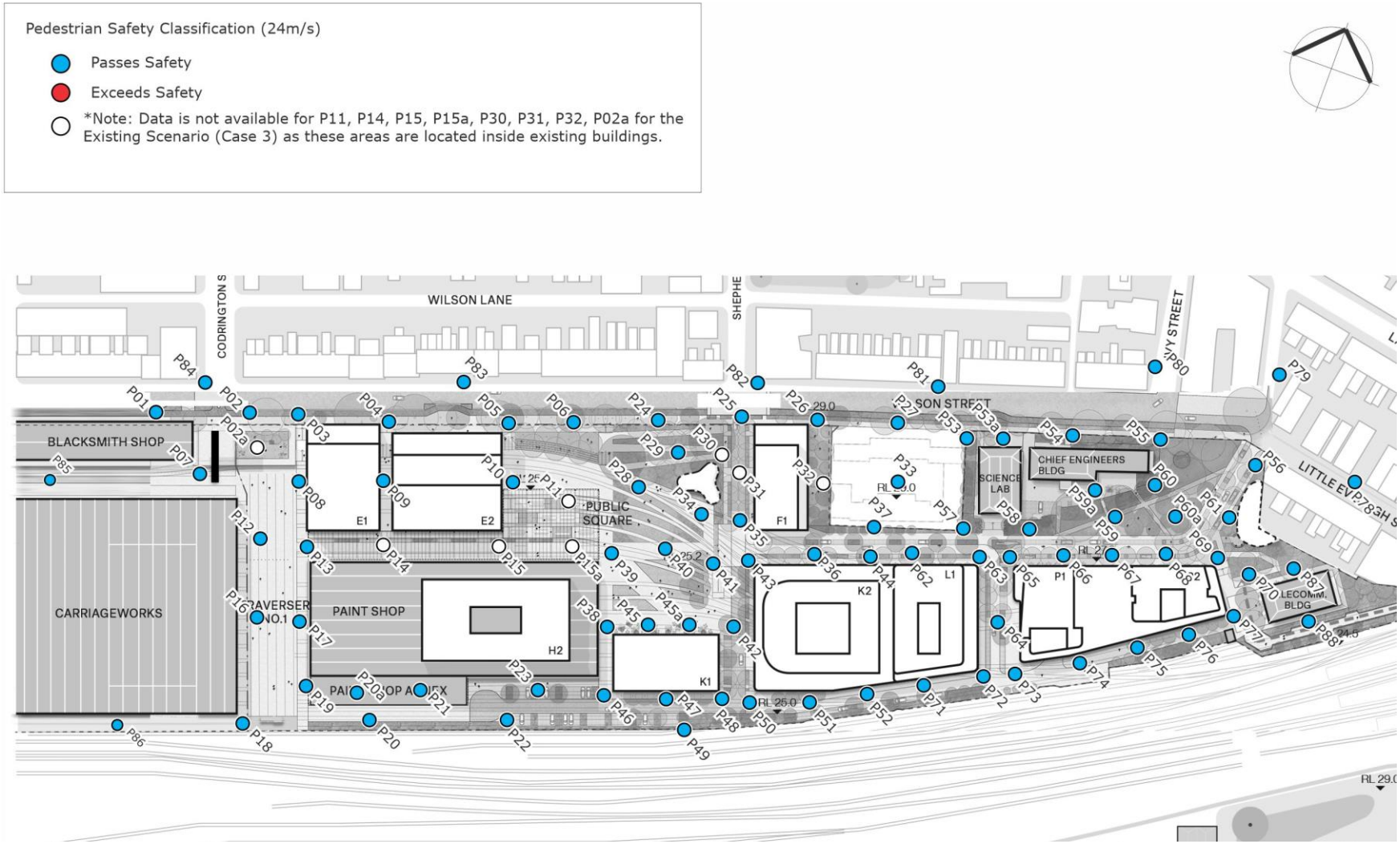


Figure 15c: Wind Tunnel Results, Safety Criteria Classification – Case 3: Existing Case
(results shown without treatments applied)

Table 7: Wind Tunnel Results Summary: Gust Equivalent Mean (GEM) 5% Probability of Exceedance (Comfort) (without treatments applied)

Study Point	Criterion (m/s)	Case 1: Pain Shop Sub-Precinct		Case 2: Paint Shop Sub-Precinct with Clothing Store Sub-Precinct		Case 3: Existing Scenario	
		Results (%)	Grade	Results (%)	Grade	Results (%)	Grade
P01	8.0	< 1%	Pass	< 1%	Pass	1%	Pass
P02	8.0	< 1%	Pass	< 1%	Pass	1%	Pass
P03	8.0	3%	Pass	2%	Pass	1%	Pass
P04	8.0	< 1%	Pass	< 1%	Pass	< 1%	Pass
P05	8.0	< 1%	Pass	< 1%	Pass	1%	Pass
P06	8.0	< 1%	Pass	< 1%	Pass	1%	Pass
P07	8.0	< 1%	Pass	< 1%	Pass	1%	Pass
P08	8.0	< 1%	Pass	< 1%	Pass	< 1%	Pass
P09	8.0	< 1%	Pass	< 1%	Pass	< 1%	Pass
P10	4.0	3%	Pass	3%	Pass	8%	Fail
P11	6.0	< 1%	Pass	< 1%	Pass	-	-
P12	8.0	1%	Pass	1%	Pass	< 1%	Pass
P13	8.0	1%	Pass	1%	Pass	< 1%	Pass
P14	8.0	< 1%	Pass	< 1%	Pass	-	-
P15	4.0	22%	Fail	17%	Fail	-	-
P16	8.0	1%	Pass	1%	Pass	< 1%	Pass
P17	8.0	1%	Pass	1%	Pass	1%	Pass
P18	8.0	1%	Pass	< 1%	Pass	3%	Pass
P19	8.0	1%	Pass	1%	Pass	< 1%	Pass
P20	6.0	1%	Pass	2%	Pass	3%	Pass
P21	6.0	2%	Pass	2%	Pass	1%	Pass
P22	8.0	1%	Pass	< 1%	Pass	1%	Pass
P23	8.0	< 1%	Pass	< 1%	Pass	< 1%	Pass
P24	8.0	< 1%	Pass	< 1%	Pass	< 1%	Pass
P25	8.0	2%	Pass	2%	Pass	1%	Pass
P26	8.0	< 1%	Pass	< 1%	Pass	1%	Pass
P27	8.0	< 1%	Pass	< 1%	Pass	1%	Pass
P28	8.0	< 1%	Pass	< 1%	Pass	< 1%	Pass
P29	8.0	1%	Pass	1%	Pass	< 1%	Pass
P30	8.0	1%	Pass	1%	Pass	-	-
P31	8.0	2%	Pass	1%	Pass	-	-

Study Point	Criterion (m/s)	Case 1: Pain Shop Sub-Precinct		Case 2: Paint Shop Sub-Precinct with Clothing Store Sub-Precinct		Case 3: Existing Scenario	
		Results (%)	Grade	Results (%)	Grade	Results (%)	Grade
P32	8.0	< 1%	Pass	< 1%	Pass	-	-
P33	8.0	< 1%	Pass	< 1%	Pass	< 1%	Pass
P34	8.0	1%	Pass	1%	Pass	< 1%	Pass
P35	8.0	1%	Pass	< 1%	Pass	< 1%	Pass
P36	6.0	13%	Fail	13%	Fail	1%	Pass
P37	8.0	1%	Pass	1%	Pass	< 1%	Pass
P38	8.0	1%	Pass	1%	Pass	< 1%	Pass
P39	8.0	< 1%	Pass	< 1%	Pass	< 1%	Pass
P40	8.0	1%	Pass	1%	Pass	< 1%	Pass
P41	8.0	2%	Pass	2%	Pass	< 1%	Pass
P42	8.0	4%	Pass	4%	Pass	1%	Pass
P43	8.0	4%	Pass	3%	Pass	< 1%	Pass
P44	6.0	12%	Fail	11%	Fail	2%	Pass
P45	4.0	29%	Fail	26%	Fail	17%	Fail
P46	8.0	< 1%	Pass	< 1%	Pass	1%	Pass
P47	8.0	< 1%	Pass	< 1%	Pass	1%	Pass
P48	8.0	2%	Pass	1%	Pass	1%	Pass
P49	8.0	1%	Pass	< 1%	Pass	1%	Pass
P50	8.0	3%	Pass	3%	Pass	1%	Pass
P51	8.0	< 1%	Pass	< 1%	Pass	1%	Pass
P52	8.0	1%	Pass	1%	Pass	5%	Pass
P53	8.0	< 1%	Pass	< 1%	Pass	1%	Pass
P54	8.0	< 1%	Pass	< 1%	Pass	2%	Pass
P55	8.0	< 1%	Pass	< 1%	Pass	1%	Pass
P56	8.0	< 1%	Pass	< 1%	Pass	< 1%	Pass
P57	8.0	2%	Pass	2%	Pass	1%	Pass
P58	8.0	2%	Pass	1%	Pass	1%	Pass
P59	8.0	1%	Pass	1%	Pass	1%	Pass
P60	6.0	4%	Pass	3%	Pass	13%	Fail
P61	8.0	< 1%	Pass	< 1%	Pass	< 1%	Pass
P62	6.0	10%	Fail	8%	Fail	3%	Pass
P63	8.0	2%	Pass	2%	Pass	< 1%	Pass
P64	8.0	5%	Pass	5%	Pass	1%	Pass

Study Point	Criterion (m/s)	Case 1: Pain Shop Sub-Precinct		Case 2: Paint Shop Sub-Precinct with Clothing Store Sub-Precinct		Case 3: Existing Scenario	
		Results (%)	Grade	Results (%)	Grade	Results (%)	Grade
P65	8.0	4%	Pass	5%	Pass	1%	Pass
P66	6.0	5%	Pass	5%	Pass	4%	Pass
P67	6.0	3%	Pass	3%	Pass	4%	Pass
P68	6.0	9%	Fail	9%	Fail	5%	Pass
P69	8.0	2%	Pass	2%	Pass	2%	Pass
P70	8.0	4%	Pass	4%	Pass	< 1%	Pass
P71	8.0	1%	Pass	1%	Pass	1%	Pass
P72	8.0	5%	Pass	5%	Pass	1%	Pass
P73	8.0	2%	Pass	2%	Pass	1%	Pass
P74	8.0	2%	Pass	2%	Pass	1%	Pass
P75	8.0	1%	Pass	1%	Pass	1%	Pass
P76	8.0	3%	Pass	3%	Pass	5%	Pass
P77	8.0	4%	Pass	4%	Pass	< 1%	Pass
P78	8.0	< 1%	Pass	< 1%	Pass	< 1%	Pass
P79	8.0	< 1%	Pass	< 1%	Pass	< 1%	Pass
P80	8.0	< 1%	Pass	< 1%	Pass	1%	Pass
P81	8.0	< 1%	Pass	< 1%	Pass	< 1%	Pass
P82	8.0	1%	Pass	1%	Pass	1%	Pass
P83	8.0	< 1%	Pass	< 1%	Pass	< 1%	Pass
P84	8.0	< 1%	Pass	< 1%	Pass	< 1%	Pass
P85	8.0	< 1%	Pass	< 1%	Pass	< 1%	Pass
P86	8.0	1%	Pass	< 1%	Pass	< 1%	Pass
P87	6.0	5%	Pass	3%	Pass	1%	Pass
P88	6.0	3%	Pass	2%	Pass	1%	Pass
P02a	8.0	1%	Pass	1%	Pass	-	-
P15a	4.0	< 1%	Pass	< 1%	Pass	-	-
P20a	6.0	1%	Pass	1%	Pass	3%	Pass
P45a	4.0	25%	Fail	24%	Fail	17%	Fail
P53a	6.0	1%	Pass	1%	Pass	6%	Fail
P59a	6.0	3%	Pass	4%	Pass	5%	Pass
P60a	8.0	1%	Pass	1%	Pass	3%	Pass

Data is not available for P11, P14, P15, P15a, P30, P31, P32, P02a for the Existing Scenario (Case 3) as these areas are located inside existing buildings.

Table 8: Wind Tunnel Results Summary: Annual Gust (Safety Criterion)
(without treatments applied)

Study Point	Criterion (m/s)	Case 1: Pain Shop Sub-Precinct		Case 2: Paint Shop Sub-Precinct with Clothing Store Sub-Precinct		Case 3: Existing Scenario	
		Results (m/s)	Grade	Results (m/s)	Grade	Results (m/s)	Grade
P01	24	16	Pass	15	Pass	17	Pass
P02	24	15	Pass	14	Pass	18	Pass
P03	24	20	Pass	19	Pass	16	Pass
P04	24	13	Pass	16	Pass	17	Pass
P05	24	18	Pass	18	Pass	17	Pass
P06	24	17	Pass	17	Pass	19	Pass
P07	24	13	Pass	12	Pass	16	Pass
P08	24	16	Pass	16	Pass	16	Pass
P09	24	15	Pass	14	Pass	15	Pass
P10	24	10	Pass	10	Pass	13	Pass
P11	24	12	Pass	12	Pass	-	-
P12	24	19	Pass	19	Pass	13	Pass
P13	24	18	Pass	18	Pass	16	Pass
P14	24	12	Pass	12	Pass	-	-
P15	24	13	Pass	13	Pass	-	-
P16	24	18	Pass	17	Pass	14	Pass
P17	24	19	Pass	19	Pass	19	Pass
P18	24	17	Pass	17	Pass	21	Pass
P19	24	19	Pass	19	Pass	15	Pass
P20	24	15	Pass	16	Pass	17	Pass
P21	24	15	Pass	15	Pass	16	Pass
P22	24	17	Pass	16	Pass	17	Pass
P23	24	15	Pass	15	Pass	17	Pass
P24	24	15	Pass	15	Pass	16	Pass
P25	24	20	Pass	20	Pass	17	Pass
P26	24	16	Pass	15	Pass	18	Pass
P27	24	15	Pass	15	Pass	18	Pass
P28	24	15	Pass	15	Pass	17	Pass
P29	24	20	Pass	19	Pass	16	Pass
P30	24	20	Pass	19	Pass	-	-
P31	24	21	Pass	21	Pass	-	-

Study Point	Criterion (m/s)	Case 1: Pain Shop Sub-Precinct		Case 2: Paint Shop Sub-Precinct with Clothing Store Sub-Precinct		Case 3: Existing Scenario	
		Results (m/s)	Grade	Results (m/s)	Grade	Results (m/s)	Grade
P32	24	14	Pass	14	Pass	-	-
P33	24	12	Pass	11	Pass	16	Pass
P34	24	19	Pass	19	Pass	16	Pass
P35	24	16	Pass	16	Pass	17	Pass
P36	24	23	Pass	22	Pass	14	Pass
P37	24	22	Pass	21	Pass	16	Pass
P38	24	17	Pass	17	Pass	15	Pass
P39	24	15	Pass	15	Pass	15	Pass
P40	24	17	Pass	17	Pass	14	Pass
P41	24	20	Pass	19	Pass	15	Pass
P42	24	20	Pass	20	Pass	17	Pass
P43	24	19	Pass	18	Pass	16	Pass
P44	24	23	Pass	22	Pass	15	Pass
P45	24	15	Pass	15	Pass	14	Pass
P46	24	16	Pass	15	Pass	18	Pass
P47	24	15	Pass	15	Pass	17	Pass
P48	24	21	Pass	20	Pass	17	Pass
P49	24	15	Pass	14	Pass	18	Pass
P50	24	19	Pass	19	Pass	17	Pass
P51	24	16	Pass	16	Pass	17	Pass
P52	24	18	Pass	18	Pass	23	Pass
P53	24	14	Pass	13	Pass	18	Pass
P54	24	14	Pass	14	Pass	20	Pass
P55	24	14	Pass	14	Pass	17	Pass
P56	24	14	Pass	14	Pass	13	Pass
P57	24	19	Pass	18	Pass	18	Pass
P58	24	20	Pass	20	Pass	19	Pass
P59	24	19	Pass	19	Pass	19	Pass
P60	24	18	Pass	18	Pass	19	Pass
P61	24	14	Pass	13	Pass	17	Pass
P62	24	22	Pass	21	Pass	16	Pass
P63	24	21	Pass	21	Pass	15	Pass
P64	24	21	Pass	21	Pass	18	Pass

Study Point	Criterion (m/s)	Case 1: Pain Shop Sub-Precinct		Case 2: Paint Shop Sub-Precinct with Clothing Store Sub-Precinct		Case 3: Existing Scenario	
		Results (m/s)	Grade	Results (m/s)	Grade	Results (m/s)	Grade
P65	24	21	Pass	24	Pass	20	Pass
P66	24	20	Pass	20	Pass	18	Pass
P67	24	19	Pass	18	Pass	17	Pass
P68	24	18	Pass	18	Pass	16	Pass
P69	24	20	Pass	19	Pass	19	Pass
P70	24	21	Pass	21	Pass	15	Pass
P71	24	21	Pass	19	Pass	17	Pass
P72	24	23	Pass	24	Pass	17	Pass
P73	24	22	Pass	21	Pass	17	Pass
P74	24	22	Pass	22	Pass	18	Pass
P75	24	21	Pass	21	Pass	17	Pass
P76	24	24	Pass	24	Pass	20	Pass
P77	24	21	Pass	20	Pass	16	Pass
P78	24	15	Pass	15	Pass	15	Pass
P79	24	16	Pass	15	Pass	15	Pass
P80	24	15	Pass	14	Pass	17	Pass
P81	24	17	Pass	15	Pass	16	Pass
P82	24	19	Pass	19	Pass	20	Pass
P83	24	15	Pass	14	Pass	14	Pass
P84	24	15	Pass	13	Pass	13	Pass
P85	24	15	Pass	13	Pass	17	Pass
P86	24	17	Pass	14	Pass	17	Pass
P87	24	18	Pass	15	Pass	15	Pass
P88	24	18	Pass	16	Pass	15	Pass
P02a	24	20	Pass	20	Pass	-	-
P15a	24	8	Pass	8	Pass	-	-
P20a	24	13	Pass	13	Pass	17	Pass
P45a	24	20	Pass	19	Pass	14	Pass
P53a	24	13	Pass	13	Pass	18	Pass
P59a	24	16	Pass	18	Pass	19	Pass
P60a	24	17	Pass	17	Pass	19	Pass

Data is not available for P11, P14, P15, P15a, P30, P31, P32, P02a for the Existing Scenario (Case 3) as these areas are located inside existing buildings.

7.2 Treatment Strategy

7.2.1 Treatment Scenario 01

Various wind mitigation measures have been included within the wind tunnel model of the precinct massing to address the exceedances in comfort. The first set of wind mitigation measures tested in the wind tunnel include continuous, impermeable awnings, which have been placed along the east west spine of the Paint Shop sub-precinct. Continuous awnings are required to be placed along active street frontages where there is high pedestrian activity, as stipulated in the ADG.

The abovementioned wind mitigation measures included in the design and tested in the wind tunnel are summarised below:

- 3m wide impermeable awning along the northern aspect of the Building K2/L1 podium and Building P1/P2 podium. The awning extends the length of the northern aspect of the podiums (refer to Figure 16).
- 4m wide impermeable awning along the northern aspect of the K1 building. The awning extends the length of the northern aspect (refer to Figure 16).

The results of the modifications made to the Base Case of the wind tunnel study are presented in the form of directional plots in Appendix C for all study points locations, summarised in Table 9, and shown on marked-up plans in Figures 17.

The results of the wind tunnel test for Treatment Scenario 01 indicate that the proposed building awnings are effective in reducing wind impact along the northern aspect of Building P1 and P2. The remaining areas continued to exceed the target comfort criterion and hence, additional testing was conducted to address these exceedances. The proposed wind mitigation measure and the results of the wind tunnel tests are discussed in Section 7.2.2.

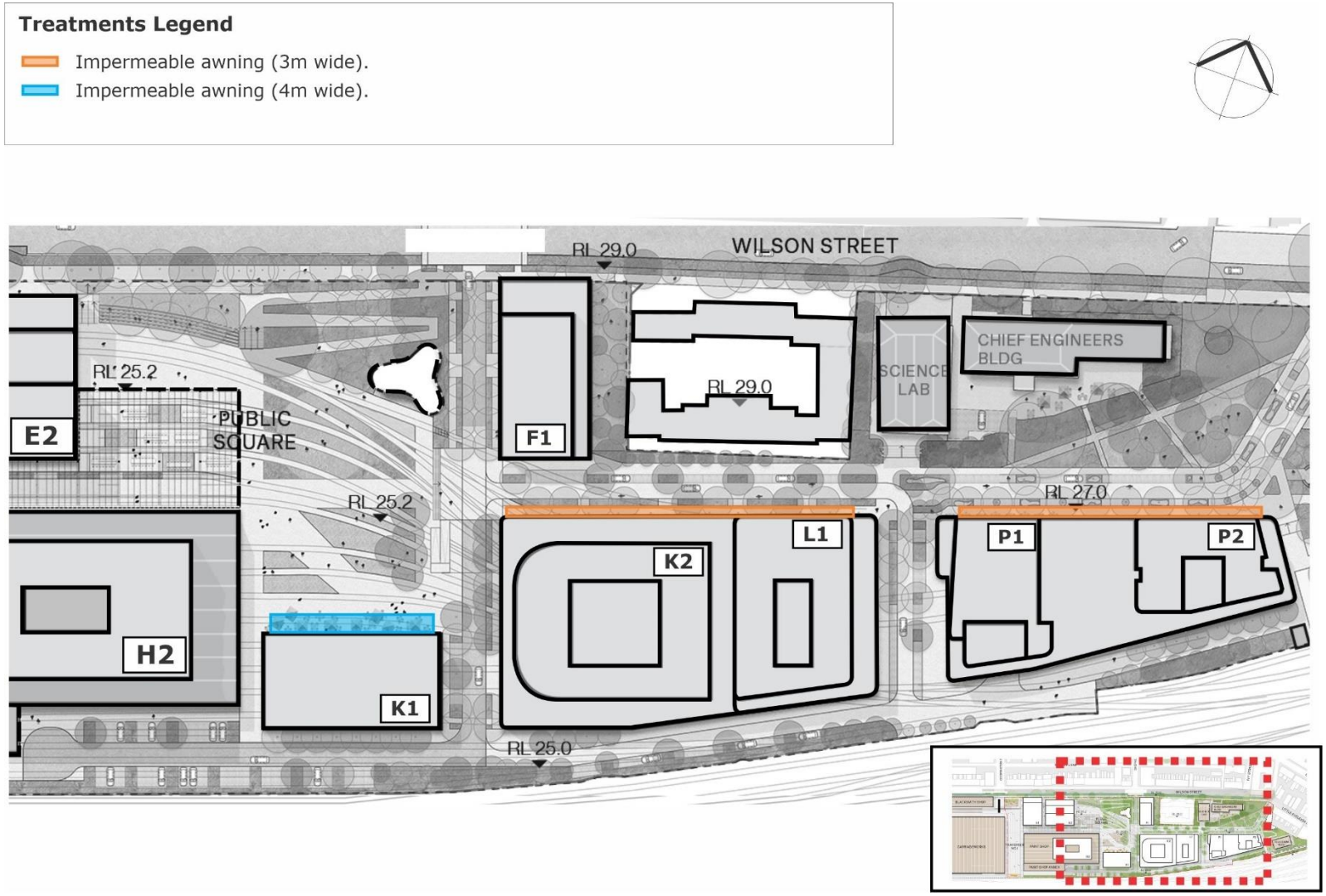


Figure 16: Treatments Tested – Scenario 01

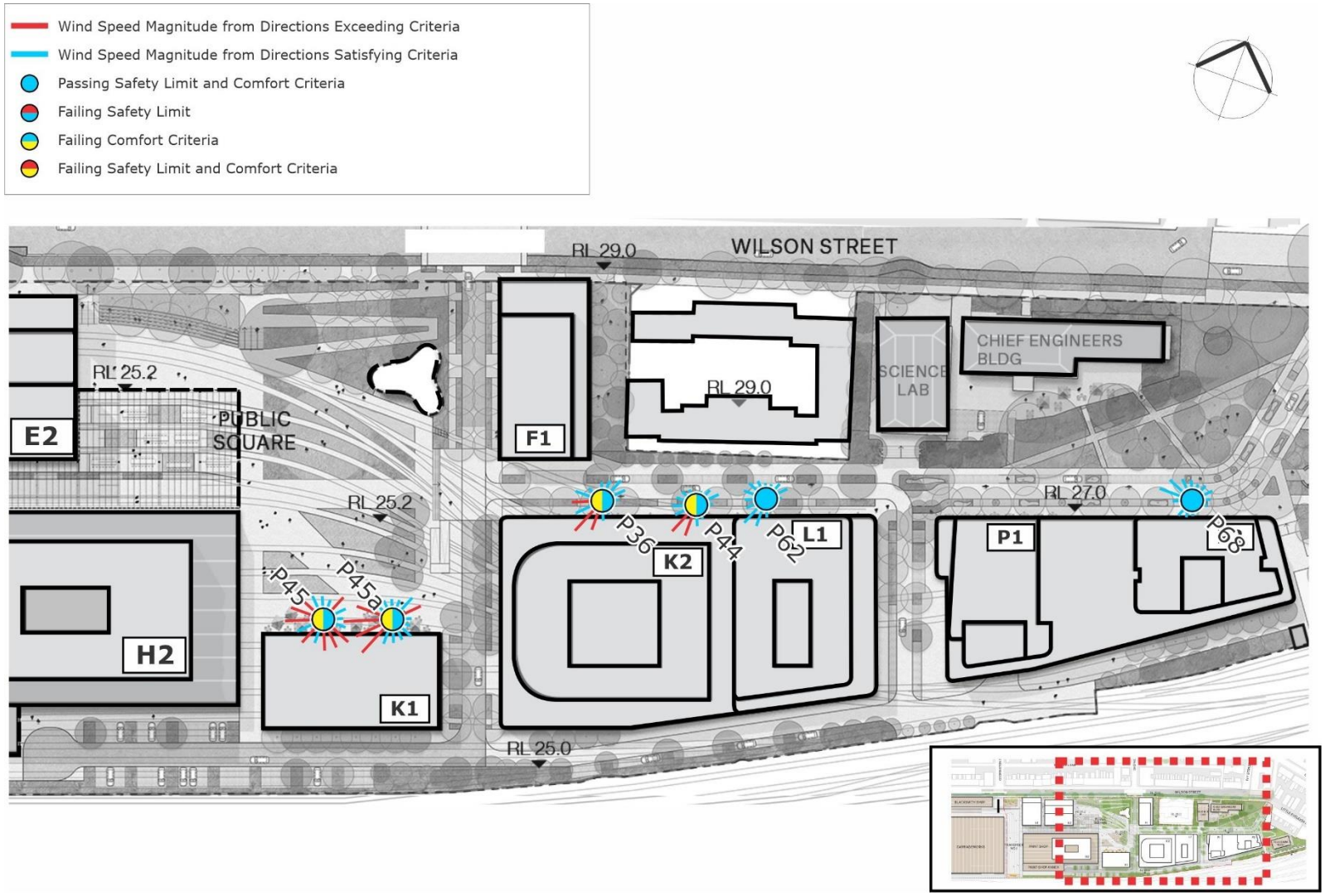


Figure 17a: Wind Tunnel Results: With Paint Shop Sub-Precinct Massing
(Treatment Scenario 01)

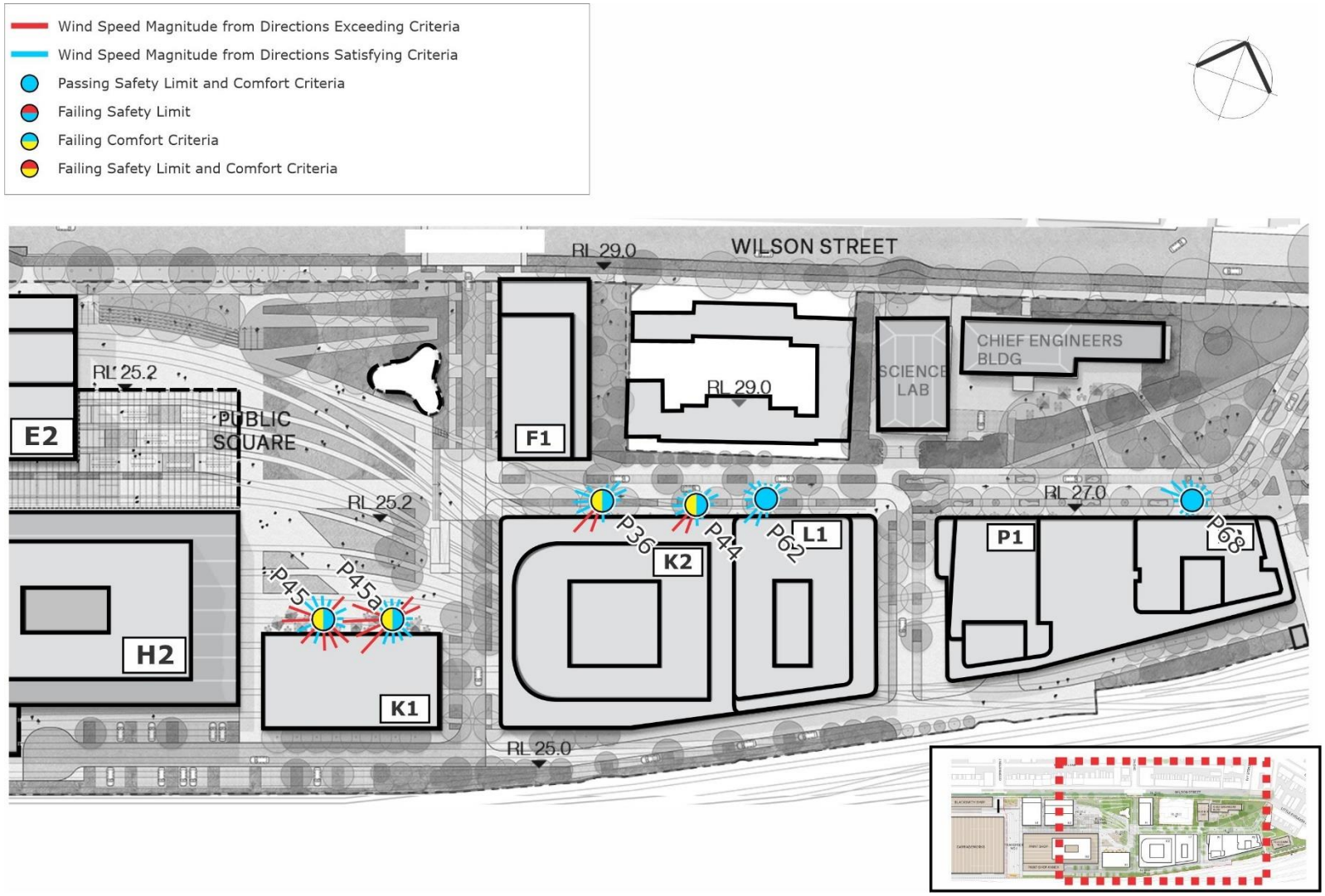


Figure 17b: Wind Tunnel Results: With Paint Shop Sub-Precinct Massing and Clothing Store Sub-Precinct Massing (Treatment Scenario 01)

Table 9: Wind Tunnel Results Summary: Gust Equivalent Mean (GEM) 5% Probability of Exceedance (Comfort) (Treatment Scenario 01)

Study Point	Criterion (m/s)	Case 1: Pain Shop Sub-Precinct		Case 2: Paint Shop Sub-Precinct with Clothing Store Sub-Precinct	
		Results (%)	Grade	Results (%)	Grade
P36	6.0	12%	Fail	13%	Fail
P44	6.0	7%	Fail	6%	Fail
P45	4.0	20%	Fail	22%	Fail
P62	6.0	5%	Pass	5%	Pass
P68	6.0	5%	Pass	4%	Pass
P45a	4.0	21%	Fail	21%	Fail

7.2.2 Treatment Scenario 02

Additional wind mitigation measures have been included within the wind tunnel model of the precinct massing to address the various exceedances in comfort. The following wind mitigation measures were included in the design and tested in the wind tunnel (noting that continuous awnings are required to be placed along active street frontages where there is high pedestrian activity, as stipulated in the ADG):

- 3m wide impermeable awning along the northern aspect of the Building K2/L1 podium and Building P1/P2 podium. The awning extends the length of the northern aspect of the podiums (refer to Figure 18).
- 4m wide impermeable awning along the northern aspect of the K1 building. The awning extends the length of the northern aspect (refer to Figure 18).
- 2m high impermeable localised wind screens along the northern aspect of the K1 and H2 buildings (refer to Figure 18).
- Evergreen tree planting, in line with the proposed landscaping along the northern aspect of the K2/L1 buildings (refer to Figure 18).

The results of the modifications made to the Base Case of the wind tunnel study are presented in the form of directional plots in Appendix C for all study points locations, summarised in Table 10, and shown on marked-up plans in Figures 19.

The results of the study indicate that with the inclusion of the abovementioned wind mitigation measures, the wind conditions for the proposed precinct massing will be suitable for their intended uses.

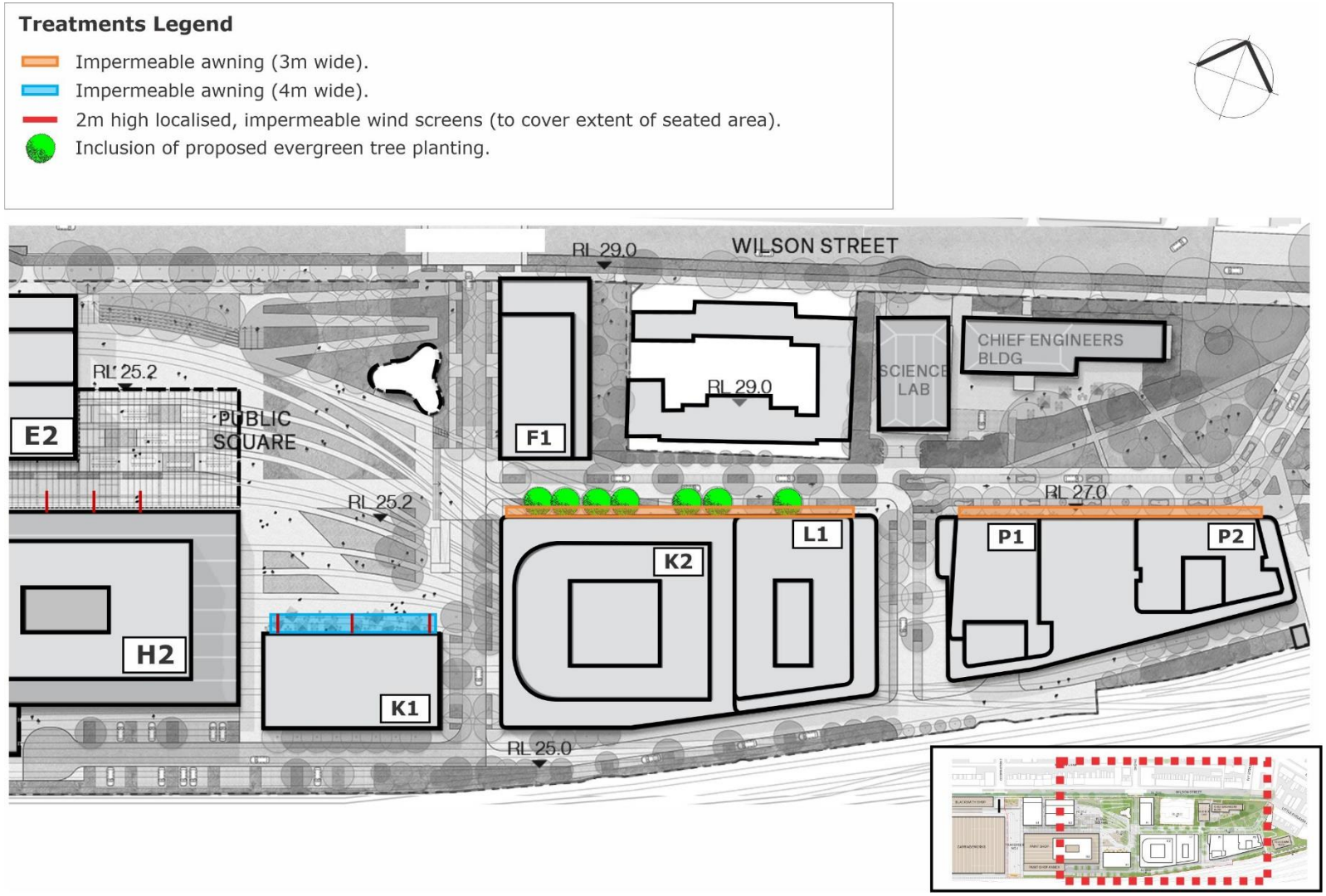


Figure 18: Treatments Tested – Scenario 02

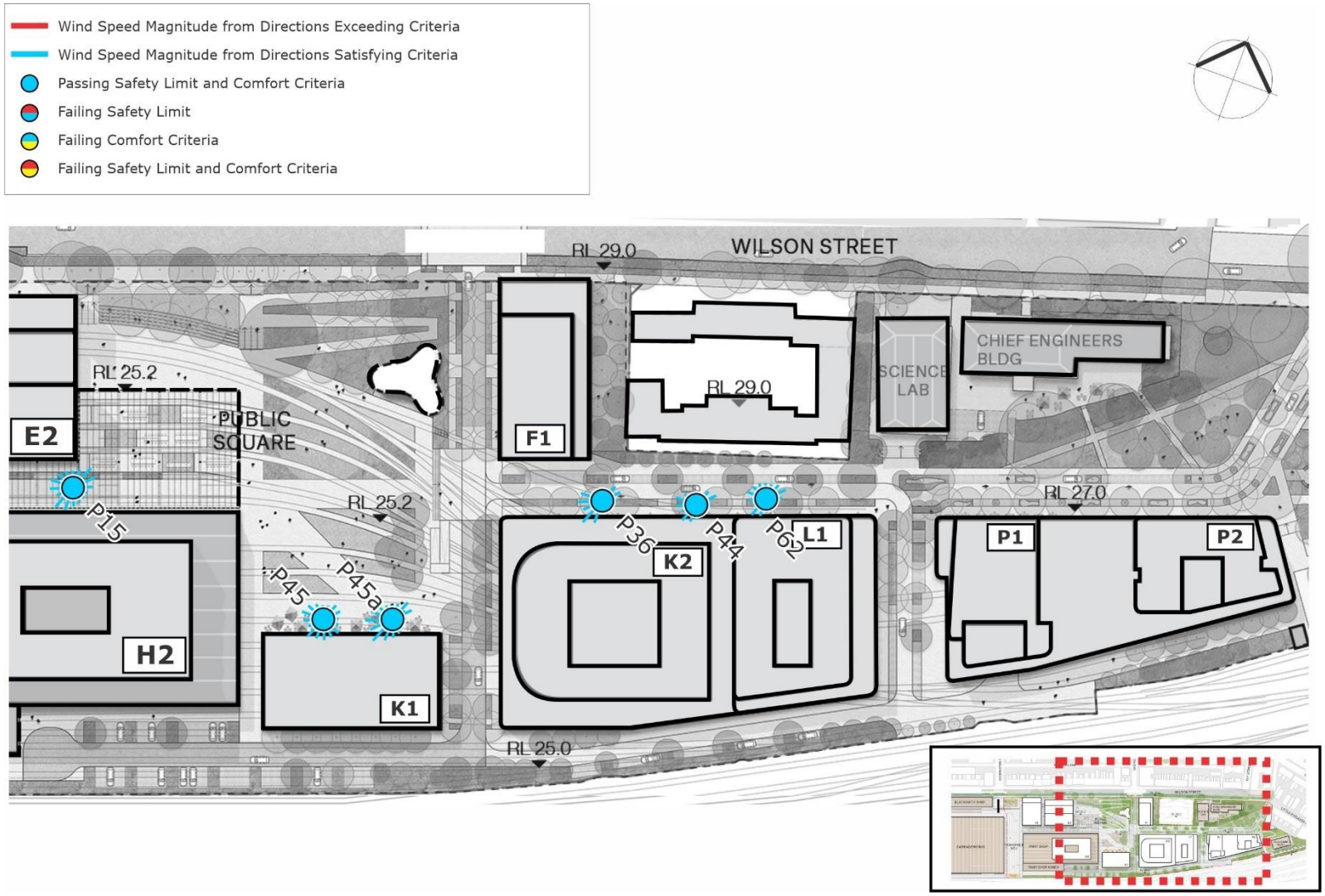


Figure 19a: Wind Tunnel Results: With Paint Shop Sub-Precinct Massing
(Treatment Scenario 02)

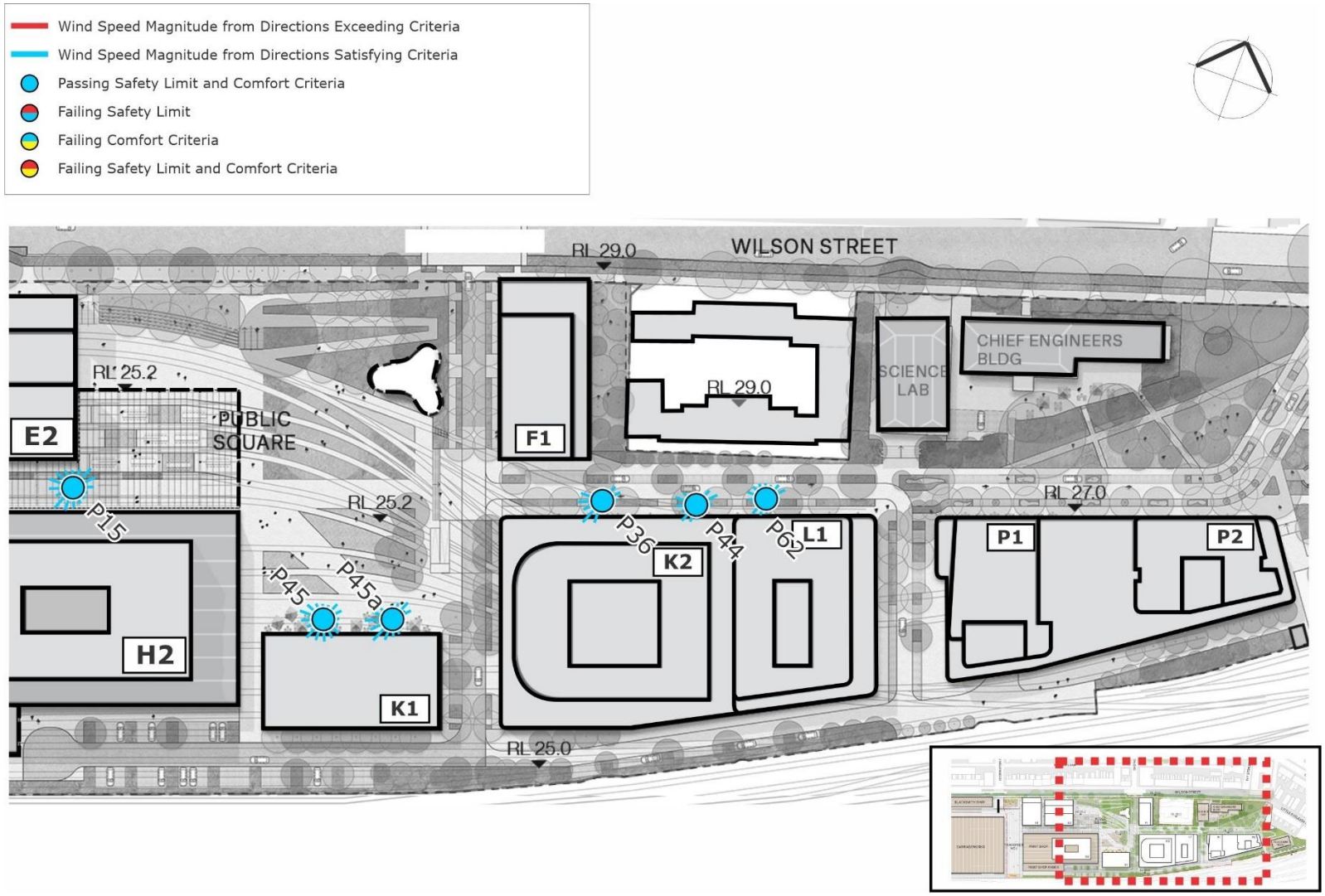


Figure 19b: Wind Tunnel Results: With Paint Shop Sub-Precinct Massing and Clothing Store Sub-Precinct Massing (Treatment Scenario 02)

Table 10: Wind Tunnel Results Summary: Gust Equivalent Mean (GEM) 5% Probability of Exceedance (Comfort) (Treatment Scenario 02)

Study Point	Criterion (m/s)	Case 1: Pain Shop Sub-Precinct		Case 2: Paint Shop Sub-Precinct with Clothing Store Sub-Precinct	
		Results (%)	Grade	Results (%)	Grade
P15	4.0	3%	Pass	3%	Pass
P36	6.0	2%	Pass	2%	Pass
P44	6.0	<1%	Pass	1%	Pass
P45	4.0	1%	Pass	2%	Pass
P62	6.0	1%	Pass	1%	Pass
P45a	4.0	3%	Pass	3%	Pass

7.3 Comparison of Wind Conditions and Development Standards for Subsequent Development Stages

7.3.1 Comparison of Wind Conditions to Other Similar Areas in Greater Sydney

The results of the study demonstrate that the wind conditions are typically better than is expected for similar areas within the Greater Sydney region and when compared to other masterplan precincts. This is reflected in an analysis of the regional wind climate. Areas within close proximity to the eastern coastline of NSW and within the Greater Sydney area are typically governed by the same regional wind climate. The regional wind climate can be used to predict the expected local wind climate for areas within the Greater Sydney region (including the proposed Redfern North Eveleigh Paint Shop sub-precinct). As mentioned in Section 5, analysis of measured directional mean wind speeds obtained at the meteorological recording station located at Kingsford Smith Airport (Sydney Airport) indicates that the site is predominantly affected by winds from three directions:

- Southerly winds are by far the most frequent winds for the Sydney region and are also the strongest.
- The westerly winds occur most frequently during the winter season for the Sydney region, and although they are typically not as strong as the southerly winds, they are usually a cold wind and hence can be a cause for discomfort for outdoor areas.
- North-easterly winds occur most frequently during the warmer months of the year for the Sydney region, and hence are usually welcomed within outdoor areas since they are typically not as strong as the southerly or westerly winds.

Outside of regional wind climate, there are various other factors which contribute towards wind conditions at the site. These include the terrain (which governs the upwind velocity and turbulence intensity profile) building morphology and shielding provided by surrounding developments.

For the proposed Redfern North Eveleigh Paint Shop sub-precinct, based on the above, it was typically expected that various areas within the precinct would experience strong wind conditions. The expected flow path of the prevailing winds within the proposed masterplan massing are shown in Figure 20. The flow paths suggest that wind the southern aspect of the site (adjacent to the high-rise towers of the development) would experience strong winds similar to other areas within the Greater Sydney region. These strong winds would be in the form of side-streaming and downwashing due to the alignment of the towers with the prevailing southerly wind and the direct exposure of the southern aspect due to its proximity to the railway line. The results of the study show that wind conditions along this aspect are favourable (within the assigned target criterion/safety limit), and this can be attributed to the design of the towers and the implementation of various wind design measures such as corner chamfers and tower offsets.

Similarly, it was expected that the westerly and north-easterly prevailing winds would funnel in between the various tall towers and create strong wind conditions at corner locations. However, the vast majority of study point locations satisfy the assigned criteria due to the design of the development.

The following design features, which have been included in the massing, should be noted as they positively impact the local wind climate:

- The tall commercial buildings along the railway line will provide direct shielding from the prevailing southerly winds to the central/northern portion of the site.

- Building podia/tower offsets reduce the impact of wind downwashing.
- Chamfered building corners and staggered design of towers reduce impact of wind funnelling and corner accelerated flow.
- Proposed awnings and any proposed tree planting increase pedestrian comfort/amenity.

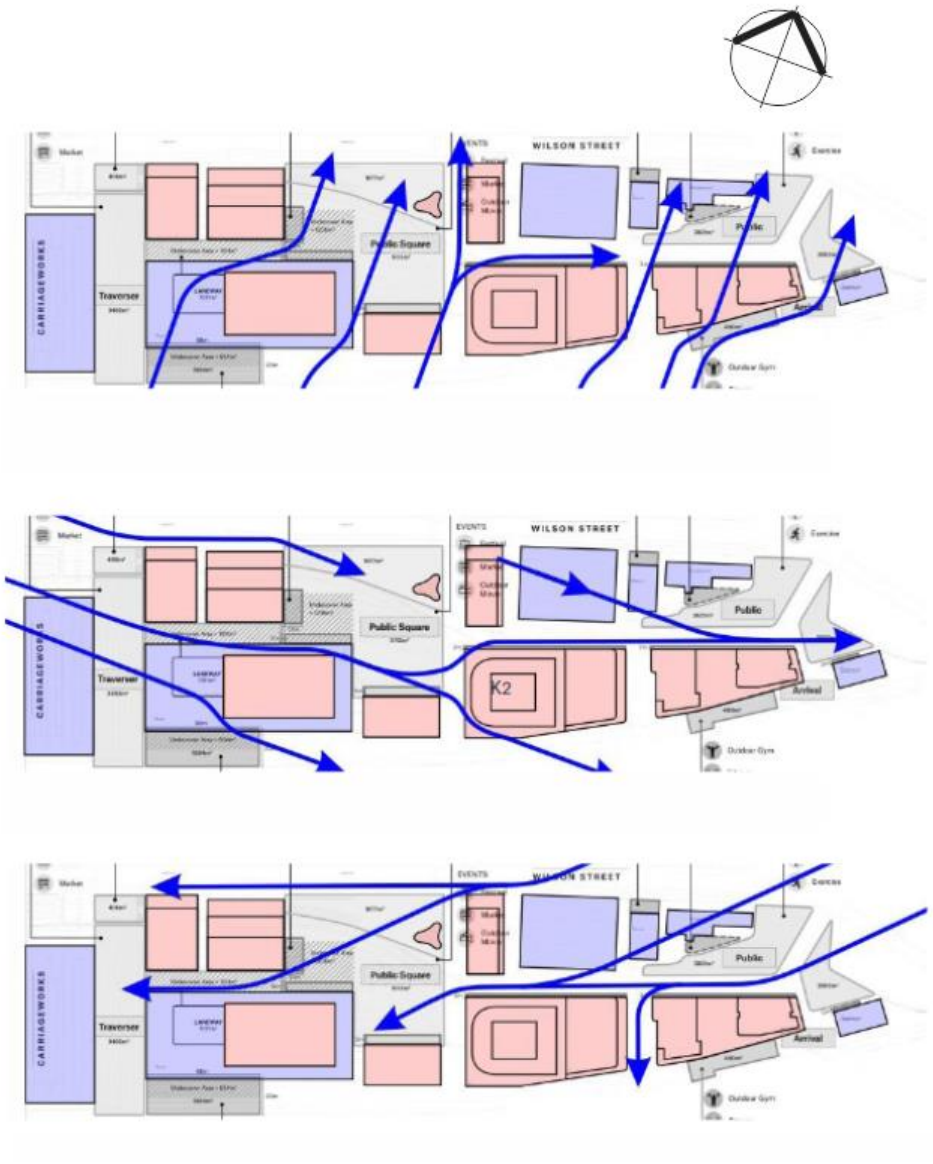


Figure 20: Expected Flow Path of Prevailing Winds within the Proposed Masterplan

7.3.2 Development Standards to be Applied to Subsequent Development Stages

The following recommended standards and guidelines are in relation to the current rezoning stage:

- To ensure pedestrian amenity (wind comfort and safety), given the success of the current scheme, it is recommended that the current design be retained. This includes building morphology (height, depth, extents etc) building orientation and building location.

- If desired, vegetation can be used to further enhance pedestrian comfort. This should be considered for large open spaces where seated activities are expected.

- If desired, a more detailed seasonal break-down of the wind environment results can be provided, which would give a better understanding of wind comfort throughout the various seasons of the year. This requirement is not necessary as the current Base Case design (with the inclusion of Treatment Scenario 02) satisfies the targeted comfort criteria and is within the safety limit for all study point locations.

The following recommended standards and guidelines are in relation to the Development Application stages. As stipulated in the Draft Sydney Development Control Plan 2012, "*a wind effects report is to be submitted with a development application for buildings higher than 45m and for other buildings at the discretion of the consent authority*". Due to the size/extent of the precinct massing, it is recommended that further wind tunnel testing be undertaken at the Development Application (DA) stage for each respective building, to address pedestrian amenity. The following should be considered:

- Pedestrian comfort and pedestrian safety are to be determined for each building via wind tunnel testing once the detailed drawings are finalised.

- Detailed drawings are only required for the development being assessed. As per the Australasian Wind Engineering Society Quality Assurance Manual, 2019 (AWES-QAM-2019), any surrounding buildings (including the portion of the masterplan precinct not being directly assessed) are only required to be modelled with overall dimensions accurate to within at least 10%. In addition, architectural details need not be included on the surrounding buildings.

- As per the Australasian Wind Engineering Society Quality Assurance Manual, 2019 (AWES-QAM-2019), the overall dimensions of the test building model (height, plan shape, etc.) should be accurate to within 2%. Architectural details, such as balconies, mullions, sunshades etc. should be included on the building model if they extend from the façade by 1m or more.

- Wind tunnel testing should be conducted with consideration of the staging of the masterplan precinct. For each subsequent tunnel test, buildings within the precinct that have an approved/determined DA should be included in the proximity model of the surrounding buildings.

- As mentioned in Section 6 of this report, the Draft Sydney DCP 2012 requires that the hourly mean wind speed, or Gust-Equivalent Mean (GEM) wind speed (whichever is greater for each wind direction), must not exceed 8m/s for walking, 6m/s for standing, and 4m/s for sitting. These are based on a 5% probability of exceedance. For pedestrian safety, the Draft Sydney DCP 2012 defines a safety limit criterion of 24m/s, based on an annual maximum 0.5 second gust wind speed, which applies to all areas. The abovementioned criteria should be applied to subsequent development stages.

- The target criteria should be re-evaluated for each development within the precinct (during the DA stage) and should be based on the proposed usage of public spaces within the site boundary.

- As per the AWES Guidelines for Pedestrian Wind Effects Criteria, 2014, the minimum criterion for public safety should be applied to pedestrian areas within and immediately adjacent to the proposed development being tested. Assessments of proposed developments should consider adjacent public and private property areas within a distance 'R' from the building envelope, where R is defined as the minimum of h/2 and b/2 where h is building height and b is the largest plan dimension of the building.

- If necessary, in-principle wind mitigation measures may be recommended for areas exposed to strong/unsafe winds. For areas where winds significantly exceed the target comfort/safety criterion, it is recommended that wind mitigation measures be quantified via wind tunnel testing. Note that vegetation may be used to address exceedances in comfort but cannot be used for exceedances in the safety limit.

