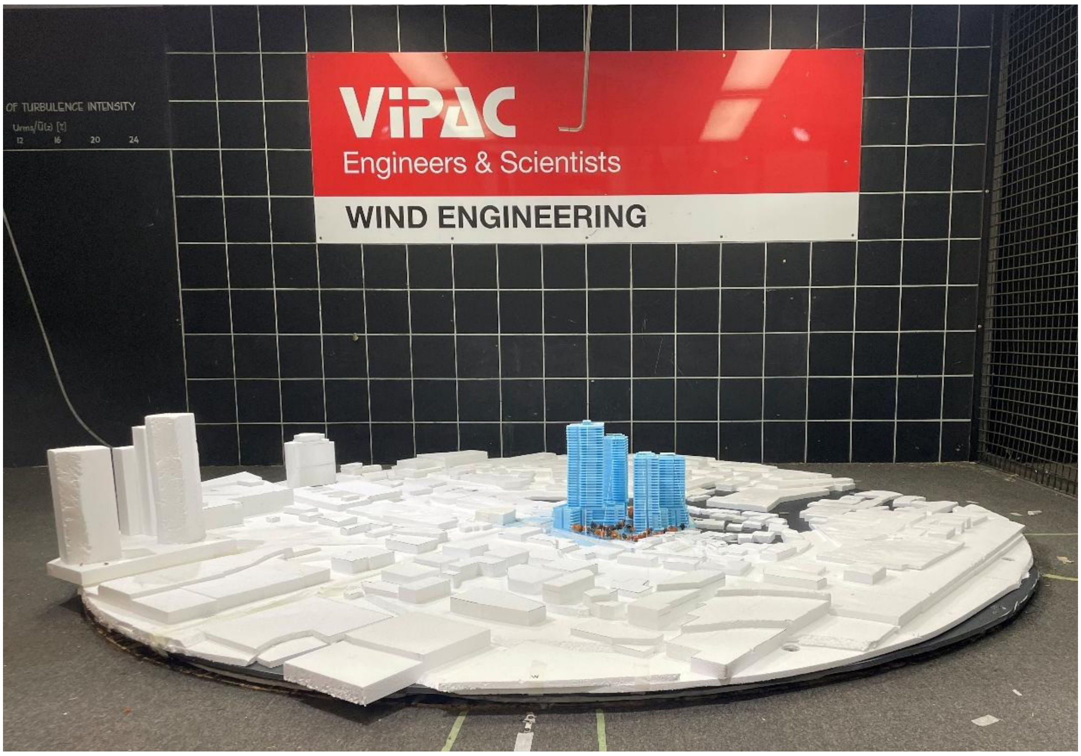
Vipac Engineers and Scientists Limited
279 Normanby Rd, Port Melbourne, VIC 3207 Australia
Private Bag 16, Port Melbourne, VIC 3207, Australia
t. +61 3 9647 9700 | **e.** melbourne@vipac.com.au
w. www.vipac.com.au | A.B.N. 33 005 453 627 | A.C.N. 005 453 627

Alton Property Group

93-107 Cecil Ave & 9-10 Roger Ave, Castle Hill

Pedestrian Level Wind - Wind Tunnel Test



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5 March 2026

Job Title:	93-107 Cecil Ave & 9-10 Roger Ave, Castle Hill
Report Title:	Pedestrian Level Wind - Wind Tunnel Test
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Prepared For:	**Prepared By:**
Alton Property Group 3/14-16 York St Sydney, New South Wales, 2000, Australia **Contact:** Karen Chow **Tel:** 02 9188 3498	Vipac Engineers and Scientists Limited 279 Normanby Rd, Port Melbourne, VIC 3207 Australia **Tel:** +61 3 9647 9700

Author:	Samuel Gewargis 05 Mar 2026	Project Engineer
Reviewer:	Zhuyun Xu 5 Mar 2026	Principal Engineer
Issued By:	Samuel Gewargis 5 Mar 2026	Project Engineer

Revision History:

Rev. #	*Comments / Details of change(s) made*	*Date*	*Revised by:*
Rev. 00	Original issue	19 Feb 2026	
Rev. 01	On client's comments	03 Mar 2026	SG
Rev. 02	Minor amendment	05 Mar 2026	SG

Executive Summary

Alton Property Group commissioned Vipac Engineers and Scientists Pty Ltd to carry out a wind tunnel test to determine the likely pedestrian level wind conditions for the proposed development at **93-107 Cecil Ave & 9-10 Roger Ave, Castle Hill.**

The model was constructed based on drawings supplied by **A+ Design Group** in **February 2026**. The proposed development and surrounding buildings covering a circular area of approximately 500 m radius were modelled at a 1:400 scale. The approaching mean and turbulent flows of the Terrain Category 3 (as shown in Figure 4) Atmospheric Boundary Layer were modelled based on Australian Standard AS 1170.2-2021.

The findings of the study are summarised as follows:

The proposed design of the development:

- All locations fulfil the recommended criterion for **safety**.
- Fulfils the recommended criterion for **walking** at all footpath locations.
- Fulfils the recommended criterion for **standing** at the building entrances and footpath activities.
- Fulfils the recommended criterion for **sitting** at the seating areas.
- Fulfils the recommended criterion for **walking** at all balconies.
- Fulfils the recommended criteria for **sitting** at the rooftop terraces.

As a general statement, common to all new developments, educating occupants about wind conditions at high-level terraces/balconies during high-wind events and tying down loose furniture are highly recommended.

Table of Contents

1 Introduction

Vipac Engineers & Scientists Ltd was commissioned by **Alton Property Group** to carry out a wind tunnel test of the likely wind conditions for the proposed development at **93-107 Cecil Ave & 9-10 Roger Ave, Castle Hill.**

The proposed development consists of four towers, with the tallest tower having 36-storey with a roof height of approximately 122.5m from ground level. The site is bounded by Cecil Avenue to the north-east, Roger Avenue to the south and existing developments to the remaining directions. A site plan of the proposed development, west elevation of the building, and the ground floor plan with overall dimensions overlaid are shown in Figures 1, 2, and 3, respectively.

The proposed development is located on a relatively hilly terrain. The site is surrounded within an approximately 7km radius predominately by low to mid-rise developments. Considering the surroundings and terrain, within a 7km radius, the site of the proposed development is assumed to be within Terrain Category 3 (as shown in Figure 4).

This report details the pedestrian level wind assessment results of the tests carried out on a 1:400 scale model of the proposed development in Vipac's Boundary Layer Wind Tunnel in Melbourne, during Feburary 2026. The results show the wind effects on ground level and elevated areas of the proposed development.

The pedestrian wind environment study of the development was conducted using omni-directional pressure sensor techniques to predict wind velocities. The study investigated safety and comfort in ground level and elevated areas of the proposed development.

The model was constructed to