8 SEASONAL ANALYSIS

A seasonal/time of day analysis was undertaken for the Redfern North Eveleigh Paint Shop Sub-Precinct masterplan. Selected study point locations were analysed with respect to the Draft Sydney Development Control Plan 2012 - Central Sydney Planning Review Amendment. This was carried out for 3-hour intervals for each month for the "Case 1" building scenario wind tunnel results. The results of the Case 2 building scenario and the treatments tested are not included in this analysis.

These calculations were based on a detailed statistical analysis of observed wind speed data obtained from the meteorological recording station located at Kingsford Smith Airport (Sydney Airport).

8.1 Results

The results of this assessment are presented in the following section. The complete results of the assessment are presented in Appendix E of this report.

Each study point is assigned a "comfort level" based on the results of the analysis. This level is described below in Table 11. The comfort level is calculated for each month in 3-hourly intervals, starting at 12am.

Table 11: Legend: Description of Criteria

Abbreviation	Criteria	Classification as per the Draft Sydney DCP 2012	Wind Speed (m/s)
LE	Long Exposure	Sitting	4 (at 5% exceedance)
SE	Short Exposure	Standing	6 (at 5% exceedance)
CW	Comfortable Walking	Walking	8 (at 5% exceedance)
EC(<2)	Exceeds CW Criteria (by < 2m/s)	-	-
EC(>2)	Exceeds CW Criteria (by > 2m/s)	-	-

The results of the analysis are comparable to the results of the pedestrian wind environment study in that each of the study point locations show suitable wind conditions for comfortable walking (at the very least) for the whole year. Some study point locations show exceedances in the comfortable walking criterion for particular times of the year however, it should be noted that that annual average is within the 5% probability of exceedance as stipulated in the Draft Sydney Development Control Plan 2012 - Central Sydney Planning Review Amendment (detailed in the pedestrian wind environment report).

In general, the results of the seasonal analysis show that the wind speeds during the warmer months of the year are typically lower during the morning and increase slightly during the afternoon/night hours. Wind speeds are shown to be faster for cooler winter months of the year when compared to the summer months, which is generally not desirable as this will increase the "chill factor". However, similar to that of the summer months of the year, the results show the winds during the morning periods consistently offer more suitable conditions for outdoor activities in comparison to those of the afternoon/night hours.

Two study point locations are selected to describe the change in wind conditions/comfort between different seasons of the year/times of the day. These are Study Points 66 and 29 (refer to Figure 21).

Figure 21: Study Point Locations (used for the Seasonal Analysis)
Profiled Study Points circled in Red

The seasonal/time of day data for Study Point 66 is shown below in Table 12a. The summer months have low wind speeds in the morning suitable for long duration stationary activities. This then transitions to short exposure and finally comfortable walking during the afternoon/night hours. Wind speeds are slightly higher during winter months and as a result it is likely that the area will not be suitable for standing activities such as café seating etc. during these months of the year.

Table 12a: Study Point 66 – Monthly and 3 Hourly Results

Time	Davenport Criteria Analysis (95%)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	LE	LE	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	LE	LE	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	SE	SE	SE
12pm - 3pm	CW	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	SE	SE	CW	CW	CW	CW	EC(<2)	CW	CW	CW
6pm - 9pm	CW	CW	CW	SE	SE	SE	SE	CW	CW	CW	CW	CW
9pm- 12am	CW	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	CW

The seasonal/time of day data for Study Point 29 is shown below in Table 12b. In the pedestrian wind environment study, Study Point 29 satisfies the Walking comfort criterion and achieves a "Walking" grade (which essentially means that the study point will not satisfy any criteria other than walking). However, the results for the seasonal analysis suggest that the point could potentially be used for standing activities (park seating) for certain times of the year. The winter months have a high probability of achieving the standing criterion, while the summer months typically have higher wind speeds. Due to the setting of location represented by the study point (i.e. park area) it is likely that occupants will accept the slightly higher wind speed as it may enhance comfort by providing a cooling effect in summer.

Table 12b: Study Point 29 – Monthly and 3 Hourly Results

Time	Davenport Criteria Analysis (95%)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	CW	CW	SE	SE	SE	SE	SE	SE	SE	CW	CW
3am - 6am	SE	CW	CW	SE	SE	SE	SE	SE	SE	SE	CW	SE
6am - 9am	SE	SE	CW	SE	SE	SE	SE	SE	SE	SE	CW	SE
9am - 12pm	CW	CW	CW	CW	SE	SE	CW	CW	CW	CW	CW	CW
12pm - 3pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	CW	CW	CW	SE	CW	CW	CW	CW	CW
6pm - 9pm	EC(<2)	CW	CW	CW	SE	SE	SE	CW	CW	CW	CW	EC(<2)
9pm- 12am	CW	CW	CW	SE	SE	SE	SE	SE	SE	CW	CW	CW

9 REFERENCES

American Society of Civil Engineers (ASCE), 2003, "Outdoor Human Comfort and its Assessment – State of the Art".

American Society of Civil Engineers (ASCE), ASCE-7-16, 2016, "Minimum Design Loads for Buildings and Other Structures".

Australasian Wind Engineering Society, QAM-1, 2019, "Quality Assurance Manual: Wind Engineering Studies of Buildings", edited by Rofail A.W., et al.

Australasian Wind Engineering Society (AWES), 2014, "Guidelines for Pedestrian Wind Effects Criteria".

Council on Tall Buildings and Urban Habitat (CTBUH), 2013, "Wind tunnel testing of high-rise buildings", CTBUH Technical Guides.

Davenport, A.G., 1972, "An approach to human comfort criteria for environmental conditions". Colloquium on Building Climatology, Stockholm.

Deaves, D.M. and Harris, R.I., 1978, "A mathematical model of the structure of strong winds." Construction Industry and Research Association (U.K), Report 76.

Engineering Science Data Unit, 1982, London, ESDU82026, "Strong Winds in the Atmospheric Boundary Layer, Part 1: Hourly Mean Wind Speeds", with Amendments A to E (issued in 2002).

Melbourne, W.H., 1978, "Criteria for Environmental Wind Conditions". Journal of Wind Engineering and Industrial Aerodynamics, vol. 3, pp241-249.

Rofail, A.W., and Kwok, K.C.S., 1991, "A Reliability Study of Wind Tunnel Results of Cladding Pressures". Proceedings of the 8th International Conference on Wind Engineering, Canada.

Rofail, A.W., 2007, "Comparison of Wind Environment Criteria against Field Observations". 12th International Conference of Wind Engineering, Cairns, Australia.

Standards Australia and Standards New Zealand, AS/NZS 1170.2, 2011, "SAA Wind Loading Standard, Part 2: Wind Actions".

State Environmental Planning Policy No. 65 (SEPP65), 2015, "Apartment Design Guide", Design Guidance - Objective 4T-1, NSW Department of Planning and Environment.

APPENDIX A PUBLISHED ENVIRONMENTAL CRITERIA

A.1 Wind Effects on People

The acceptability of wind in an area is dependent upon the use of the area. For example, people walking or window-shopping will tolerate higher wind speeds than those seated at an outdoor restaurant. Quantifying wind comfort has been the subject of much research and many researchers, such as A.G. Davenport, T.V. Lawson, W.H. Melbourne, and A.D. Penwarden, have published criteria for pedestrian comfort for pedestrians in outdoor spaces for various types of activities. This section discusses and compares the various published criteria.

A.2 A.D. Penwarden (1973) Criteria for Mean Wind Speeds

A.D. Penwarden (1973) developed a modified version of the Beaufort scale which describes the effects of various wind intensities on people. Table A.1 presents the modified Beaufort scale. Note that the effects listed in this table refers to wind conditions occurring frequently over the averaging time (a probability of occurrence exceeding 5%). Higher ranges of wind speeds can be tolerated for rarer events.

Table A.1: Summary of Wind Effects on People (A.D. Penwarden, 1973)

Type of Winds	Beaufort Number	Hourly Mean Wind Speed (m/s)	Effects
Calm	0	0 - 0.3	
Calm, light air	1	0.3 - 1.6	No noticeable wind
Light breeze	2	1.6 - 3.4	Wind felt on face
Gentle breeze	3	3.4 - 5.5	Hair is disturbed, clothing flaps, newspapers difficult to read
Moderate breeze	4	5.5 – 8.0	Raises dust, dry soil and loose paper, hair disarranged
Fresh breeze	5	8.0 – 10.8	Force of wind felt on body, danger of stumbling
Strong breeze	6	10.8 – 13.9	Umbrellas used with difficulty, hair blown straight, difficult to walk steadily, wind noise on ears unpleasant
Near gale	7	13.9 – 17.2	Inconvenience felt when walking
Gale	8	17.2 - 20.8	Generally impedes progress, difficulty balancing in gusts
Strong gale	9	20.8 – 24.5	People blown over

A.3 A.G. Davenport (1972) Criteria for Mean Wind Speeds

A.G. Davenport (1972) also determined a set of criteria in terms of the Beaufort scale and for various return periods. Table A.2 presents a summary of the criteria based on a probability of exceedance of 5%.

Table A.2: Criteria by A.G. Davenport (1972)

Classification	Activities	5% exceedance Mean Wind Speed (m/s)
Walking Fast	Acceptable for walking, main public accessways.	7.5 - 10.0
Strolling, Skating	Slow walking, etc.	5.5 - 7.5
Short Exposure Activities	Generally acceptable for walking & short duration stationary activities such as window-shopping, standing or sitting in plazas.	3.5 - 5.5
Long Exposure Activities	Generally acceptable for long duration stationary activities such as in outdoor restaurants & theatres and in parks.	0 - 3.5

A.4 T.V. Lawson (1975) Criteria for Mean Wind Speeds

In 1973, T.V. Lawson, while referring to the Beaufort wind speeds of A.D. Penwarden (1973) (as listed in Table A.1), quoted that a Beaufort 4 wind speed would be acceptable if it is not exceeded for more than 4% of the time, and that a Beaufort 6 wind speed would be unacceptable if it is exceeded more than 2% of the time. Later, in 1975, T.V. Lawson presented a set of criteria very similar to those presented in A.G. Davenport (1972) (as listed in Table A.2). These criteria are presented in Table A.3 and Table A.4 for safety and comfort respectively.

Table A.3: Safety Criteria by T.V. Lawson (1975)

Classification	Activities	Annual Mean Wind Speed (m/s)
Safety (all weather areas)	Accessible by the general public.	0 – 15
Safety (fair weather areas)	Private areas, balconies/terraces, etc.	0 – 20

Table A.4: Comfort Criteria by T.V. Lawson (1975)

Classification	Activities	5% exceedance Mean Wind Speed (m/s)
Business Walking	Objective Walking from A to B.	8 - 10
Pedestrian Walking	Slow walking, etc.	6 - 8
Short Exposure Activities	Pedestrian standing or sitting for short times.	4 – 6
Long Exposure Activities	Pedestrian sitting for a long duration.	0 - 4

A.5 W.H. Melbourne (1978) Criteria for Gust Wind Speeds

W.H. Melbourne (1978) introduced a set of criteria for the assessment of environmental wind conditions that were developed for a temperature range of 10°C to 30°C and for people suitably dressed for outdoor conditions. These criteria are presented in Table A.5, and are based on maximum gust wind speeds with a probability of exceedance of once per year.

Table A.5: Criteria by W.H. Melbourne (1978)

Classification	Activities	Annual Gust Wind Speed (m/s)
Limit for Safety	Completely unacceptable: people likely to get blown over.	23
Marginal	Unacceptable as main public accessways.	16 - 23
Comfortable Walking	Acceptable for walking, main public accessways	13 - 16
Short Exposure Activities	Generally acceptable for walking & short duration stationary activities such as window-shopping, standing or sitting in plazas.	10 - 13
Long Exposure Activities	Generally acceptable for long duration stationary activities such as in outdoor restaurants & theatres and in parks.	0 - 10

A.6 Comparison of the Published Wind Speed Criteria

W.H. Melbourne (1978) presented a comparison of the criteria of various researchers on a probabilistic basis. Figure A.1 presents the results of this comparison, and indicates that the criteria of W.H. Melbourne (1978) are comparatively quite conservative. This conclusion was also observed by A.W. Rofail (2007) when undertaking on-site remedial studies. The results of A.W. Rofail (2007) concluded that the criteria by W.H. Melbourne (1978) generally overstates the wind effects in a typical urban setting due to the assumption of a fixed 15% turbulence intensity for all areas. It was observed in A.W. Rofail (2007) that the 15% turbulence intensity assumption is not real and that the turbulence intensities at 1.5m above ground is at least 20% and in a suburban or urban setting is generally in the range of 30% to 60%.

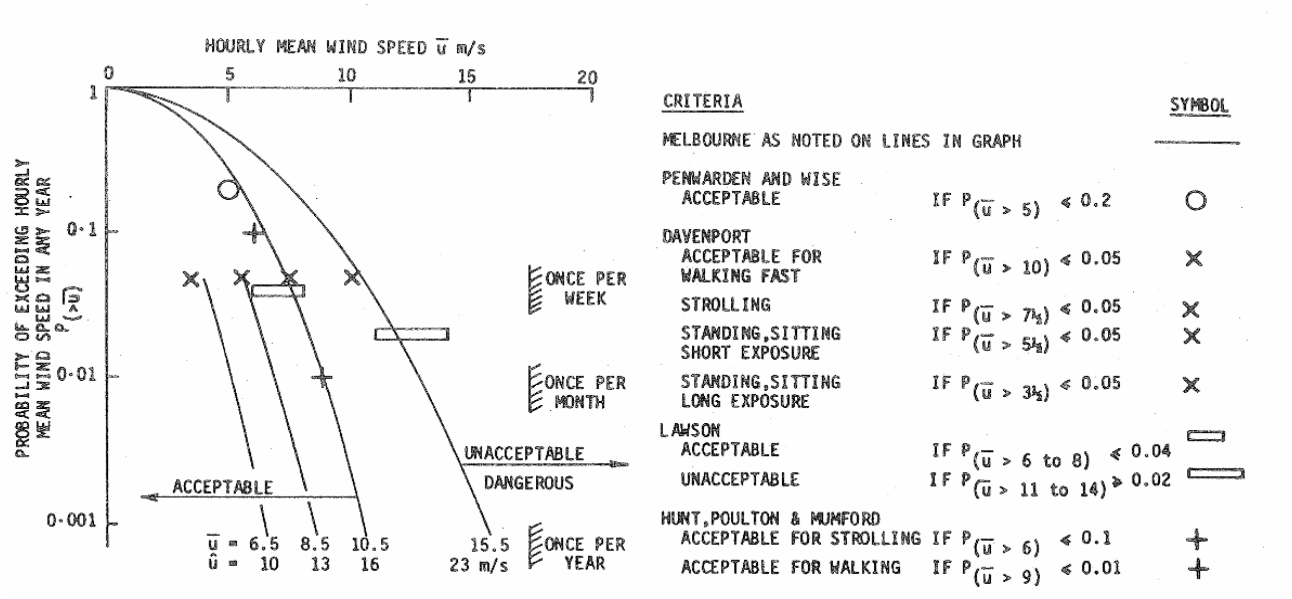


Figure A.1: Comparison of Various Mean and Gust Wind Environment Criteria, assuming 15% turbulence and a Gust Factor of 1.5 (W.H. Melbourne, 1978)

A.7 References relating to Pedestrian Comfort Criteria

Davenport, A.G., 1972, "An approach to human comfort criteria for environmental conditions". Colloquium on Building Climatology, Stockholm.

Davenport, A.G., 1977, "The prediction of risk under wind loading", 2nd International Conference on Structural Safety and Reliability, Munich, Germany, pp511-538.

Lawson, T.V., 1973, "The wind environment of buildings: a logical approach to the establishment of criteria". Bristol University, Department of Aeronautical Engineering.

Lawson, T.V., 1975, "The determination of the wind environment of a building complex before construction". Bristol University, Department of Aeronautical Engineering.

Melbourne, W.H., 1978, "Criteria for Environmental Wind Conditions". Journal of Wind Engineering and Industrial Aerodynamics, vol. 3, pp241-249.

Penwarden, A.D. (1973). "Acceptable Wind Speeds in Towns", Building Science, vol. 8: pp259–267.

Penwarden, A.D., Wise A.F.E., 1975, "Wind Environment Around Buildings". Building Research Establishment Report, London.

Rofail, A.W., 2007, "Comparison of Wind Environment Criteria against Field Observations". 12th International Conference of Wind Engineering, Cairns, Australia.

APPENDIX B DATA ACQUISITION

The wind tunnel testing procedures utilised for this study were based on the guidelines set out in the Australasian Wind Engineering Society Quality Assurance Manual (AWES-QAM-1-2019), ASCE 7-16 (Chapter C31), and CTBUH (2013). The wind speed measurements for the wind tunnel study were determined as coefficients using data acquired by either Dantec hot-wire probe anemometers or pressure-based wind speed sensors and converted to full-scale wind speeds using details of the regional wind climate obtained from an analysis of directional wind speed recordings from the local meteorological recording station(s).

B.1 Measurement of the Velocity Coefficients

The study model and proximity model were setup within the wind tunnel which was configured to the appropriate boundary layer profile, and the wind velocity measurements were monitored using either Dantec hot-wire probe anemometers or pressure-based wind speed sensors at selected critical outdoor locations. The wind velocity results presented in this study for each study point are representative of wind at a full-scale height of approximately 1.5m above ground/slab level. In the case of the Dantec hot-wire probe anemometers, the support of the probe is mounted such that the probe wire is vertical as much as possible to ensure that the measured wind speeds are independent of wind direction along the horizontal plane. In addition, care was taken in the alignment of the hot-wire probe wire and in avoiding wall-heating effects.

Wind speed measurements were made in the wind tunnel for 16 wind directions, at 22.5° increments. Data was acquired for each wind direction using a sample rate of 1024Hz. The sample length was determined to produce a full-scale sample time that is sufficient for this type of study. In the case of the pressure-based wind speed sensors, the phase lag between the various channels where data is acquired simultaneously is within 10% of a typical pressure cycle, and the signal is low-pass filtered at 500Hz and then digital filtering is applied over this range to provide an unbiased response from the pressure measurement system (A.W. Rofail, 2004).

The mean, gust and standard deviation velocity coefficients were determined from the data acquired in the wind tunnel. The gust velocity coefficients were also derived for each wind direction from by the following relation:

$$\hat{C}_V = \bar{C}_V + g \cdot \sigma_{C_V} \qquad \text{B.1}$$

where:

$\hat{C}_V$ is the gust velocity coefficient.

$\bar{C}_V$ is the mean velocity coefficient.

g is the peak factor, taken as 3.0 for a 3-sec gust and 3.4 for a 0.5-sec gust.

σ_{C_V} is the standard deviation of the velocity coefficient measurement.

In the case of a Dantec hot-wire probe anemometer, the velocity coefficient is obtained as follows:

$$C_V = \frac{C_{V,study}}{C_{V,200m}} \quad \text{B.2}$$

where:

$C_{V,study}$ is the velocity coefficient measurement obtained from the Dantec hot-wire probe anemometer at the study point location.

$C_{V,200m}$ is the velocity coefficient measurement obtained from the Dantec hot-wire probe anemometer at the free-stream reference location at 200m height upwind of the model in the wind tunnel.

However, in the case of the pressure-based wind speed sensors, these are determined from the measured differential mean, standard deviation and maximum pressure coefficients obtained from the wind speed sensor. For this analysis all calculations are performed on the square root of the differential pressure measurements. The velocity coefficient at the pressure-based wind speed sensor location is then calculated as follows:

$$C_V = \frac{\alpha + \beta\sqrt{\Delta p}}{V_{200m}} \quad \text{B.3}$$

where:

C_V is the velocity coefficient measurement at the study point location.

α is a calibration coefficient for the pressure-based wind speed sensor.

β is a calibration coefficient for the pressure-based wind speed sensor.

Δp is the differential pressure obtained from the pressure-based wind speed sensor at the study point location.

V_{200m} is the wind speed at the free-stream reference location of 200m height (full-scale) in the wind tunnel, which is determined directly in the wind tunnel using a pitot static probe.

B.2 Calculation of the Full-Scale Results

The full-scale results determine if the wind conditions at a study location satisfy the designated criteria of that location. More specifically, the full-scale results need to determine the probability of exceedance of a given wind speed at a study location. To determine the probability of exceedance, the measured velocity coefficients were combined with a statistical model of the local wind climate that relates wind speed to a probability of exceedance. Details of the wind climate model are outlined in Section 5 of the main report.

The statistical model of the wind climate includes the impact of wind directionality as any local variations in wind speed or frequency with wind direction. This is important as the wind directions that produce the highest wind speed events for a region may not coincide with the most wind exposed direction at the site.

The methodology adopted for the derivation of the full-scale results for the maximum gust and the GEM wind speeds are outlined in the following sub-sections.

B.3 Maximum Gust Wind Speeds

The full-scale maximum gust wind speed at each study point location is derived from the measured coefficient using the following relationship:

$$V_{study} = V_{ref,RH}\left(\frac{k_{200m,tr,T=1hr}}{k_{RH,tr,T=1hr}}\right)C_V \qquad \text{B.4}$$

where:

V_{study} is the full-scale wind speed at the study point location.

$V_{ref,RH}$ is the full-scale reference wind speed at the study reference height. This value is determined by combining the directional wind speed data for the region (detailed in Section 5) and the upwind terrain and height multipliers for the site (detailed in Section 4).

$k_{200m,tr,T=1hr}$ is the hourly mean terrain and height multiplier at the free-stream reference location of 200m height.

$k_{RH,tr,T=1hr}$ is the hourly mean terrain and height multiplier at the study reference height (Section 4).

C_V is the velocity coefficient, obtained from either Equation B.2 (in the case of Dantec hot-wire probe anemometers) or Equation B.3 (in the case of pressure-based wind speed sensors).

The value of $V_{ref,RH}$ varies with each prevailing wind direction. Wind directions where there is a high probability that a strong wind will occur have a higher directional wind speed than other directions. To determine the directional wind speeds, a probability level must be assigned for each wind direction. These probability levels are set following the approach used in AS/NZS1170.2:2011, which assumes that the major contributions to the combined probability of exceedance of a typical load effect comes from only two 45 degree sectors.

B.4 Maximum Gust-Equivalent Mean Wind Speeds

The contribution to the probability of exceedance of a specified wind speed (ie: the desired wind speed for pedestrian comfort, as per the criteria) was calculated for each wind direction. These contributions are then combined over all wind directions to calculate the total probability of exceedance of the specified wind speed. To calculate the probability of exceedance for a specified wind speed a statistical wind climate model was used to describe the relationship between directional wind speeds and the probability of exceedance. A detailed description of the methodology is given by T.V. Lawson (1980).

The criteria used in this study is referenced to a probability of exceedance of 5% of a specified wind speed.

B.5 References relating to Data Acquisition

American Society of Civil Engineers (ASCE), ASCE-7-16, 2016, "Minimum Design Loads for Buildings and Other Structures".

Australasian Wind Engineering Society, QAM-1, 2019, "Quality Assurance Manual: Wind Engineering Studies of Buildings", edited by Rofail A.W., et al.

Council on Tall Buildings and Urban Habitat (CTBUH), 2013, "Wind tunnel testing of high-rise buildings", CTBUH Technical Guides.

Lawson, T.V., 1980, "Wind Effects on Buildings - Volume 1, Design Applications". Applied Science Publishers Ltd, Ripple Road, Barking, Essex, England.

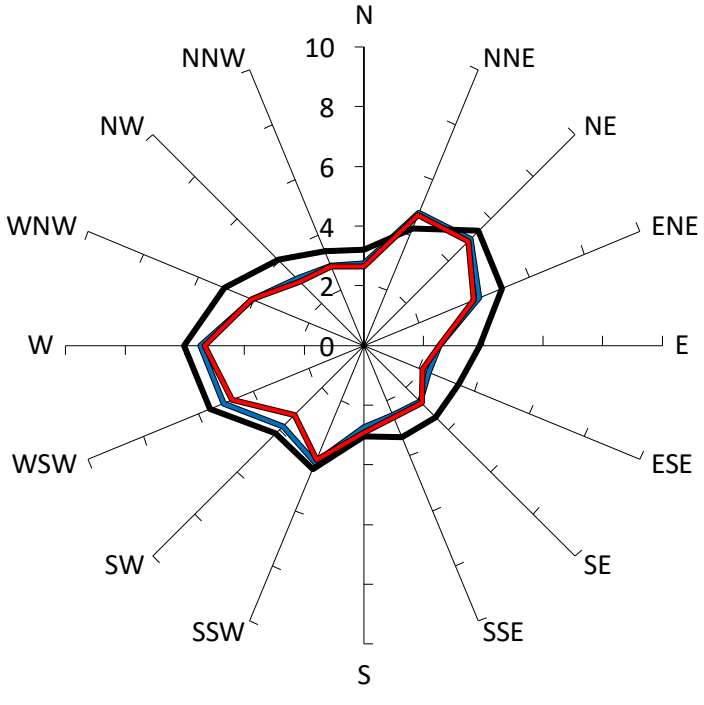
Rofail A.W., Tonin, R., and Hanafi, D., 2004, "Sensitivity of frequency response to type of tubing", Australasian Wind Engineering Workshop, Darwin.

Standards Australia and Standards New Zealand, AS/NZS 1170.2, 2011, "SAA Wind Loading Standard, Part 2: Wind Actions".

APPENDIX C DIRECTIONAL PLOTS OF WIND TUNNEL RESULTS

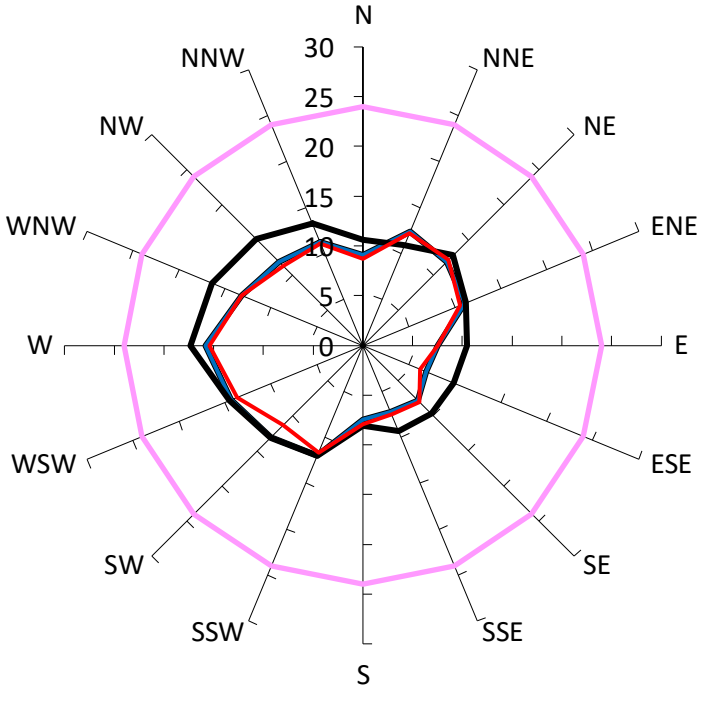
Results for P01

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

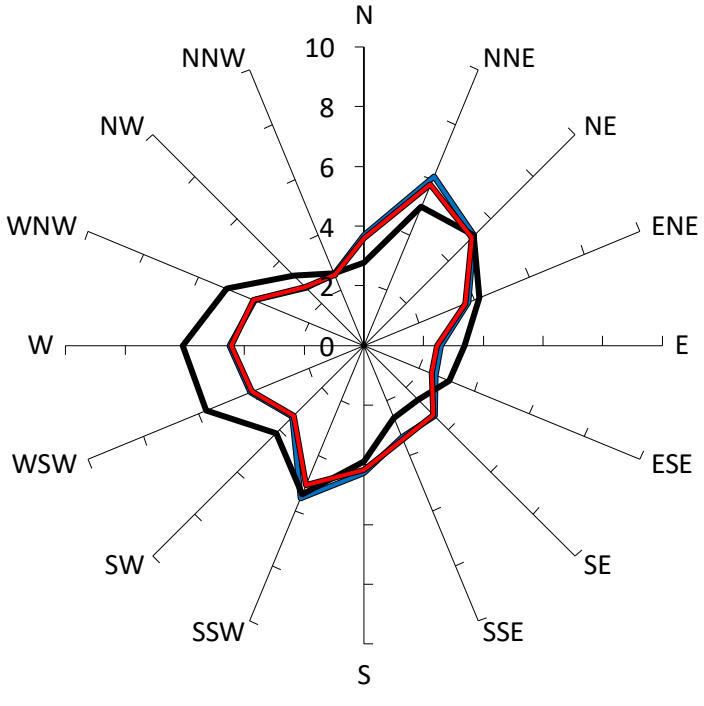


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	16
	Existing Site	1%	17
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	15

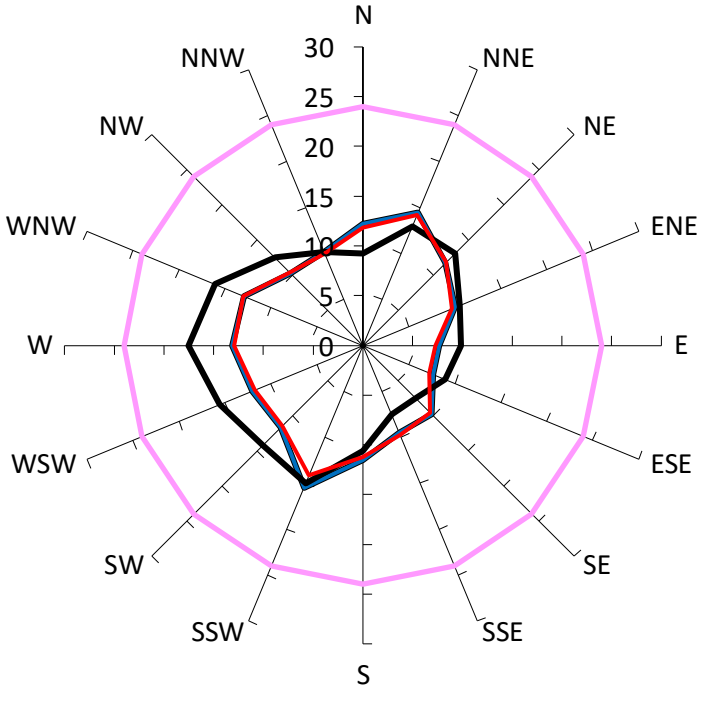
Results for P02

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

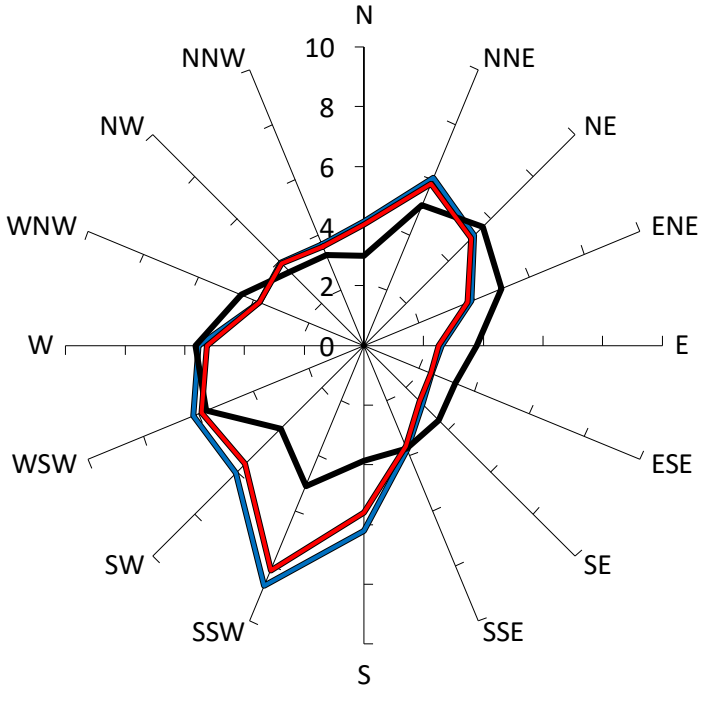


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	15
Existing Site	1%	18
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	14

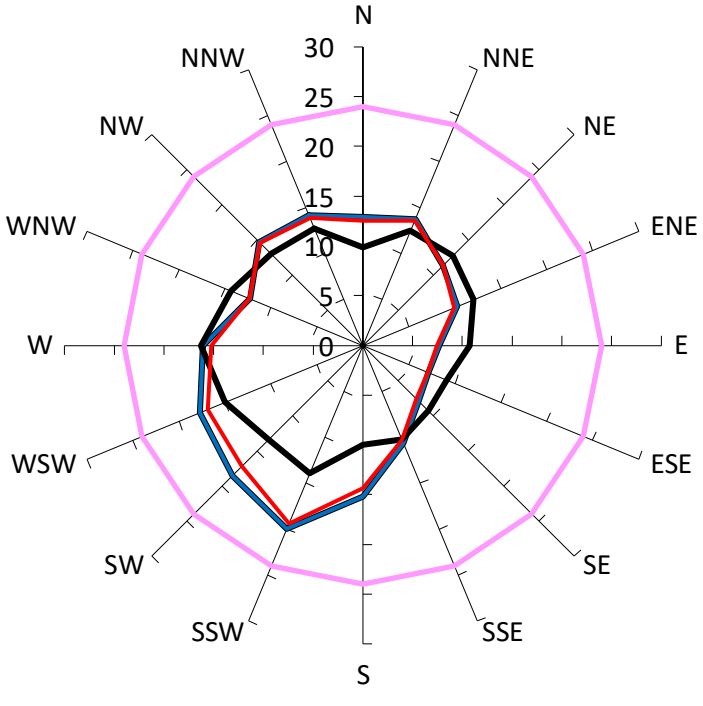
Results for P03

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

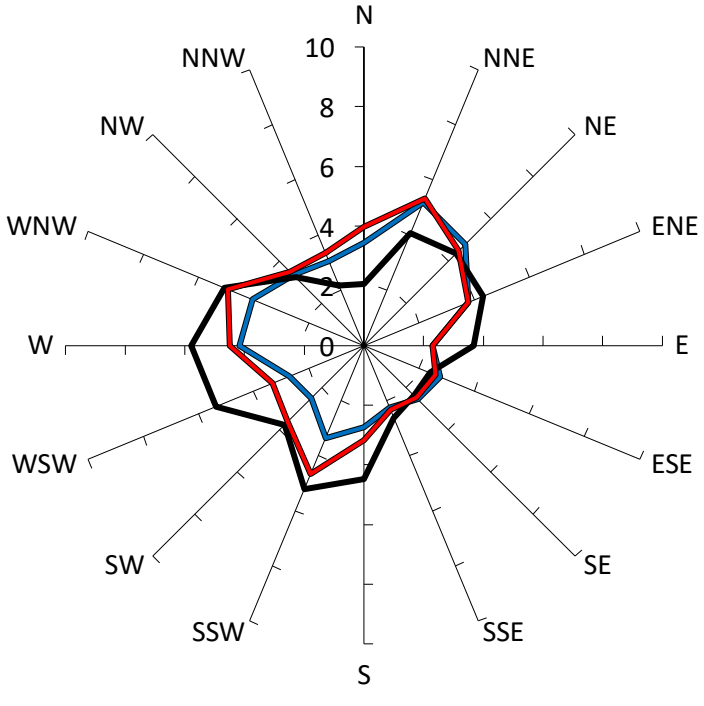


Safety Limit: 24m/s

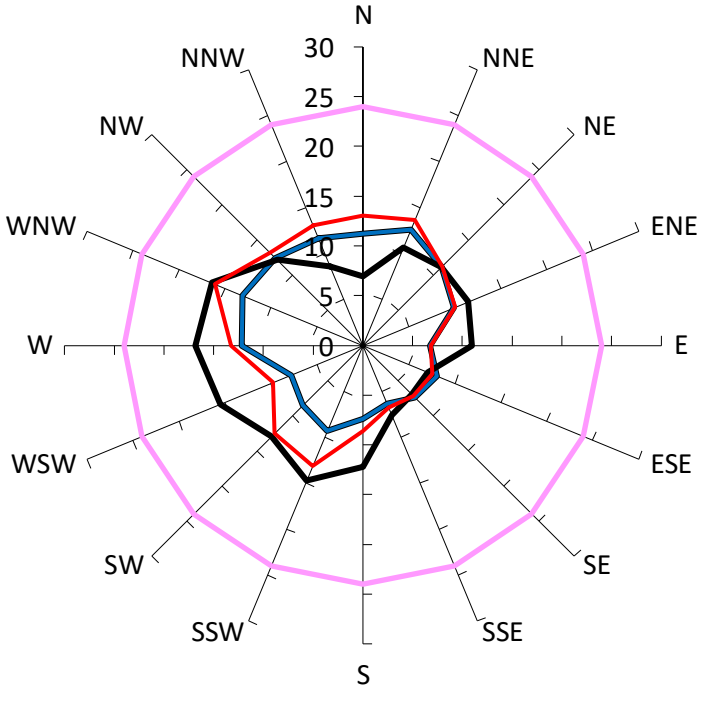
Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	3%	20
Existing Site	1%	16
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	2%	19

Results for P04

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

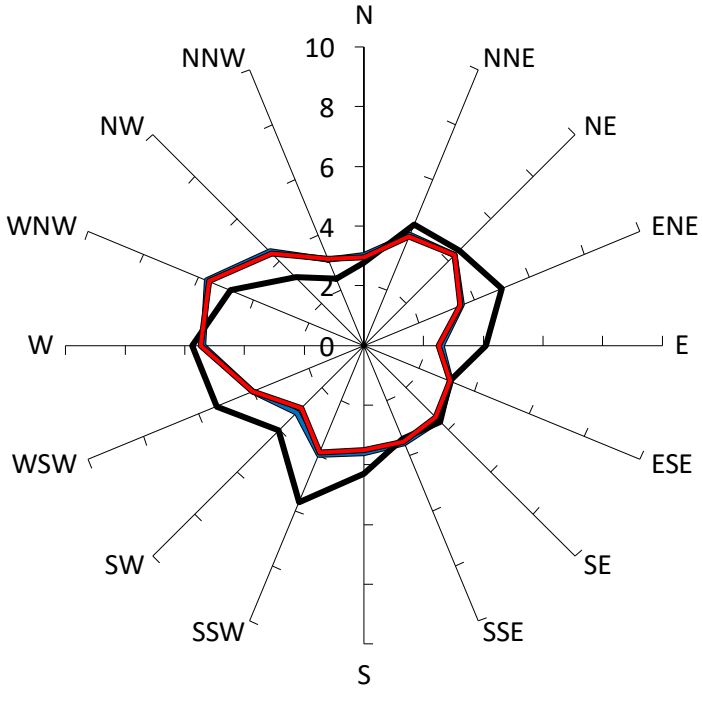


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	13
	Existing Site	< 1%	17
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	16

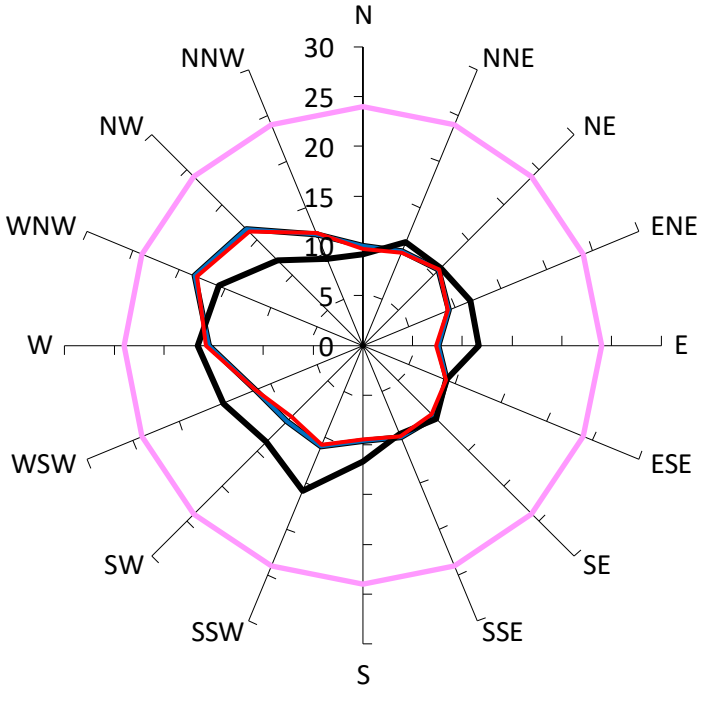
Results for P05

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

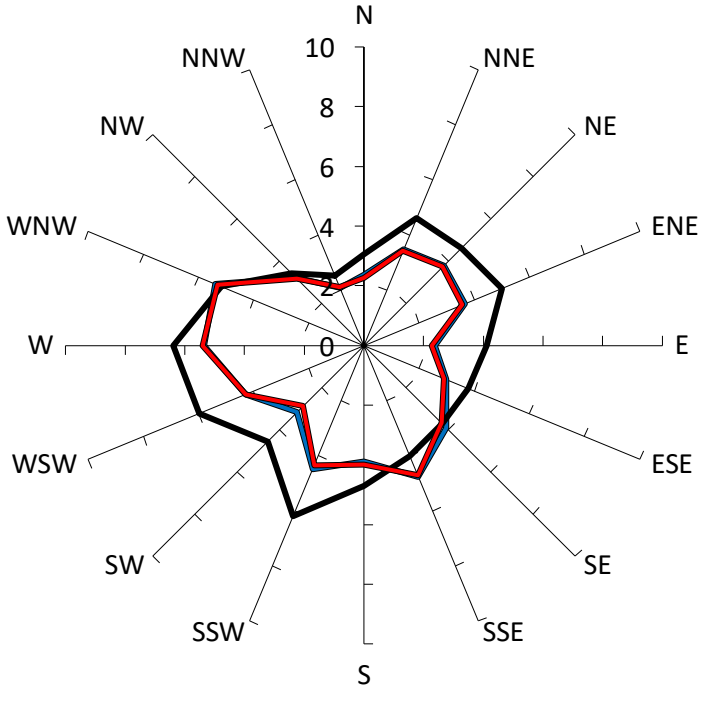


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	18
Existing Site	1%	17
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	18

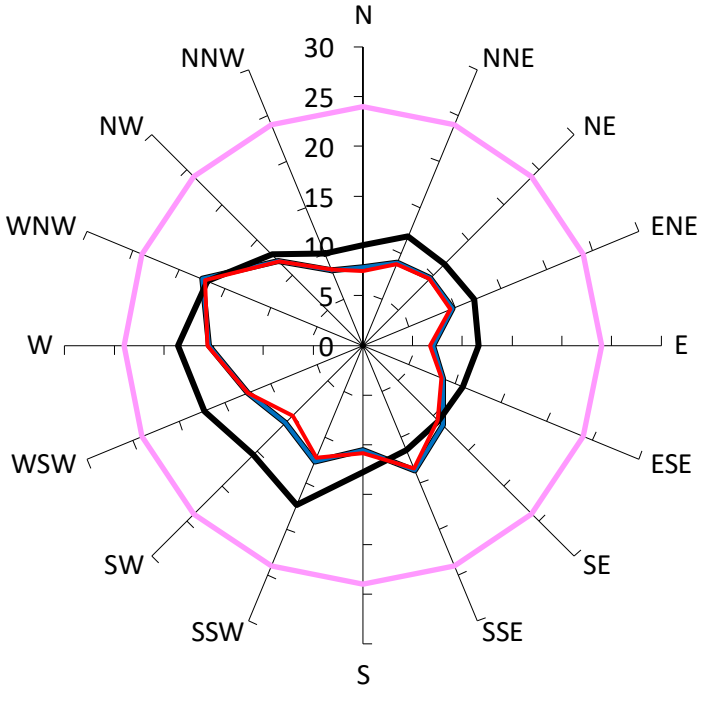
Results for P06

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

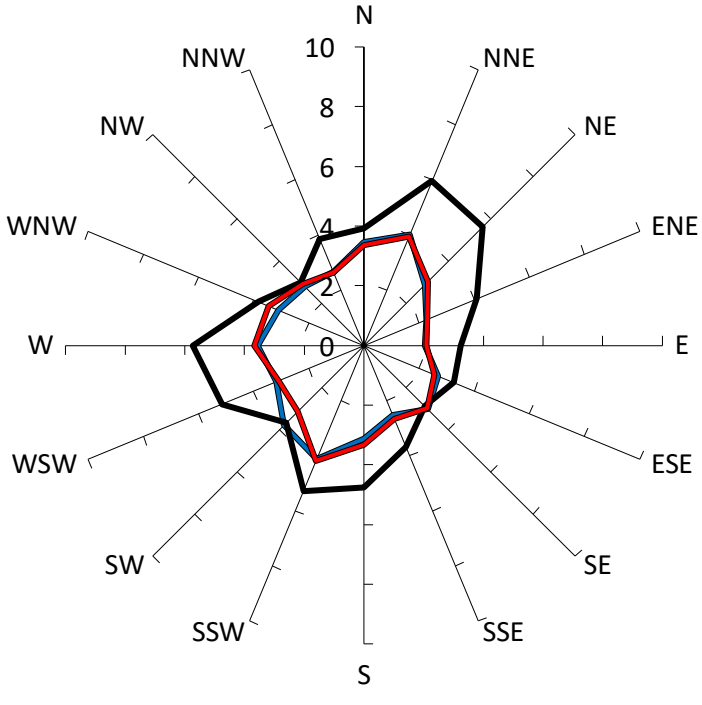


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	17
	Existing Site	1%	19
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	17

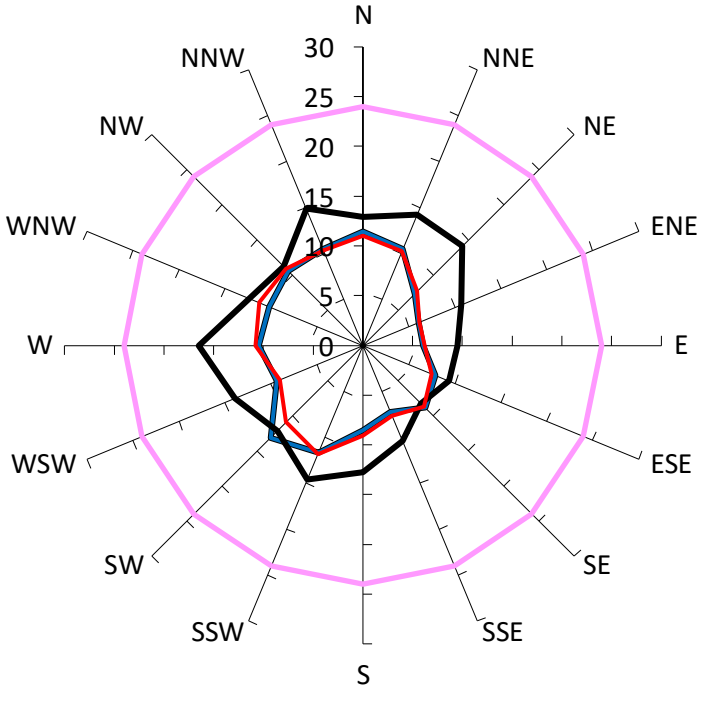
Results for P07

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

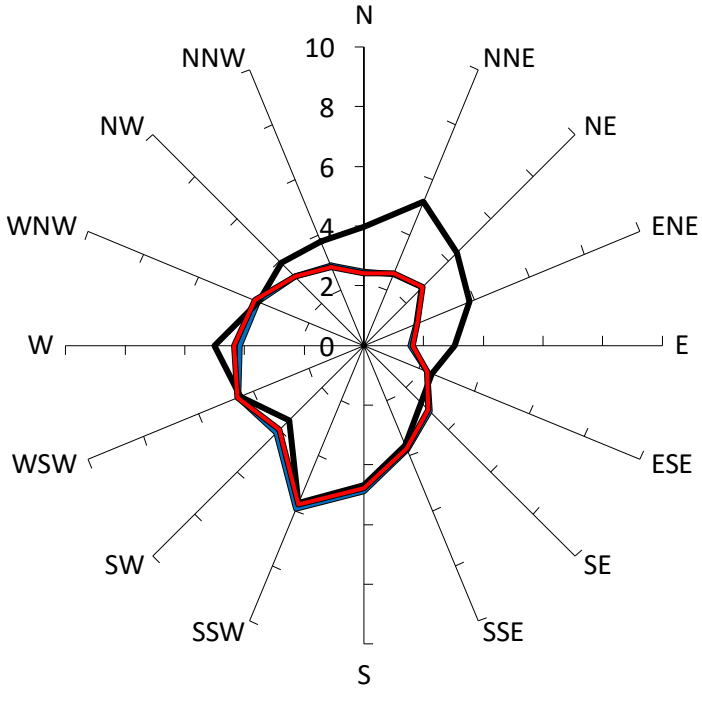


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	13
Existing Site	1%	16
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	12

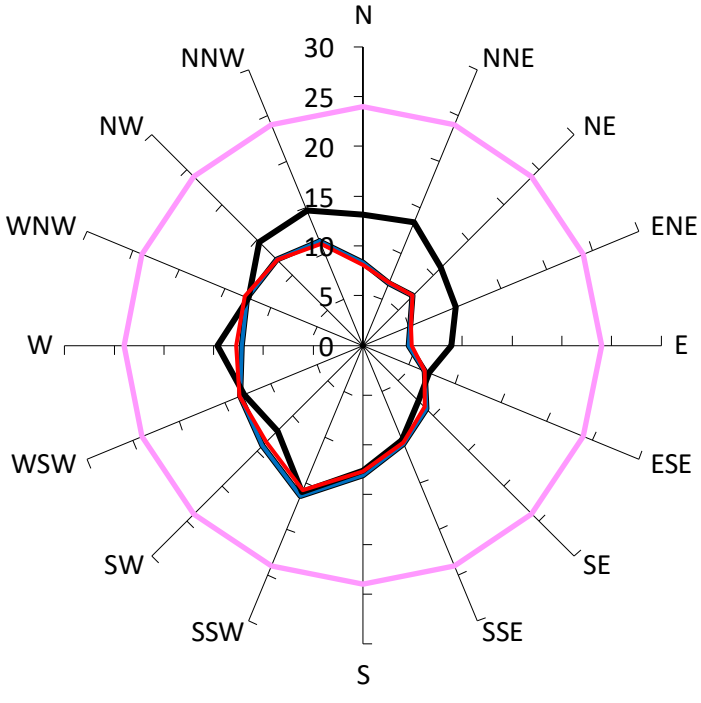
Results for P08

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

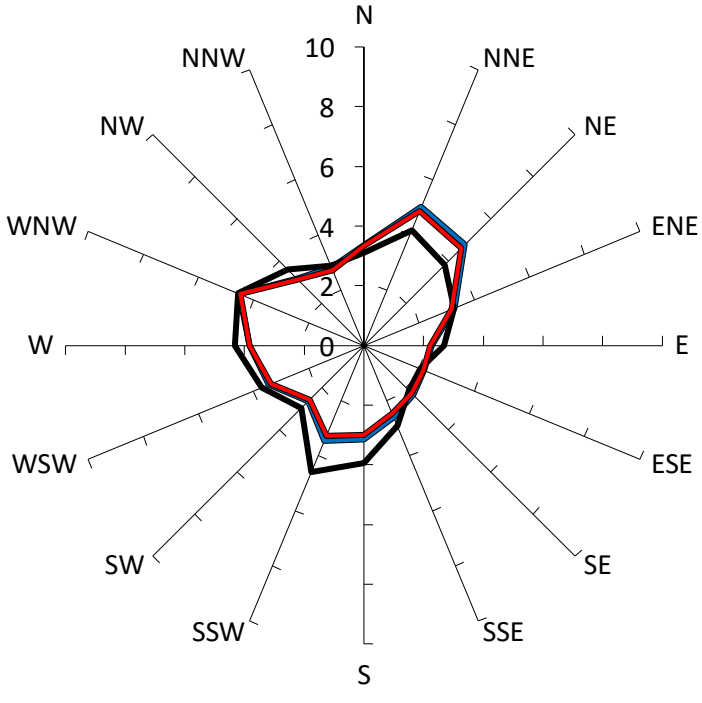


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	16
	Existing Site	< 1%	16
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	16

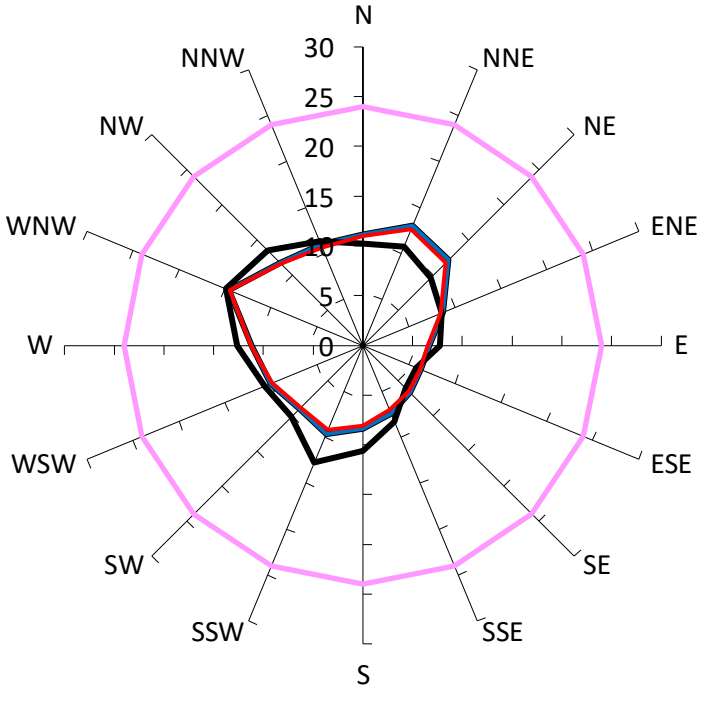
Results for P09

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

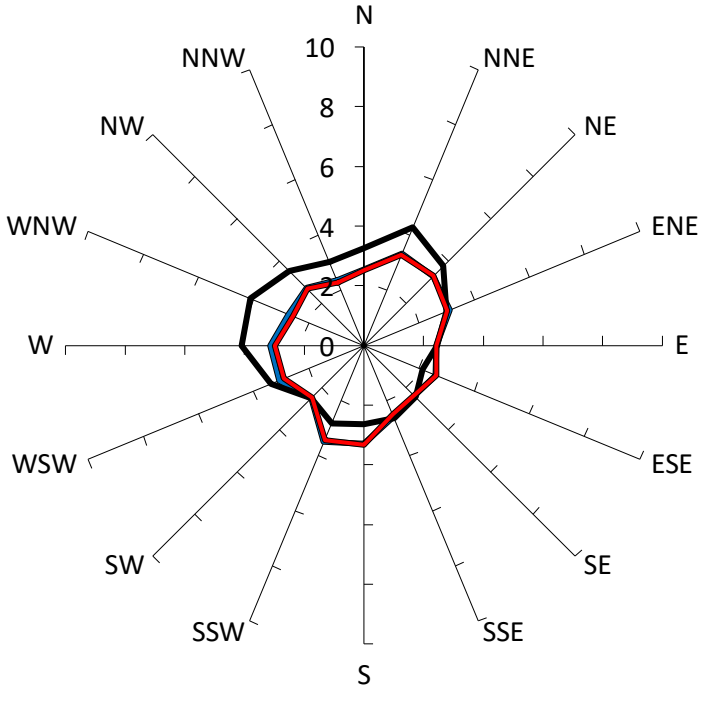


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	15
Existing Site	< 1%	15
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	14

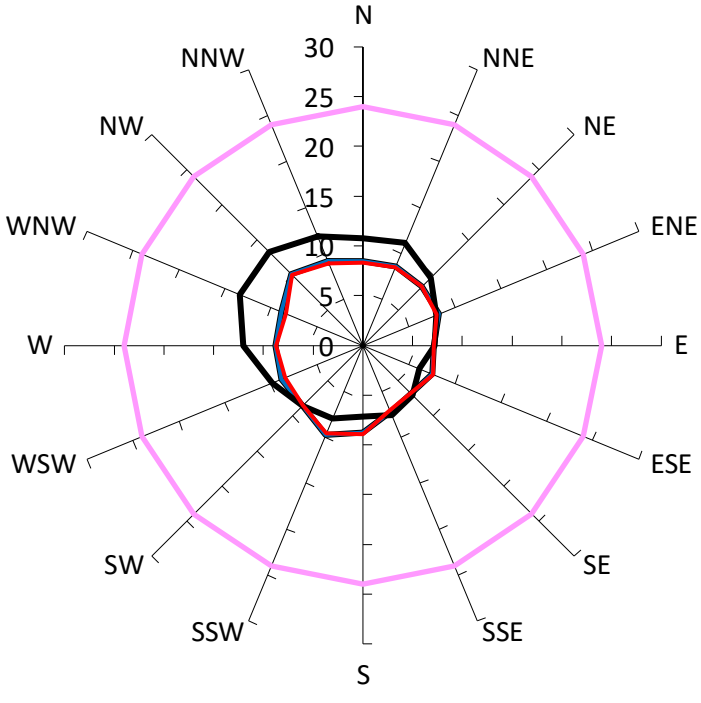
Results for P10

Gust Equivalent Mean (m/s)



Comfort Criteria: 4m/s with 5% probability of exceedence

Maximum Gust (m/s)

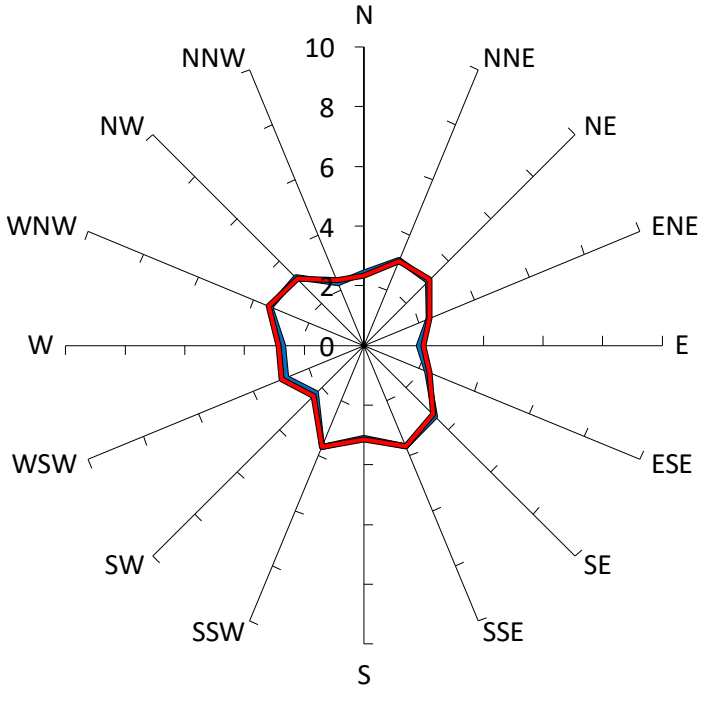


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Sitting Criterion (4m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	3%	10
Existing Site	8%	13
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	3%	10

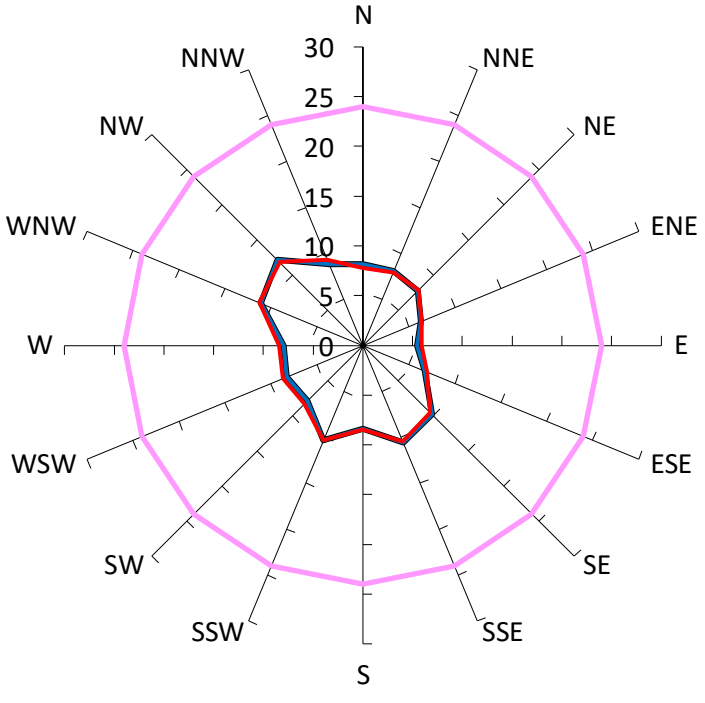
Results for P11

Gust Equivalent Mean (m/s)



Comfort Criteria: 6m/s with 5% probability of exceedence

Maximum Gust (m/s)

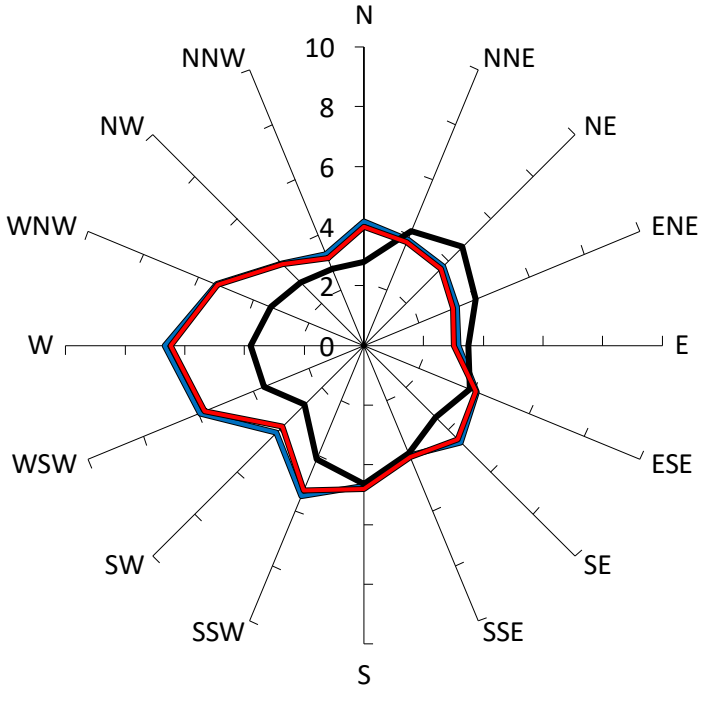


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Standing Criterion (6m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	12
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	12

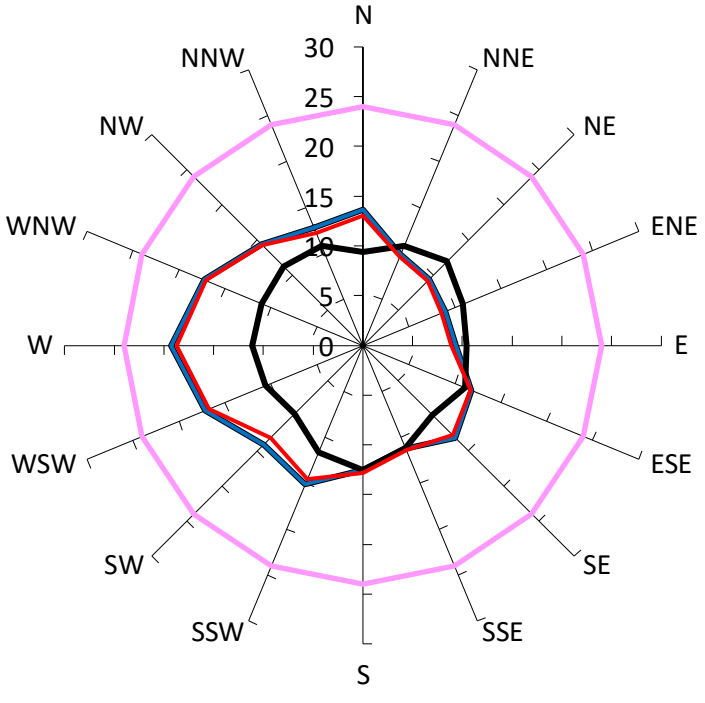
Results for P12

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

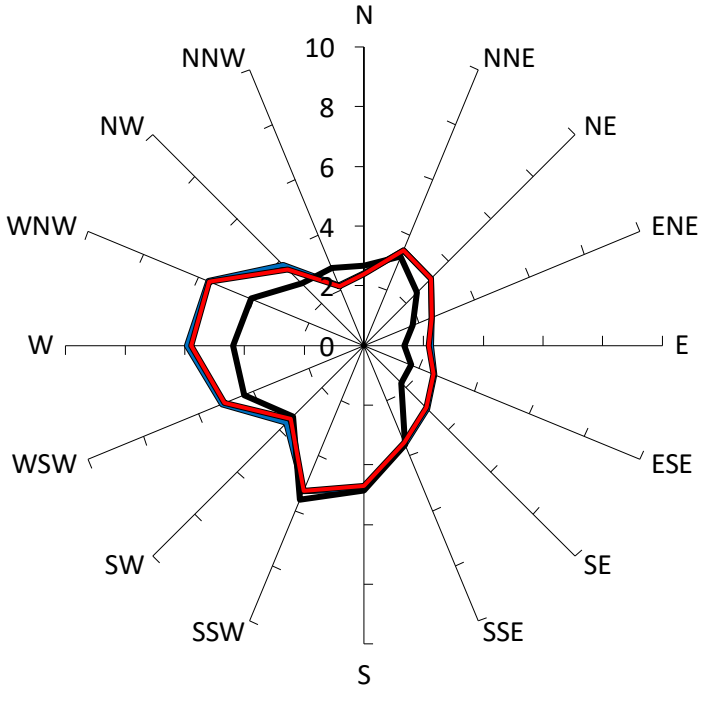


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	19
	Existing Site	< 1%	13
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	19

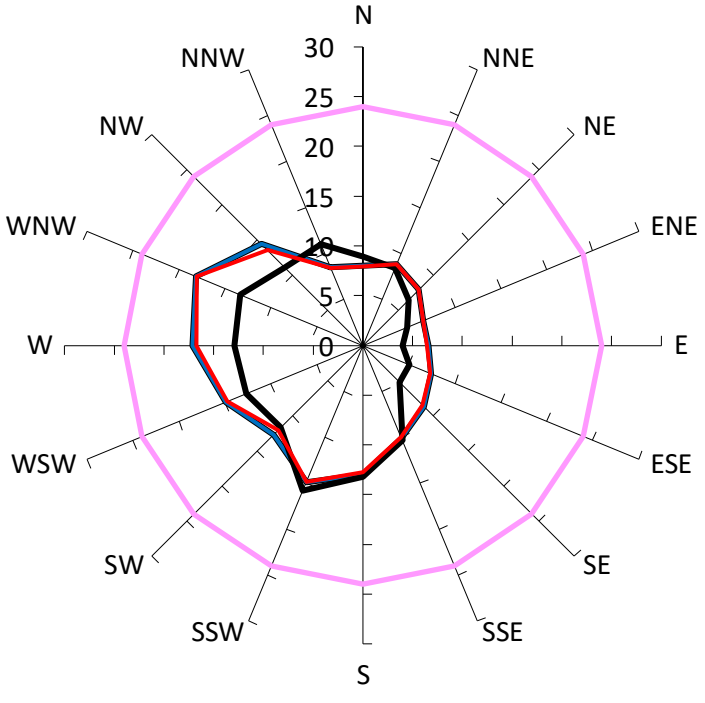
Results for P13

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

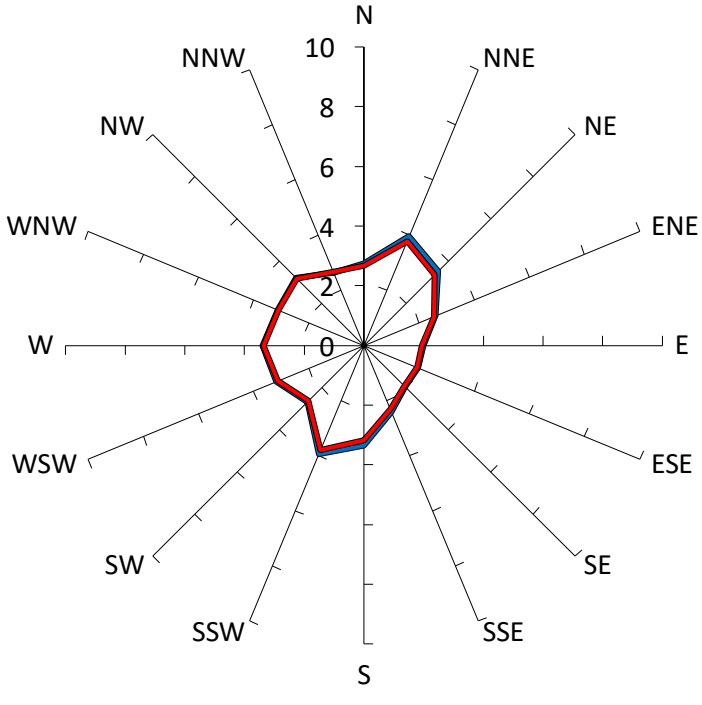


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	18
Existing Site	< 1%	16
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	18

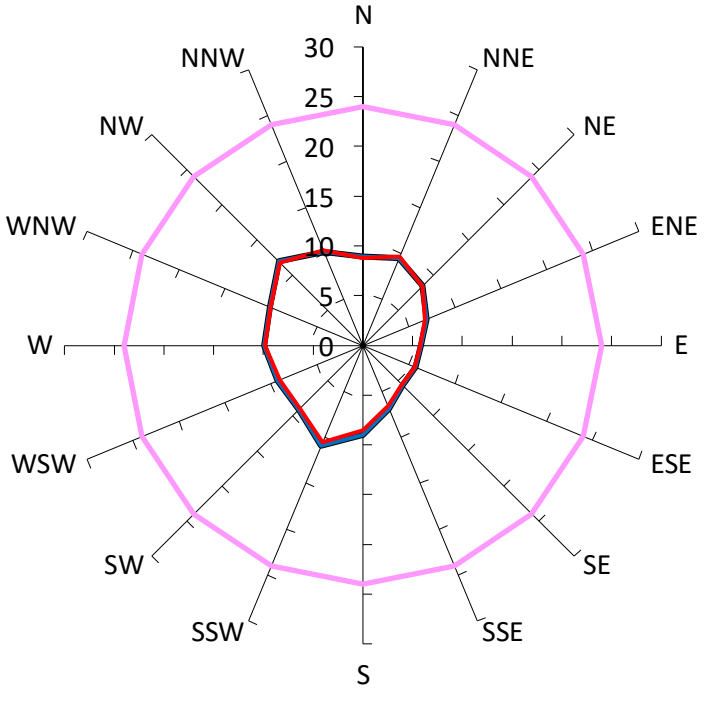
Results for P14

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

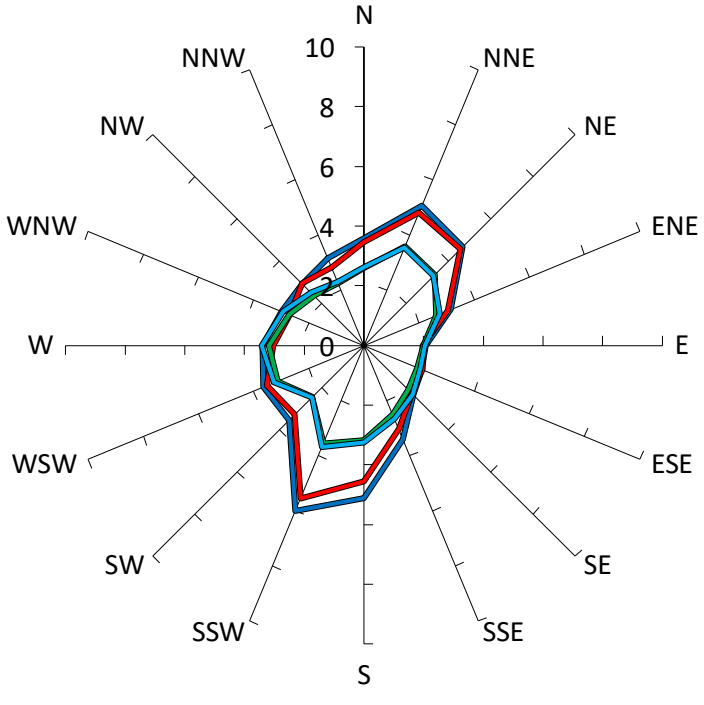


Safety Limit: 24m/s

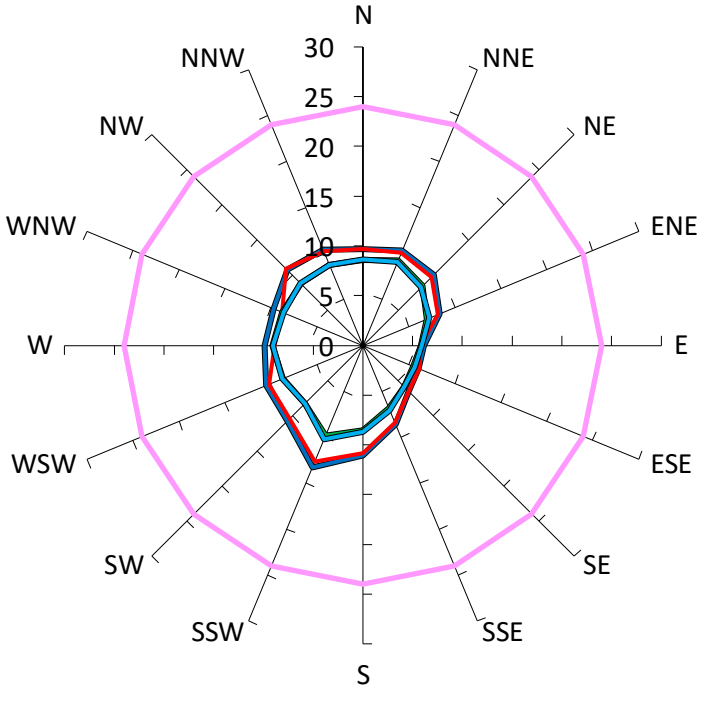
	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	12
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	12

Results for P15

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)



Comfort Criteria: 4m/s with 5% probability of exceedence

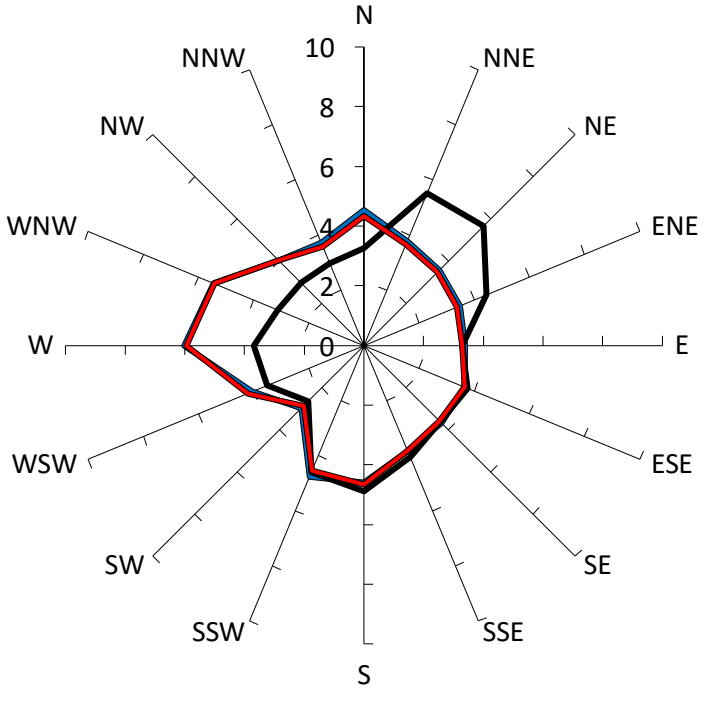


Safety Limit: 24m/s

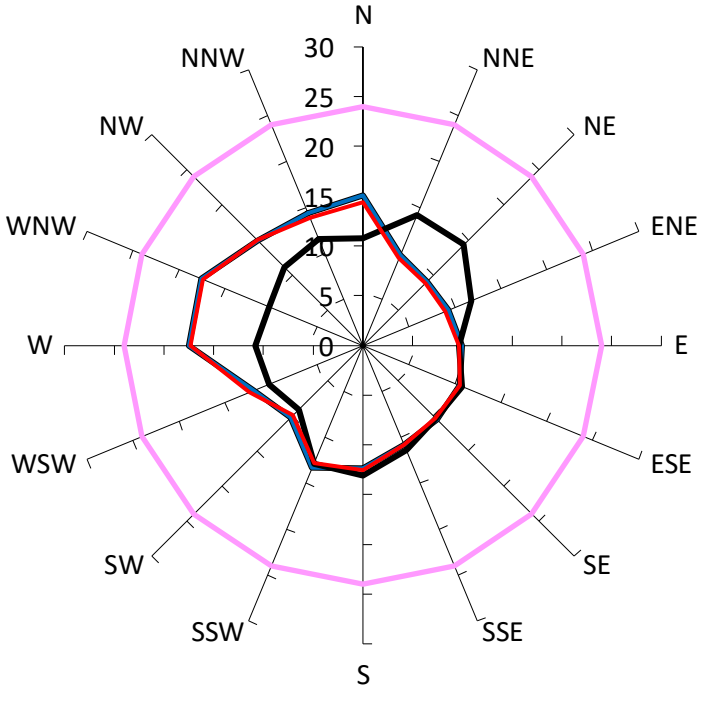
	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Sitting Criterion (4m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	22%	13
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	17%	13
	Treatment Scenario 2 (proposed development): 2m high localised, impermeable wind screens (tenant operated if necessary)	3%	10
	Treatment Scenario 2 (proposed development with clothing precinct): 2m high localised, impermeable wind screens (tenant operated if necessary)	3%	10

Results for P16

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

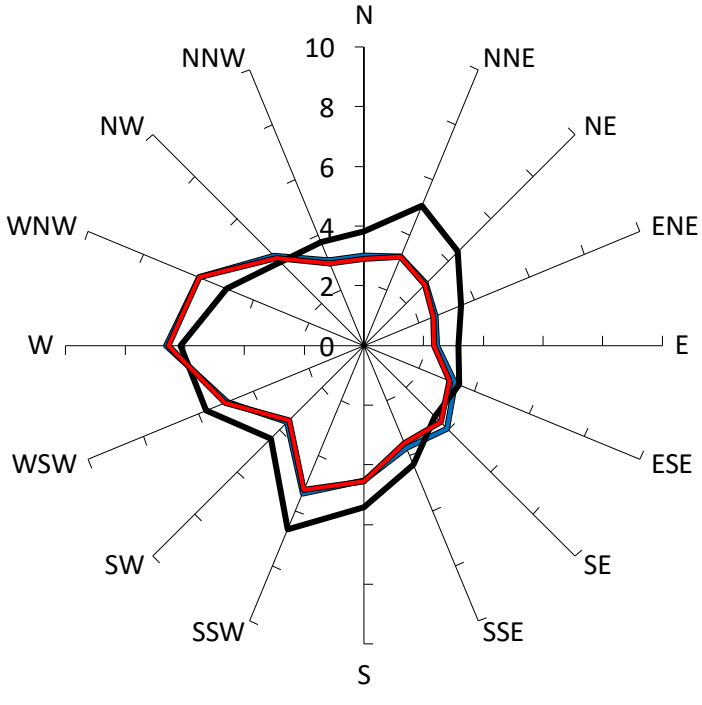


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	18
	Existing Site	< 1%	14
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	17

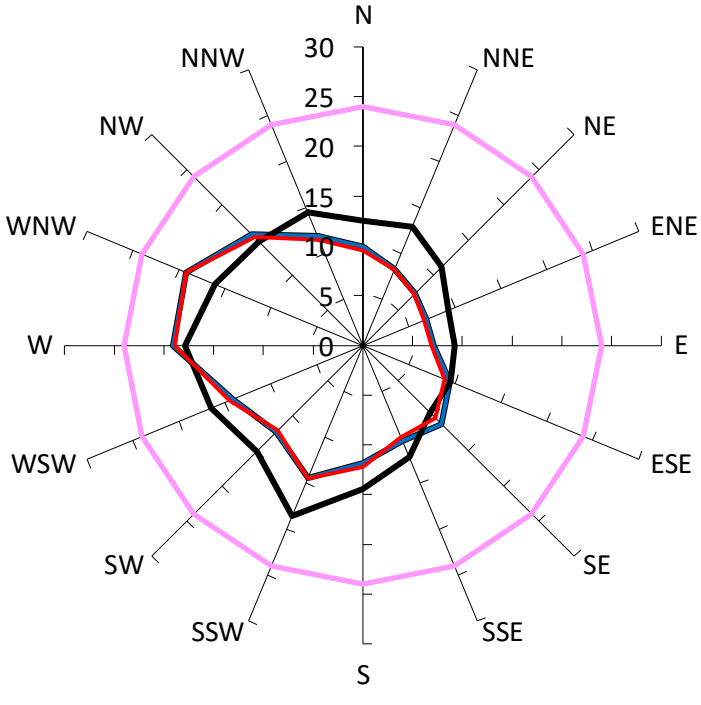
Results for P17

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

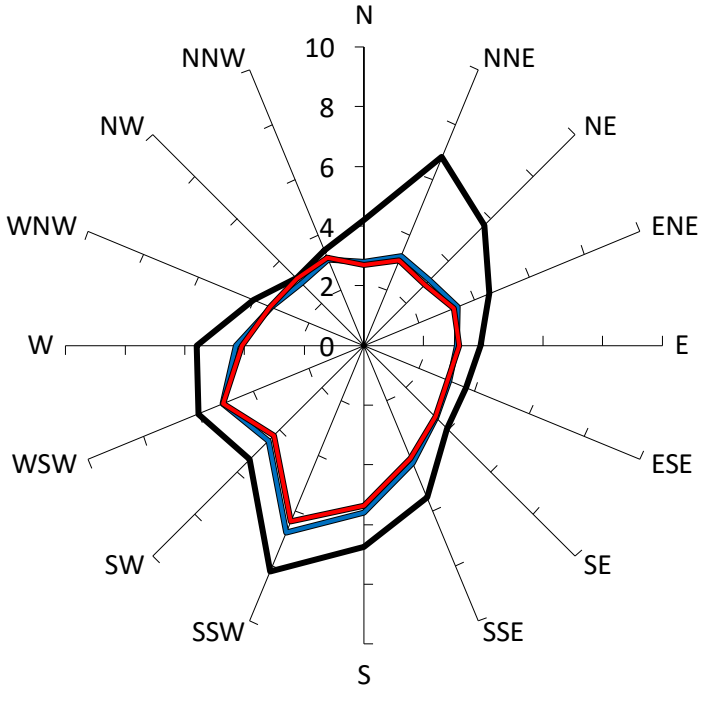


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	19
	Existing Site	1%	19
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	19

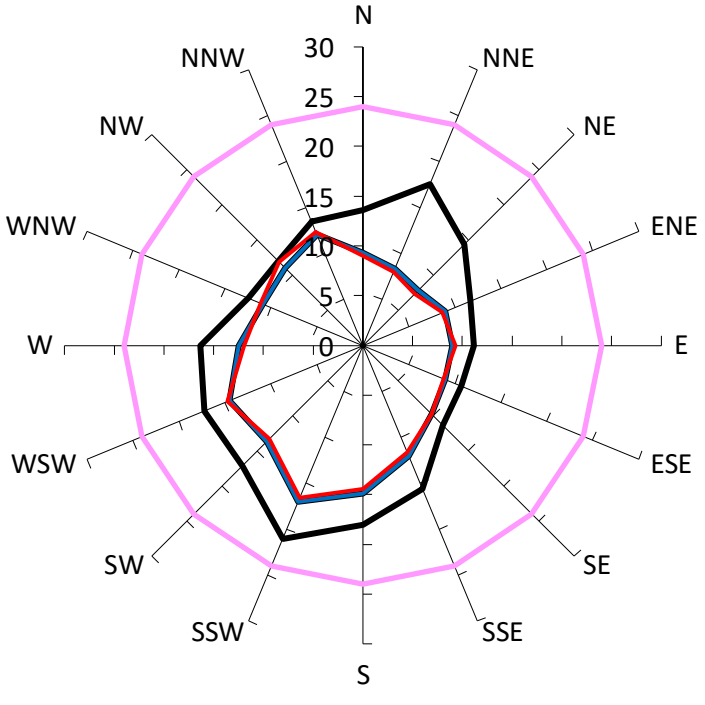
Results for P18

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

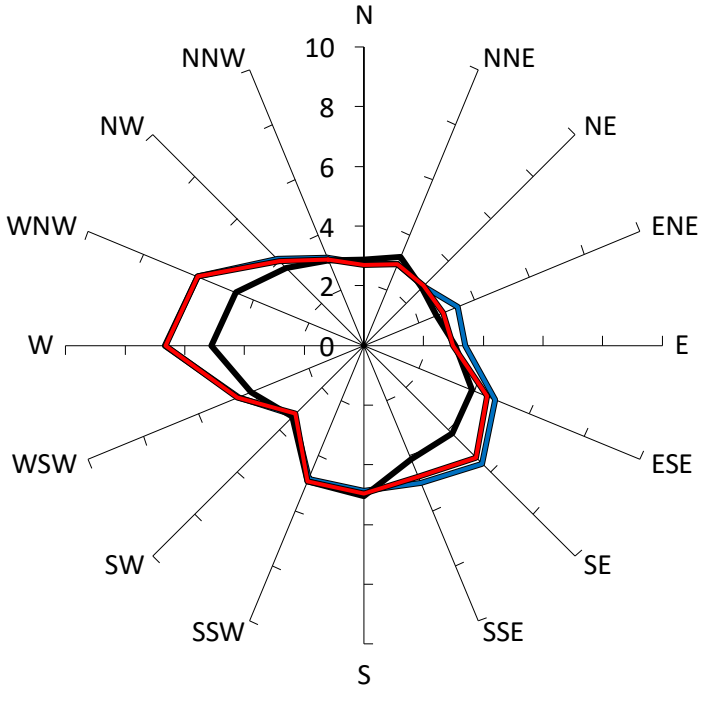


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	17
Existing Site	3%	21
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	17

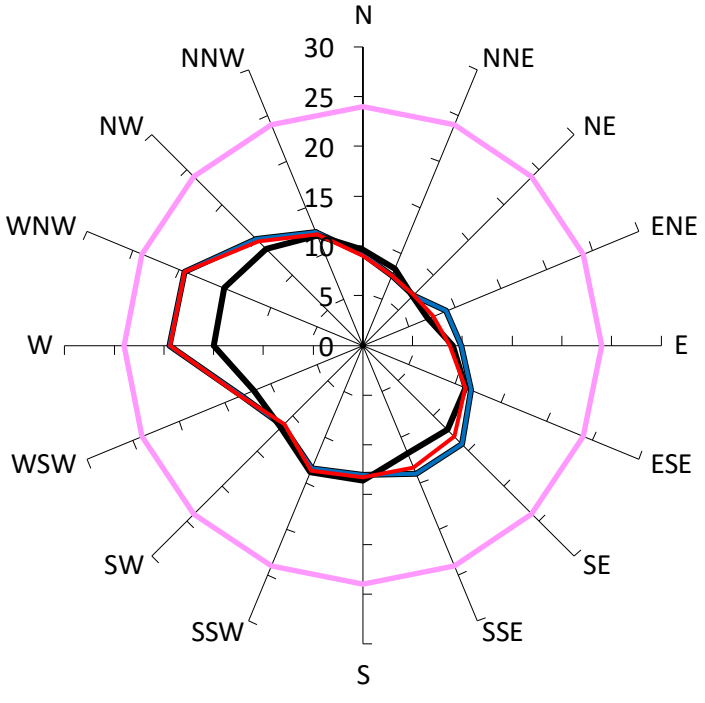
Results for P19

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

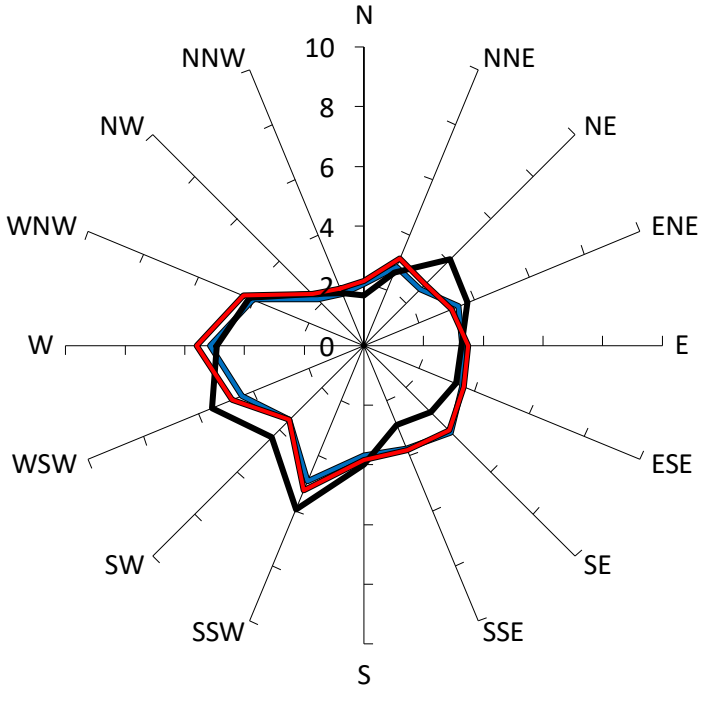


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	19
Existing Site	< 1%	15
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	19

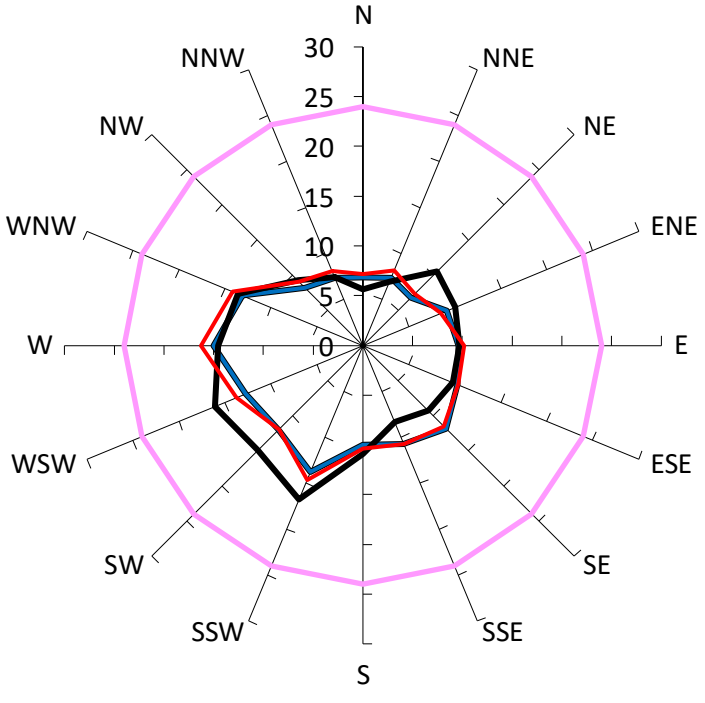
Results for P20

Gust Equivalent Mean (m/s)



Comfort Criteria: 6m/s with 5% probability of exceedence

Maximum Gust (m/s)

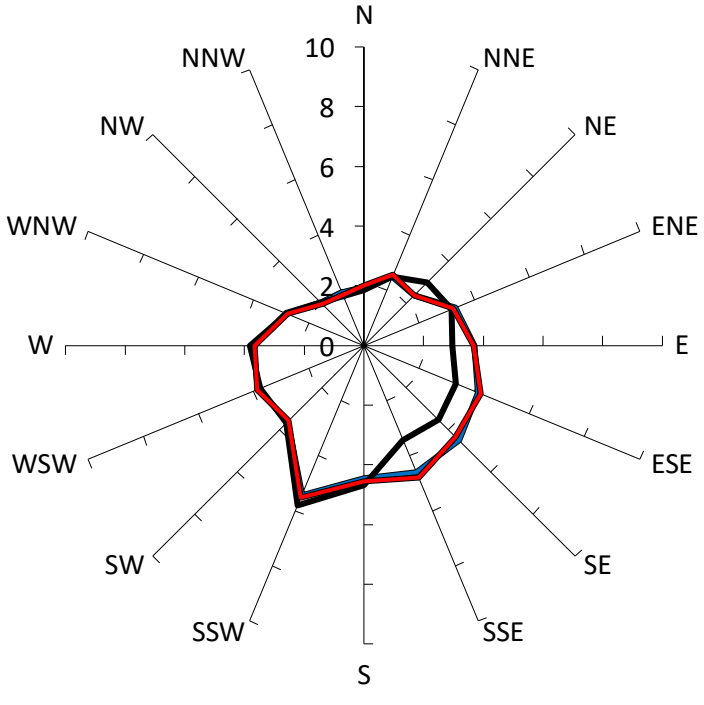


Safety Limit: 24m/s

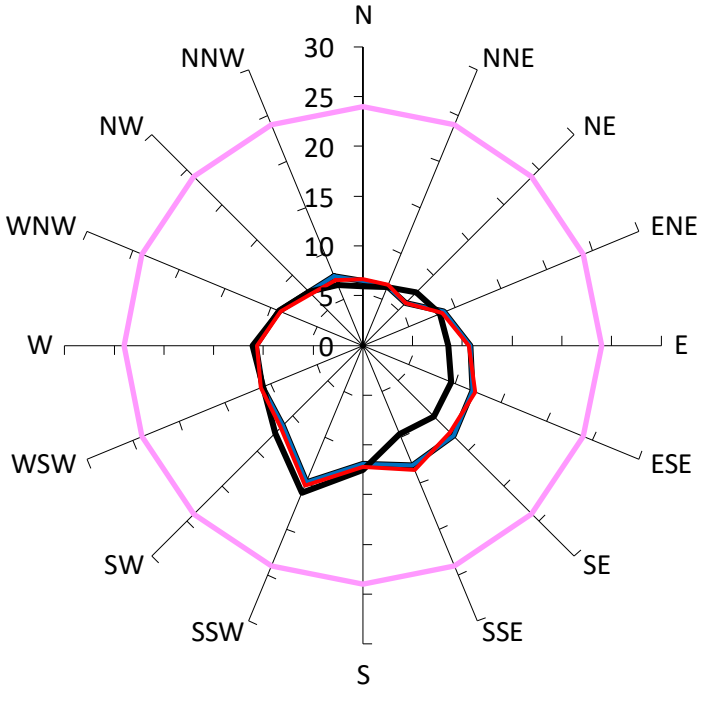
Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Standing Criterion (6m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	15
Existing Site	3%	17
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	2%	16

Results for P21

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)



Comfort Criteria: 6m/s with 5% probability of exceedence

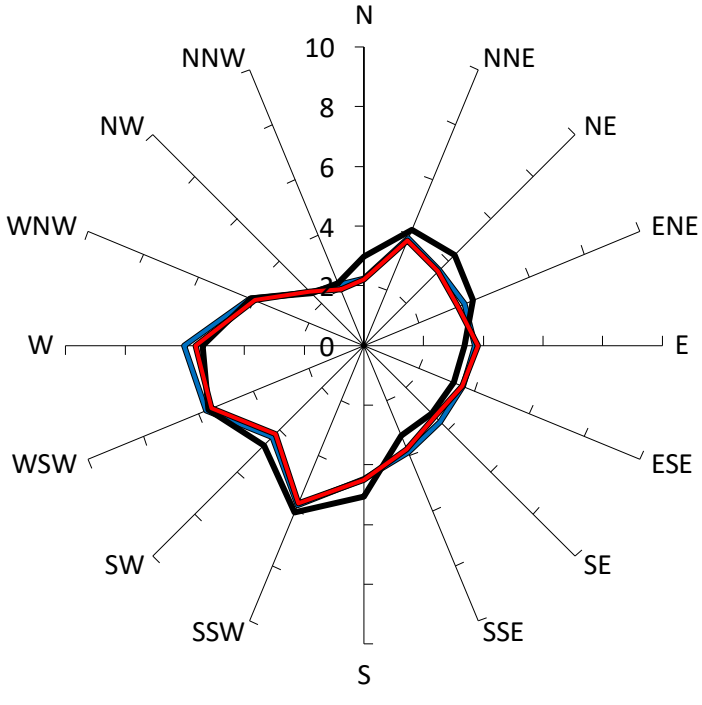


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Standing Criterion (6m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	2%	15
	Existing Site	1%	16
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	2%	15

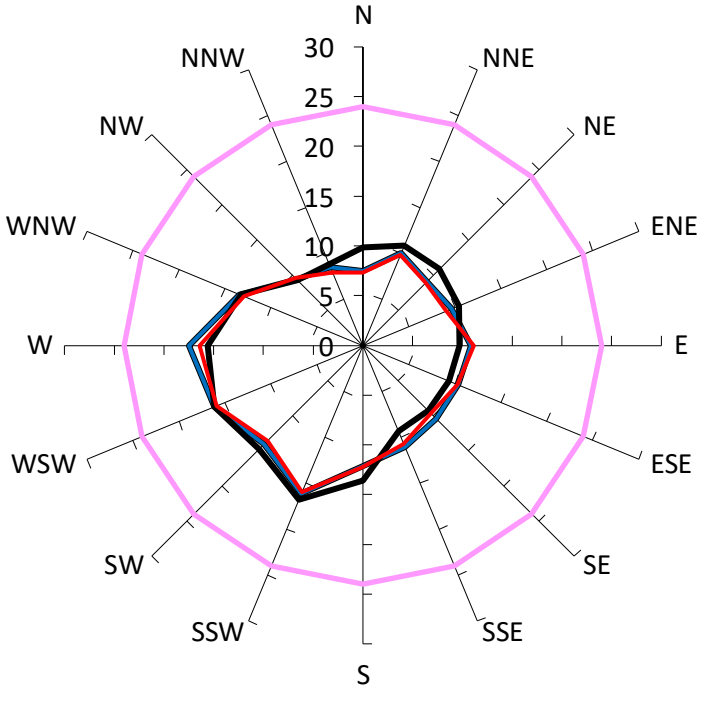
Results for P22

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

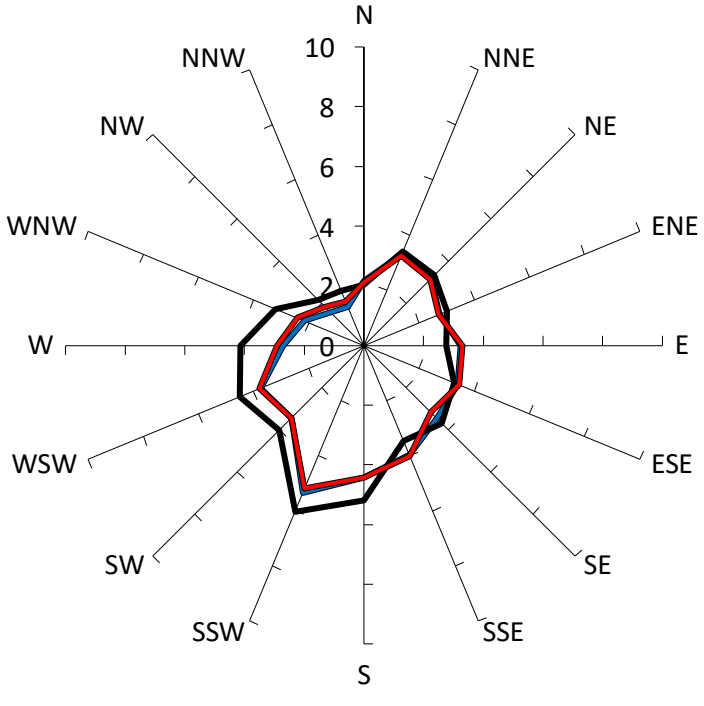


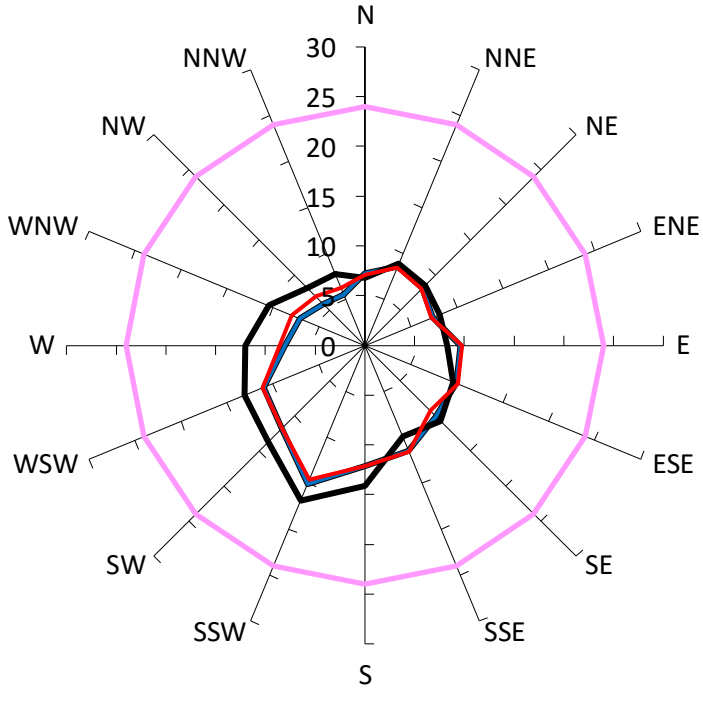
Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	17
	Existing Site	1%	17
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	16

Results for P23

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)





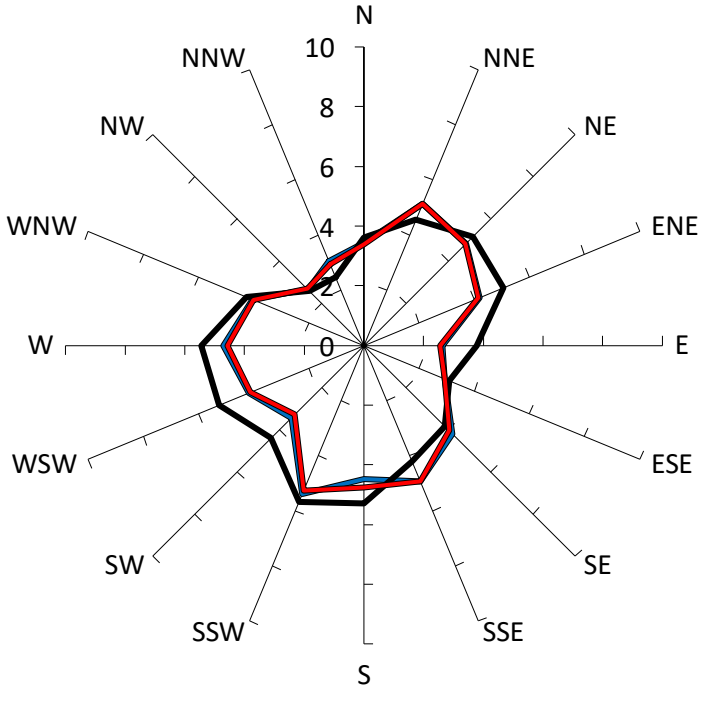
Comfort Criteria: 8m/s with 5% probability of exceedence

Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	15
	Existing Site	< 1%	17
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	15

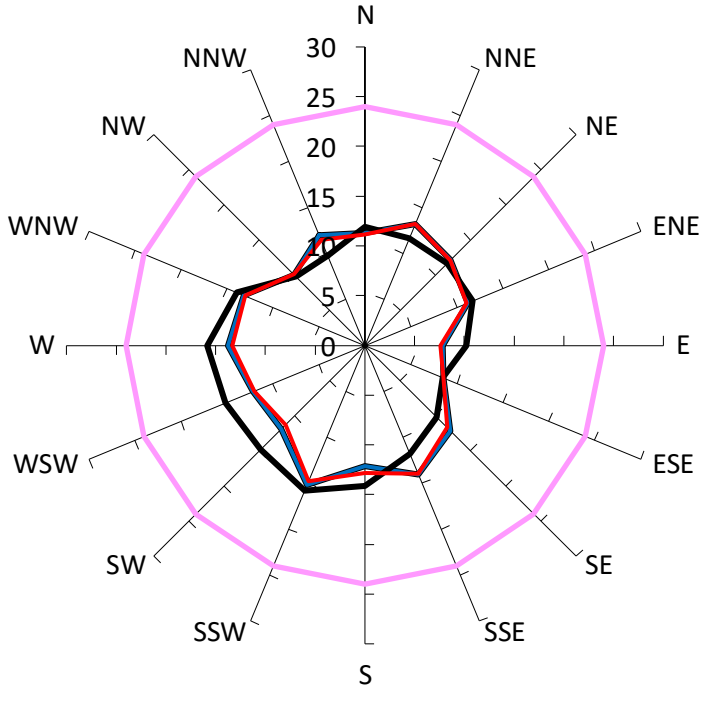
Results for P24

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

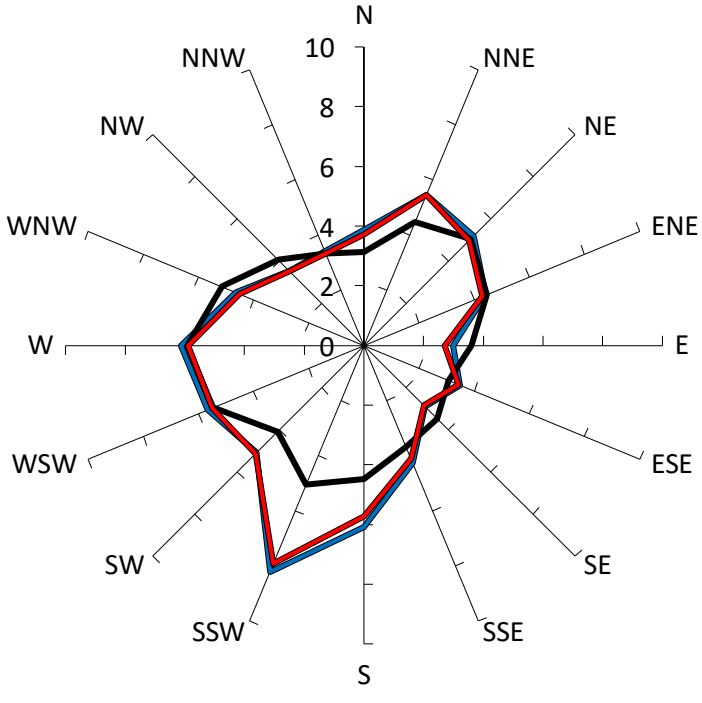


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	15
Existing Site	< 1%	16
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	15

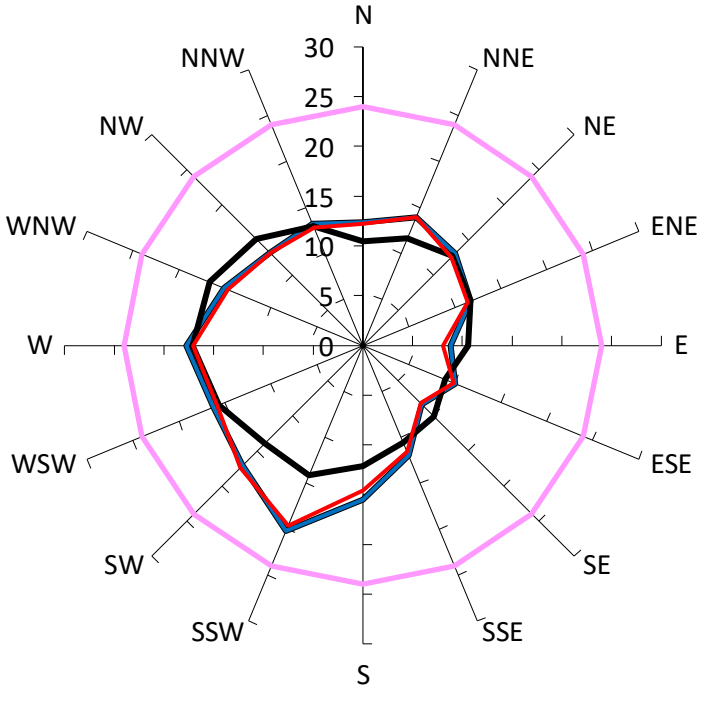
Results for P25

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

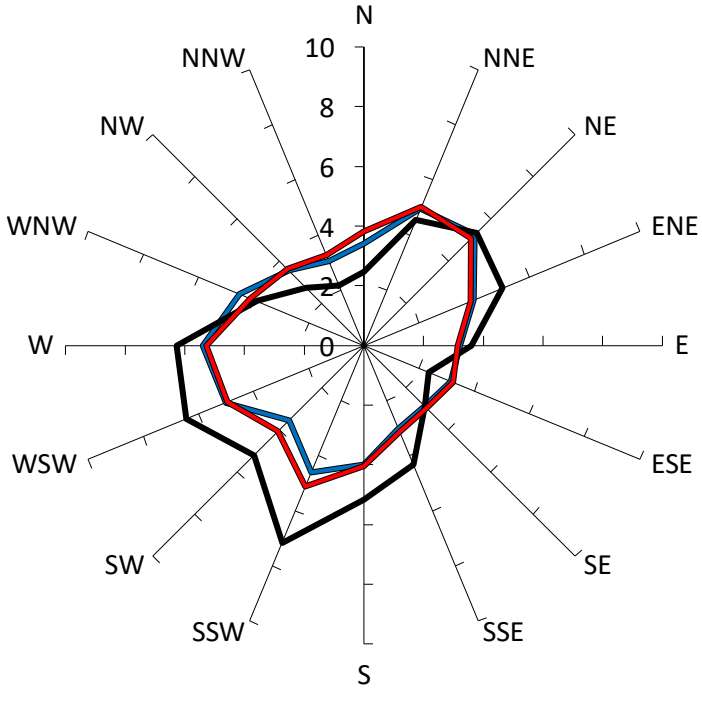


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	2%	20
Existing Site	1%	17
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	2%	20

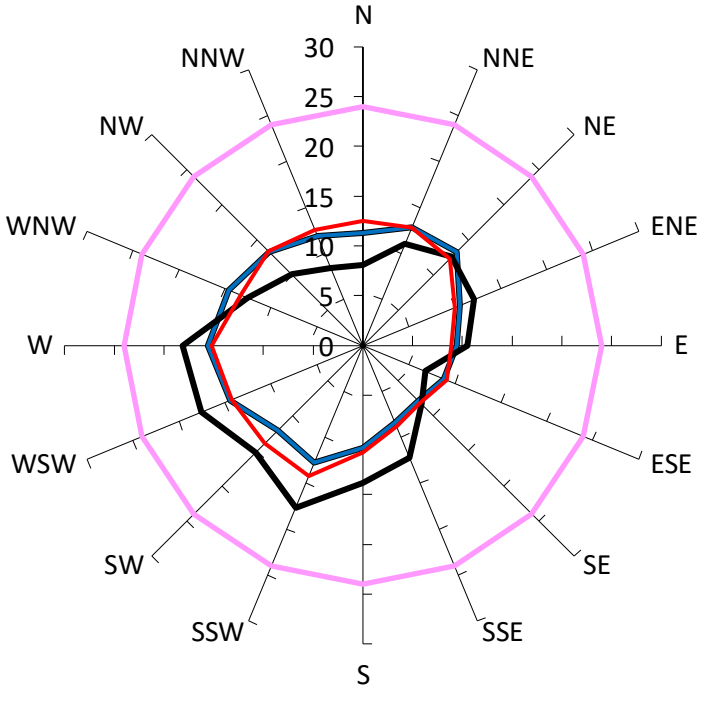
Results for P26

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

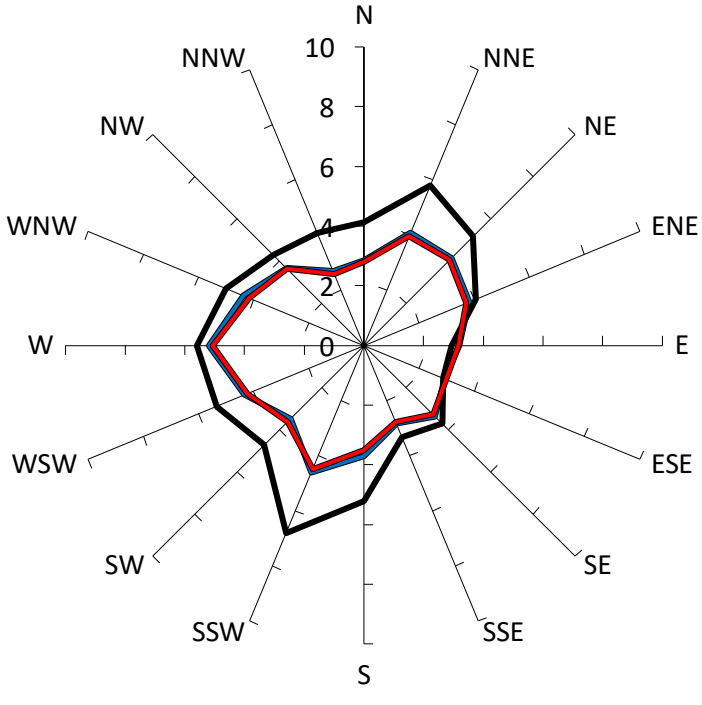


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	16
	Existing Site	1%	18
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	15

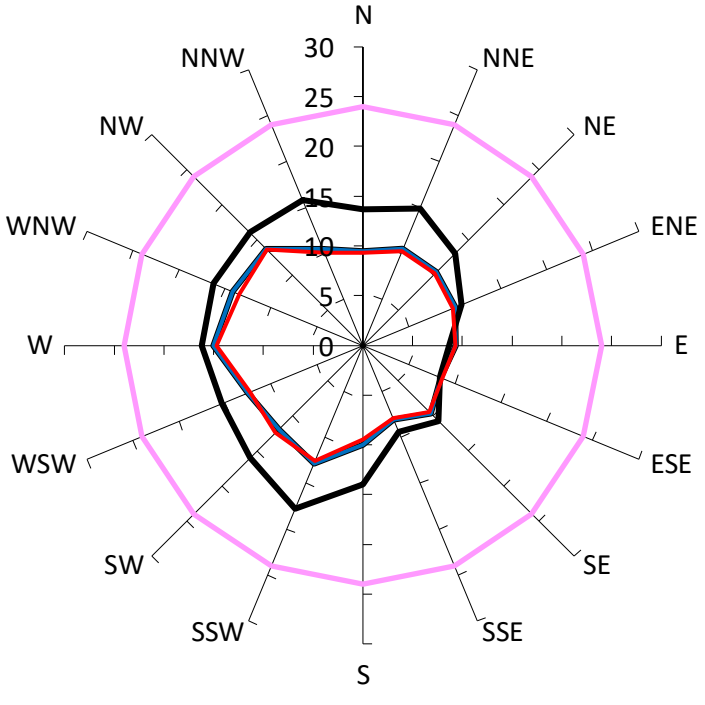
Results for P27

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

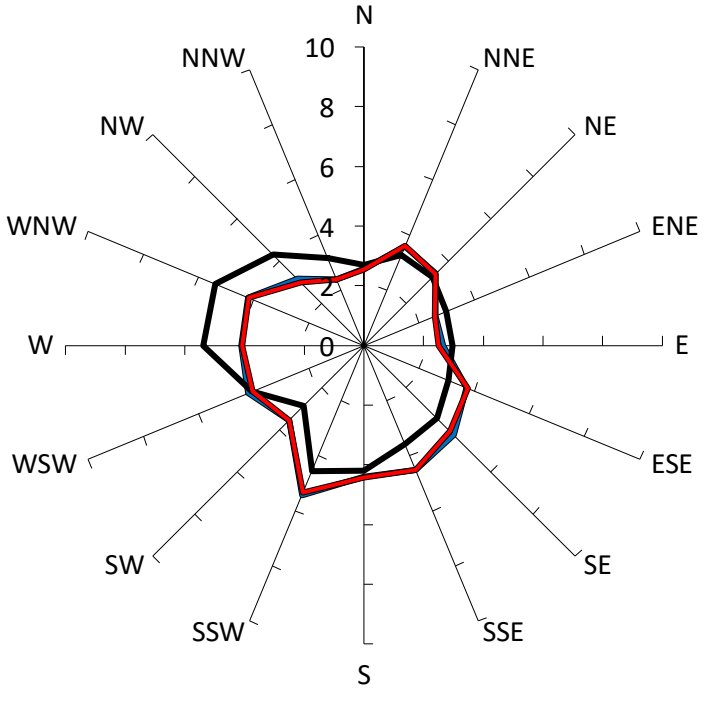


Safety Limit: 24m/s

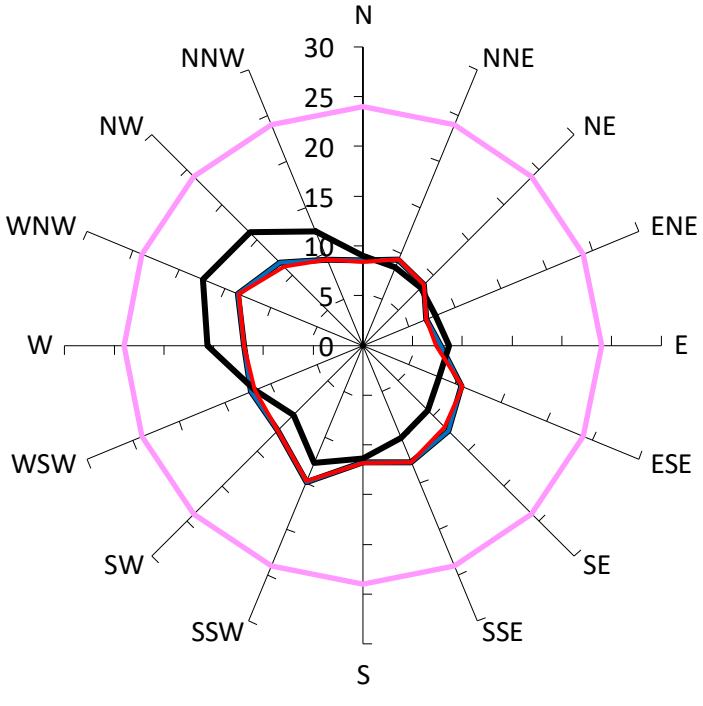
Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	15
Existing Site	1%	18
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	15

Results for P28

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

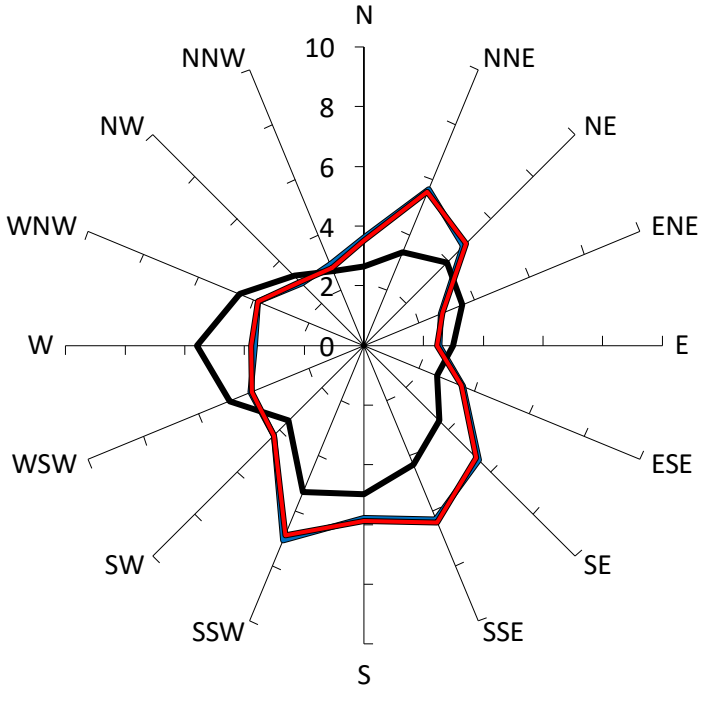


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	15
	Existing Site	< 1%	17
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	15

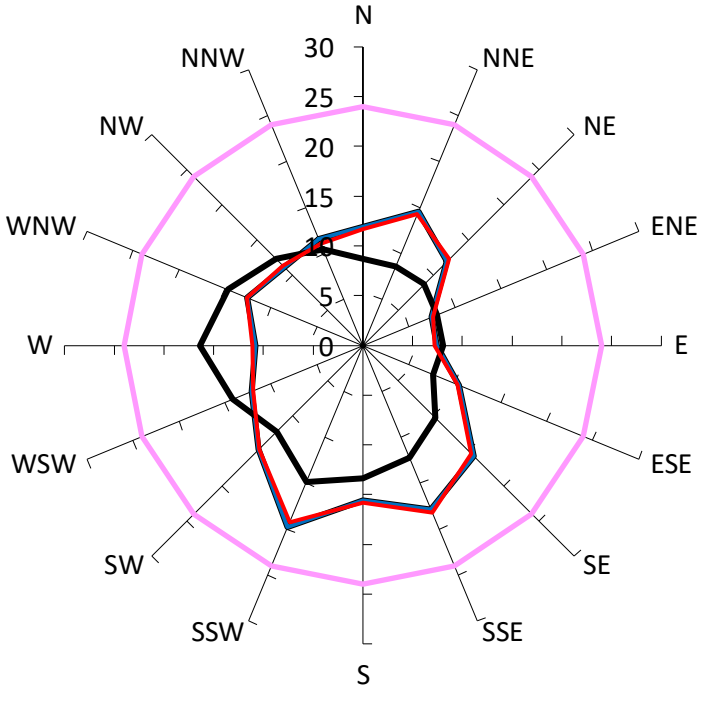
Results for P29

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

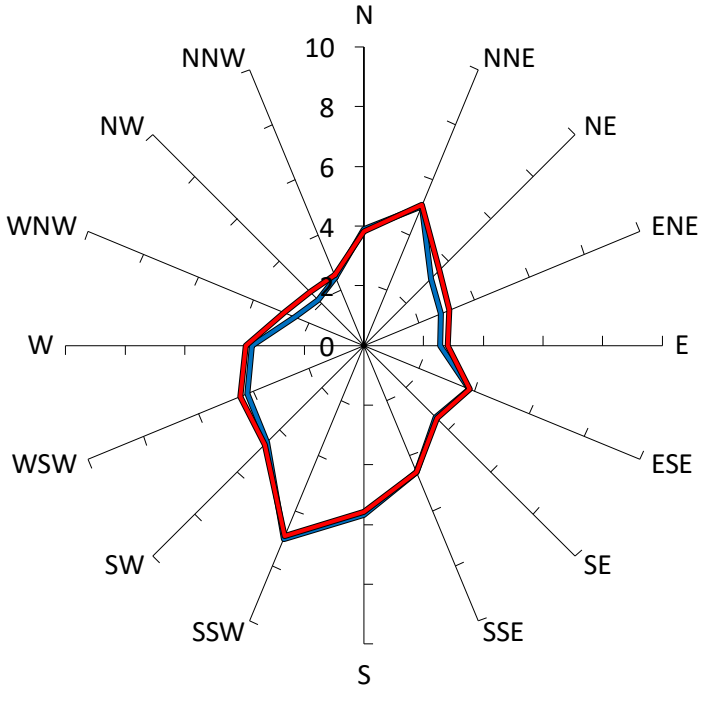


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	20
Existing Site	< 1%	16
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	19

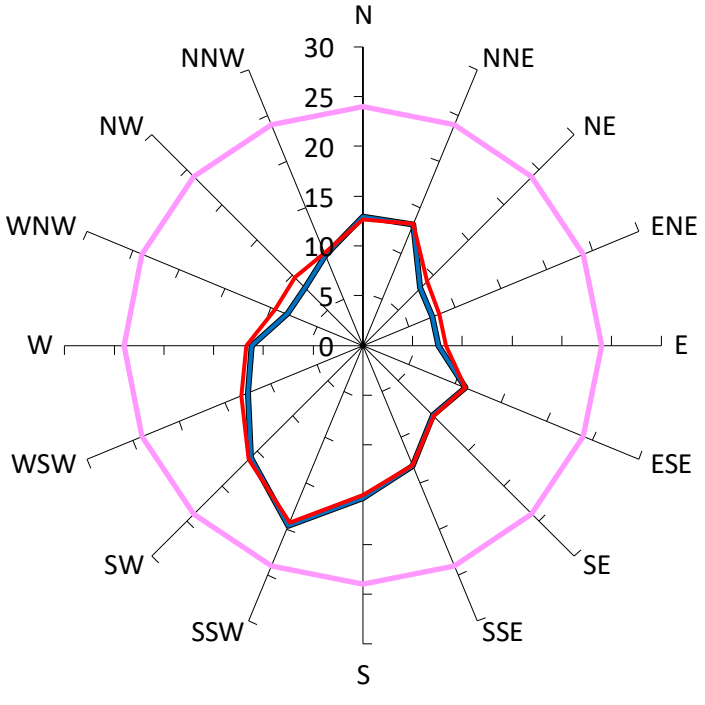
Results for P30

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

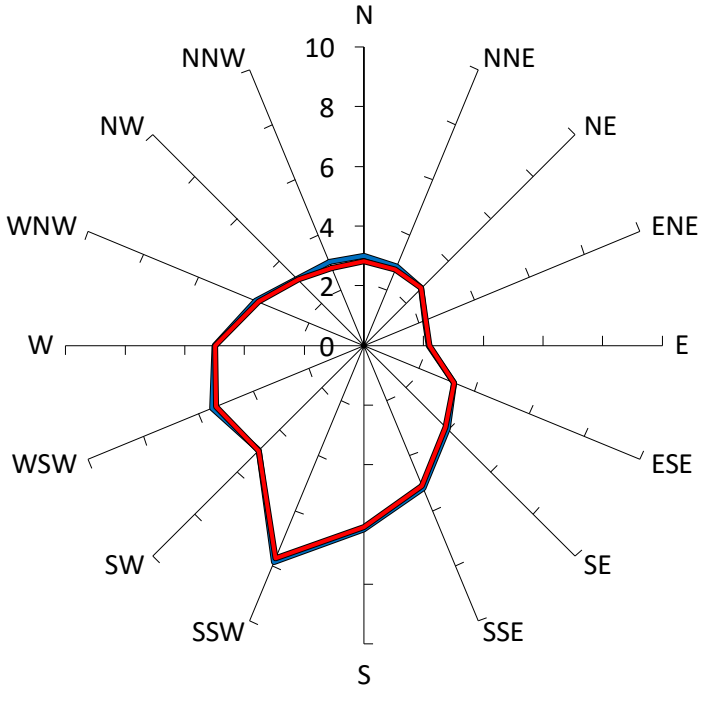


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	20
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	19

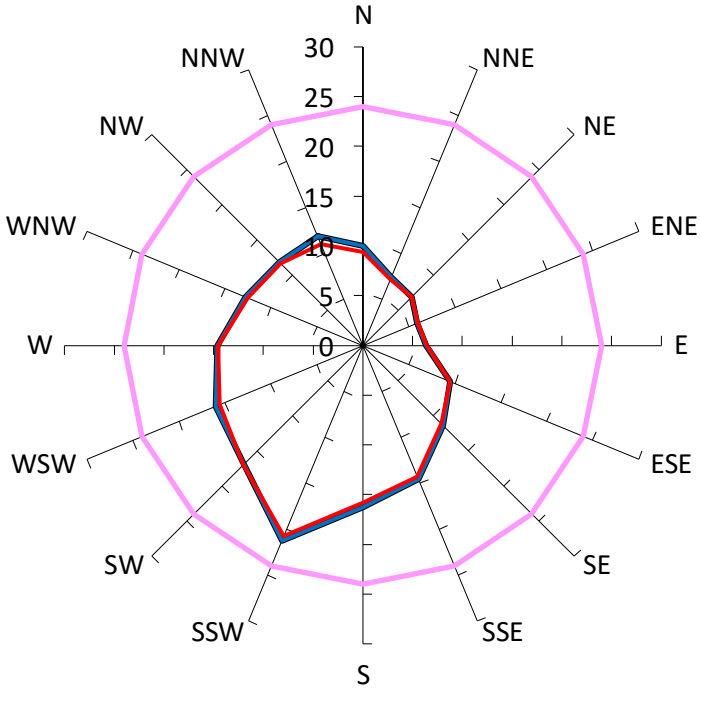
Results for P31

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

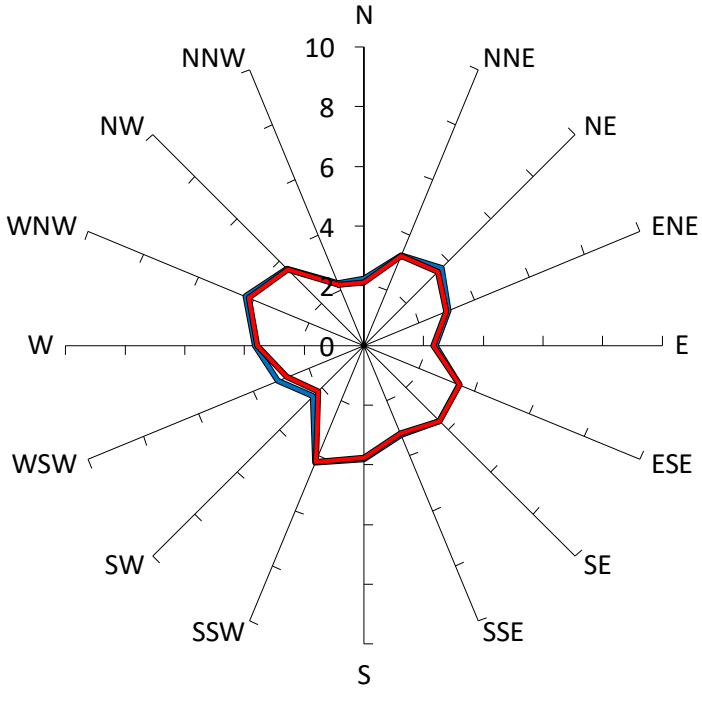


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	2%	21
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	21

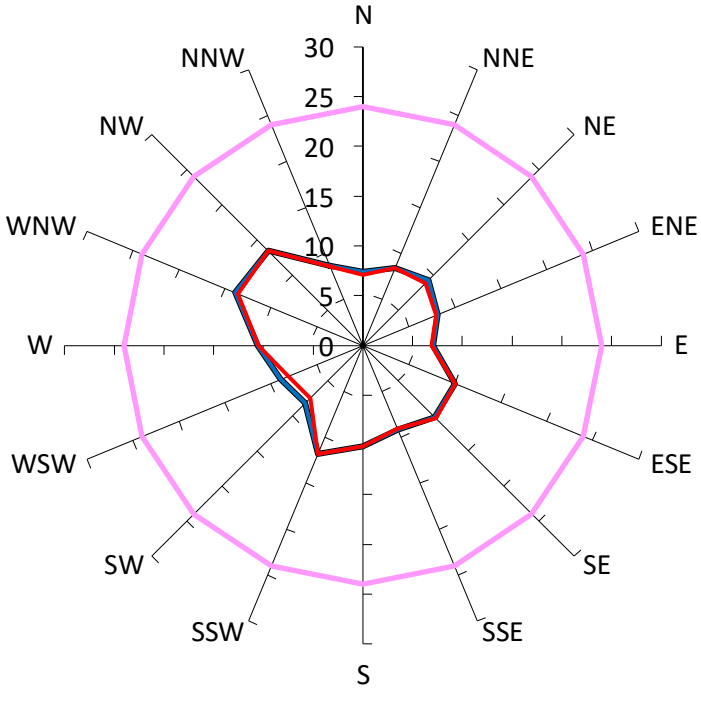
Results for P32

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

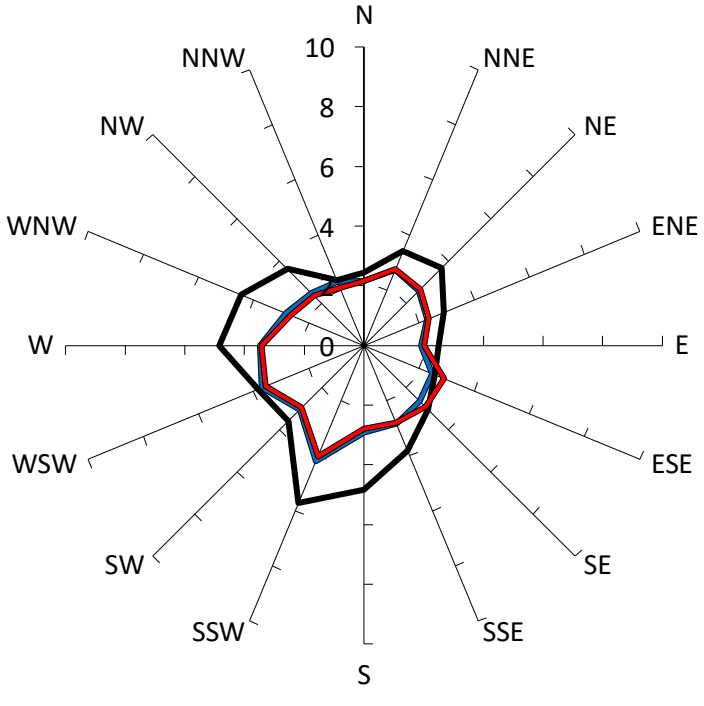


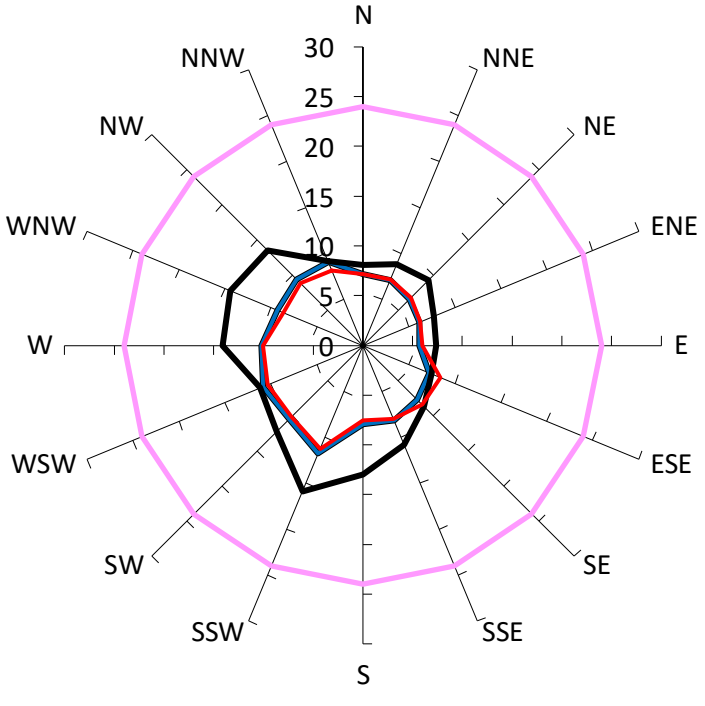
Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	14
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	14

Results for P33

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)





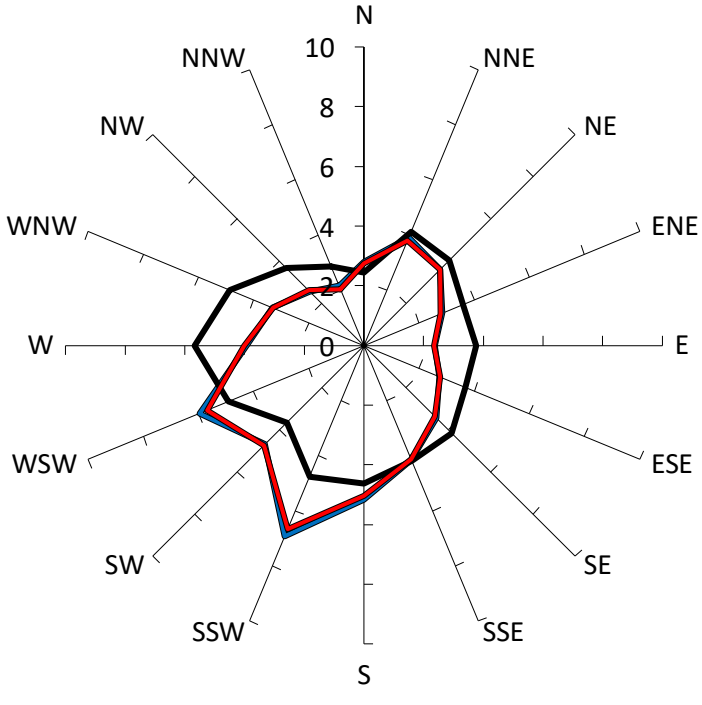
Comfort Criteria: 8m/s with 5% probability of exceedence

Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	12
	Existing Site	< 1%	16
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	11

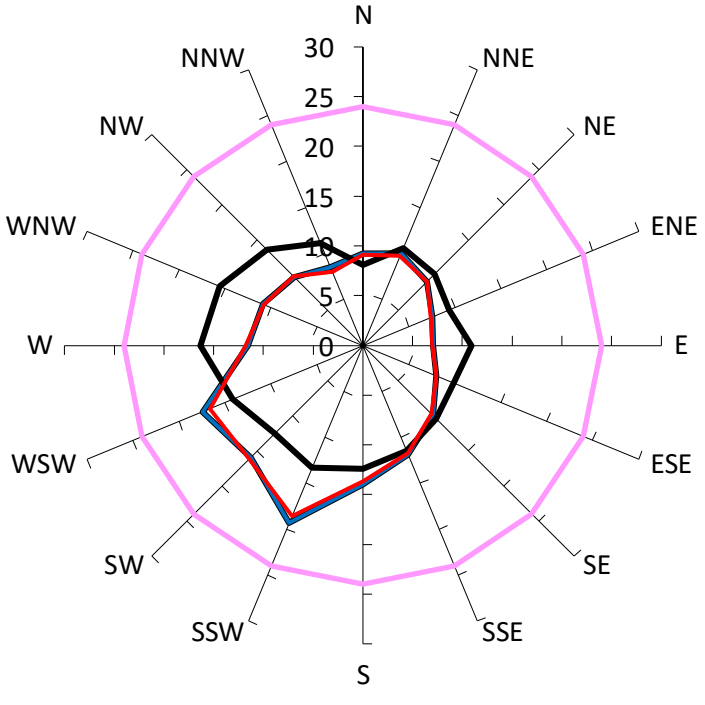
Results for P34

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

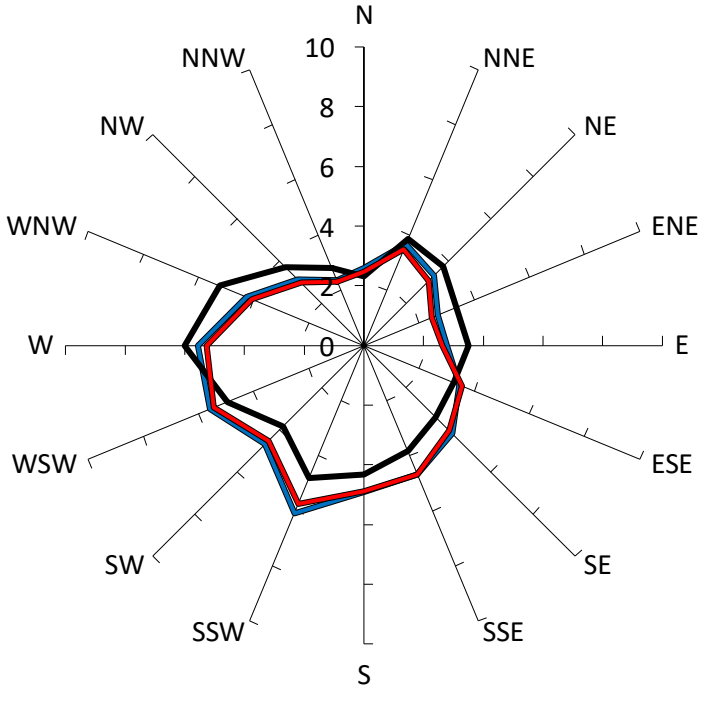


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	19
Existing Site	< 1%	16
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	19

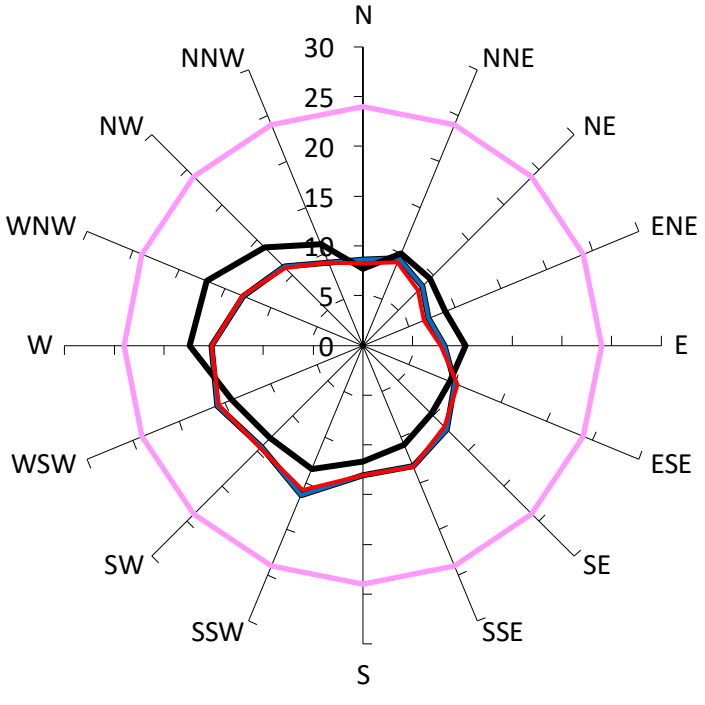
Results for P35

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

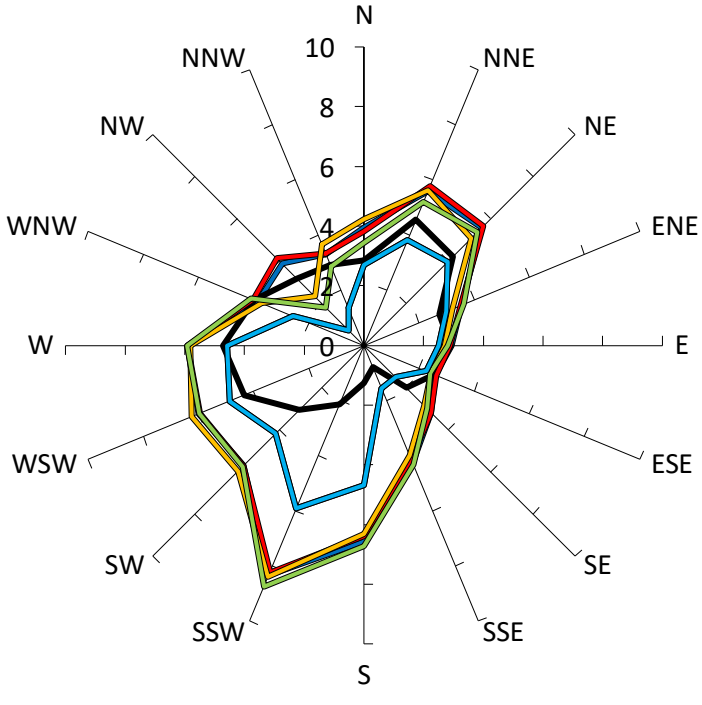


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	16
	Existing Site	< 1%	17
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	16

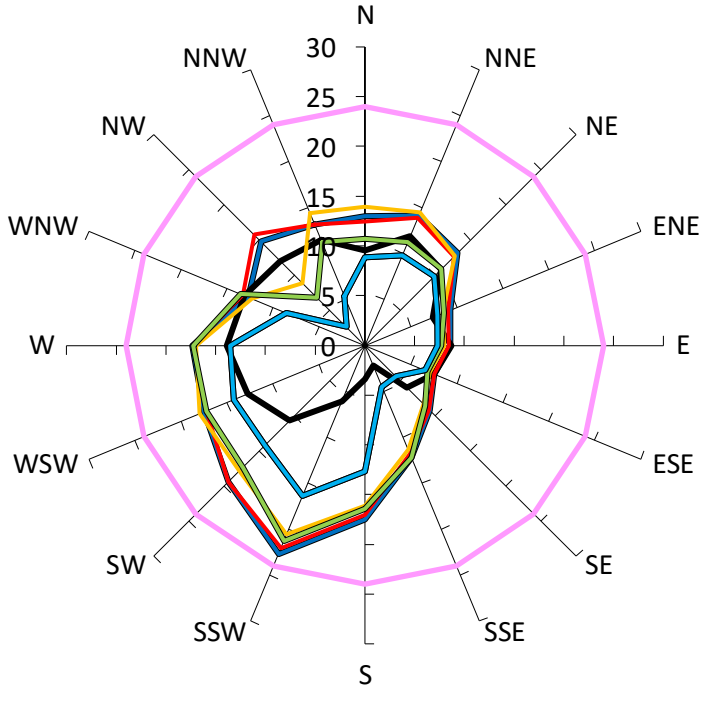
Results for P36

Gust Equivalent Mean (m/s)



Comfort Criteria: 6m/s with 5% probability of exceedence

Maximum Gust (m/s)

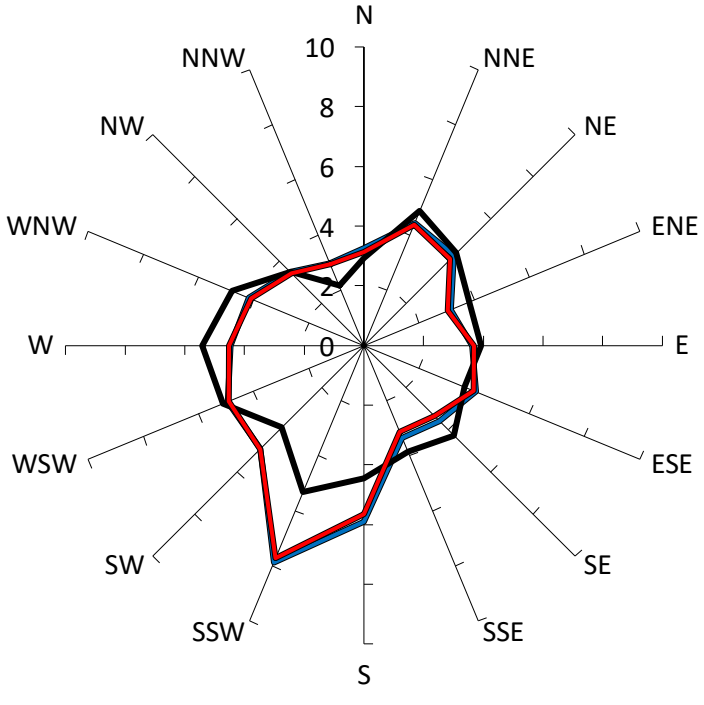


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Standing Criterion (6m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	13%	23
Existing Site	1%	14
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	13%	22
Treatment Scenario 1 (proposed development): 3m wide impermeable awning	12%	21
Treatment Scenario 1 (proposed development with clothing precinct): 3m wide impermeable awning	13%	21
Treatment Scenario 2 (proposed development): 3m wide impermeable awning + tree planting	2%	16
Treatment Scenario 2 (proposed development with clothing precinct): 3m wide impermeable awning + tree planting	2%	16

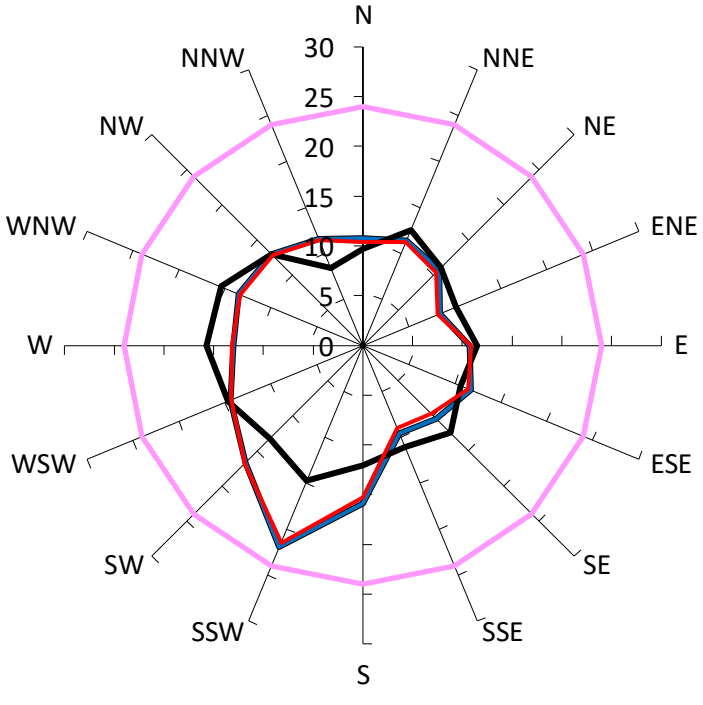
Results for P37

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

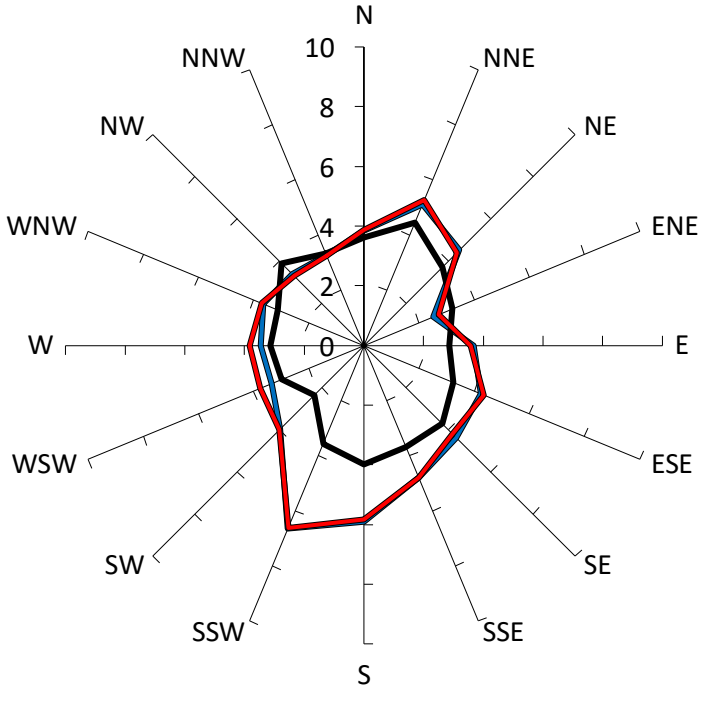


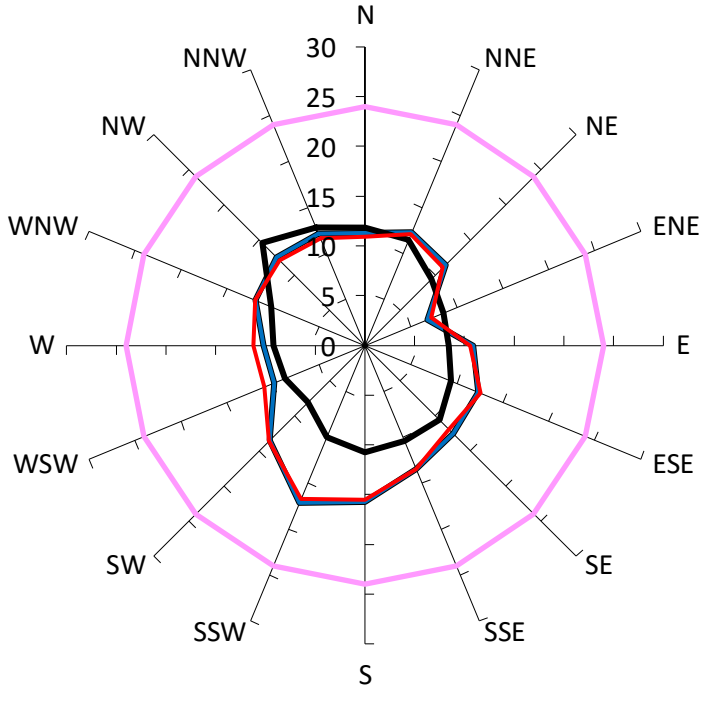
Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	22
Existing Site	< 1%	16
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	21

Results for P38

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)





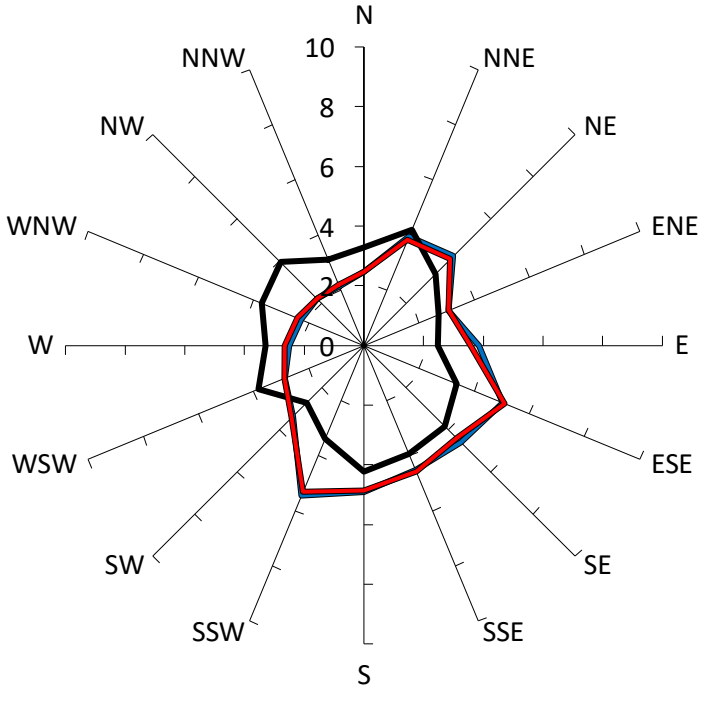
Comfort Criteria: 8m/s with 5% probability of exceedence

Safety Limit: 24m/s

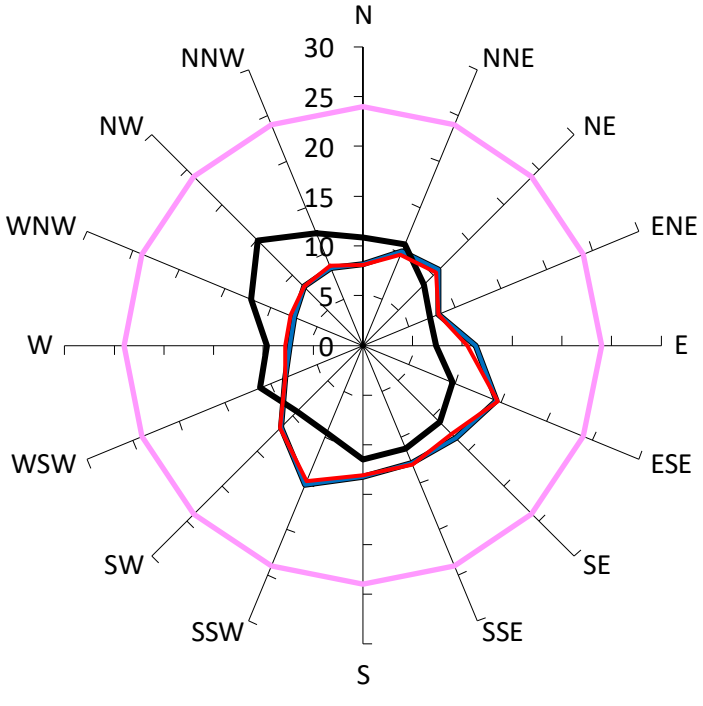
	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	17
	Existing Site	< 1%	15
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	17

Results for P39

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

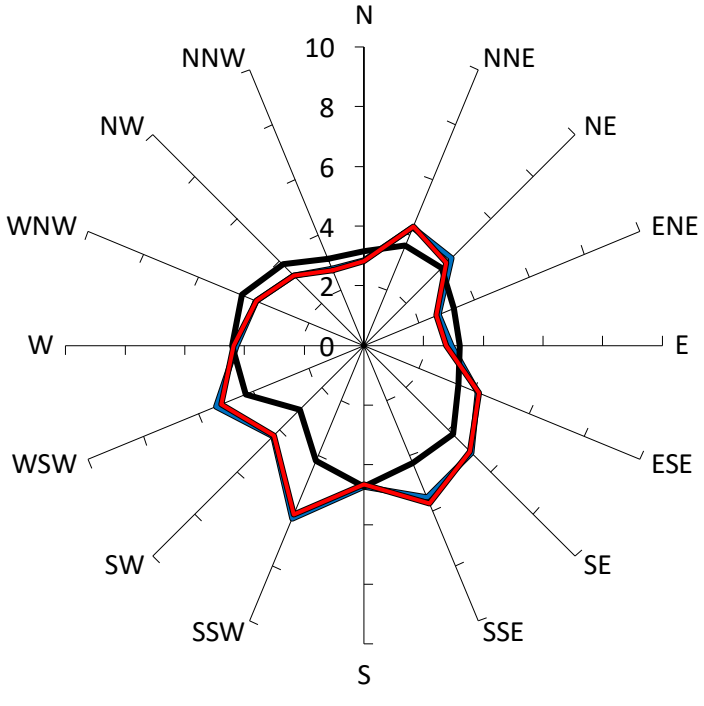


Safety Limit: 24m/s

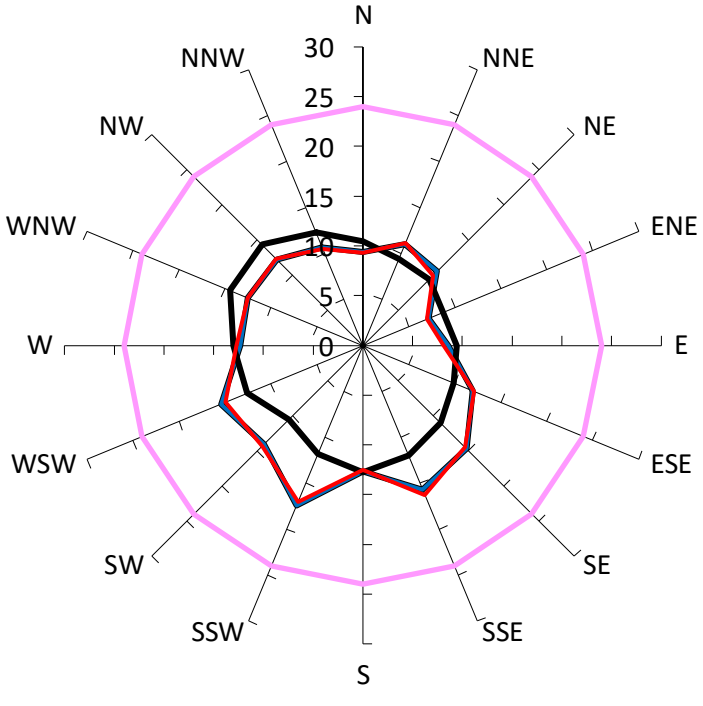
	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	15
	Existing Site	< 1%	15
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	15

Results for P40

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

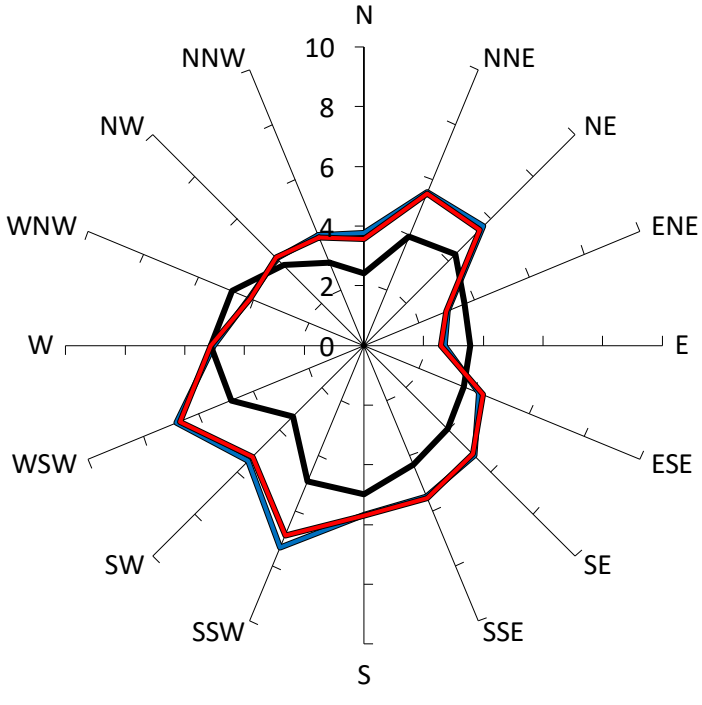


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	17
	Existing Site	< 1%	14
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	17

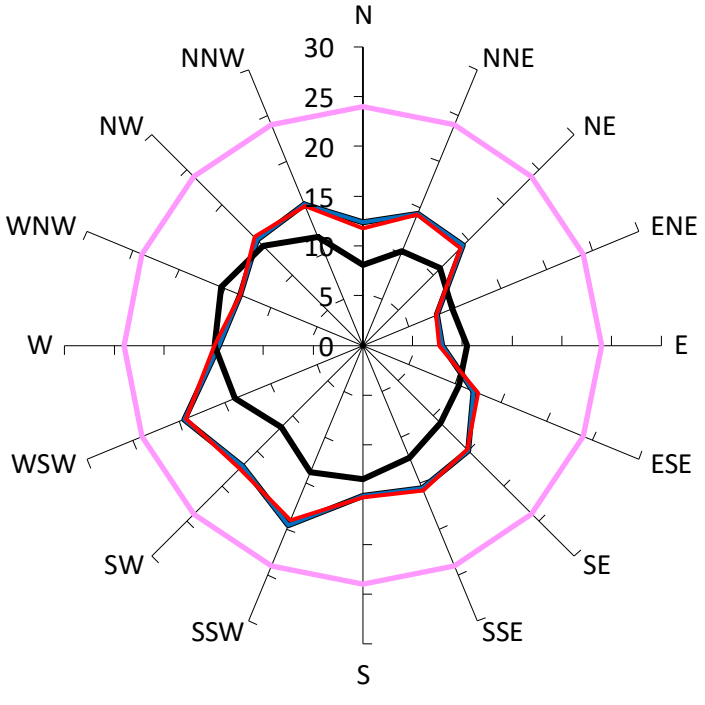
Results for P41

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

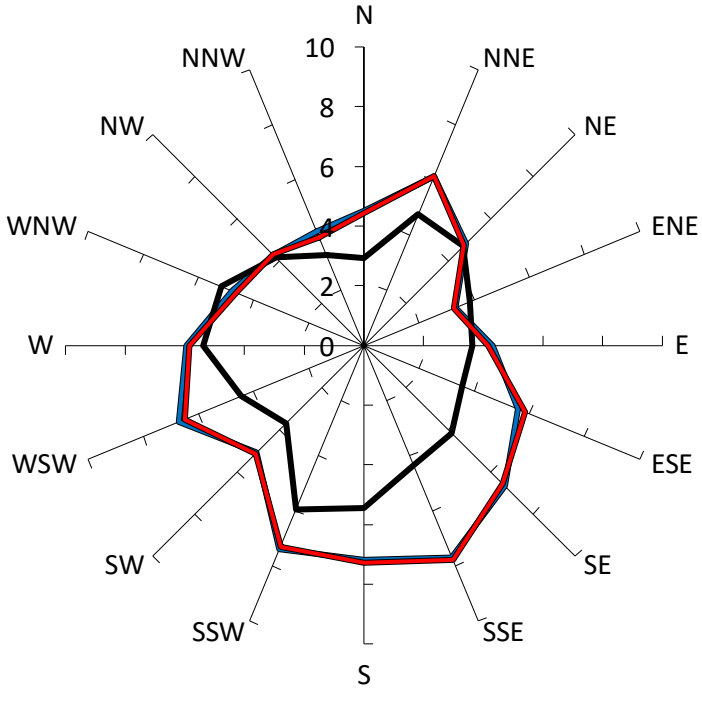


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	2%	20
Existing Site	< 1%	15
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	2%	19

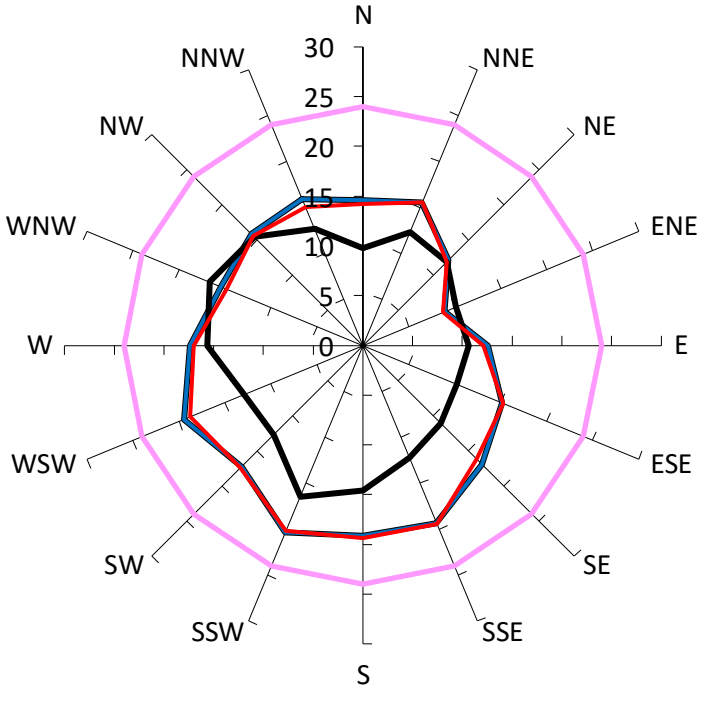
Results for P42

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

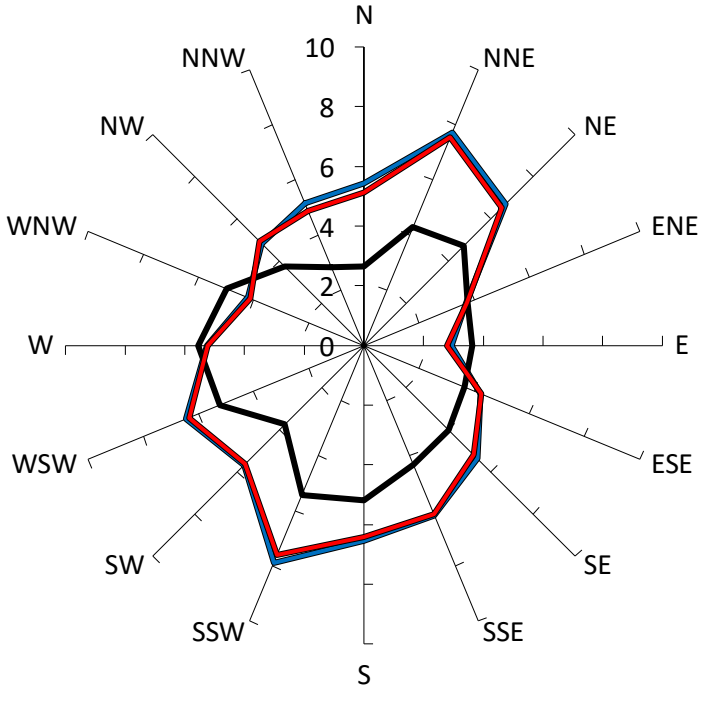


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	4%	20
	Existing Site	1%	17
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	4%	20

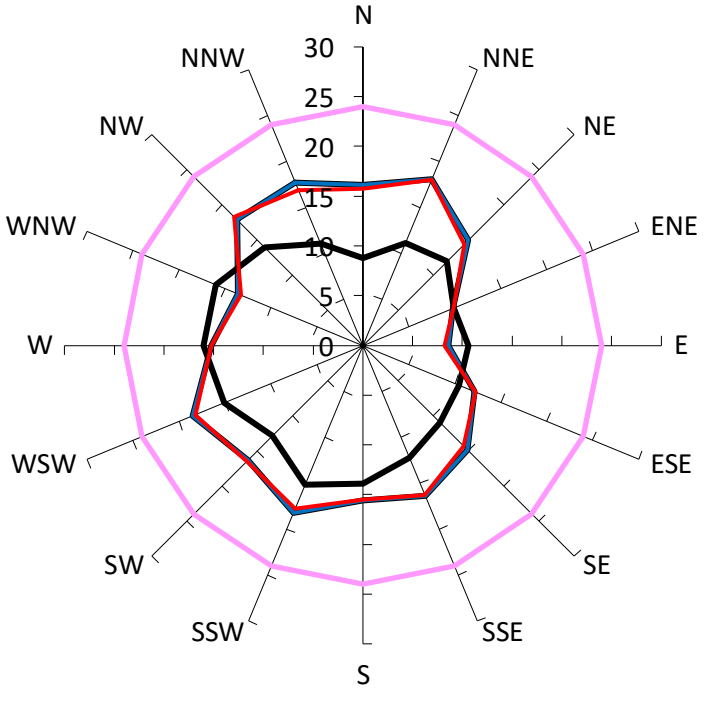
Results for P43

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

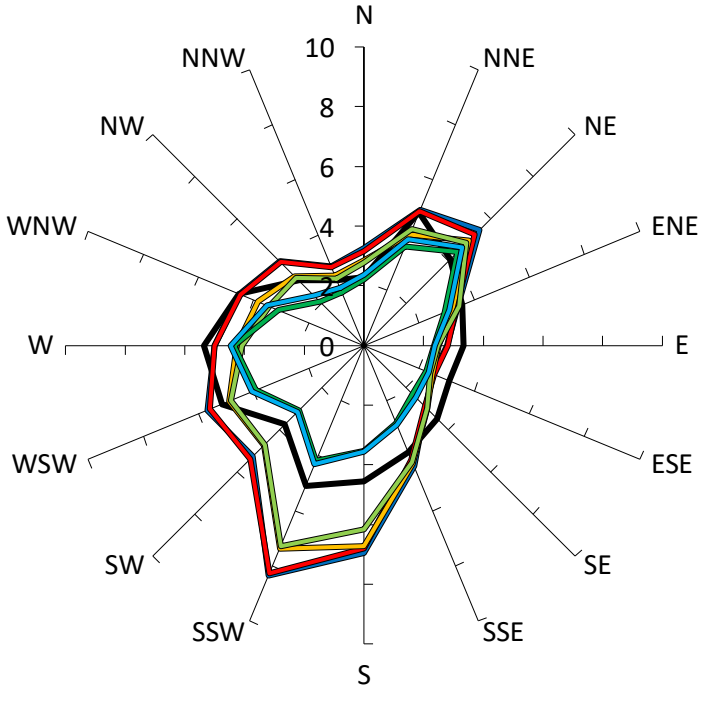


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	4%	19
Existing Site	< 1%	16
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	3%	18

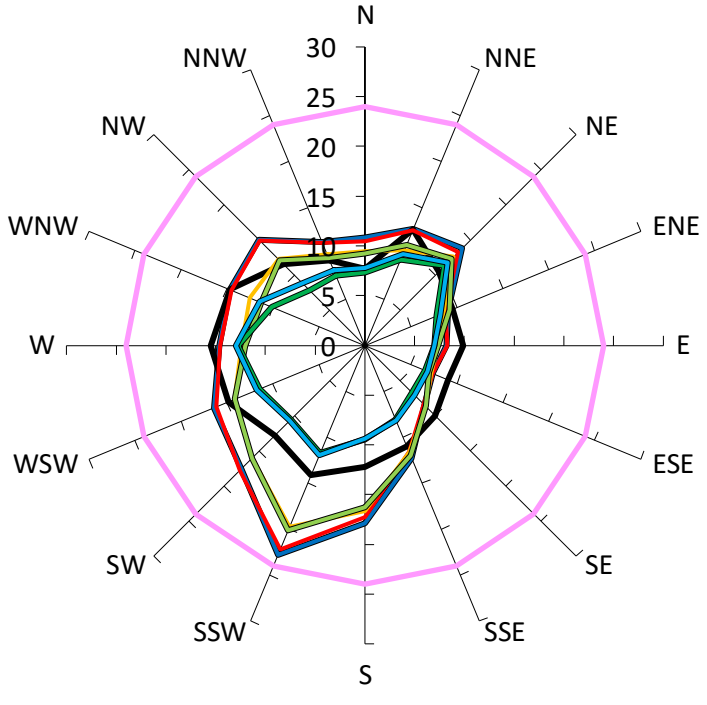
Results for P44

Gust Equivalent Mean (m/s)



Comfort Criteria: 6m/s with 5% probability of exceedence

Maximum Gust (m/s)

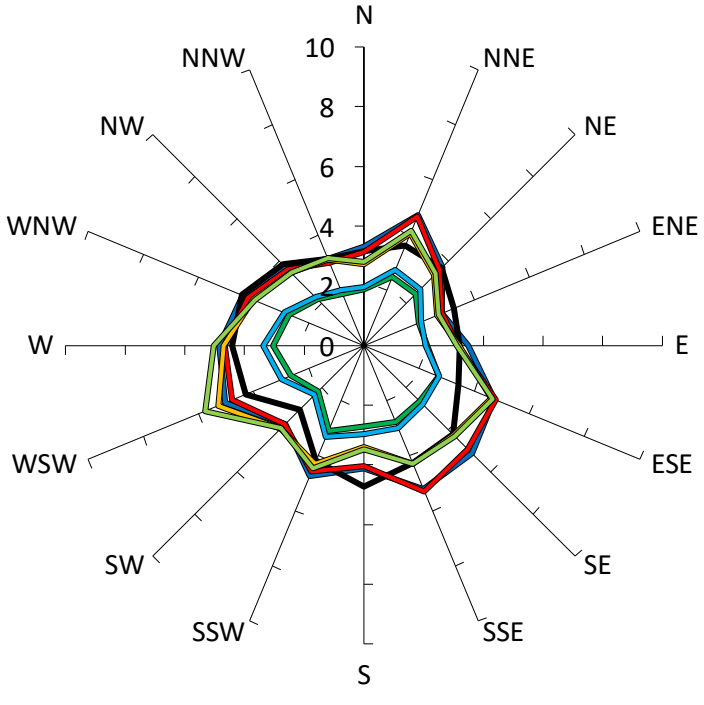


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Standing Criterion (6m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	12%	23
Existing Site	2%	15
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	11%	22
Treatment Scenario 1 (proposed development): 3m wide impermeable awning	7%	20
Treatment Scenario 1 (proposed development with clothing precinct): 3m wide impermeable awning	6%	20
Treatment Scenario 2 (proposed development): 3m wide impermeable awning + tree planting	< 1%	13
Treatment Scenario 2 (proposed development with clothing precinct): 3m wide impermeable awning + tree planting	1%	13

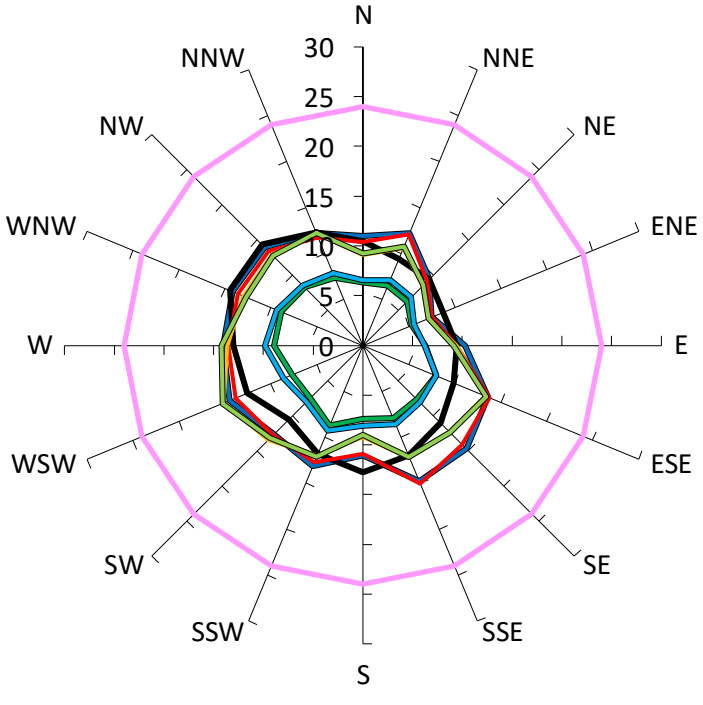
Results for P45

Gust Equivalent Mean (m/s)



Comfort Criteria: 4m/s with 5% probability of exceedence

Maximum Gust (m/s)

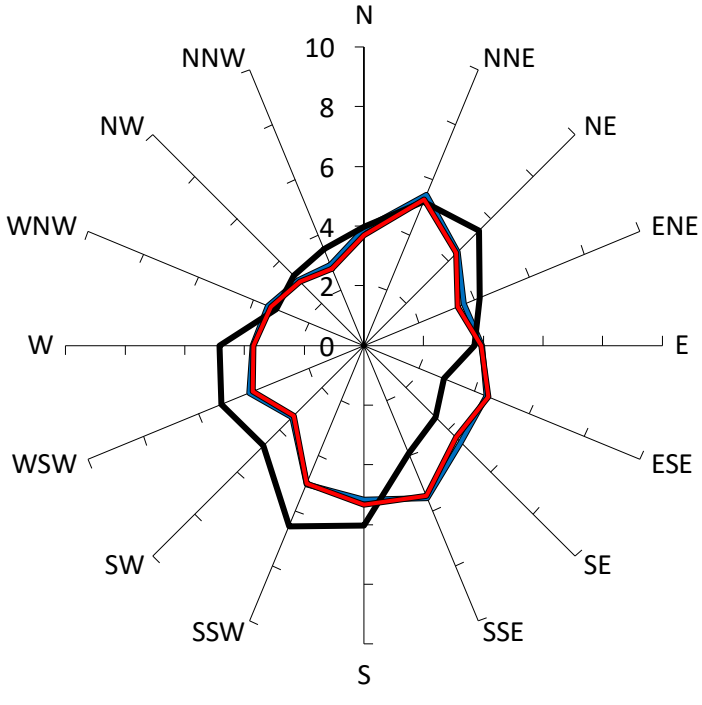


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Sitting Criterion (4m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	29%	15
Existing Site	17%	14
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	26%	15
Treatment Scenario 1 (proposed development): 4m wide impermeable awning	20%	15
Treatment Scenario 1 (proposed development with clothing precinct): 4m wide impermeable awning	22%	15
Treatment Scenario 2 (proposed development): 4m wide impermeable awning + 2m high localised, impermeable wind screens (tenant operated if necessary)	1%	9
Treatment Scenario 2 (proposed development with clothing precinct): 4m wide impermeable awning + 2m high localised, impermeable wind screens (tenant operated if necessary)	2%	10

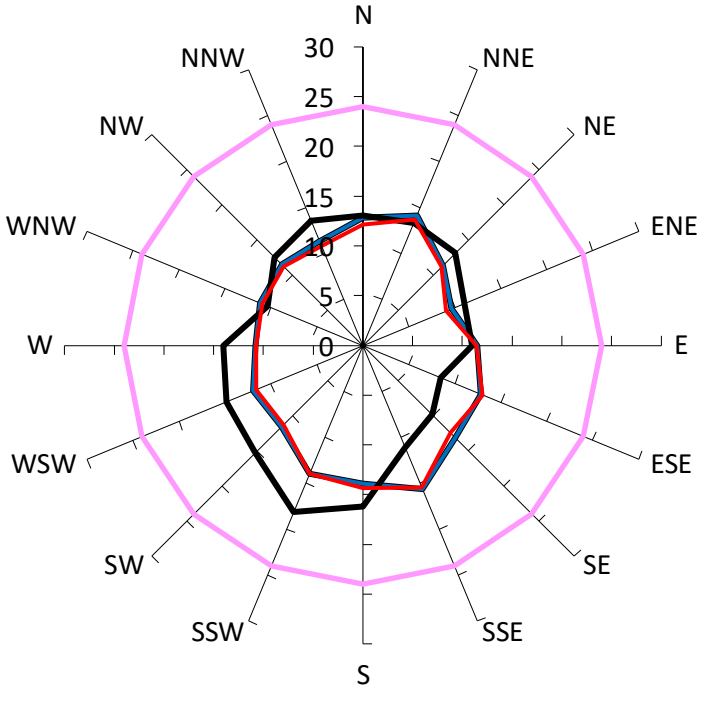
Results for P46

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

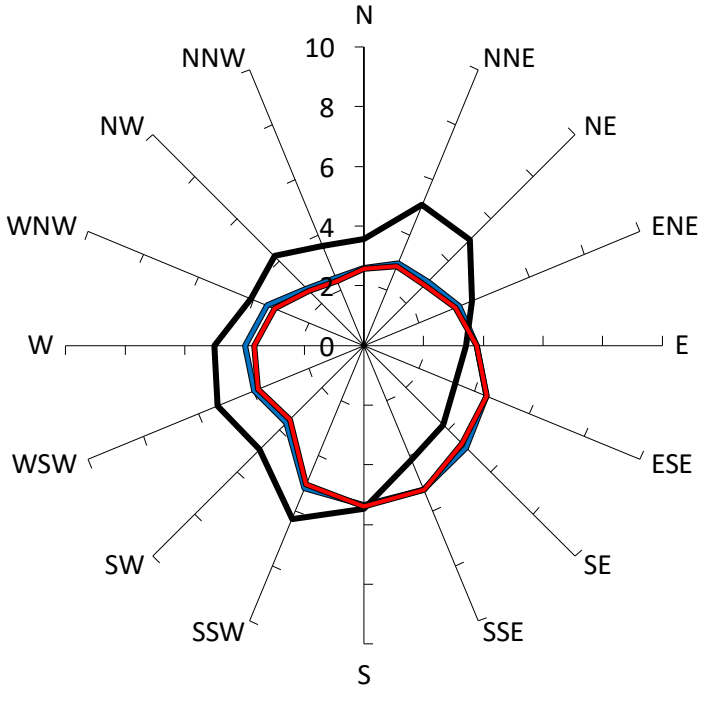


Safety Limit: 24m/s

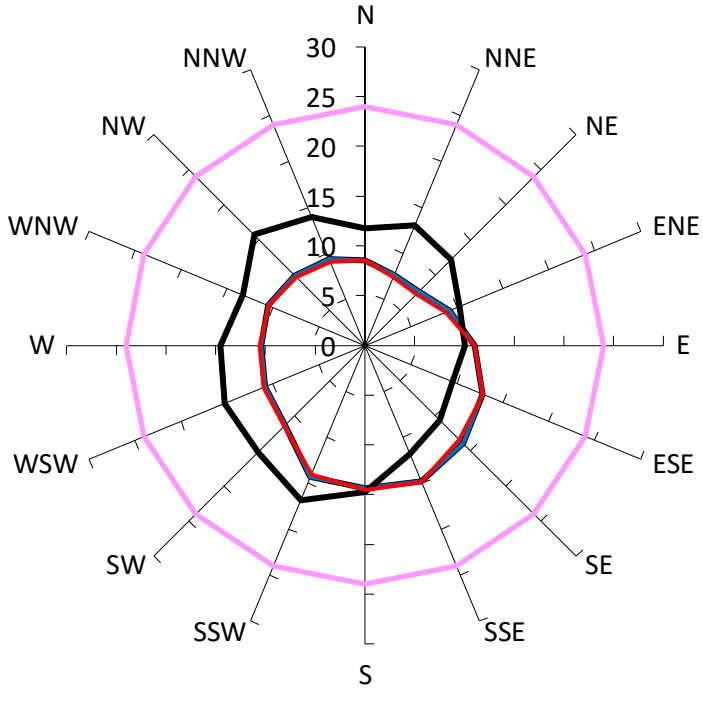
Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	16
Existing Site	1%	18
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	15

Results for P47

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

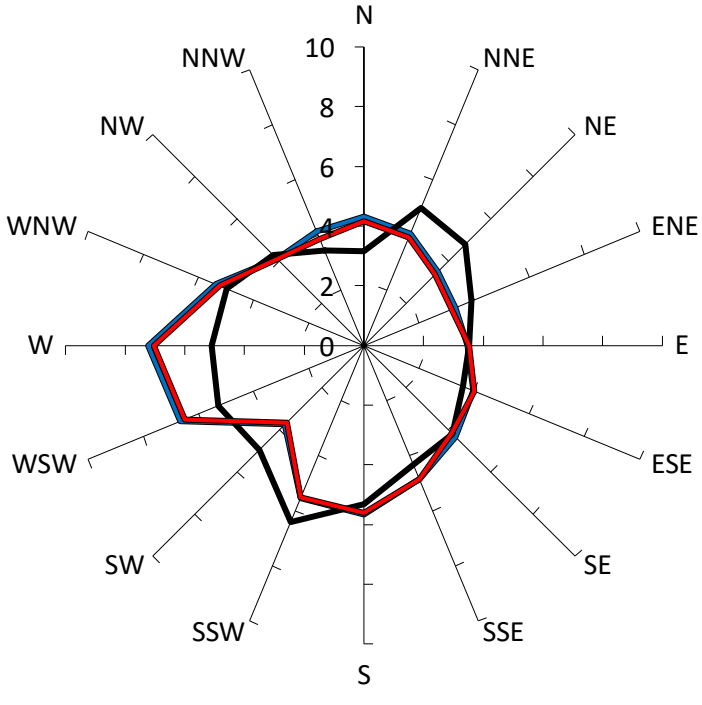


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	15
	Existing Site	1%	17
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	15

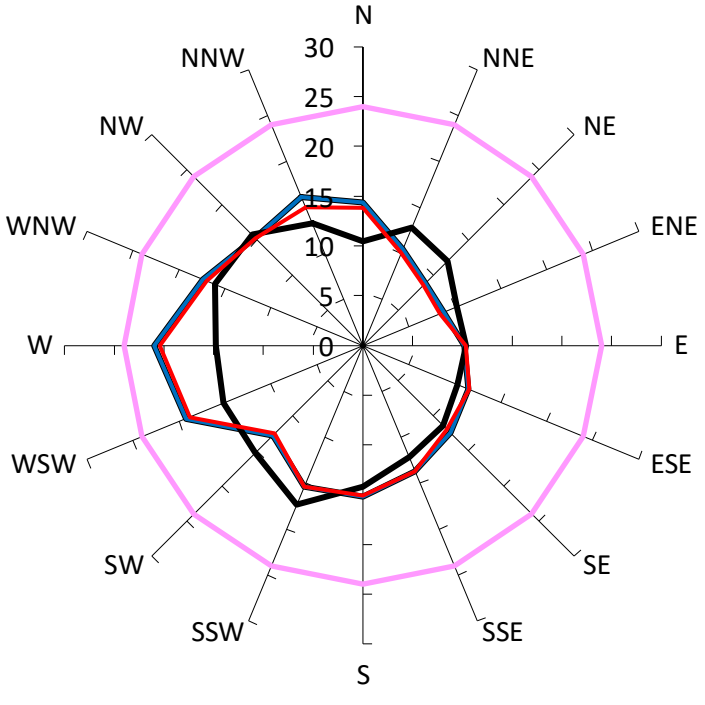
Results for P48

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

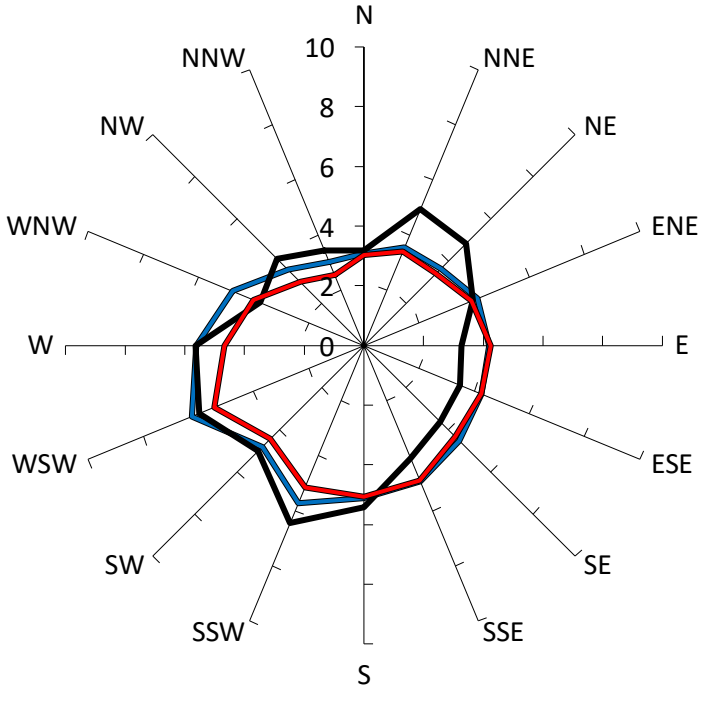


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	2%	21
	Existing Site	1%	17
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	20

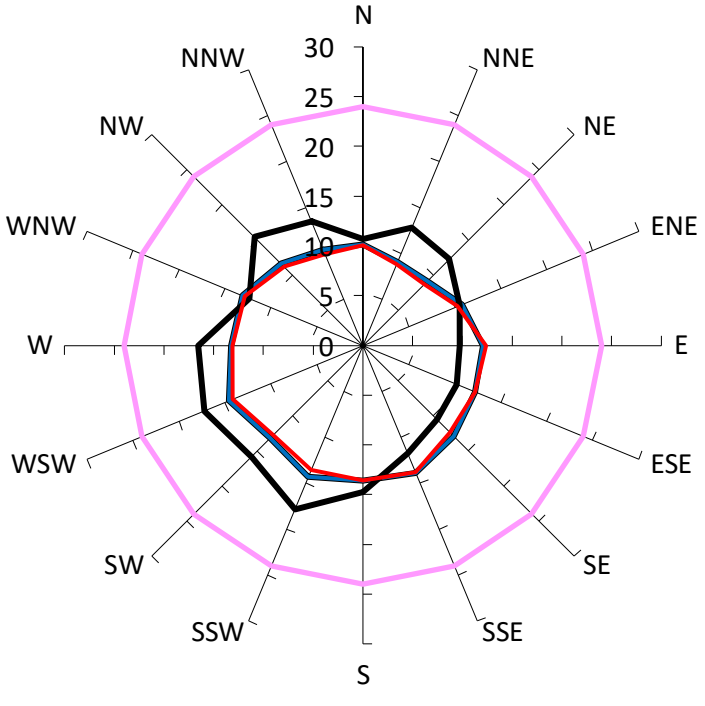
Results for P49

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

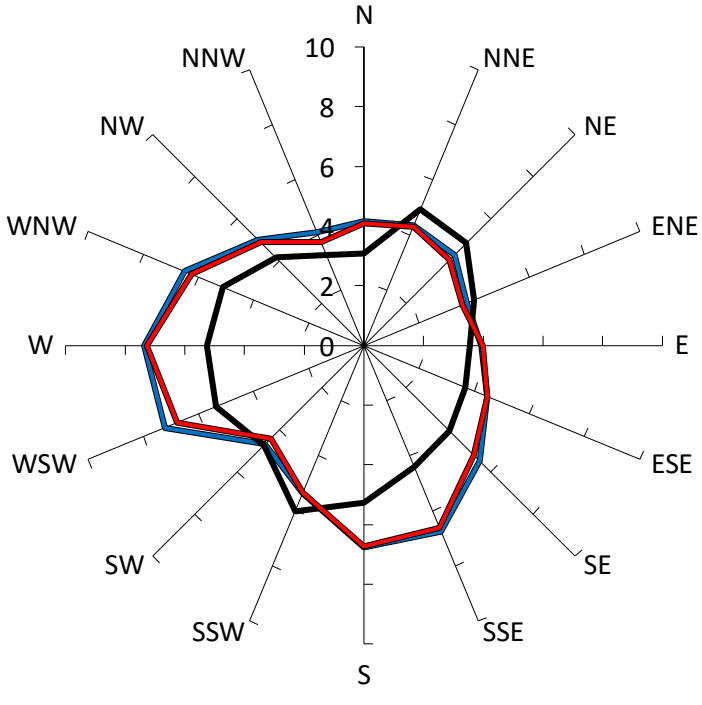


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	15
Existing Site	1%	18
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	14

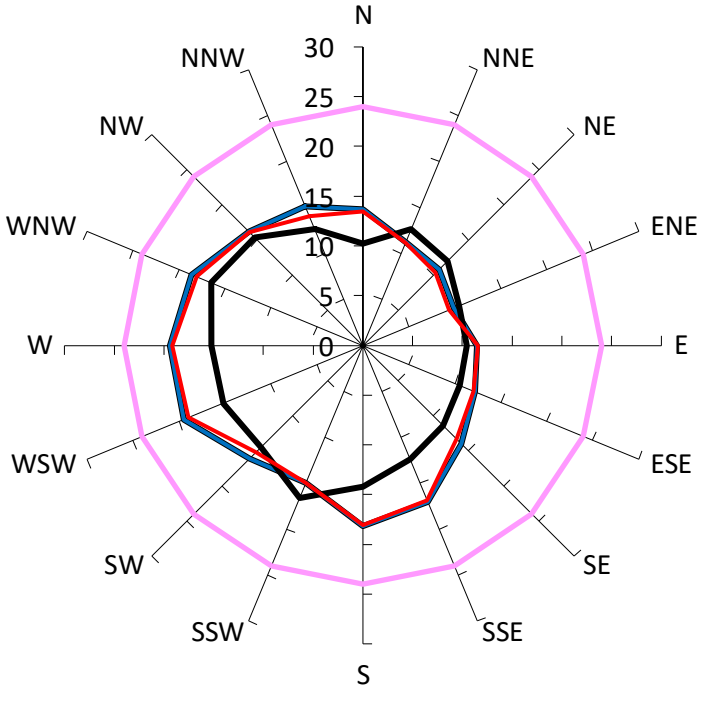
Results for P50

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

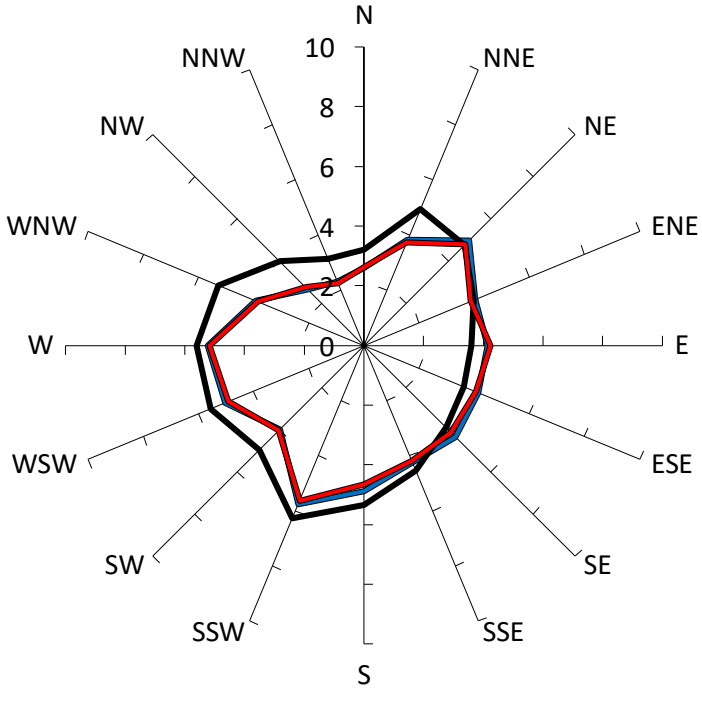


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	3%	19
Existing Site	1%	17
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	3%	19

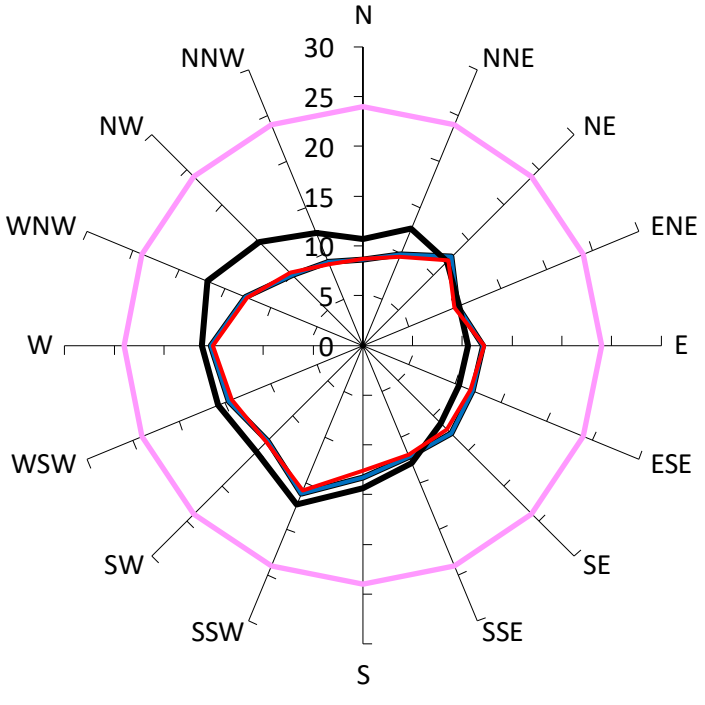
Results for P51

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

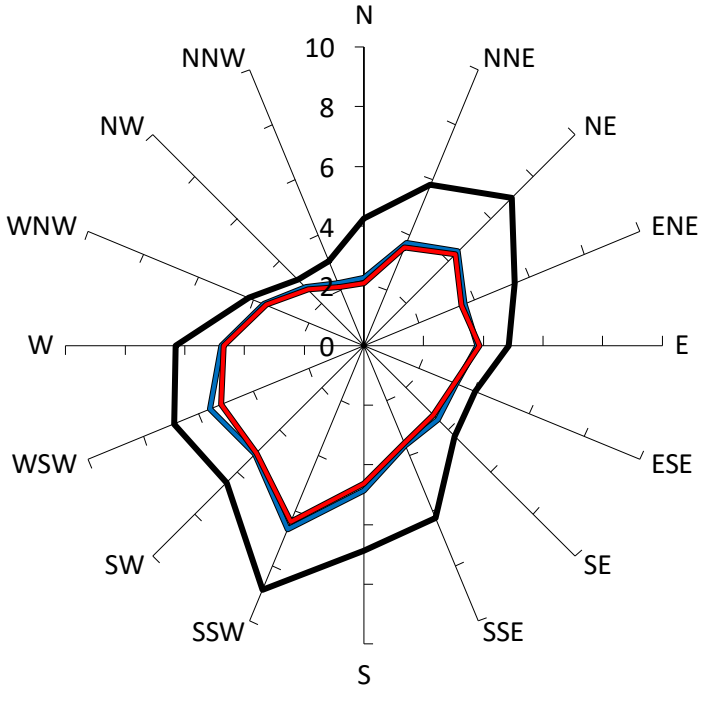


Safety Limit: 24m/s

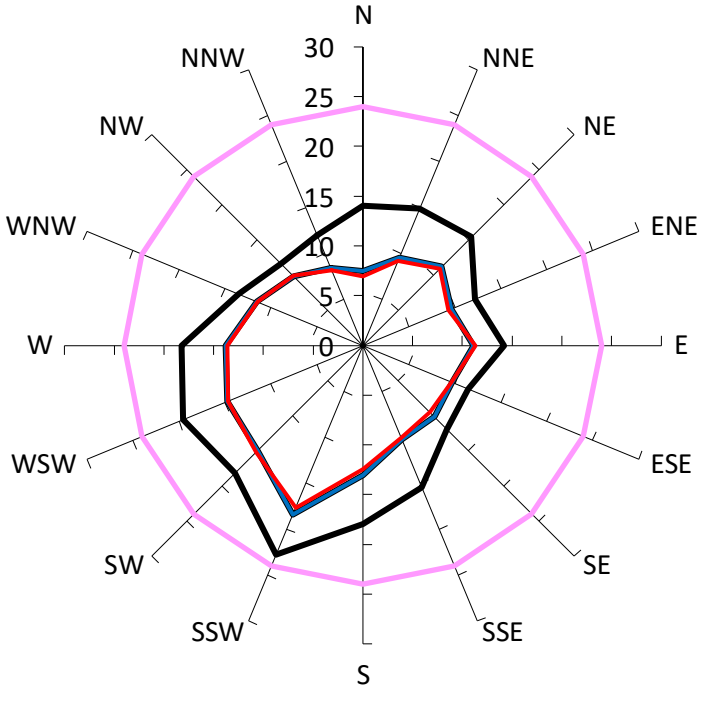
	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	16
	Existing Site	1%	17
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	16

Results for P52

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

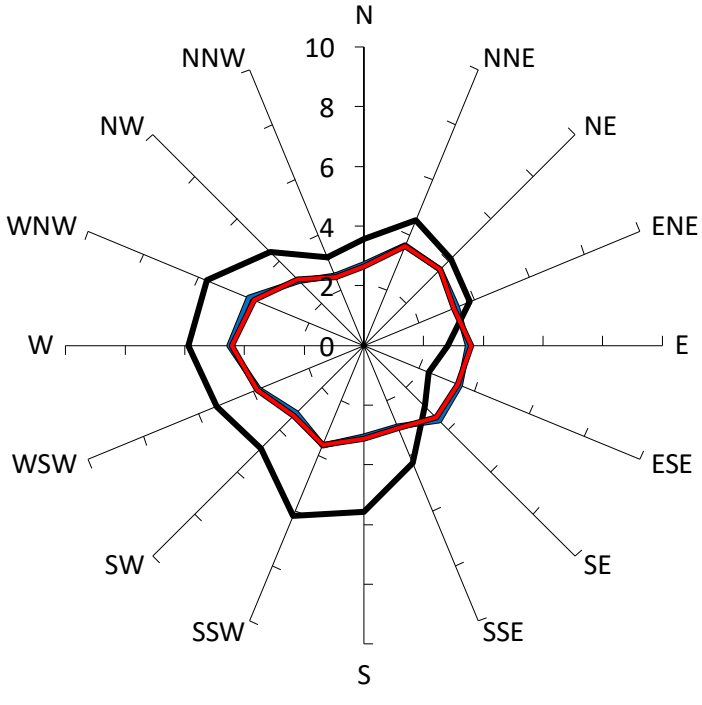


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	18
	Existing Site	5%	23
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	18

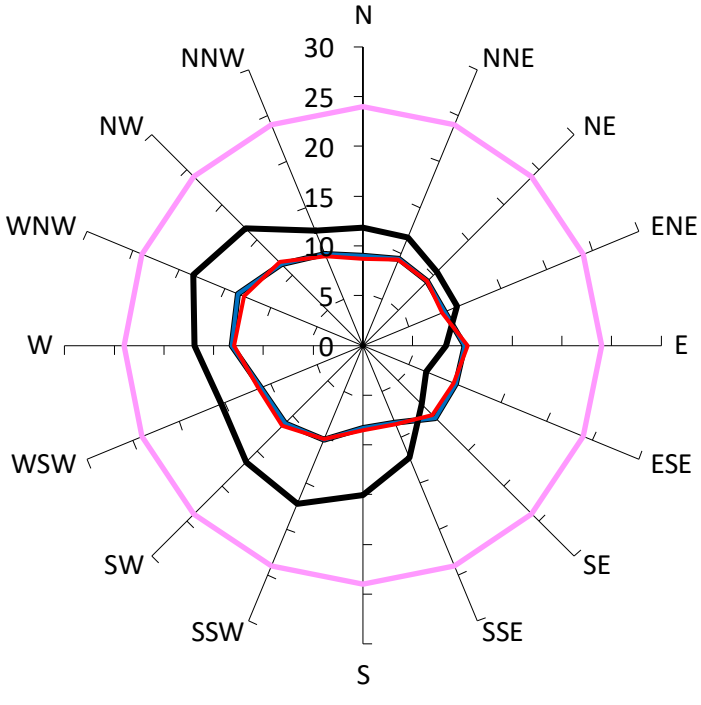
Results for P53

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

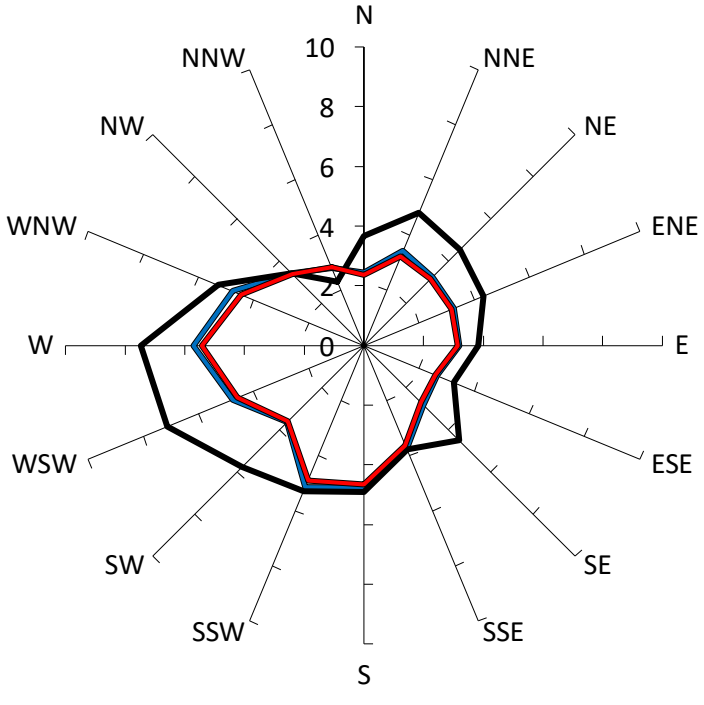


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	14
Existing Site	1%	18
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	13

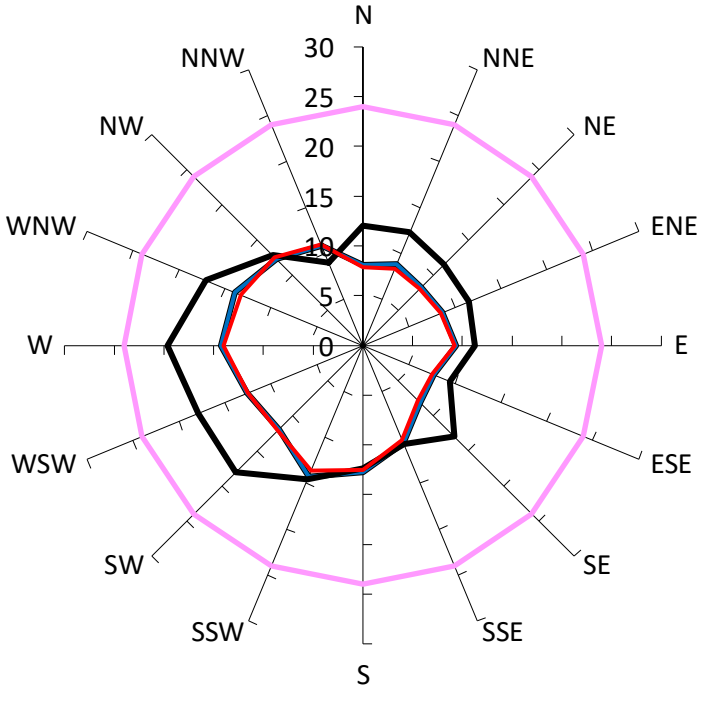
Results for P54

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

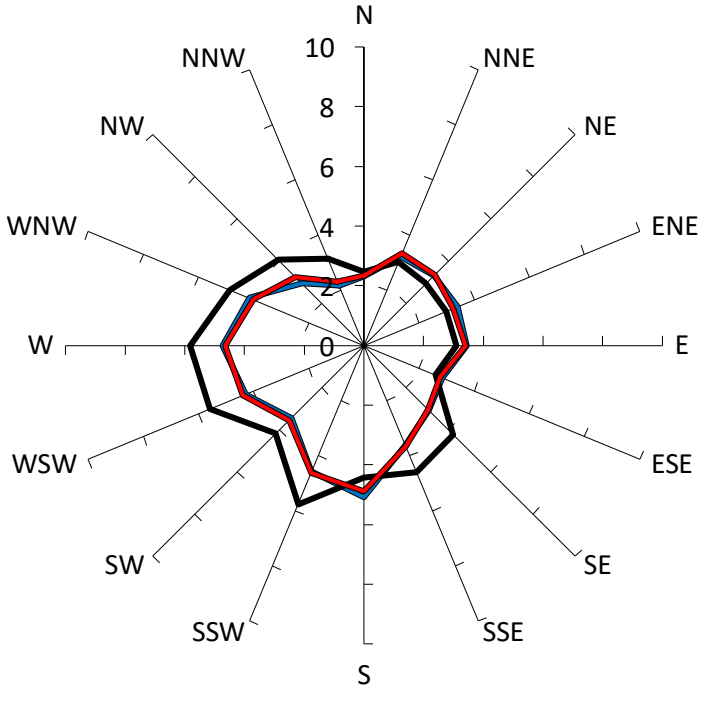


Safety Limit: 24m/s

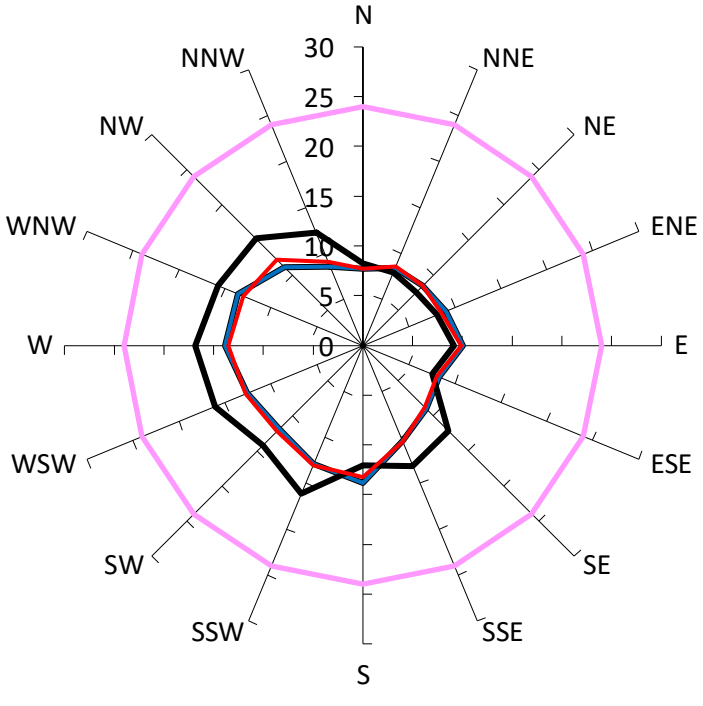
Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	14
Existing Site	2%	20
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	14

Results for P55

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

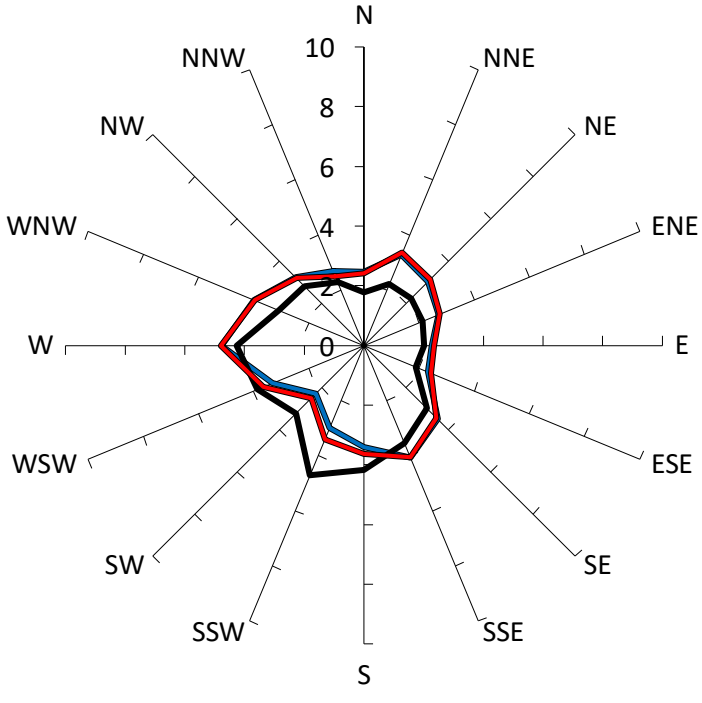


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	14
	Existing Site	1%	17
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	14

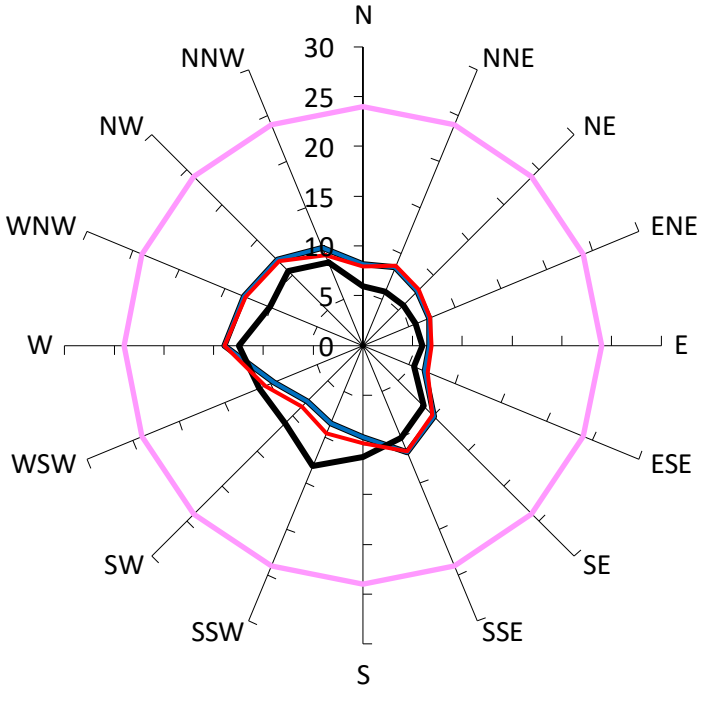
Results for P56

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

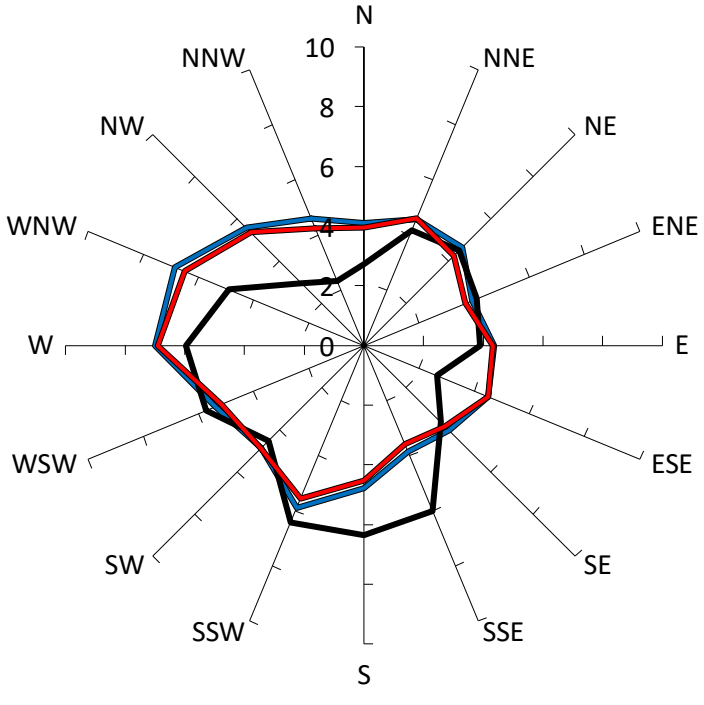


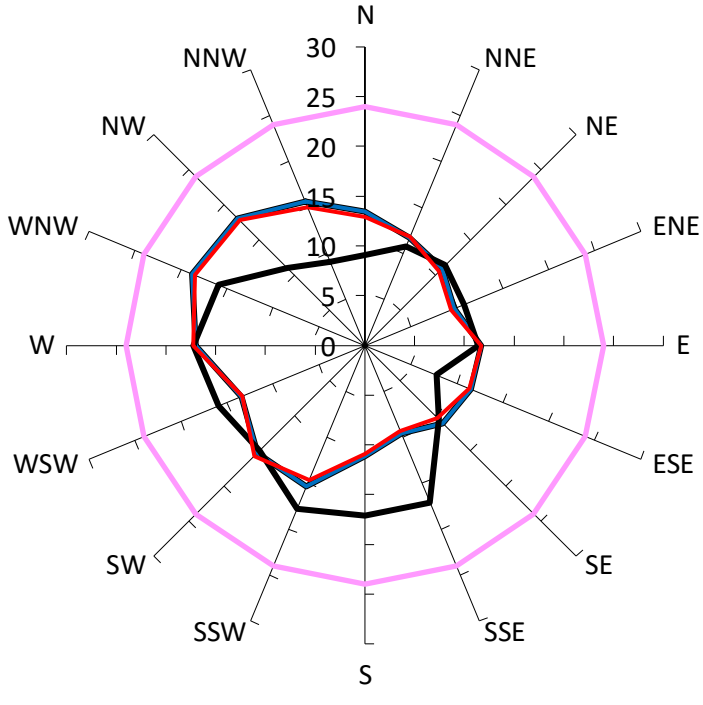
Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	14
Existing Site	< 1%	13
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	14

Results for P57

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)





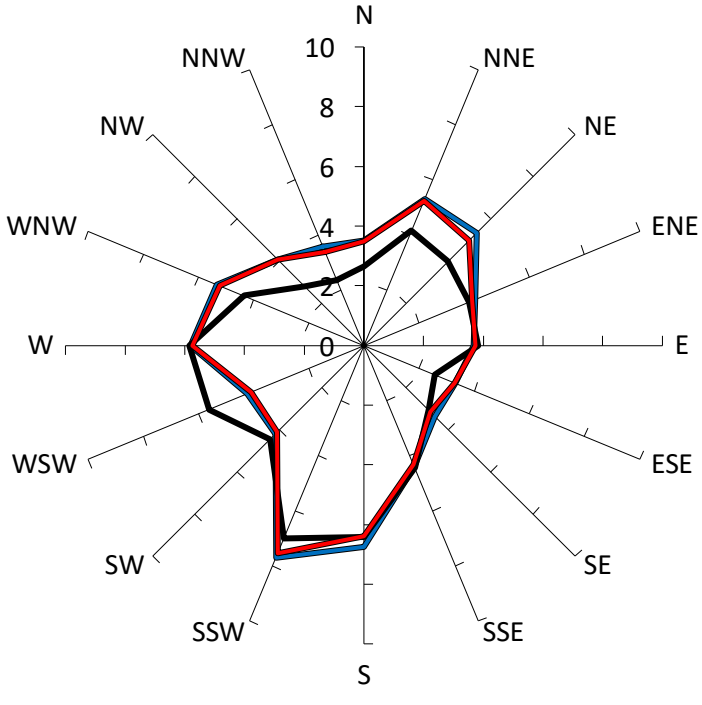
Comfort Criteria: 8m/s with 5% probability of exceedence

Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	2%	19
Existing Site	1%	18
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	2%	18

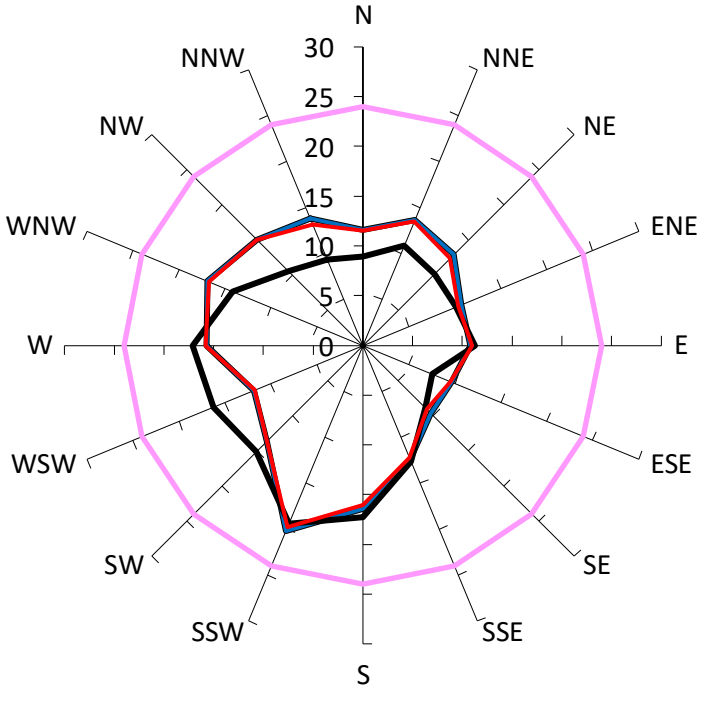
Results for P58

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

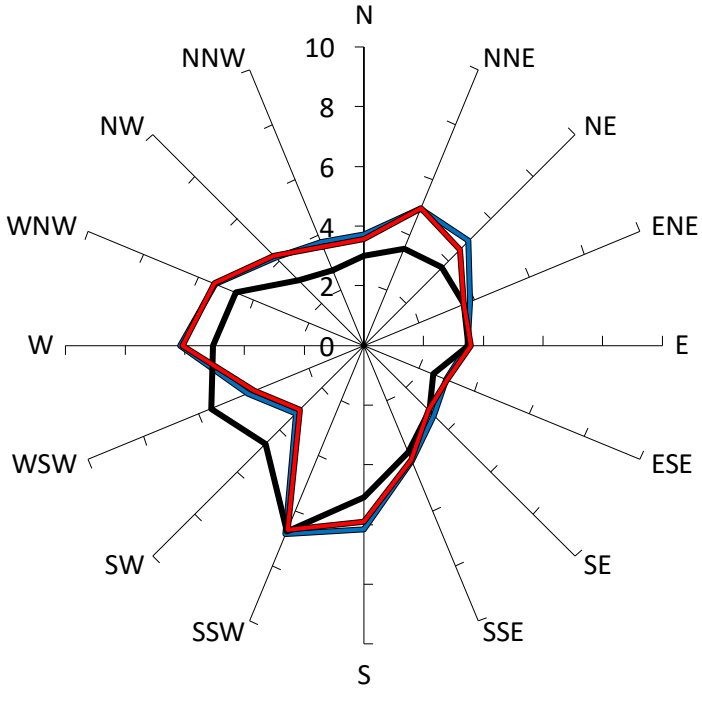


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	2%	20
Existing Site	1%	19
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	20

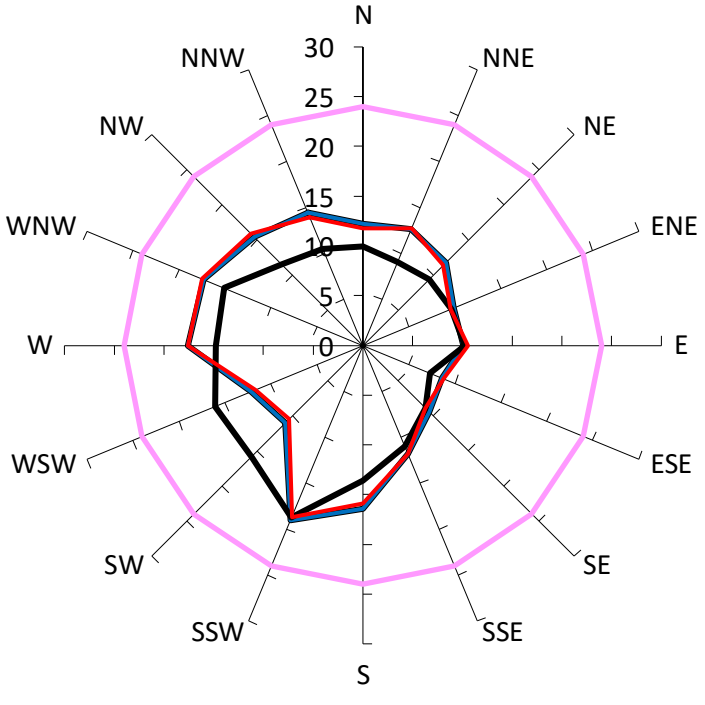
Results for P59

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

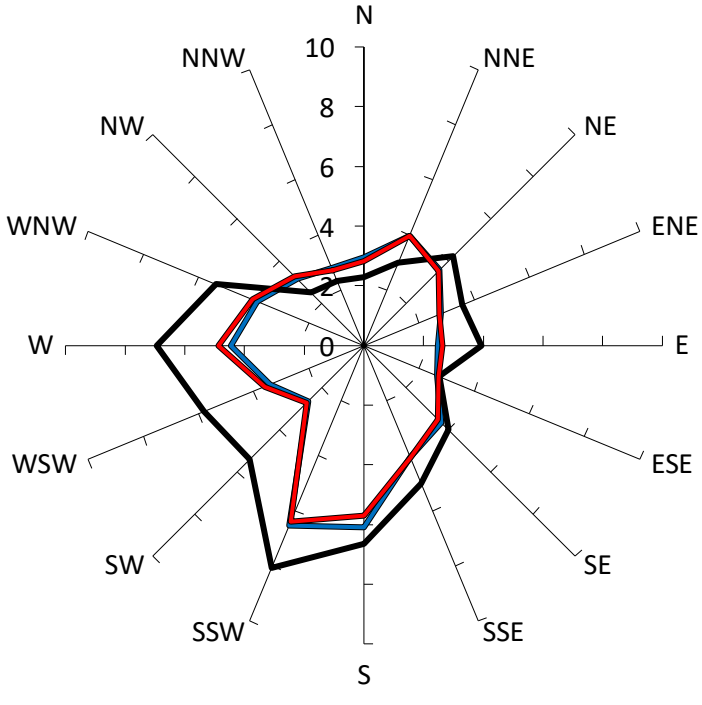


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	19
	Existing Site	1%	19
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	19

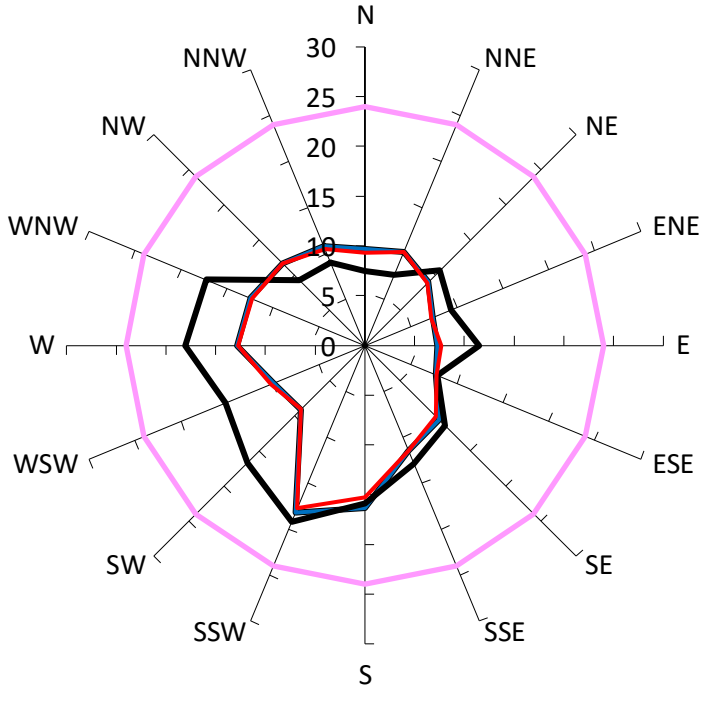
Results for P60

Gust Equivalent Mean (m/s)



Comfort Criteria: 6m/s with 5% probability of exceedence

Maximum Gust (m/s)

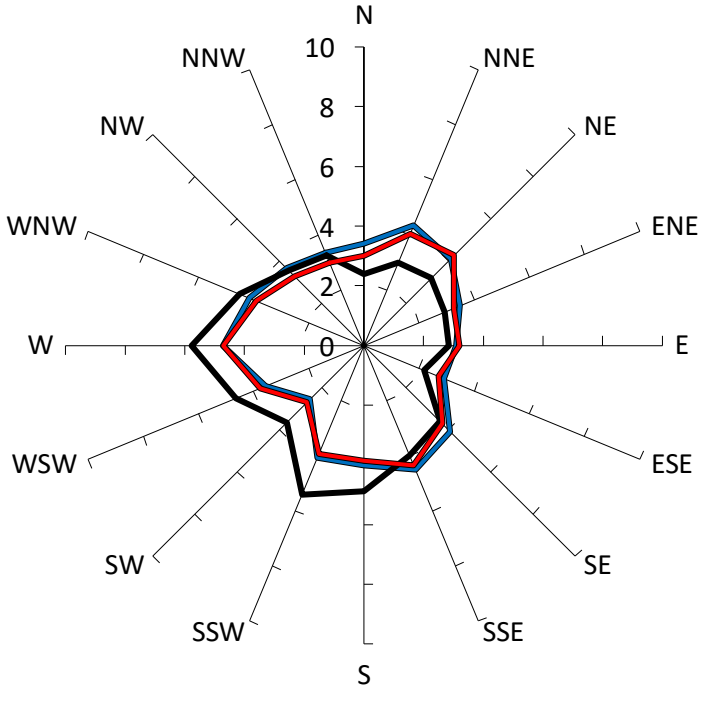


Safety Limit: 24m/s

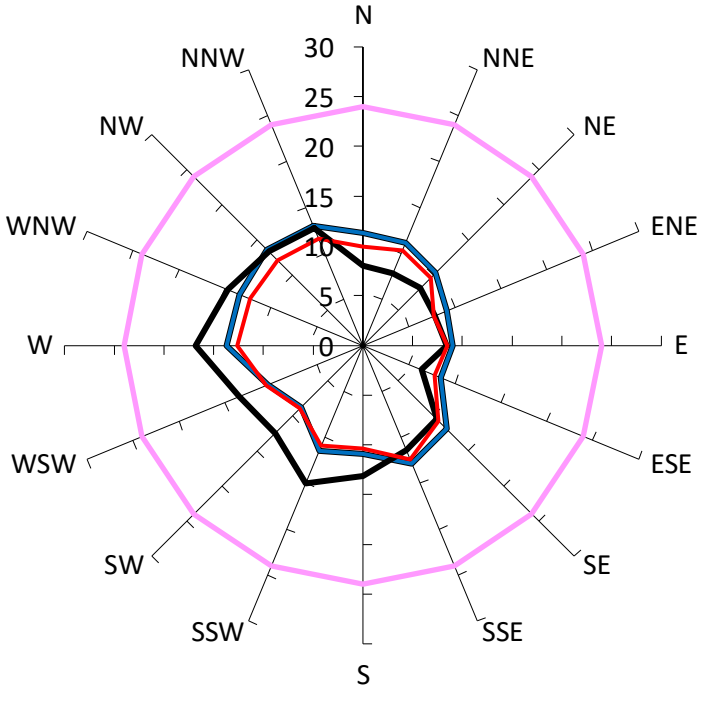
Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Standing Criterion (6m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	4%	18
Existing Site	13%	19
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	3%	18

Results for P61

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

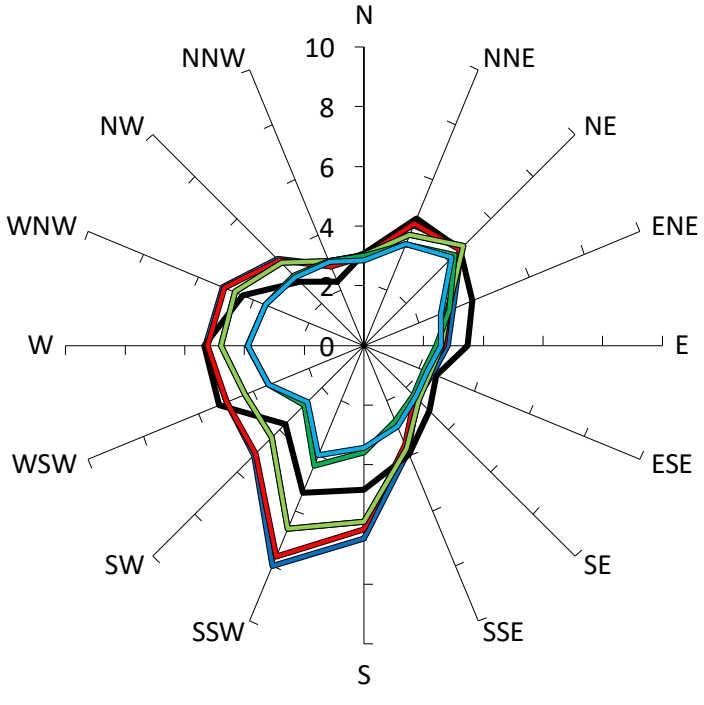


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	14
	Existing Site	< 1%	17
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	13

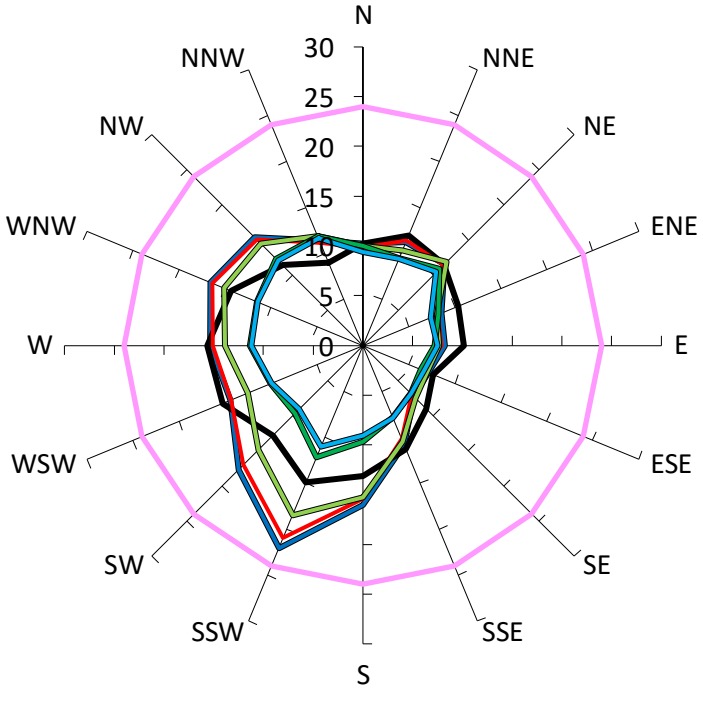
Results for P62

Gust Equivalent Mean (m/s)



Comfort Criteria: 6m/s with 5% probability of exceedence

Maximum Gust (m/s)

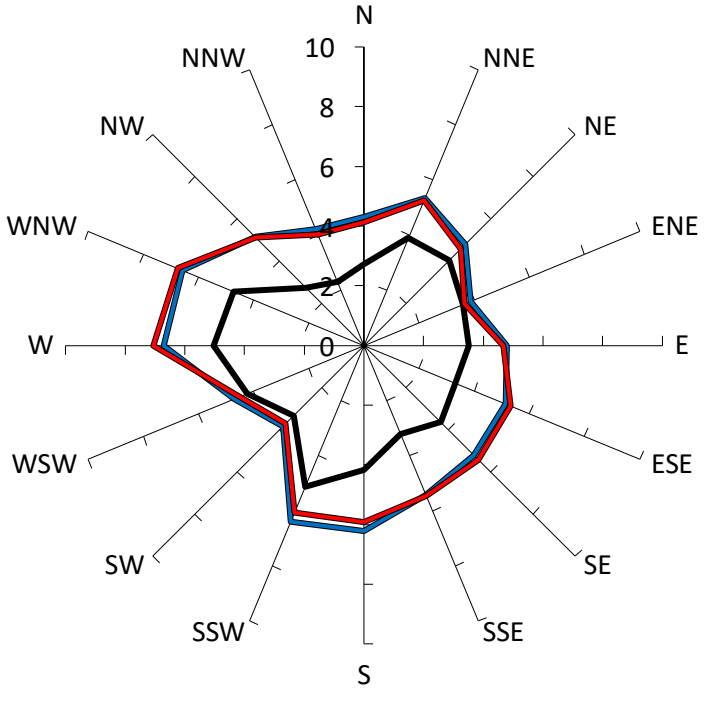


Safety Limit: 24m/s

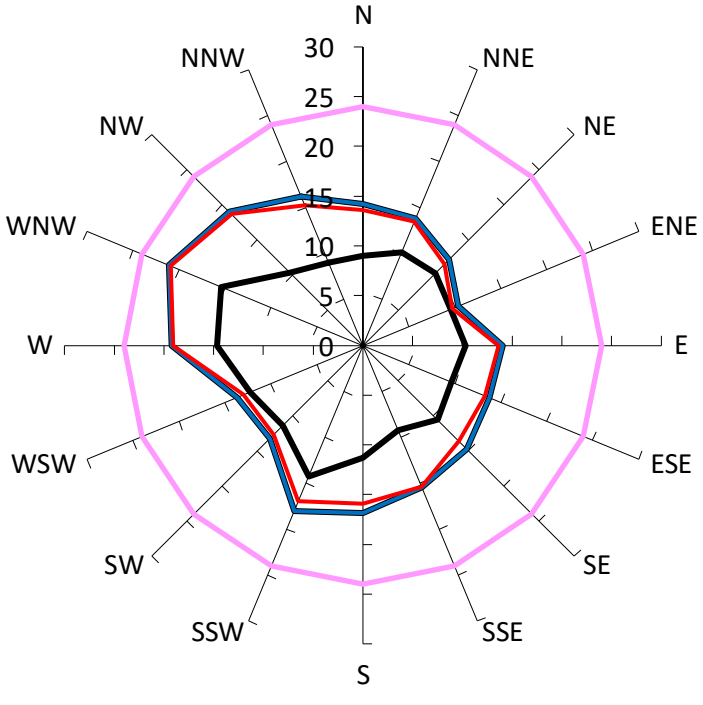
Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Standing Criterion (6m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	10%	22
Existing Site	3%	16
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	8%	21
Treatment Scenario 1 (proposed development): 3m wide impermeable awning	5%	18
Treatment Scenario 1 (proposed development with clothing precinct): 3m wide impermeable awning	5%	18
Treatment Scenario 2 (proposed development): 3m wide impermeable awning + tree planting	1%	12
Treatment Scenario 2 (proposed development with clothing precinct): 3m wide impermeable awning + tree planting	1%	12

Results for P63

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

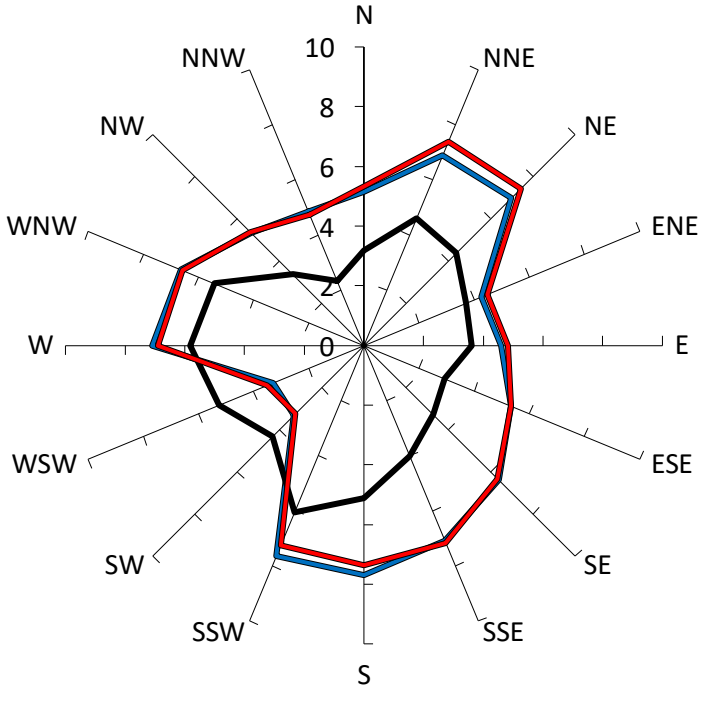


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	2%	21
	Existing Site	< 1%	15
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	2%	21

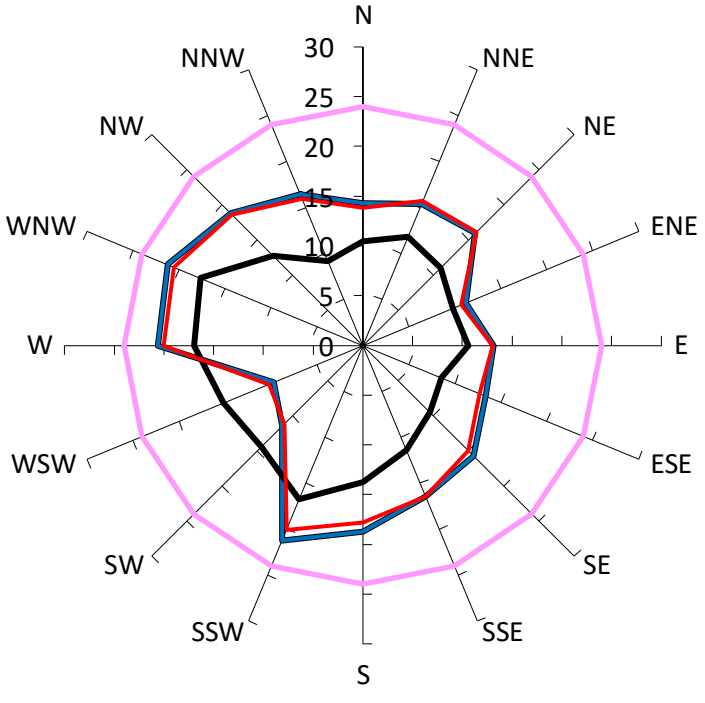
Results for P64

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

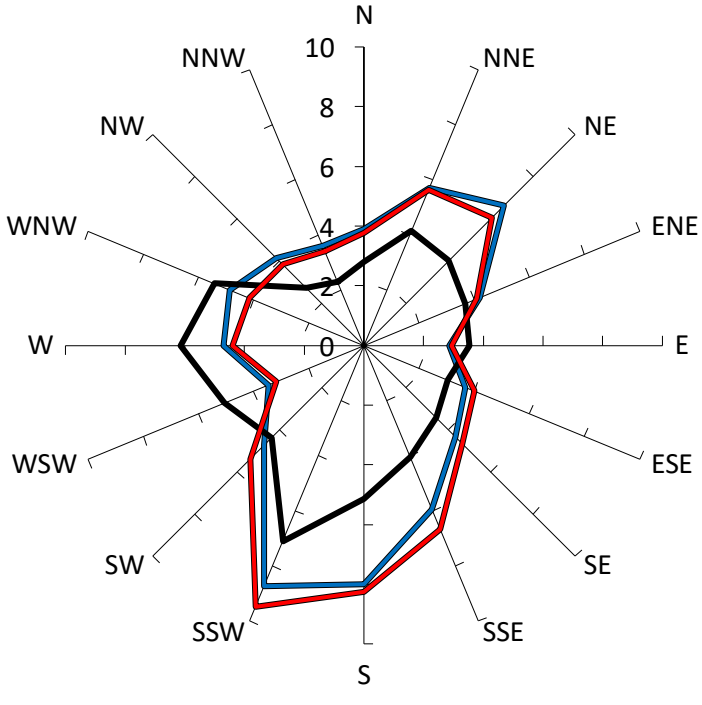


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	5%	21
Existing Site	1%	18
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	5%	21

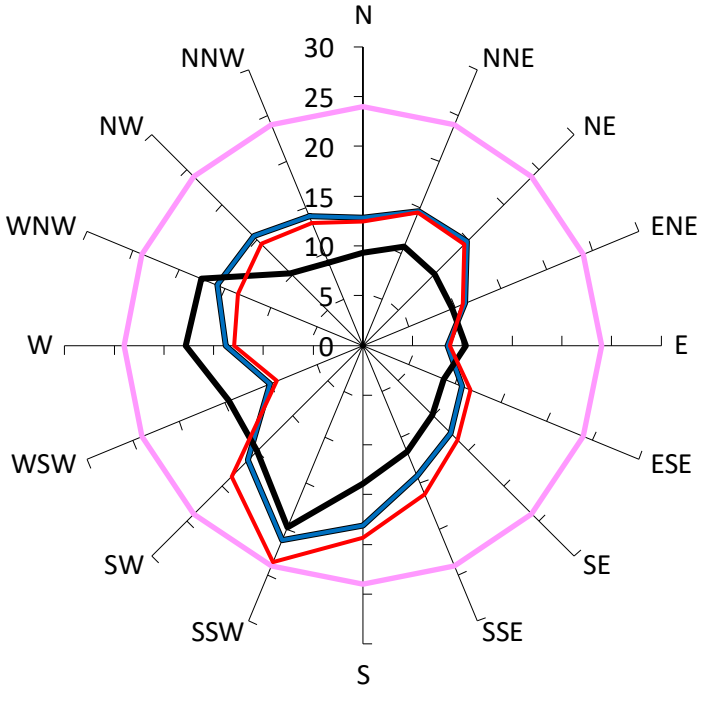
Results for P65

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

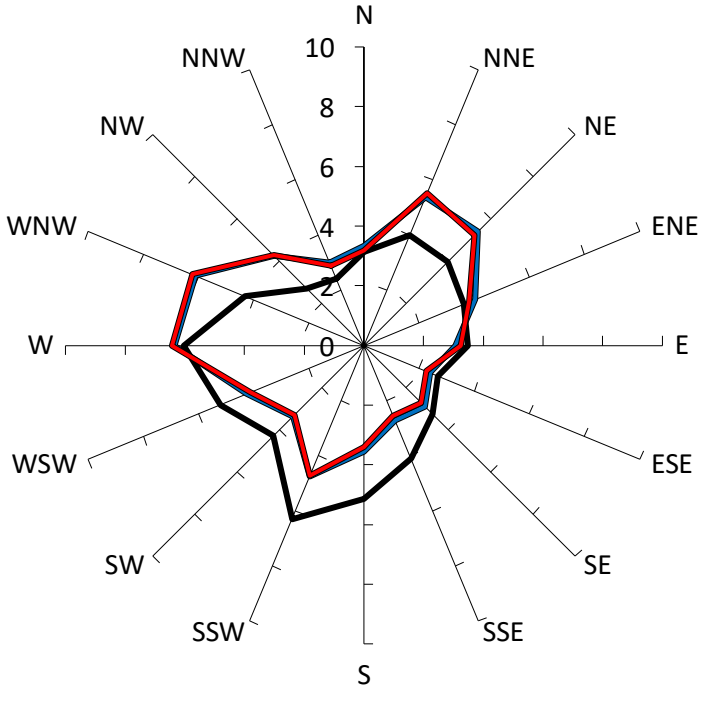


Safety Limit: 24m/s

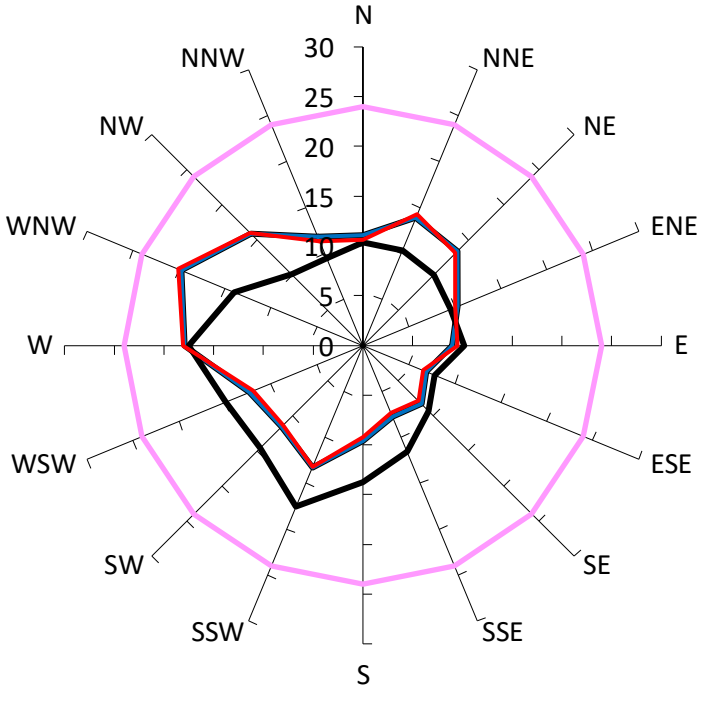
Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	4%	21
Existing Site	1%	20
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	5%	24

Results for P66

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)



Comfort Criteria: 6m/s with 5% probability of exceedence

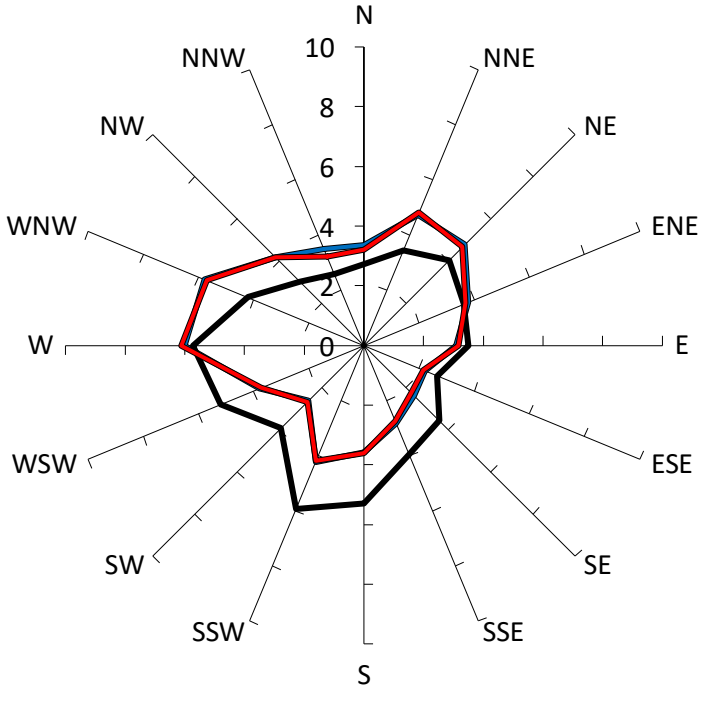


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Standing Criterion (6m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	5%	20
	Existing Site	4%	18
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	5%	20

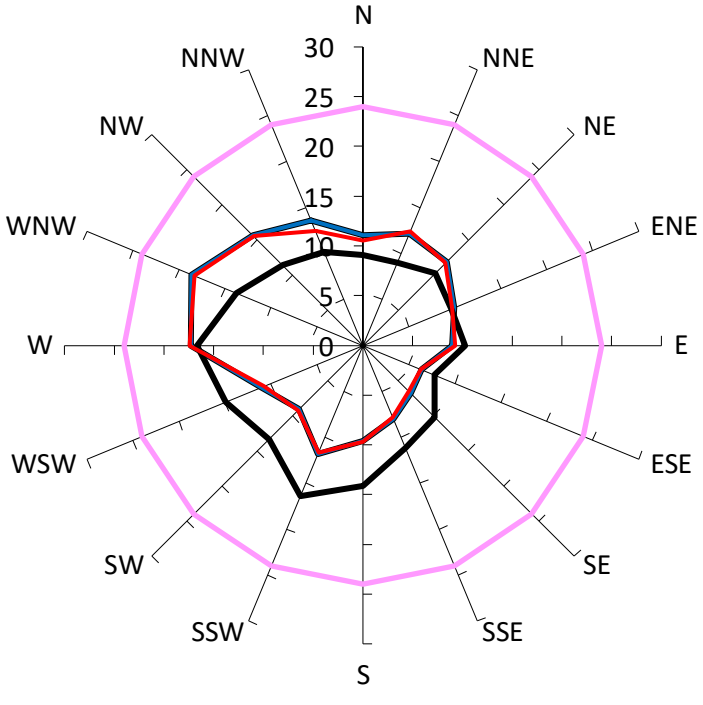
Results for P67

Gust Equivalent Mean (m/s)



Comfort Criteria: 6m/s with 5% probability of exceedence

Maximum Gust (m/s)

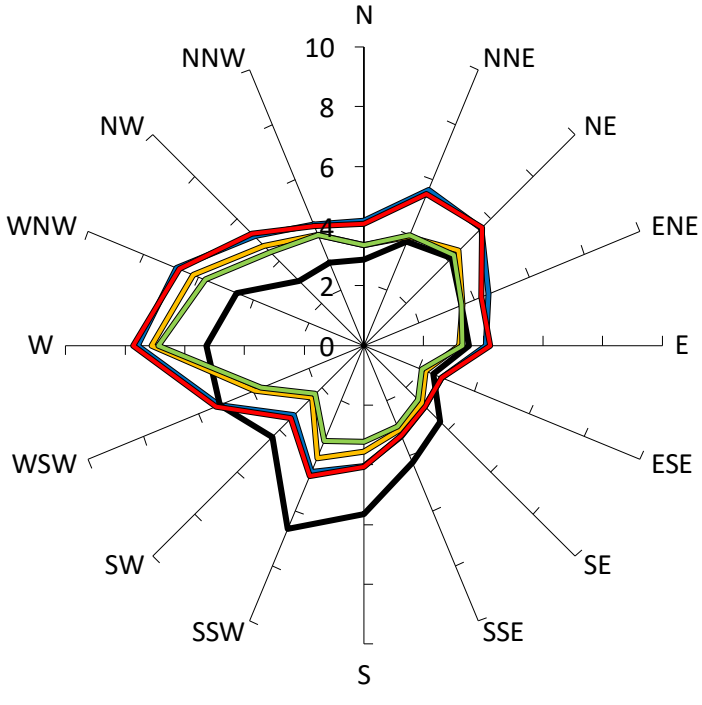


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Standing Criterion (6m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	3%	19
Existing Site	4%	17
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	3%	18

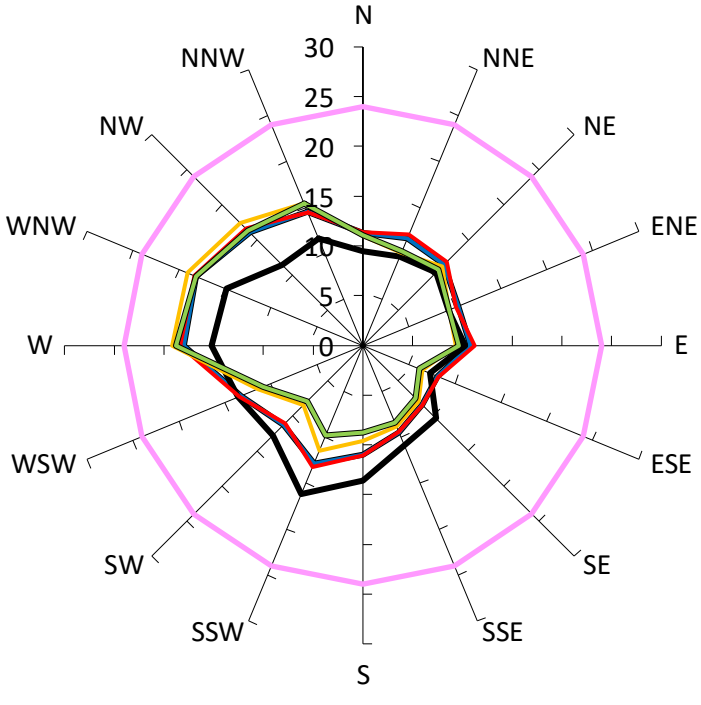
Results for P68

Gust Equivalent Mean (m/s)



Comfort Criteria: 6m/s with 5% probability of exceedence

Maximum Gust (m/s)

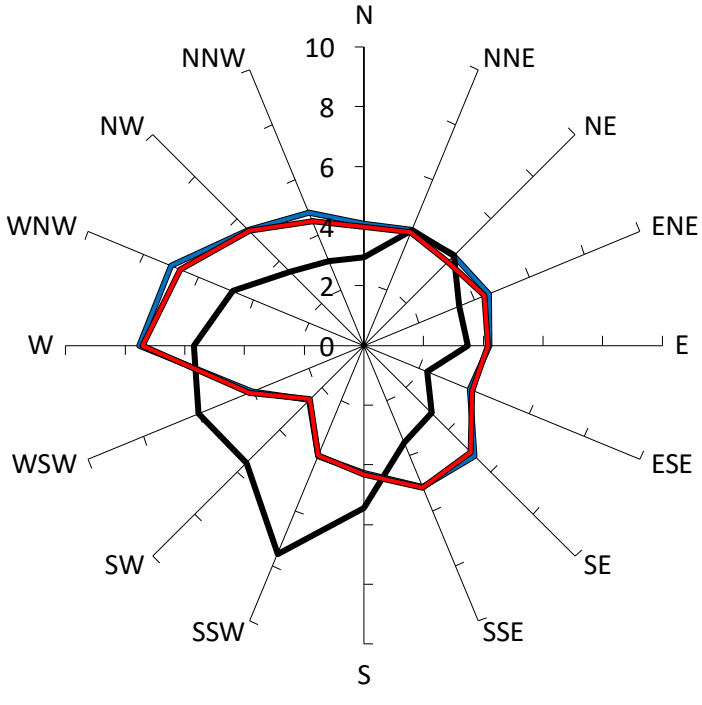


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Standing Criterion (6m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	9%	18
Existing Site	5%	16
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	9%	18
Treatment Scenario 1 (proposed development): 3m wide impermeable awning	5%	19
Treatment Scenario 1 (proposed development with clothing precinct): 3m wide impermeable awning	4%	19

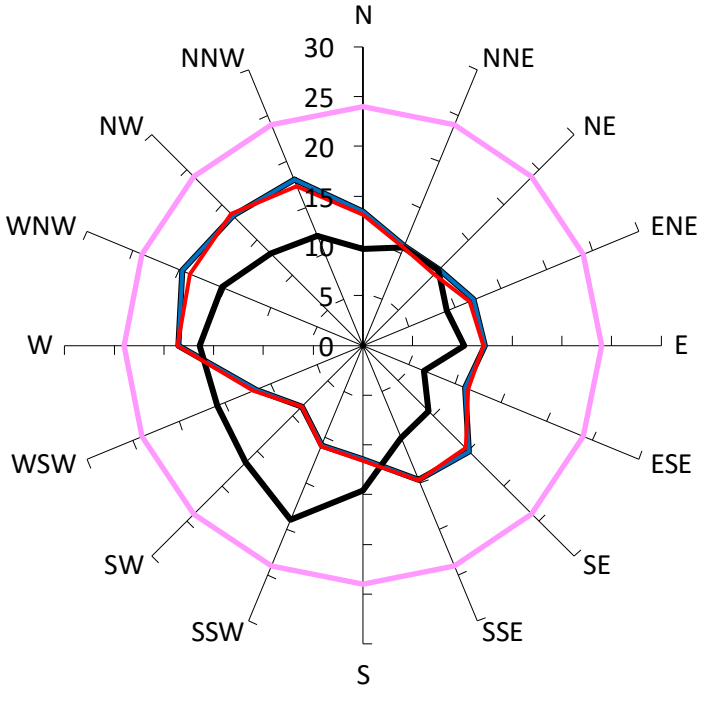
Results for P69

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

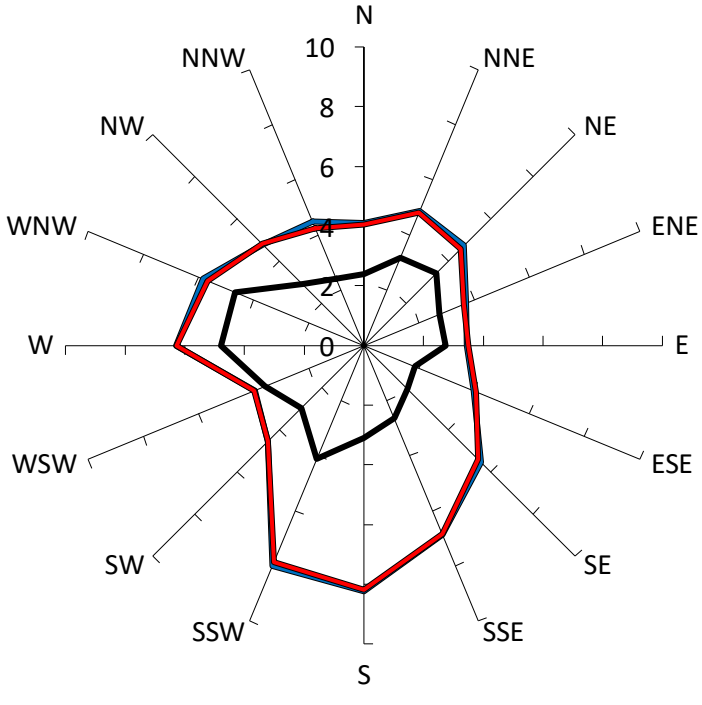


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	2%	20
Existing Site	2%	19
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	2%	19

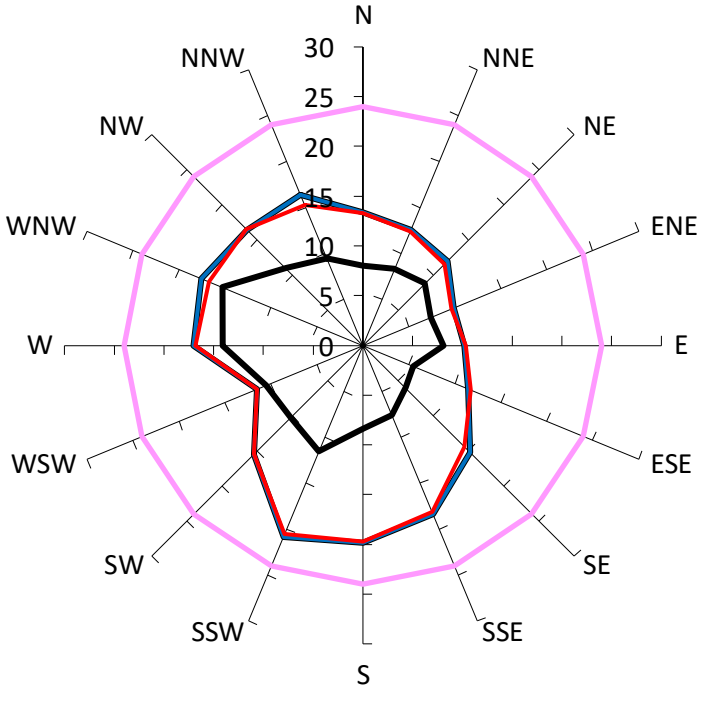
Results for P70

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

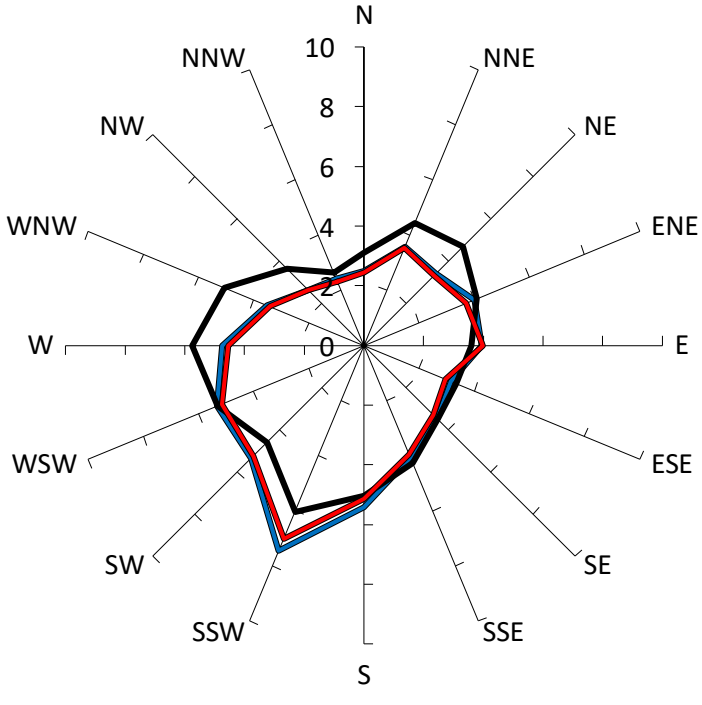


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	4%	21
Existing Site	< 1%	15
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	4%	21

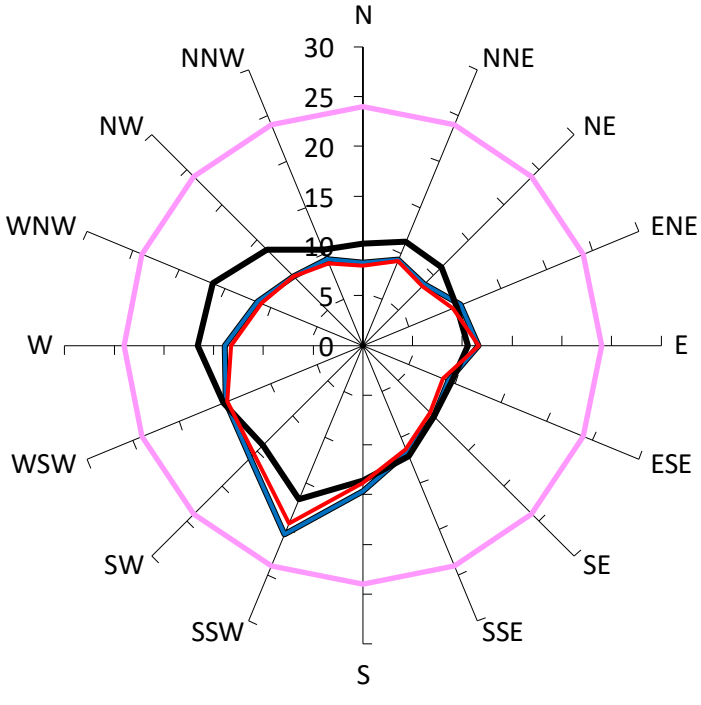
Results for P71

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

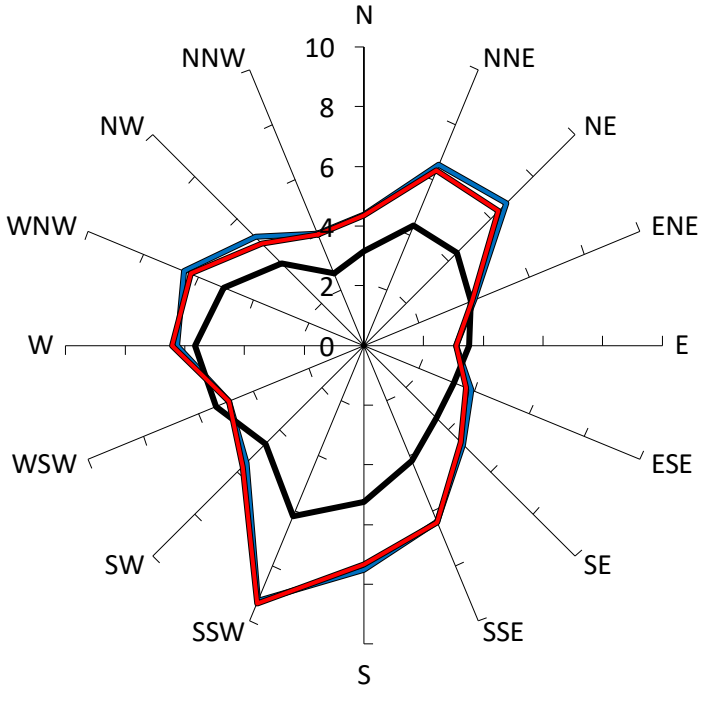


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	21
Existing Site	1%	17
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	19

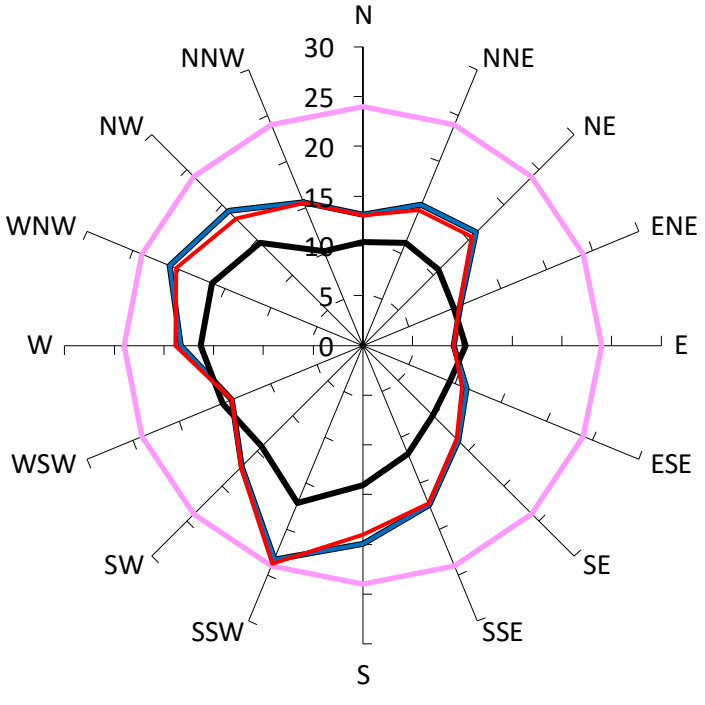
Results for P72

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

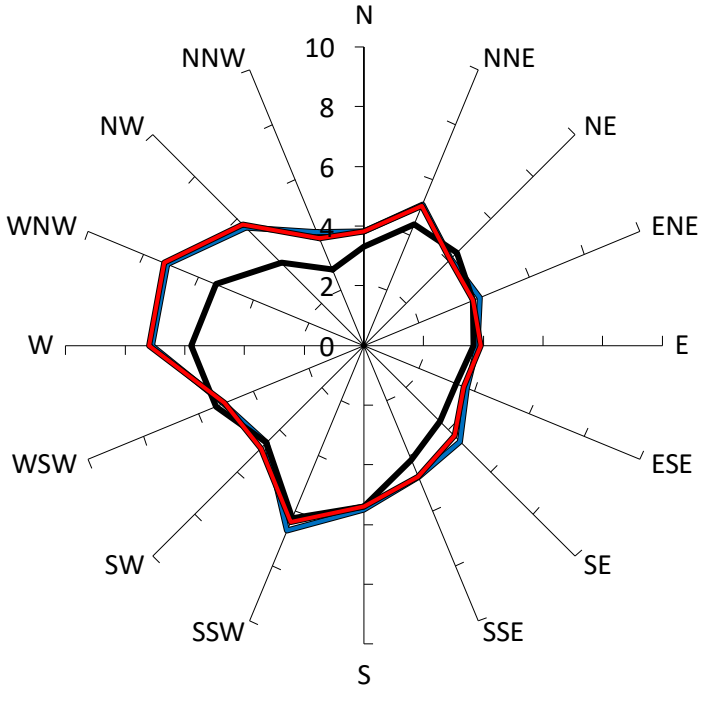


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	5%	23
	Existing Site	1%	17
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	5%	24

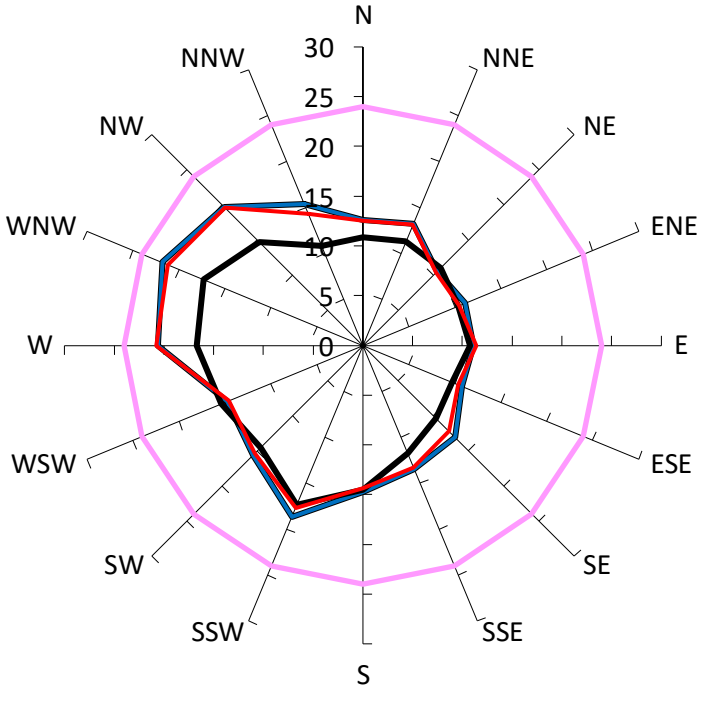
Results for P73

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

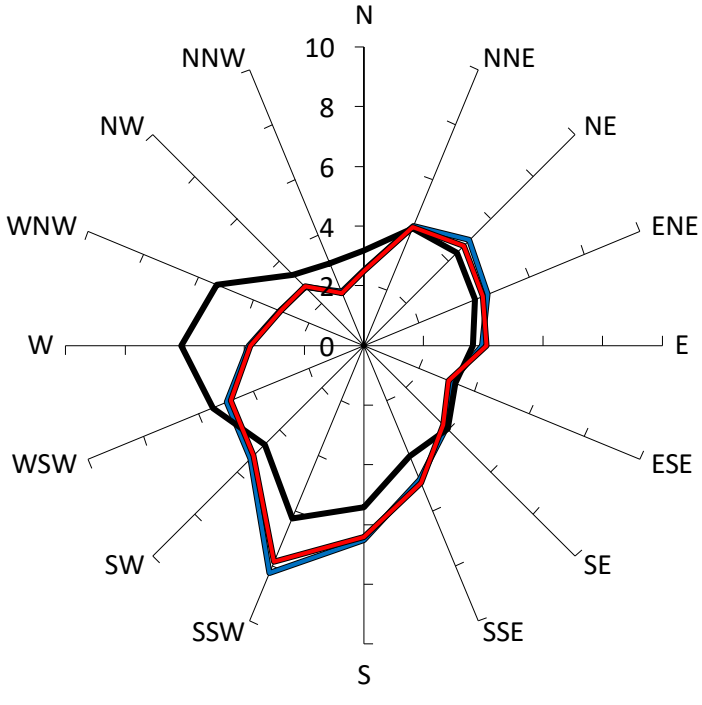


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	2%	22
Existing Site	1%	17
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	2%	21

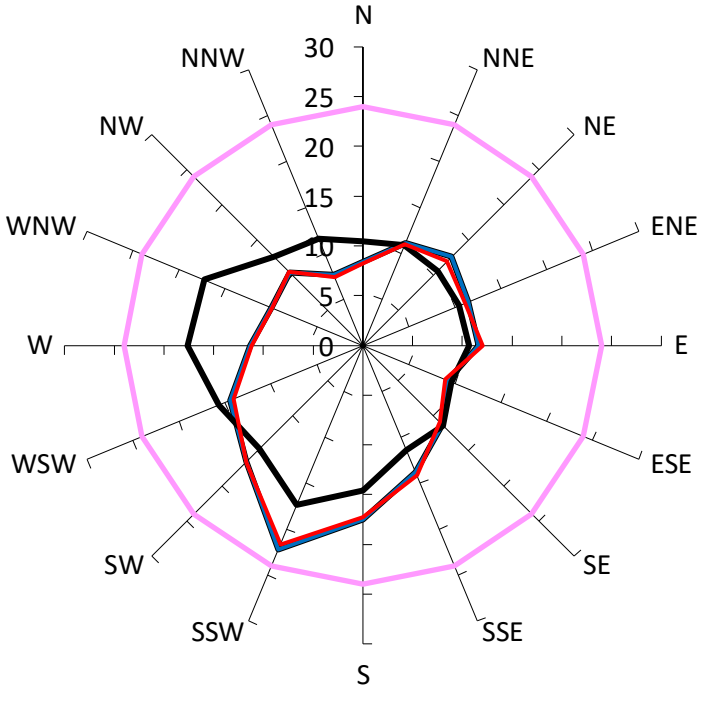
Results for P74

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

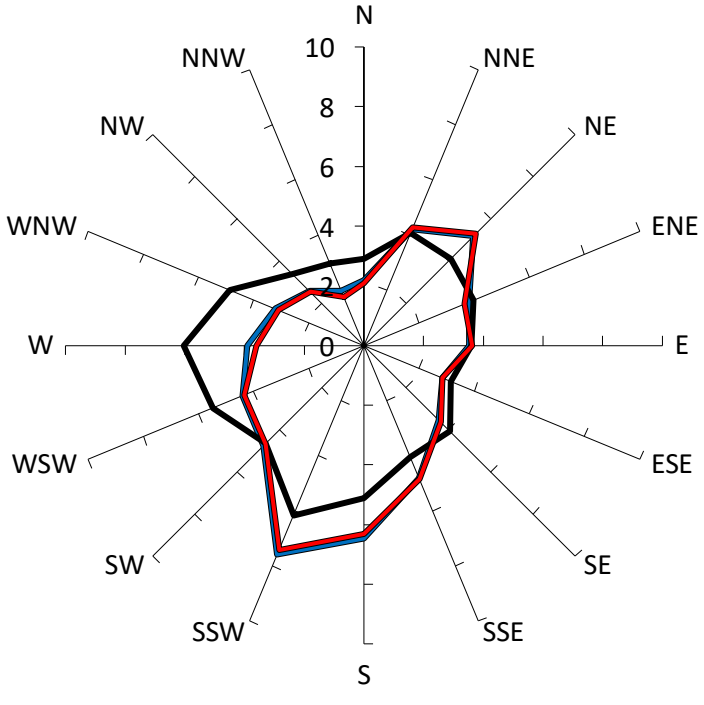


Safety Limit: 24m/s

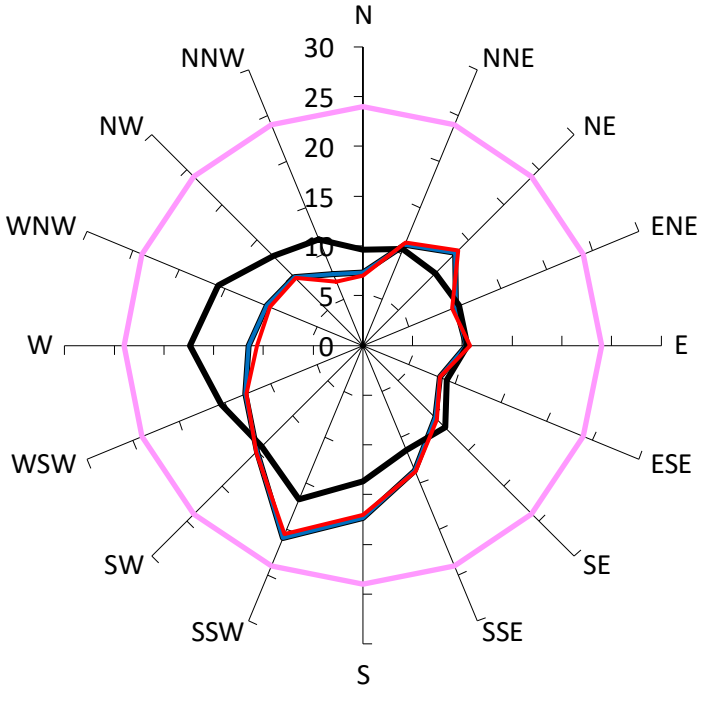
Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	2%	22
Existing Site	1%	18
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	2%	22

Results for P75

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

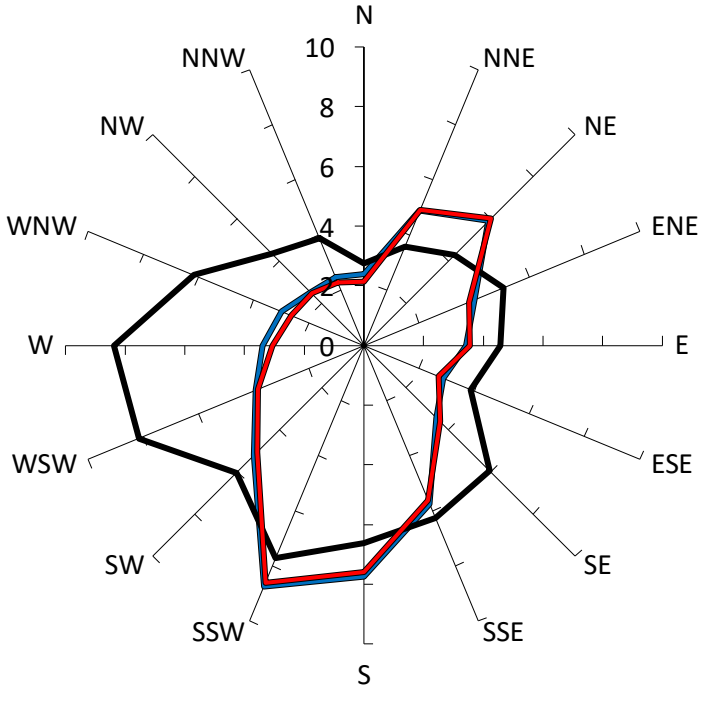


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	21
	Existing Site	1%	17
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	21

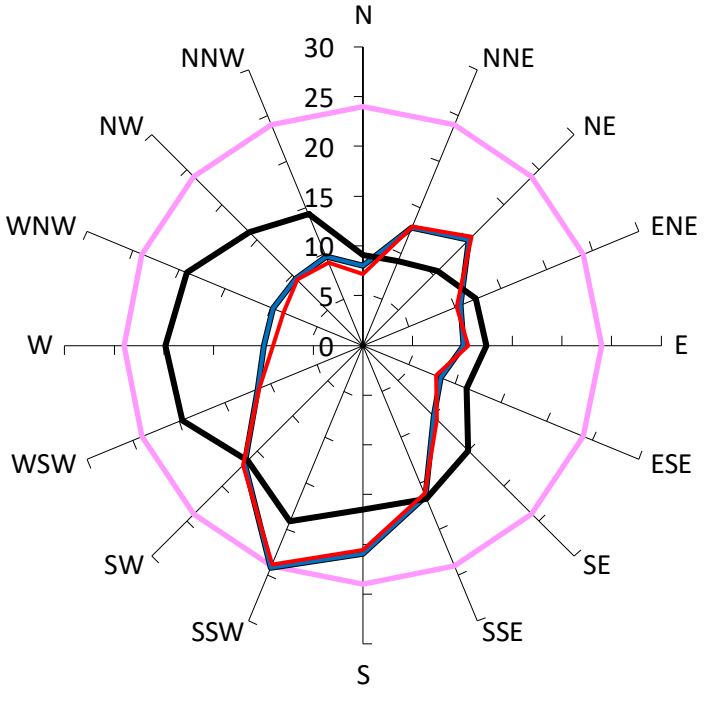
Results for P76

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

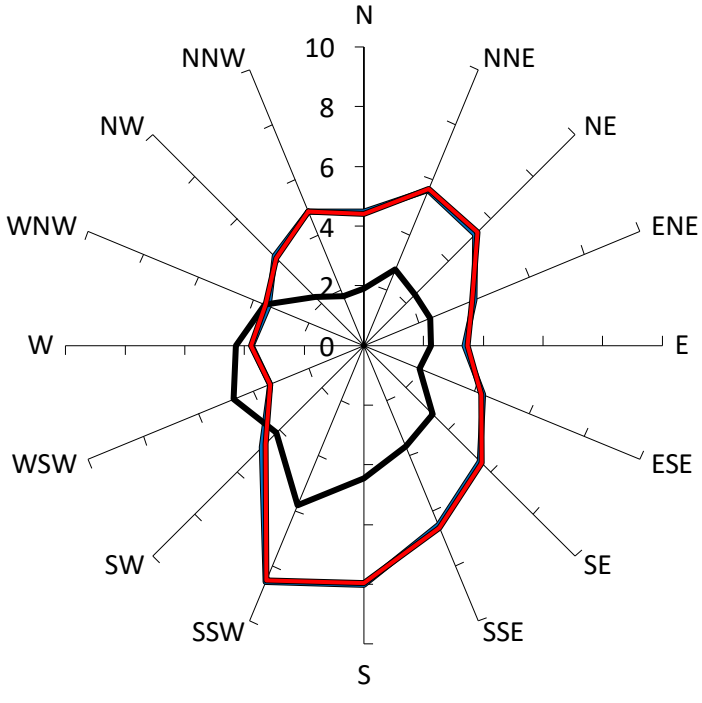


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	3%	24
	Existing Site	5%	20
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	3%	24

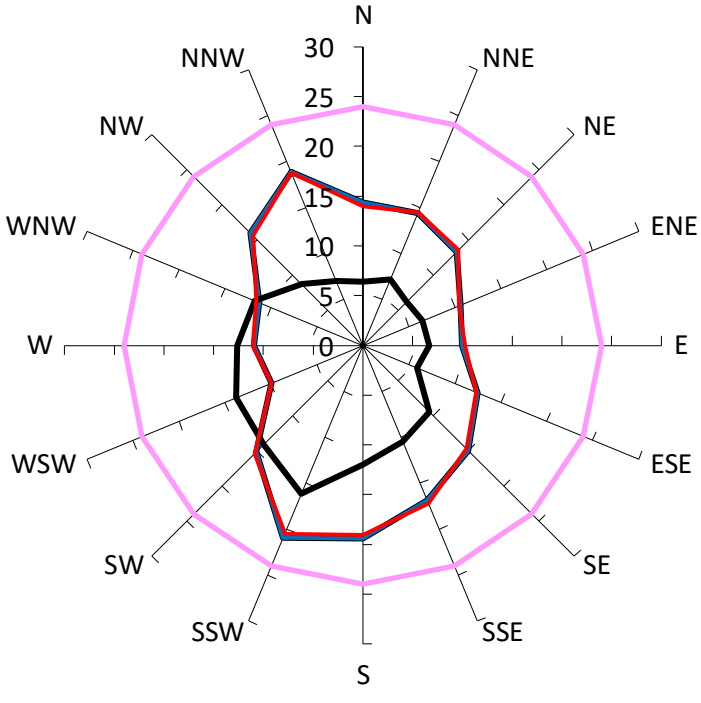
Results for P77

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

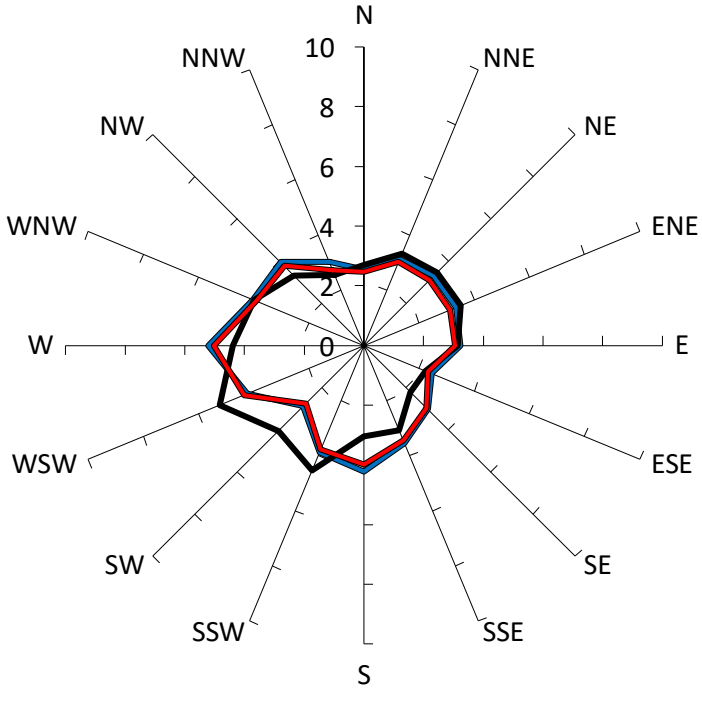


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	4%	21
Existing Site	< 1%	16
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	4%	20

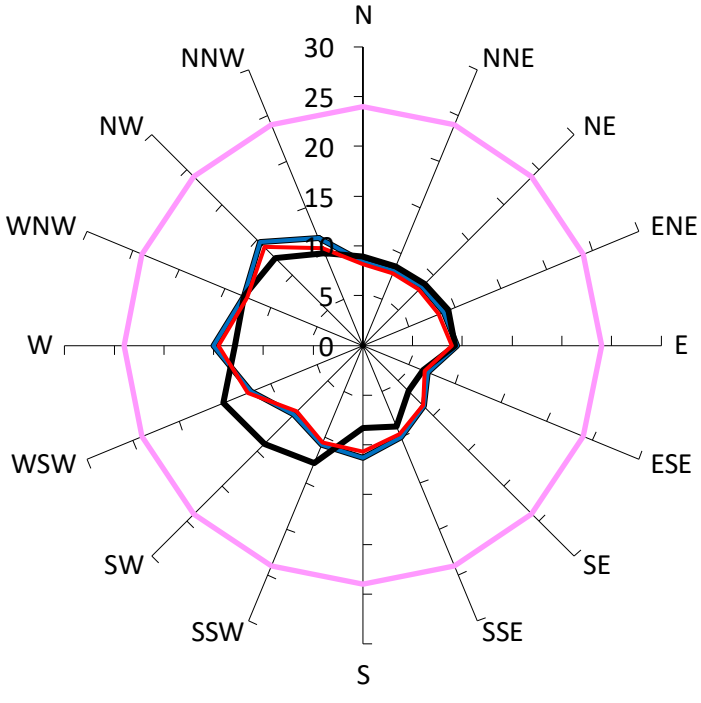
Results for P78

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

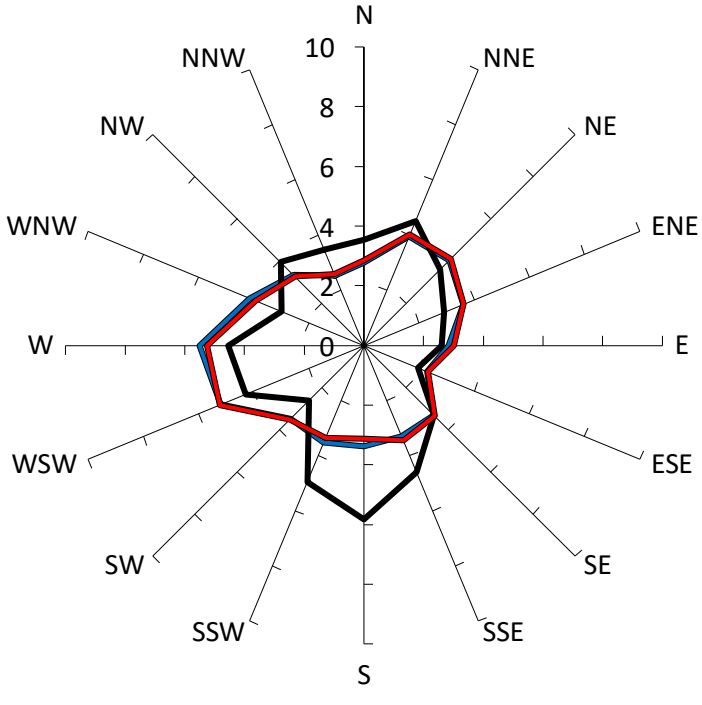


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	15
	Existing Site	< 1%	15
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	15

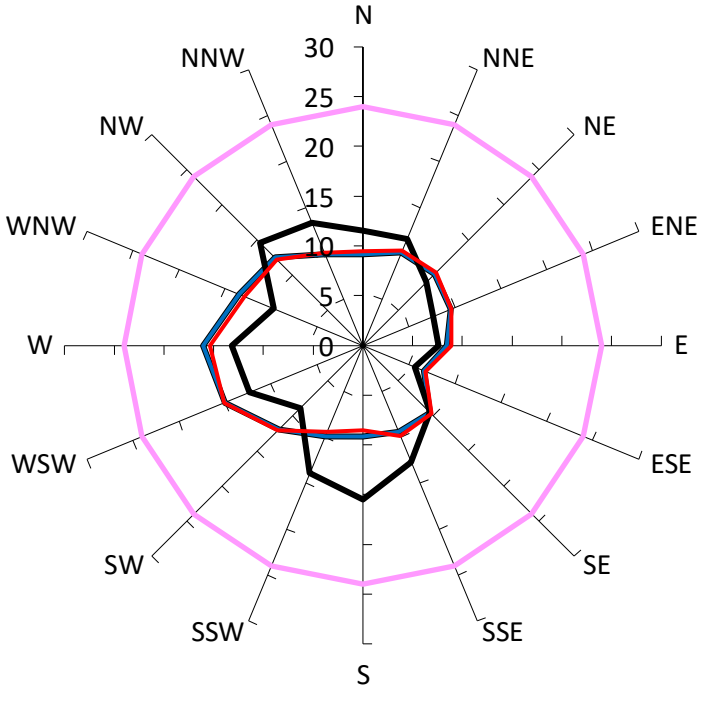
Results for P79

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

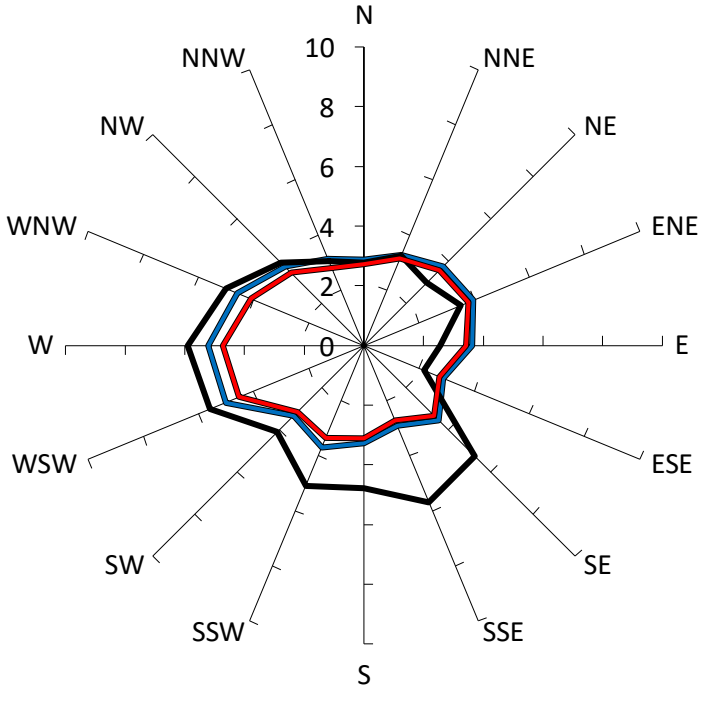


Safety Limit: 24m/s

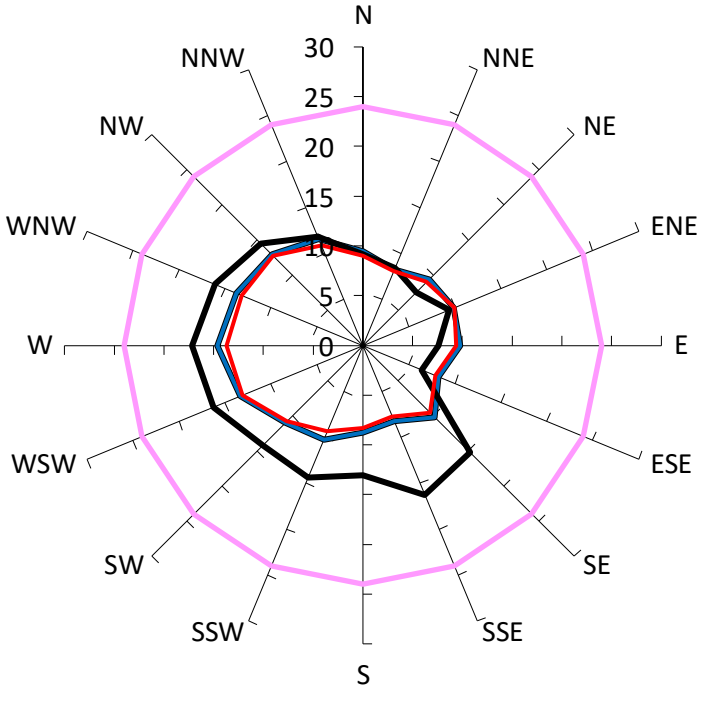
	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	16
	Existing Site	< 1%	15
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	15

Results for P80

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

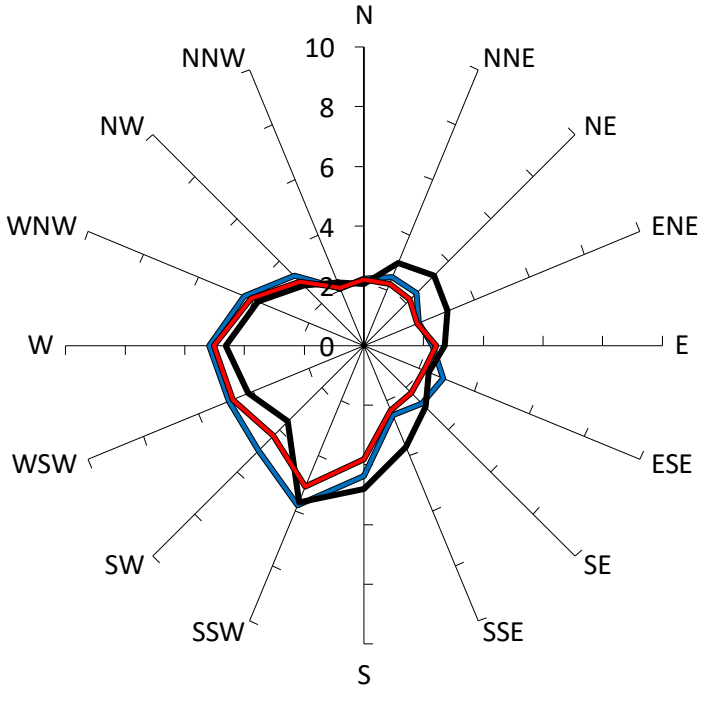


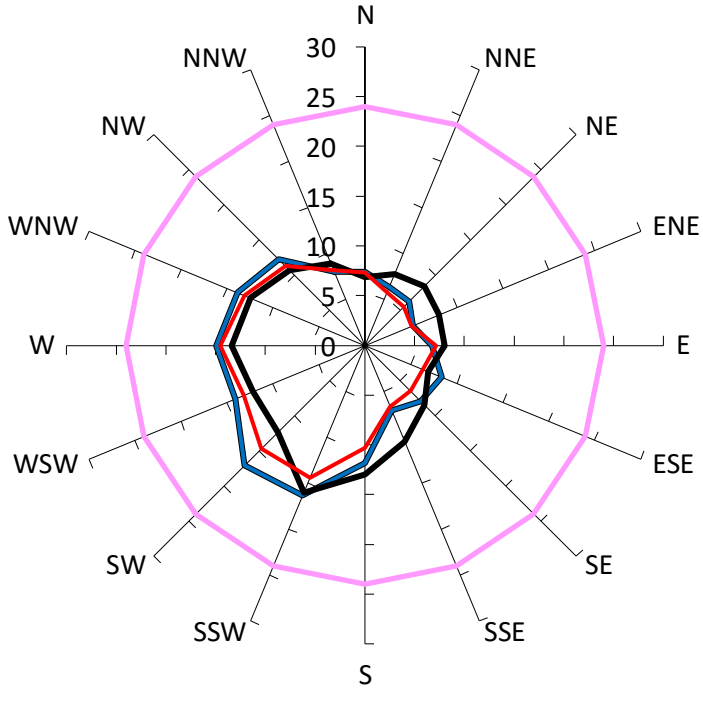
Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	15
	Existing Site	1%	17
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	14

Results for P81

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)





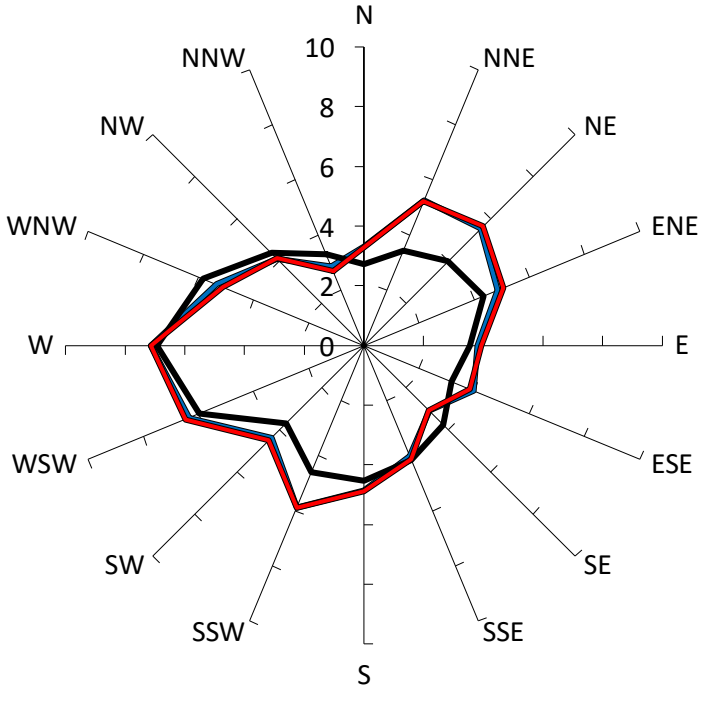
Comfort Criteria: 8m/s with 5% probability of exceedence

Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	17
	Existing Site	< 1%	16
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	15

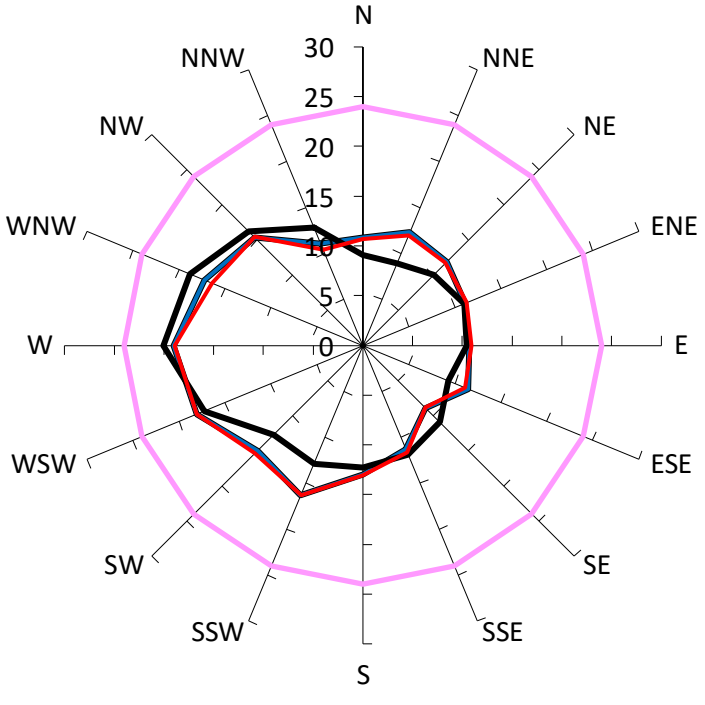
Results for P82

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

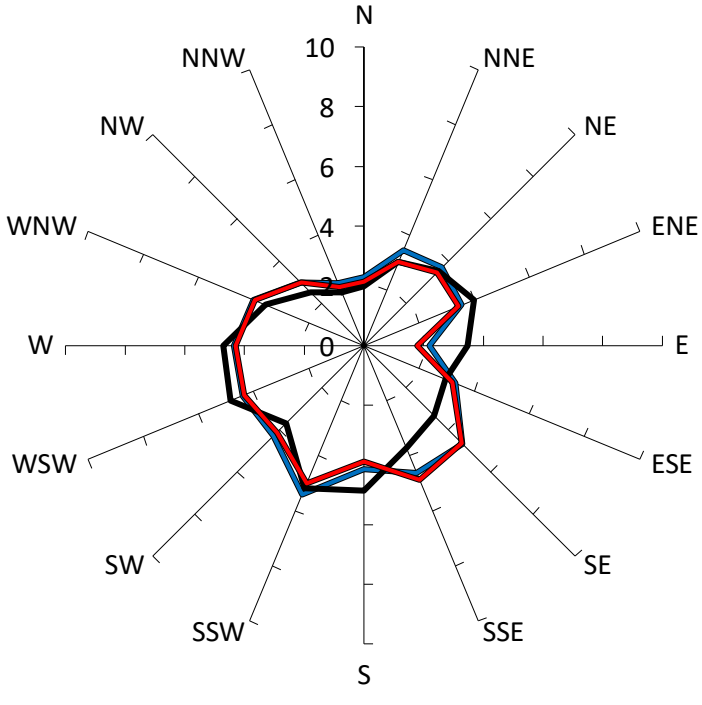


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	19
Existing Site	1%	20
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	19

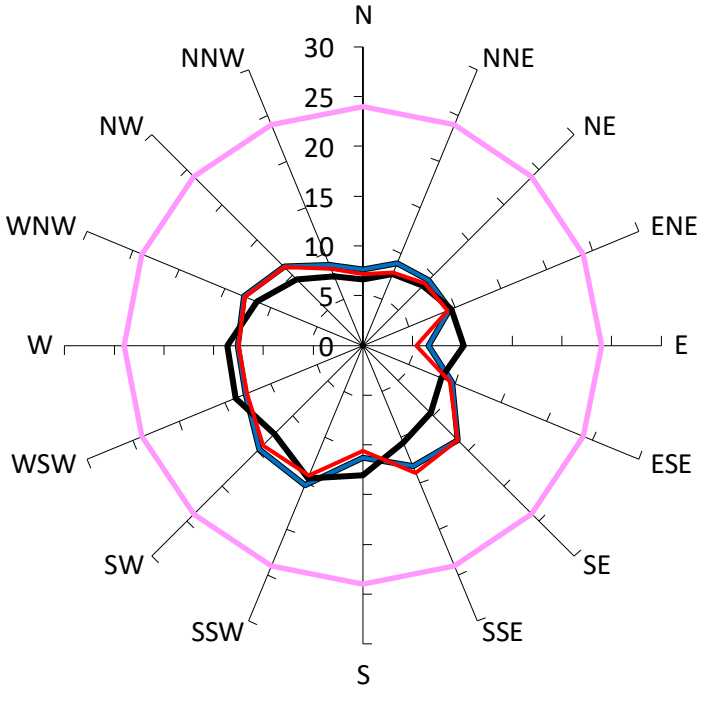
Results for P83

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

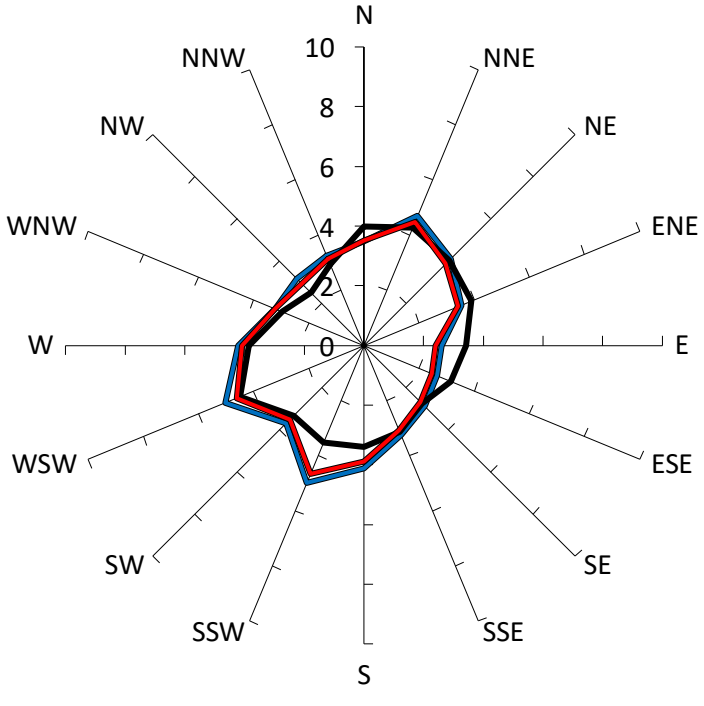


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	15
	Existing Site	< 1%	14
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	14

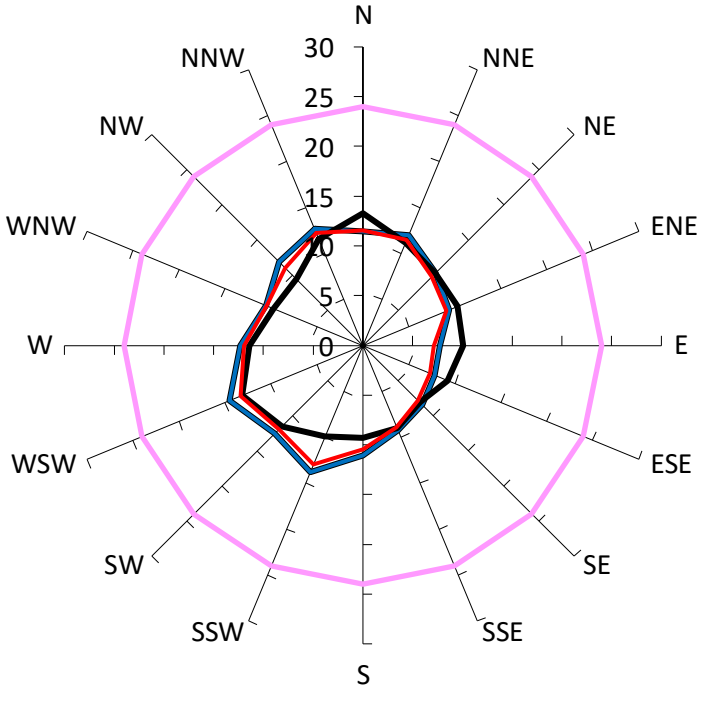
Results for P84

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

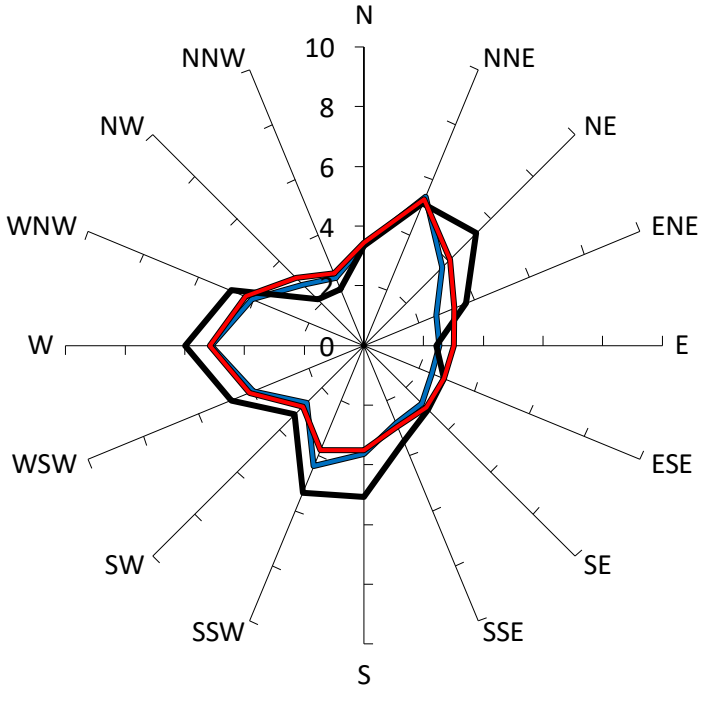


Safety Limit: 24m/s

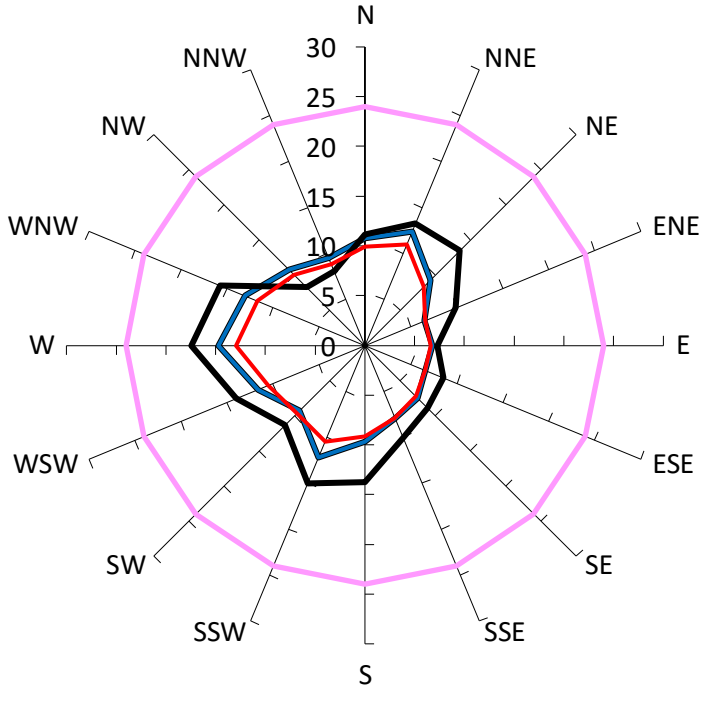
Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	15
Existing Site	< 1%	13
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	13

Results for P85

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

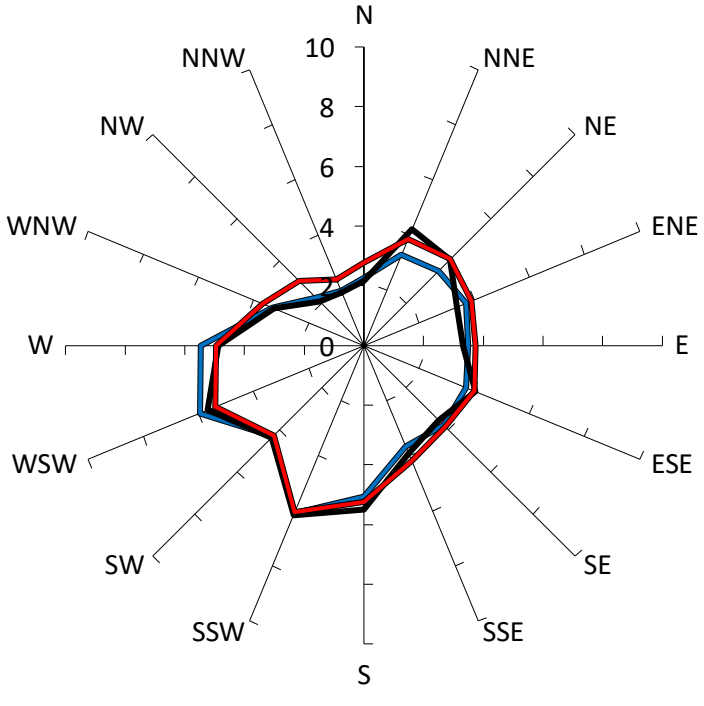


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	15
	Existing Site	< 1%	17
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	13

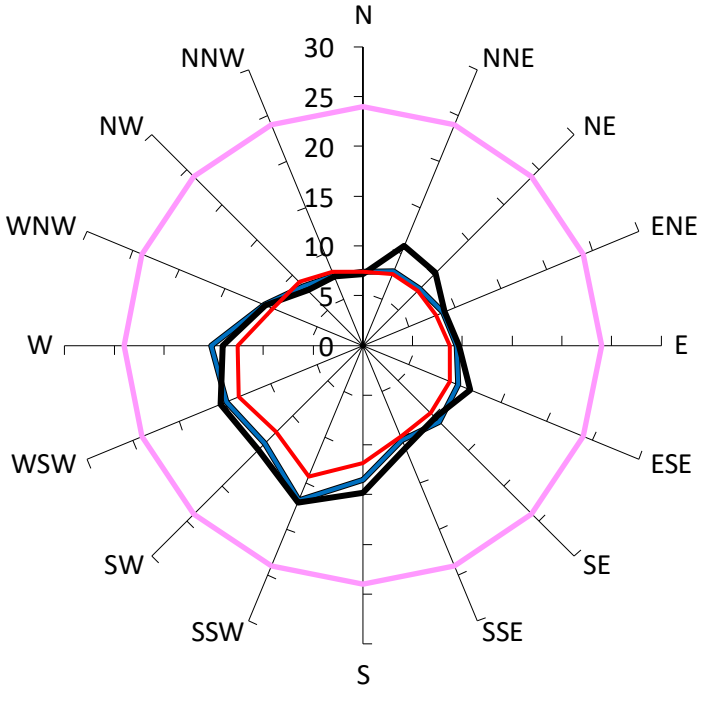
Results for P86

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

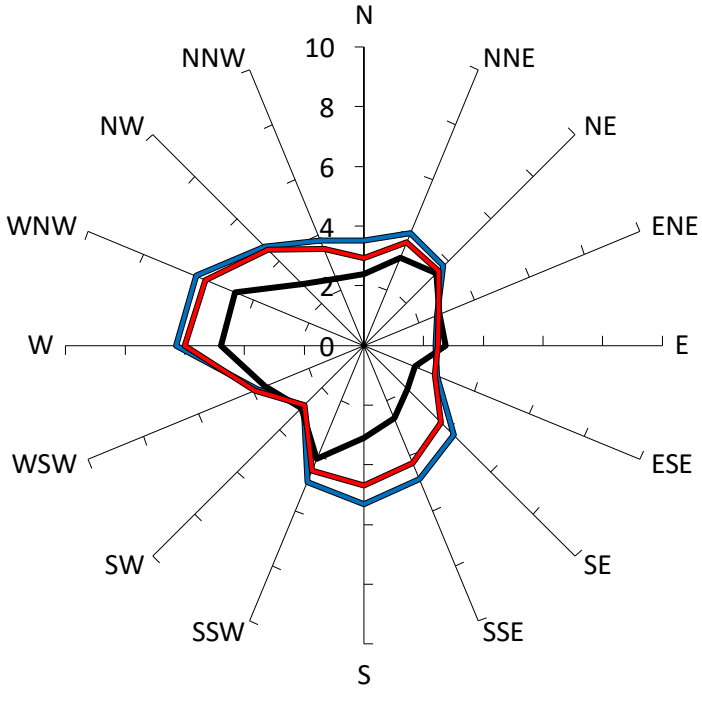


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	17
	Existing Site	< 1%	17
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	14

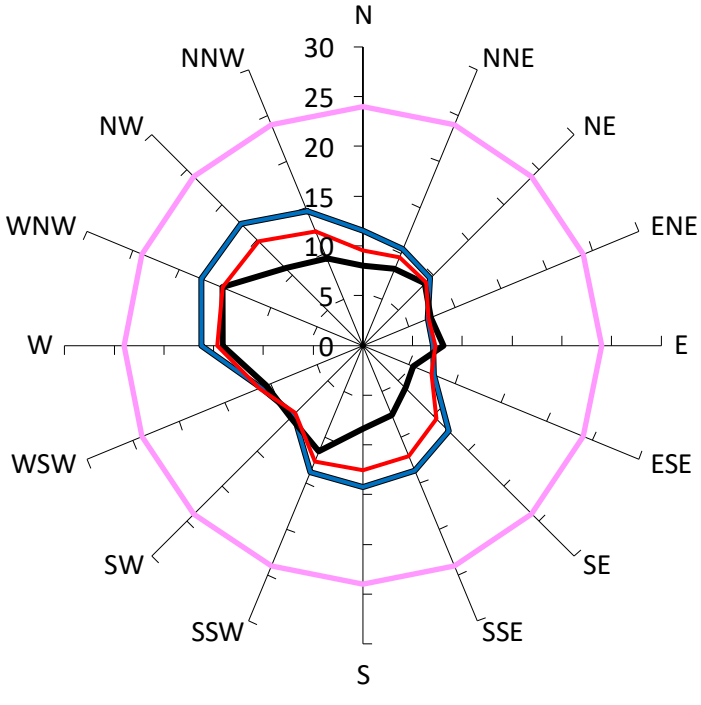
Results for P87

Gust Equivalent Mean (m/s)



Comfort Criteria: 6m/s with 5% probability of exceedence

Maximum Gust (m/s)

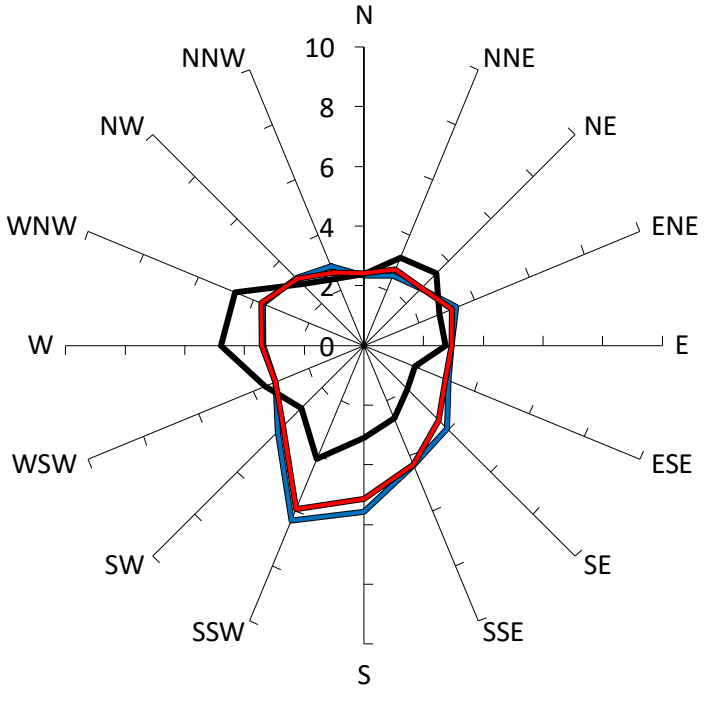


Safety Limit: 24m/s

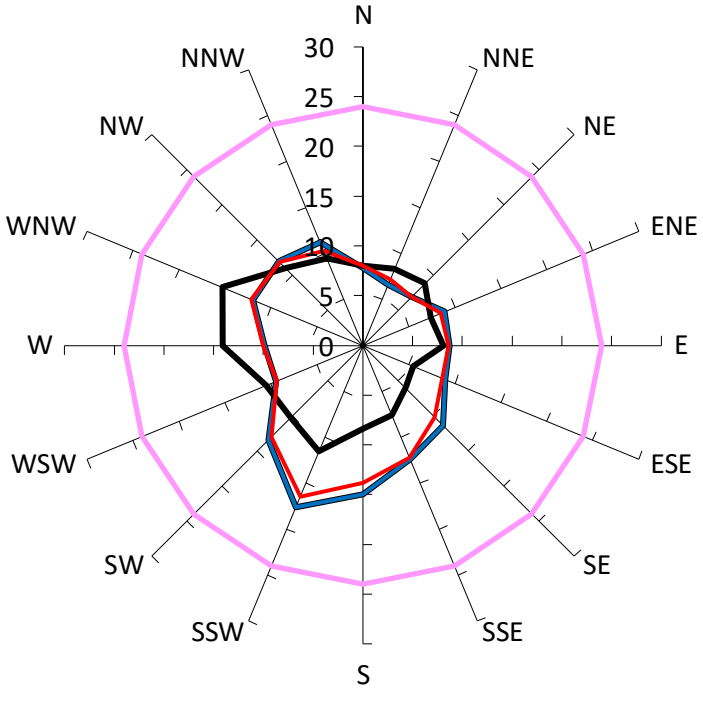
	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Standing Criterion (6m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	5%	18
	Existing Site	1%	15
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	3%	15

Results for P88

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)



Comfort Criteria: 6m/s with 5% probability of exceedence

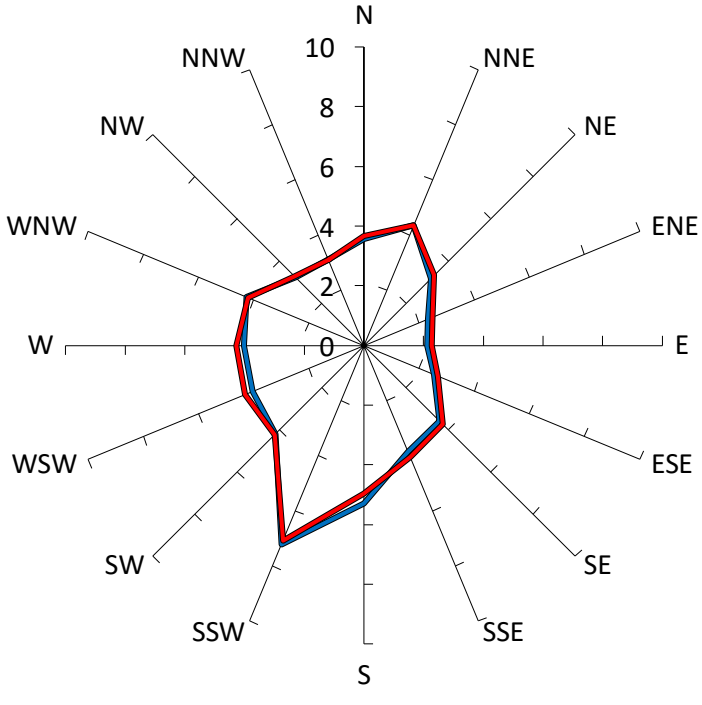


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Standing Criterion (6m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	3%	18
	Existing Site	1%	15
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	2%	16

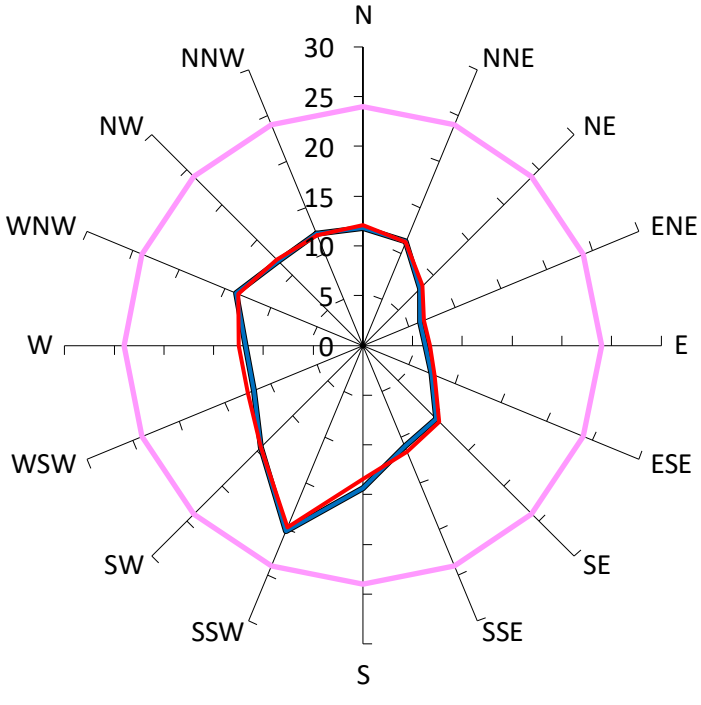
Results for P02a

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

Maximum Gust (m/s)

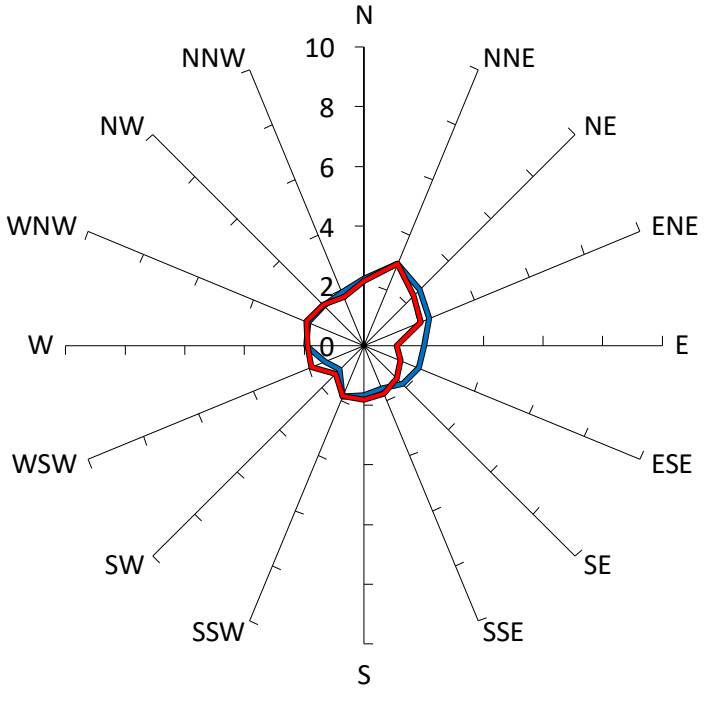


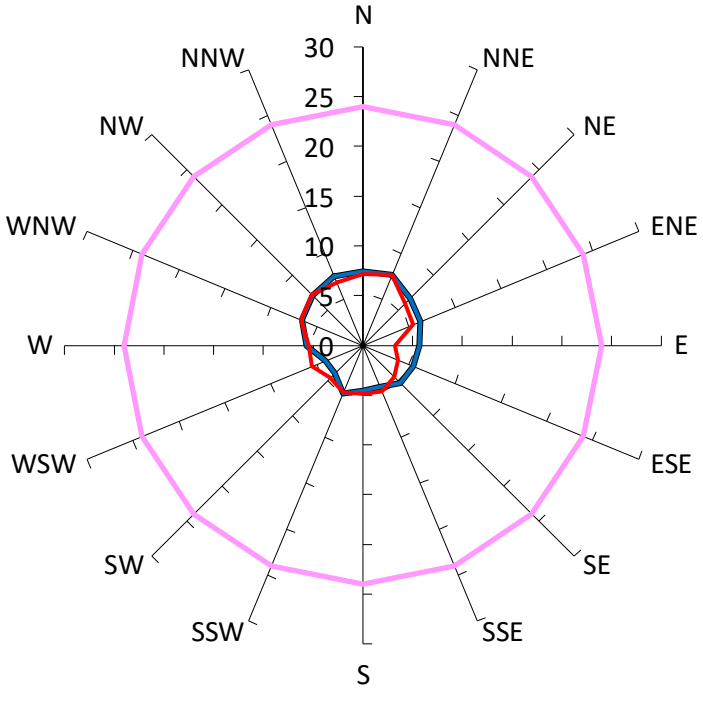
Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	20
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	20

Results for P15a

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)





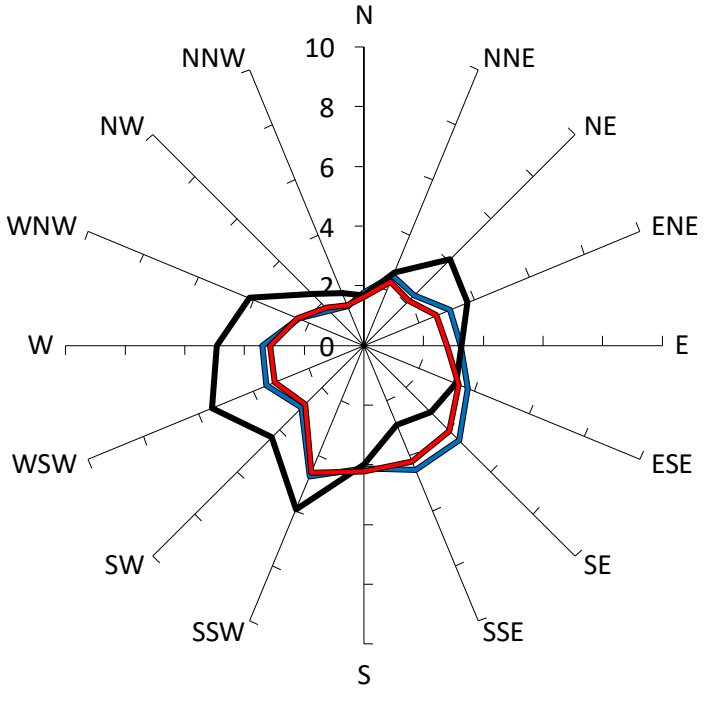
Comfort Criteria: 4m/s with 5% probability of exceedence

Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Sitting Criterion (4m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	< 1%	8
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	< 1%	8

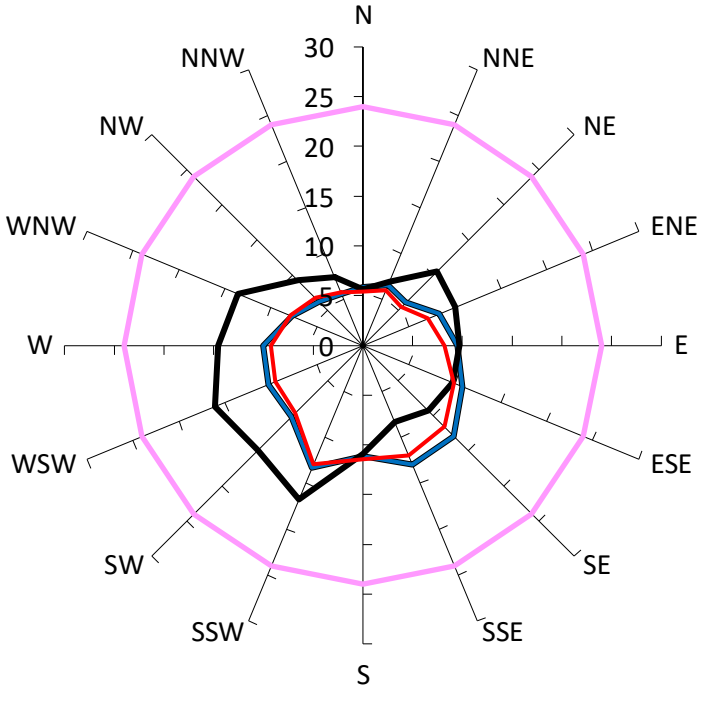
Results for P20a

Gust Equivalent Mean (m/s)



Comfort Criteria: 6m/s with 5% probability of exceedence

Maximum Gust (m/s)

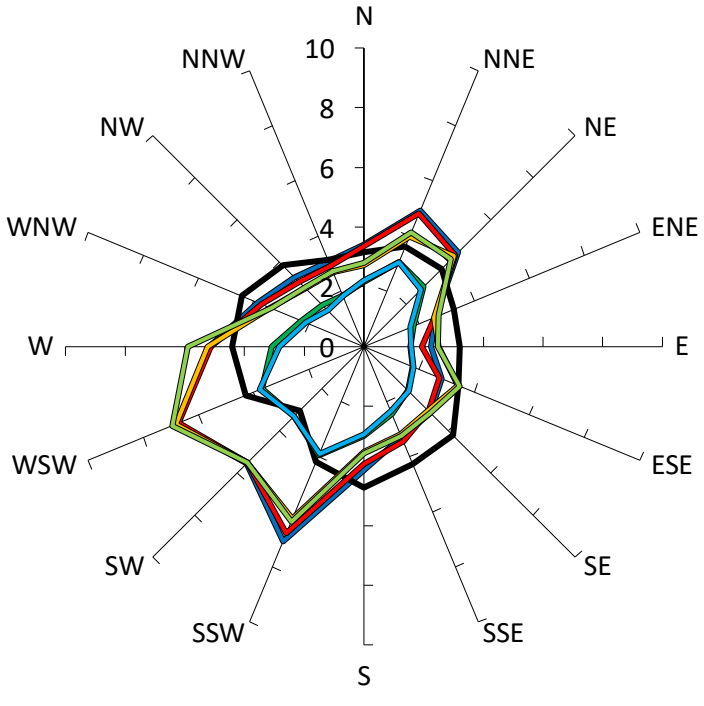


Safety Limit: 24m/s

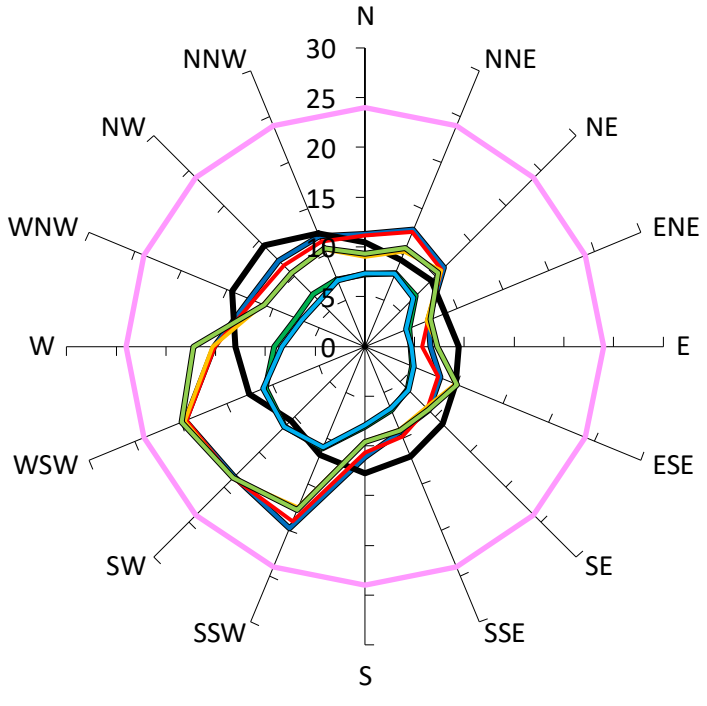
Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Standing Criterion (6m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	13
Existing Site	3%	17
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	13

Results for P45a

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)



Comfort Criteria: 4m/s with 5% probability of exceedence

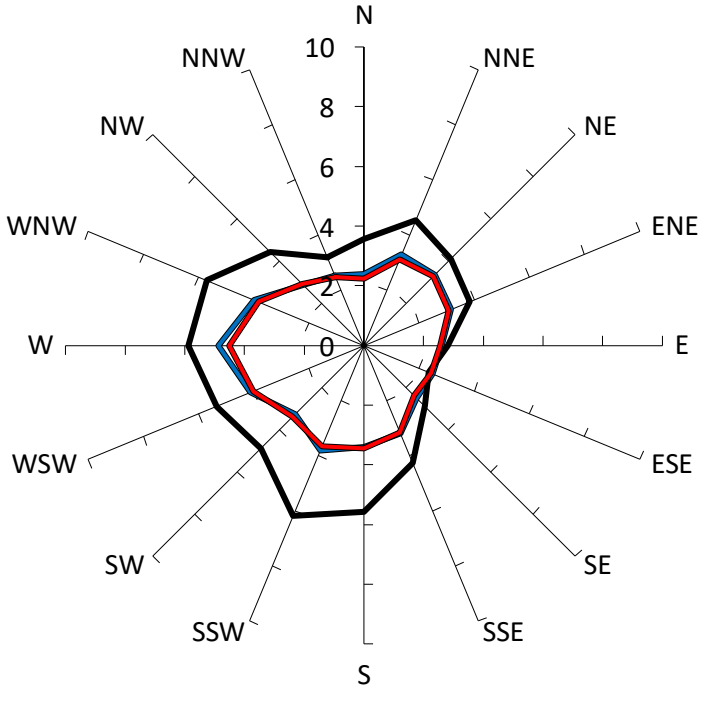


Safety Limit: 24m/s

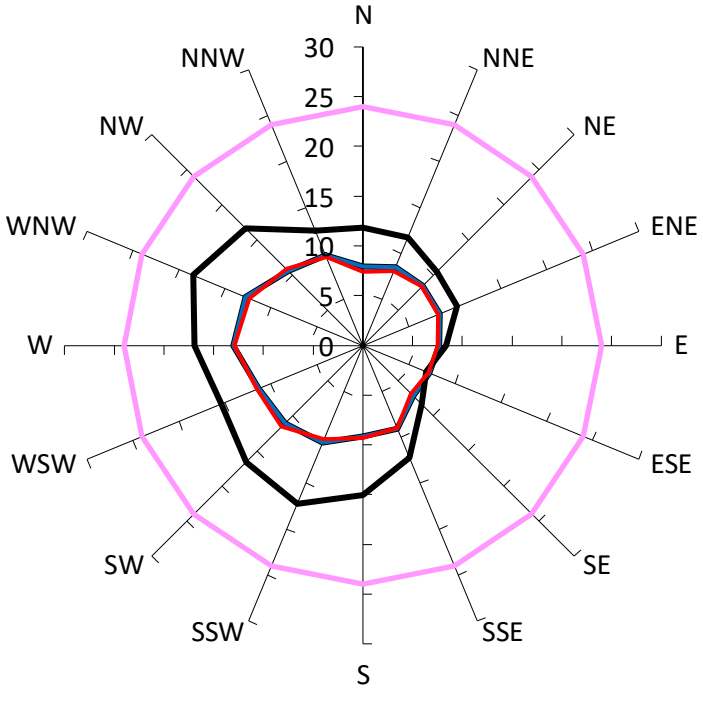
	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Sitting Criterion (4m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	25%	20
	Existing Site	17%	14
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	24%	19
	Treatment Scenario 1 (proposed development): 4m wide impermeable awning	21%	20
	Treatment Scenario 1 (proposed development with clothing precinct): 4m wide impermeable awning	21%	20
	Treatment Scenario 2 (proposed development): 4m wide impermeable awning + 2m high localised, impermeable wind screens (tenant operated if necessary)	3%	11
	Treatment Scenario 2 (proposed development with clothing precinct): 4m wide impermeable awning + 2m high localised, impermeable wind screens (tenant operated if necessary)	3%	11

Results for P53a

Gust Equivalent Mean (m/s)	Maximum Gust (m/s)



Comfort Criteria: 6m/s with 5% probability of exceedence

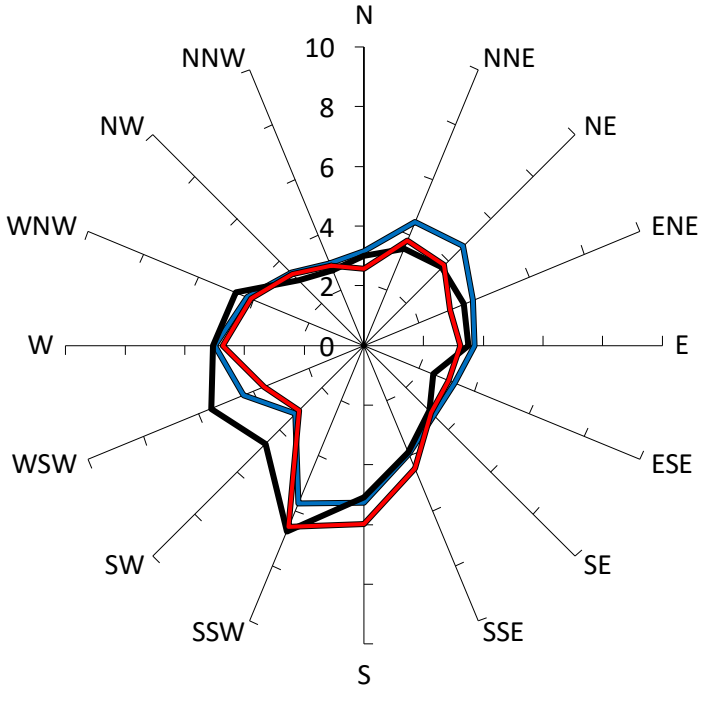


Safety Limit: 24m/s

	Description	GEM Prob of Exceed %	Peak Gust m/s
	Criterion: Wind Comfort Standard for Standing Criterion (6m/s). Safety Limit (24m/s).	5%	24
	With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	13
	Existing Site	6%	18
	With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	13

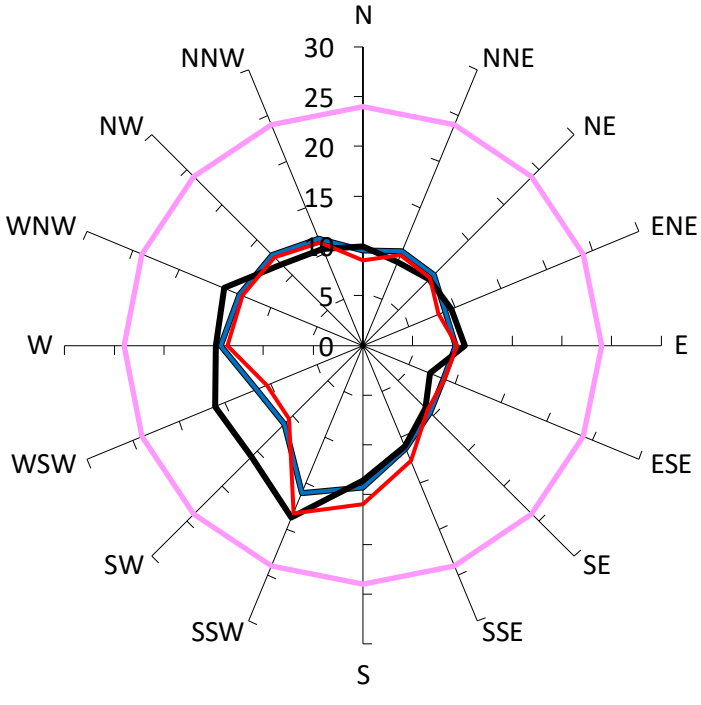
Results for P59a

Gust Equivalent Mean (m/s)



Comfort Criteria: 6m/s with 5% probability of exceedence

Maximum Gust (m/s)

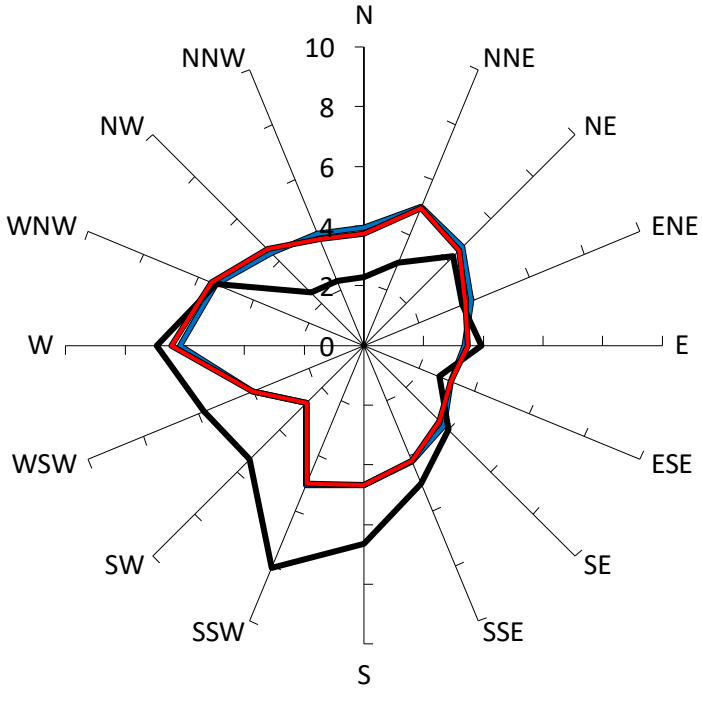


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Standing Criterion (6m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	3%	16
Existing Site	5%	19
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	4%	18

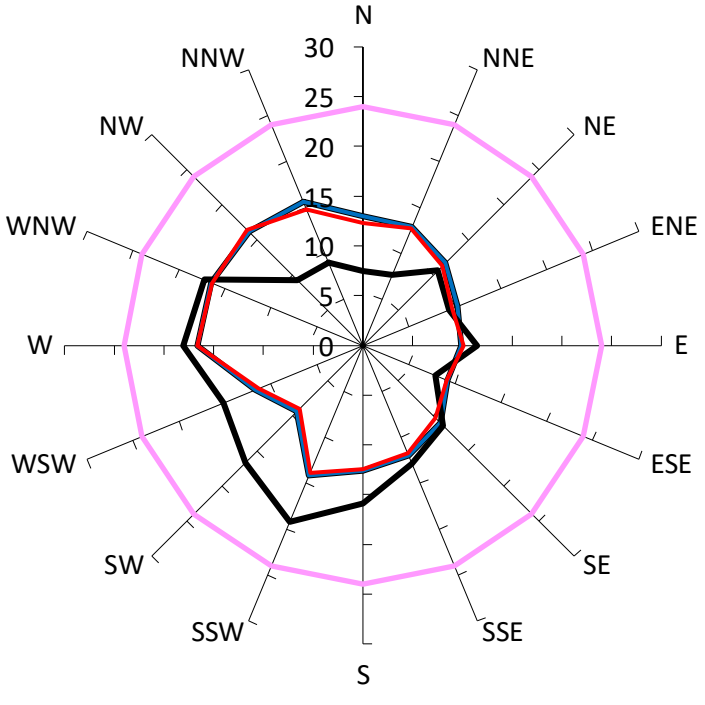
Results for P60a

Gust Equivalent Mean (m/s)



Comfort Criteria: 8m/s with 5% probability of exceedence

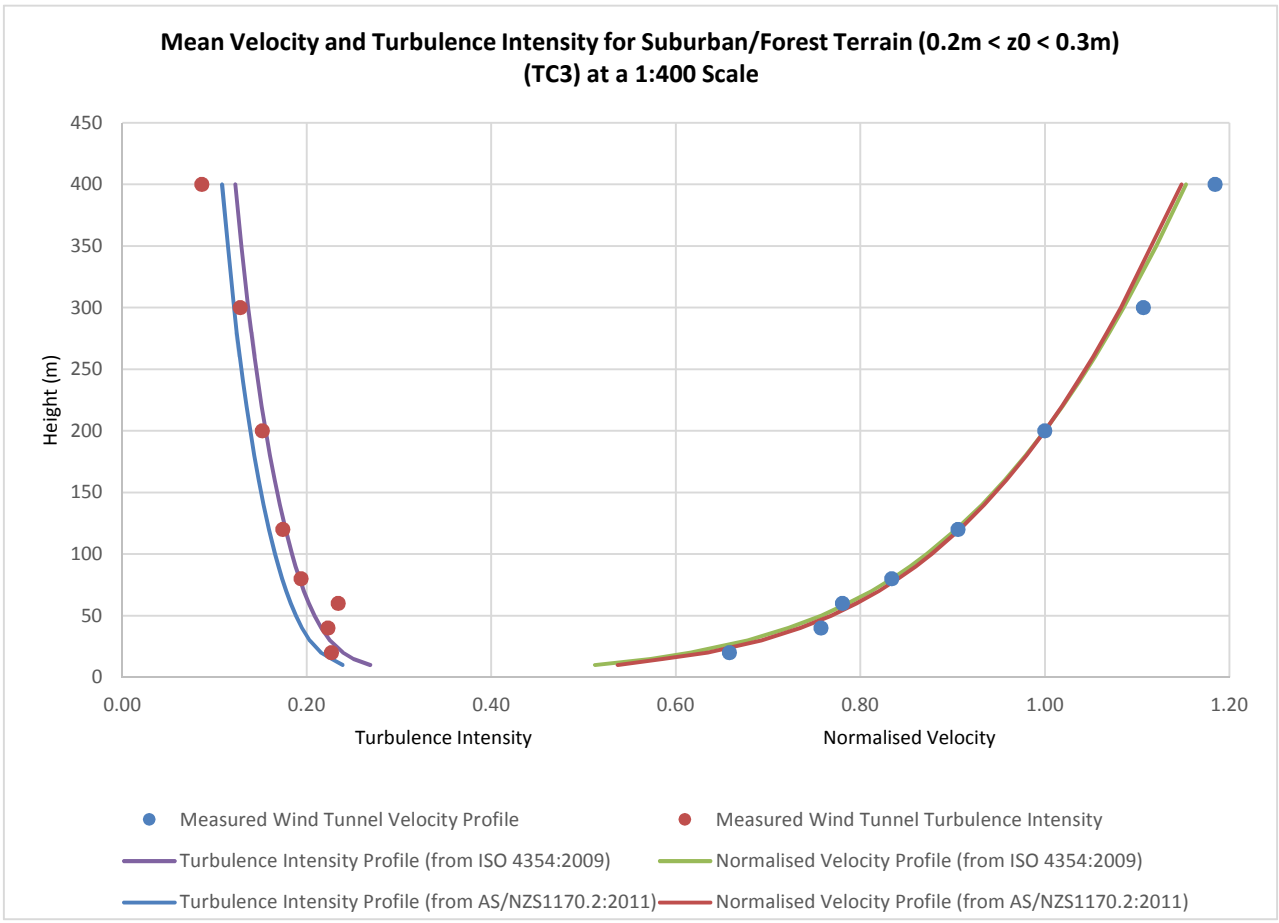
Maximum Gust (m/s)

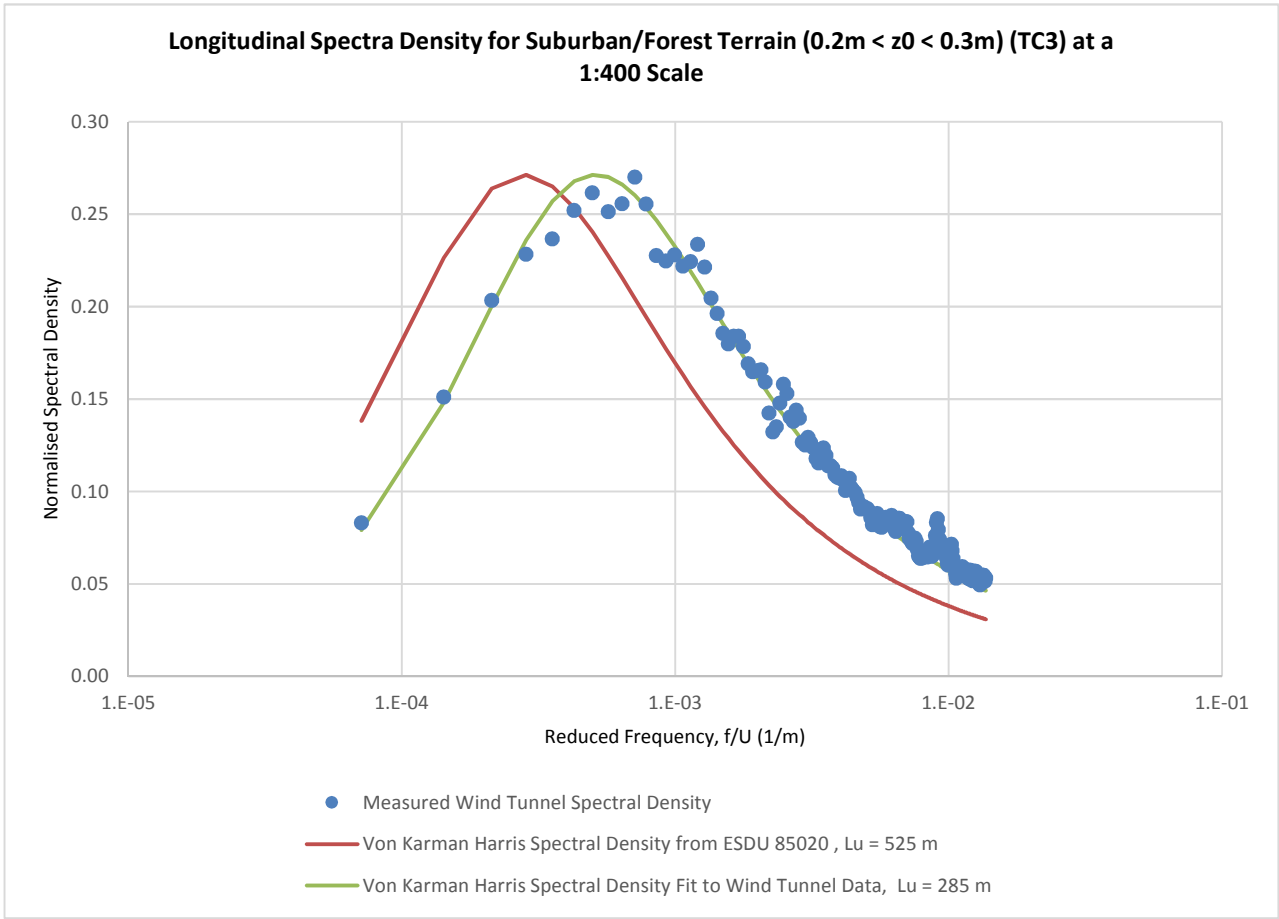


Safety Limit: 24m/s

Description	GEM Prob of Exceed %	Peak Gust m/s
Criterion: Wind Comfort Standard for Walking Criterion (8m/s). Safety Limit (24m/s).	5%	24
With the proposed Paint Shop Sub-Precinct development, no vegetation or other treatments.	1%	17
Existing Site	3%	19
With the proposed Paint Shop Sub-Precinct development and the Clothing Store Sub-Precinct, no vegetation or other treatments.	1%	17

APPENDIX D VELOCITY AND TURBULENCE INTENSITY PROFILES


Mean Velocity and Turbulence Intensity for Suburban/Forest Terrain (0.2m < z0 < 0.3m) (TC3) at a 1:400 Scale
Height (m)
450
400
350
300
250
200
150
100
50
0
0.00
0.20
0.40
0.60
0.80
1.00
1.20
Turbulence Intensity
Normalised Velocity
Measured Wind Tunnel Velocity Profile
Measured Wind Tunnel Turbulence Intensity
Turbulence Intensity Profile (from ISO 4354:2009)
Normalised Velocity Profile (from ISO 4354:2009)
Turbulence Intensity Profile (from AS/NZS1170.2:2011)
Normalised Velocity Profile (from AS/NZS1170.2:2011)


Longitudinal Spectra Density for Suburban/Forest Terrain (0.2m < z0 < 0.3m) (TC3) at a 1:400 Scale
Normalised Spectral Density
0.30
0.25
0.20
0.15
0.10
0.05
0.00
1.E-05
1.E-04
1.E-03
1.E-02
1.E-01
Reduced Frequency, f/U (1/m)
Measured Wind Tunnel Spectral Density
Von Karman Harris Spectral Density from ESDU 85020 , Lu = 525 m
Von Karman Harris Spectral Density Fit to Wind Tunnel Data, Lu = 285 m

APPENDIX E SEASONAL ANALYSIS RESULTS DATA

Point **P01**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	LE	LE	LE	SE	SE	SE	SE	SE	LE	LE	SE
3am - 6am	LE	LE	LE	LE	SE	SE	SE	SE	SE	LE	LE	LE
6am - 9am	LE	LE	LE	LE	SE	SE	SE	SE	SE	SE	SE	LE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	SE
3pm - 6pm	CW	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW
6pm - 9pm	CW	CW	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P02**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	CW	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	SE	SE	SE	SE	SE	CW	CW	CW	CW
6pm - 9pm	EC(<2)	CW	CW	SE	SE	SE	SE	SE	CW	CW	CW	EC(<2)
9pm- 12am	CW	CW	SE	SE	SE	SE	SE	SE	SE	SE	SE	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P03**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	CW	SE	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
3am - 6am	SE	SE	SE	CW	CW	CW	CW	SE	CW	CW	SE	CW
6am - 9am	SE	CW	SE	CW	CW	CW	CW	CW	CW	CW	CW	CW
9am - 12pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
12pm - 3pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	EC(<2)	CW	CW	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)
6pm - 9pm	EC(<2)	EC(<2)	CW	CW	CW	CW	CW	CW	CW	CW	EC(<2)	EC(<2)
9pm- 12am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P04**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	SE
3am - 6am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
6am - 9am	LE	LE	LE	LE	LE	LE	LE	LE	SE	LE	LE	LE
9am - 12pm	SE	SE	LE	LE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	CW	SE	SE	SE
3pm - 6pm	CW	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW	CW
6pm - 9pm	CW	CW	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW
9pm- 12am	SE	SE	SE	LE	LE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P05**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	LE	LE	SE	LE	SE	SE	SE	SE	SE	SE	LE	SE
3am - 6am	LE	LE	LE	LE	SE	SE	SE	SE	SE	SE	LE	LE
6am - 9am	LE	LE	LE	SE	SE	SE	SE	SE	SE	SE	SE	LE
9am - 12pm	SE	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	CW
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P06**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	LE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	CW	CW	CW	CW	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P07**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
3am - 6am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
6am - 9am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
9am - 12pm	LE	LE	LE	LE	SE	SE	SE	SE	SE	SE	SE	LE
12pm - 3pm	SE	LE	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6pm - 9pm	SE	SE	SE	SE	LE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	LE	LE	SE	LE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P08**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P09**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	SE
3am - 6am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
6am - 9am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
9am - 12pm	SE	SE	LE	LE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	CW	SE	SE	SE
3pm - 6pm	CW	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW	CW
6pm - 9pm	CW	CW	SE	SE	LE	SE	SE	SE	SE	SE	CW	CW
9pm- 12am	SE	SE	SE	LE	LE	SE	LE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P10**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
3am - 6am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
6am - 9am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
9am - 12pm	LE	LE	LE	LE	LE	LE	LE	LE	SE	LE	LE	LE
12pm - 3pm	LE	LE	LE	LE	LE	SE	SE	SE	SE	SE	SE	LE
3pm - 6pm	SE	SE	LE	LE	LE	LE	LE	SE	SE	SE	SE	SE
6pm - 9pm	SE	SE	LE	LE	LE	LE	LE	LE	LE	SE	SE	SE
9pm- 12am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P11**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
3am - 6am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
6am - 9am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
9am - 12pm	LE	LE	LE	LE	LE	LE	SE	SE	SE	SE	LE	LE
12pm - 3pm	SE	LE	LE	LE	LE	SE	SE	SE	SE	SE	SE	SE
3pm - 6pm	SE	SE	SE	LE	LE	SE	SE	SE	SE	SE	SE	SE
6pm - 9pm	SE	SE	SE	LE	LE	LE	LE	LE	SE	SE	SE	SE
9pm- 12am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P12

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE	SE
12pm - 3pm	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	CW	SE
3pm - 6pm	SE	SE	SE	SE	CW	CW	CW	CW	EC(<2)	CW	CW	CW
6pm - 9pm	CW	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	CW
9pm- 12am	SE	SE	SE	SE	SE	CW	CW	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P13**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE	SE
3pm - 6pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P14

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
3am - 6am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
6am - 9am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
9am - 12pm	LE	LE	LE	LE	LE	SE	SE	SE	SE	SE	SE	LE
12pm - 3pm	SE	LE	LE	LE	SE	SE	SE	SE	SE	SE	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6pm - 9pm	SE	SE	SE	LE	LE	LE	LE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	LE	LE	LE	LE	LE	LE	LE	LE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P15

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3pm - 6pm	CW	CW	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW
6pm - 9pm	CW	CW	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P16

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE	SE
3pm - 6pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	CW	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P17**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE	SE
12pm - 3pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE	SE
3pm - 6pm	SE	SE	SE	SE	CW	CW	CW	CW	EC(<2)	CW	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P18**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW	CW	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P19

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE	SE
12pm - 3pm	CW	SE	SE	CW	CW	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	SE	CW	CW	CW	CW	EC(<2)	CW	CW	CW
6pm - 9pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	CW
9pm- 12am	SE	SE	SE	SE	SE	CW	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P20**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	LE
3am - 6am	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	LE
6am - 9am	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	LE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	SE	SE	CW	SE	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P21**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	LE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P22**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE	SE
3pm - 6pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P23**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	LE	LE	LE	LE	LE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	LE	LE	LE	LE	LE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	LE	LE	LE	LE	LE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	LE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	LE	SE	LE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P24**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW	SE
3pm - 6pm	CW	CW	SE	SE	SE	SE	SE	SE	CW	CW	CW	CW
6pm - 9pm	CW	CW	CW	SE	SE	SE	SE	SE	SE	CW	CW	CW
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P25**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	CW	SE	CW	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	CW	CW	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	CW	SE	CW	CW	CW	SE
9am - 12pm	SE	CW	SE	CW	CW	CW	CW	CW	CW	CW	CW	CW
12pm - 3pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
6pm - 9pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
9pm- 12am	CW	CW	CW	SE	SE	CW	CW	CW	CW	CW	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P26

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	LE	LE	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	LE	LE	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	CW	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	SE
3pm - 6pm	CW	CW	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW
6pm - 9pm	CW	CW	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P27**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	LE	LE	SE	LE	SE	SE	SE	SE	SE	LE	LE	LE
3am - 6am	LE	LE	LE	LE	SE	SE	SE	SE	SE	SE	LE	LE
6am - 9am	LE	LE	LE	LE	SE	SE	SE	SE	SE	SE	SE	LE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	CW	SE	CW	CW	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P28**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P29**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	CW	CW	SE	SE	SE	SE	SE	SE	SE	CW	CW
3am - 6am	SE	CW	CW	SE	SE	SE	SE	SE	SE	SE	CW	SE
6am - 9am	SE	SE	CW	SE	SE	SE	SE	SE	SE	SE	CW	SE
9am - 12pm	CW	CW	CW	CW	SE	SE	CW	CW	CW	CW	CW	CW
12pm - 3pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	CW	CW	CW	SE	CW	CW	CW	CW	CW
6pm - 9pm	EC(<2)	CW	CW	CW	SE	SE	SE	CW	CW	CW	CW	EC(<2)
9pm- 12am	CW	CW	CW	SE	SE	SE	SE	SE	SE	CW	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P30**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	CW	SE	SE	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	SE	SE	SE	SE	SE	CW	CW	CW	CW
6pm - 9pm	CW	CW	CW	SE	SE	SE	SE	SE	SE	CW	CW	CW
9pm- 12am	CW	SE	SE	SE	SE	SE	SE	SE	SE	SE	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P31**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	CW	SE	SE
9am - 12pm	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	CW	CW
12pm - 3pm	SE	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
6pm - 9pm	CW	SE	SE	SE	CW	SE	SE	CW	CW	CW	CW	CW
9pm- 12am	SE	SE	SE	SE	SE	CW	SE	SE	SE	CW	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P32**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
3am - 6am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
6am - 9am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
9am - 12pm	LE	LE	LE	LE	SE	SE	SE	SE	SE	SE	SE	LE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6pm - 9pm	SE	SE	SE	LE	LE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	LE	LE	SE	LE	SE	LE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P33**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
3am - 6am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
6am - 9am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
9am - 12pm	LE	LE	LE	LE	LE	LE	SE	SE	SE	SE	LE	LE
12pm - 3pm	LE	LE	LE	LE	SE	SE	SE	SE	SE	SE	LE	LE
3pm - 6pm	LE	LE	LE	LE	SE	SE	SE	SE	SE	SE	SE	SE
6pm - 9pm	SE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	SE
9pm- 12am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P34**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	CW	CW	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	SE
3pm - 6pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE
6pm - 9pm	CW	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P35

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	SE
3pm - 6pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P36

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	CW
3am - 6am	SE	SE	SE	CW	CW	CW	CW	SE	CW	CW	SE	CW
6am - 9am	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW
9am - 12pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
12pm - 3pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	EC(<2)	CW	CW
6pm - 9pm	EC(<2)	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	EC(<2)
9pm- 12am	CW	CW	CW	SE	CW	CW	CW	CW	CW	CW	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P37**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	SE
12pm - 3pm	SE	CW	SE	CW	CW	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
6pm - 9pm	CW	CW	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	CW	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P38**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	CW	CW	SE	SE
12pm - 3pm	CW	CW	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	SE	SE	SE	SE	SE	CW	CW	CW	CW
6pm - 9pm	CW	CW	CW	SE	SE	SE	SE	SE	SE	CW	CW	CW
9pm- 12am	CW	CW	SE	SE	SE	SE	SE	SE	SE	SE	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P39

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	LE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	LE	LE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	LE	LE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3pm - 6pm	CW	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6pm - 9pm	CW	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	CW
9pm- 12am	SE	SE	SE	SE	SE	SE	LE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P40**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	SE	SE	SE	SE	CW	CW	CW	CW	CW
6pm - 9pm	CW	CW	CW	SE	SE	SE	SE	SE	SE	CW	CW	CW
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P41**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	CW	SE	CW	CW	CW	CW	CW	CW	CW	CW
3am - 6am	SE	SE	CW	CW	CW	CW	CW	CW	CW	SE	CW	SE
6am - 9am	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	CW	SE
9am - 12pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
12pm - 3pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	EC(<2)	CW	CW
6pm - 9pm	EC(<2)	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
9pm- 12am	CW	CW	CW	SE	CW	CW	CW	CW	CW	CW	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P42**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
3am - 6am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
6am - 9am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
9am - 12pm	CW	CW	CW	CW	CW	CW	CW	CW	EC(<2)	CW	CW	CW
12pm - 3pm	EC(<2)	EC(<2)	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)
3pm - 6pm	EC(<2)	EC(<2)	EC(<2)	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)
6pm - 9pm	EC(<2)	EC(<2)	EC(<2)	CW	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)
9pm- 12am	EC(<2)	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	EC(<2)

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P43**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
3am - 6am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
6am - 9am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
9am - 12pm	CW	CW	CW	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	CW	CW
12pm - 3pm	EC(<2)	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)
3pm - 6pm	EC(>2)	EC(<2)	EC(<2)	EC(<2)	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)
6pm - 9pm	EC(>2)	EC(<2)	EC(<2)	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(>2)
9pm- 12am	EC(<2)	EC(<2)	CW	CW	CW	CW	CW	CW	CW	CW	EC(<2)	EC(<2)

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P44**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	CW	SE	SE	SE	CW	CW	CW
3am - 6am	SE	SE	SE	CW	SE	SE	SE	SE	SE	CW	SE	CW
6am - 9am	SE	SE	SE	SE	SE	SE	CW	SE	CW	CW	CW	CW
9am - 12pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
12pm - 3pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
6pm - 9pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
9pm- 12am	CW	CW	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P45

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	CW	SE	SE	SE
12pm - 3pm	CW	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	SE	SE	SE	CW	CW	CW	CW	CW	CW
6pm - 9pm	CW	CW	CW	SE	SE	SE	SE	SE	SE	CW	CW	CW
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P46

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	CW	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	SE	SE	SE	SE	SE	CW	CW	CW	CW
6pm - 9pm	CW	CW	CW	SE	SE	SE	SE	SE	CW	CW	CW	CW
9pm- 12am	CW	CW	CW	SE	SE	SE	SE	SE	SE	SE	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P47**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	CW	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	CW	CW	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P48**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	SE	SE
9am - 12pm	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	CW	SE
12pm - 3pm	SE	SE	SE	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	CW	CW	CW
3pm - 6pm	CW	CW	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	CW	CW	CW
6pm - 9pm	CW	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	CW
9pm- 12am	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P49**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE	SE
12pm - 3pm	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	CW	SE
3pm - 6pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	CW
6pm - 9pm	SE	SE	SE	SE	SE	CW	SE	CW	CW	CW	SE	CW
9pm- 12am	SE	SE	SE	SE	SE	CW	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P50**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
3am - 6am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
6am - 9am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
9am - 12pm	CW	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	CW	CW	CW
12pm - 3pm	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	CW
3pm - 6pm	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	CW	CW
6pm - 9pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
9pm- 12am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P51**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	SE
3pm - 6pm	CW	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW
6pm - 9pm	CW	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	CW
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P52**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE	SE
3pm - 6pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P53**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	LE	LE	LE	LE	LE	SE	SE	SE	LE	LE	LE	LE
3am - 6am	LE	LE	LE	LE	LE	SE	LE	LE	LE	LE	LE	LE
6am - 9am	LE	LE	LE	LE	LE	SE	SE	LE	SE	LE	LE	LE
9am - 12pm	SE	LE	LE	SE	SE	SE	SE	SE	SE	SE	SE	LE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6pm - 9pm	SE	SE	SE	LE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	LE	LE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P54**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	CW	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	CW	CW	CW	CW	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P55

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P56

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	LE	LE	LE	LE	LE	SE	LE	SE	LE	LE	LE	LE
3am - 6am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
6am - 9am	LE	LE	LE	LE	LE	SE	SE	LE	LE	LE	LE	LE
9am - 12pm	LE	LE	LE	SE	SE	SE	SE	SE	SE	SE	SE	LE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6pm - 9pm	SE	SE	SE	LE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	LE	LE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P57**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	SE	SE
9am - 12pm	SE	SE	SE	CW	CW	CW	EC(<2)	CW	EC(<2)	CW	CW	SE
12pm - 3pm	CW	SE	SE	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	CW	CW
3pm - 6pm	CW	CW	SE	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	CW	CW	CW
6pm - 9pm	CW	CW	SE	SE	CW	CW	CW	CW	CW	CW	CW	CW
9pm- 12am	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P58**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	CW	CW	SE	CW	CW	CW	CW	CW	CW	CW	CW	CW
12pm - 3pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
6pm - 9pm	CW	CW	CW	SE	CW	CW	SE	CW	CW	CW	CW	CW
9pm- 12am	CW	CW	SE	SE	SE	CW	SE	CW	SE	CW	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P59

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	SE
12pm - 3pm	CW	SE	SE	CW	CW	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
6pm - 9pm	CW	CW	CW	SE	SE	CW	SE	CW	CW	CW	CW	CW
9pm- 12am	CW	SE	SE	SE	SE	SE	SE	SE	SE	SE	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P60**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW	SE
3pm - 6pm	CW	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW	CW
6pm - 9pm	CW	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	CW
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P61**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	LE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	CW	CW	SE	SE
3pm - 6pm	CW	SE	SE	SE	SE	SE	SE	SE	CW	CW	SE	CW
6pm - 9pm	CW	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	CW
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P62**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	CW	SE	SE
9am - 12pm	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	CW	CW
12pm - 3pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
6pm - 9pm	CW	CW	SE	CW	CW	CW	CW	CW	CW	CW	CW	CW
9pm- 12am	CW	SE	SE	SE	SE	CW	SE	SE	SE	CW	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P63**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	CW	SE	SE	CW	SE	CW	SE	SE	CW	SE
3am - 6am	SE	SE	SE	SE	SE	CW	SE	CW	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	SE
9am - 12pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
12pm - 3pm	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	CW	CW
3pm - 6pm	CW	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	CW	CW
6pm - 9pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
9pm- 12am	CW	CW	CW	SE	SE	CW	CW	CW	CW	CW	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P64

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
3am - 6am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
6am - 9am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
9am - 12pm	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	CW
12pm - 3pm	EC(<2)	EC(<2)	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)
3pm - 6pm	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)
6pm - 9pm	EC(>2)	EC(<2)	EC(<2)	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)
9pm- 12am	EC(<2)	EC(<2)	CW	CW	CW	CW	CW	CW	CW	CW	EC(<2)	EC(<2)

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P65**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	CW	CW	CW	CW	SE	CW	SE	SE	CW	CW	CW	CW
3am - 6am	CW	CW	CW	CW	SE	SE	SE	SE	CW	CW	CW	CW
6am - 9am	CW	CW	CW	CW	SE	CW	CW	SE	CW	CW	CW	CW
9am - 12pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
12pm - 3pm	CW	CW	CW	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)
3pm - 6pm	EC(<2)	EC(<2)	CW	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)
6pm - 9pm	EC(<2)	EC(<2)	CW	CW	CW	CW	CW	CW	CW	CW	EC(<2)	EC(<2)
9pm- 12am	CW	CW	CW	CW	SE	CW	SE	CW	CW	CW	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P66

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	LE	LE	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	LE	LE	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	SE	SE	SE
12pm - 3pm	CW	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	SE	SE	CW	CW	CW	CW	EC(<2)	CW	CW	CW
6pm - 9pm	CW	CW	CW	SE	SE	SE	SE	CW	CW	CW	CW	CW
9pm- 12am	CW	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P67**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	LE	LE	LE	SE	SE	SE	SE	SE	LE	LE	SE
3am - 6am	LE	LE	LE	LE	SE	SE	SE	SE	SE	SE	LE	LE
6am - 9am	LE	LE	LE	LE	SE	SE	SE	SE	SE	SE	SE	LE
9am - 12pm	SE	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	SE
3pm - 6pm	CW	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW
6pm - 9pm	CW	CW	SE	SE	SE	SE	SE	SE	CW	CW	CW	CW
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P68**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	CW	CW	CW	CW	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	CW	CW	EC(<2)	CW	EC(<2)	CW	CW	SE
12pm - 3pm	CW	SE	SE	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	CW	CW
3pm - 6pm	CW	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	CW	EC(<2)
6pm - 9pm	CW	CW	CW	SE	CW	CW	CW	CW	CW	CW	CW	EC(<2)
9pm- 12am	CW	CW	SE	SE	SE	CW	CW	CW	CW	SE	SE	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P69

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	SE	SE
9am - 12pm	SE	SE	SE	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	CW	CW	SE
12pm - 3pm	CW	SE	SE	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	CW	CW
3pm - 6pm	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	CW	CW	CW
6pm - 9pm	CW	CW	CW	SE	CW	CW	CW	CW	CW	CW	CW	CW
9pm- 12am	SE	SE	SE	SE	SE	CW	CW	CW	CW	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P70**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
3am - 6am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
6am - 9am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
9am - 12pm	CW	CW	CW	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	CW	CW
12pm - 3pm	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)
3pm - 6pm	EC(<2)	EC(<2)	EC(<2)	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)
6pm - 9pm	EC(<2)	CW	CW	CW	CW	CW	CW	CW	CW	CW	EC(<2)	EC(<2)
9pm- 12am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P71**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	SE
3pm - 6pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P72**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
3am - 6am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
6am - 9am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
9am - 12pm	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	CW
12pm - 3pm	EC(<2)	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)
3pm - 6pm	EC(<2)	EC(<2)	EC(<2)	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)
6pm - 9pm	EC(<2)	EC(<2)	EC(<2)	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)
9pm- 12am	EC(<2)	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	EC(<2)

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P73**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	SE	SE
9am - 12pm	SE	SE	SE	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	CW	CW	SE
12pm - 3pm	CW	CW	SE	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	CW	CW
3pm - 6pm	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)	EC(<2)	CW	CW
6pm - 9pm	CW	CW	CW	SE	CW	CW	CW	CW	CW	CW	CW	CW
9pm- 12am	CW	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P74**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	CW
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	CW	CW	SE
9am - 12pm	SE	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
12pm - 3pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
6pm - 9pm	CW	CW	CW	CW	CW	SE	SE	SE	CW	CW	CW	CW
9pm- 12am	CW	SE	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P75**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	CW	SE	SE	CW	CW	SE
12pm - 3pm	CW	CW	SE	CW	CW	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	CW	CW	CW	SE	CW	CW	CW	CW	CW
6pm - 9pm	CW	CW	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW
9pm- 12am	CW	SE	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P76

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	CW	CW	CW	CW	SE	SE	SE	SE	SE	CW	CW	CW
3am - 6am	CW	CW	CW	CW	SE	SE	SE	SE	SE	CW	CW	CW
6am - 9am	CW	CW	CW	CW	SE	SE	SE	SE	SE	CW	CW	CW
9am - 12pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
12pm - 3pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	EC(<2)	CW
6pm - 9pm	CW	CW	CW	CW	CW	CW	SE	CW	CW	CW	CW	CW
9pm- 12am	CW	CW	CW	CW	SE	CW	SE	CW	CW	CW	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P77

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
3am - 6am	CW	CW	CW	CW	CW	CW	CW	SE	CW	CW	CW	CW
6am - 9am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
9am - 12pm	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW
12pm - 3pm	CW	CW	CW	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)
3pm - 6pm	EC(<2)	EC(<2)	EC(<2)	CW	CW	CW	CW	CW	EC(<2)	EC(<2)	EC(<2)	EC(<2)
6pm - 9pm	EC(<2)	EC(<2)	CW	CW	CW	CW	CW	CW	CW	CW	EC(<2)	EC(<2)
9pm- 12am	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P78**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	LE	LE	LE	LE	SE	SE	SE	SE	SE	LE	LE	LE
3am - 6am	LE	LE	LE	LE	SE	SE	SE	SE	SE	SE	LE	LE
6am - 9am	LE	LE	LE	LE	SE	SE	SE	SE	SE	SE	LE	LE
9am - 12pm	LE	LE	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	CW	SE	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	SE	SE	CW	SE	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	LE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P79**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	LE	LE	LE	LE	SE	SE	SE	SE	SE	LE	LE	LE
3am - 6am	LE	LE	LE	LE	SE	SE	SE	SE	SE	LE	LE	LE
6am - 9am	LE	LE	LE	LE	SE	SE	SE	SE	SE	SE	LE	LE
9am - 12pm	SE	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	CW	CW	CW	CW	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P80**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	LE	LE	LE	LE	SE	SE	SE	SE	SE	LE	LE	LE
3am - 6am	LE	LE	LE	LE	SE	SE	SE	SE	SE	SE	LE	LE
6am - 9am	LE	LE	LE	LE	SE	SE	SE	SE	SE	SE	LE	LE
9am - 12pm	SE	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P81**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	LE	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	CW	SE	CW	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P82**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	CW	CW	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	CW	CW	SE	CW	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	SE
12pm - 3pm	CW	SE	SE	CW	CW	CW	EC(<2)	CW	EC(<2)	CW	CW	CW
3pm - 6pm	CW	CW	CW	CW	CW	CW	CW	CW	EC(<2)	CW	CW	CW
6pm - 9pm	CW	CW	CW	SE	CW	CW	CW	CW	CW	CW	CW	CW
9pm- 12am	CW	SE	SE	SE	SE	CW	CW	CW	CW	SE	SE	CW

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P83**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P84**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	LE	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	LE	SE	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	CW	SE	SE	SE
3pm - 6pm	CW	SE	SE	SE	SE	SE	SE	SE	CW	CW	SE	CW
6pm - 9pm	CW	CW	SE	SE	SE	SE	SE	SE	SE	SE	CW	CW
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P85**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	LE	LE	SE	SE	SE	SE	SE	LE	LE	SE
3am - 6am	LE	LE	LE	LE	LE	SE	SE	SE	SE	LE	LE	LE
6am - 9am	LE	LE	LE	LE	SE	SE	SE	SE	SE	SE	SE	LE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	CW	CW	SE	SE
3pm - 6pm	CW	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW	CW
6pm - 9pm	CW	CW	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P86

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE	SE
3pm - 6pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P87**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE	SE
12pm - 3pm	SE	SE	SE	SE	CW	CW	CW	CW	EC(<2)	CW	CW	SE
3pm - 6pm	CW	SE	SE	SE	CW	CW	CW	CW	EC(<2)	CW	CW	CW
6pm - 9pm	CW	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	CW
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P88**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P02a**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	CW	SE	CW	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE
3pm - 6pm	CW	SE	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW
6pm - 9pm	CW	SE	SE	SE	SE	SE	SE	SE	SE	SE	CW	CW
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P15a

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
3am - 6am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
6am - 9am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
9am - 12pm	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
12pm - 3pm	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
3pm - 6pm	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
6pm - 9pm	SE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	SE
9pm- 12am	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P20a**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	LE	SE	LE	LE	LE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	LE	LE	LE	LE	LE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	LE	LE	LE	LE	LE	SE	SE	LE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6pm - 9pm	SE	SE	SE	SE	SE	SE	LE	SE	SE	SE	SE	SE
9pm- 12am	SE	SE	SE	SE	LE	SE	LE	LE	LE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P45a**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	CW	CW	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	CW	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	CW	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE	SE
12pm - 3pm	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	CW	SE	CW	CW	CW	CW	CW	CW	CW	CW	CW
6pm - 9pm	CW	CW	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW
9pm- 12am	SE	SE	SE	SE	SE	CW	CW	CW	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P53a**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	LE	LE	LE	LE	LE	SE	SE	SE	LE	LE	LE	LE
3am - 6am	LE	LE	LE	LE	LE	SE	SE	LE	LE	LE	LE	LE
6am - 9am	LE	LE	LE	LE	LE	SE	SE	SE	SE	LE	LE	LE
9am - 12pm	LE	LE	LE	SE	SE	SE	SE	SE	SE	SE	SE	LE
12pm - 3pm	SE	LE	LE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3pm - 6pm	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6pm - 9pm	SE	SE	SE	LE	SE	SE	SE	SE	SE	SE	SE	SE
9pm- 12am	SE	LE	LE	LE	LE	SE	SE	SE	SE	LE	LE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point P59a

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	SE	SE	SE	CW	SE	SE	SE
12pm - 3pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	SE
3pm - 6pm	CW	SE	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW
6pm - 9pm	CW	CW	SE	SE	SE	SE	SE	SE	SE	CW	CW	CW
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	

Point **P60a**

Time	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12am - 3am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
3am - 6am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
6am - 9am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
9am - 12pm	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW	SE	SE
12pm - 3pm	SE	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	CW
3pm - 6pm	CW	SE	SE	SE	CW	CW	CW	CW	CW	CW	CW	CW
6pm - 9pm	CW	CW	SE	SE	SE	SE	SE	CW	CW	CW	CW	CW
9pm- 12am	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE

Abbreviation	Criteria	Wind Speed (m/s)
LE	Long Exposure	4.0
SE	Short Exposure	6.0
CW	Comfortable Walking	8.0
EC(<2)	Exceeds All Criteria	
EC(>2)	Exceeds All Criteria	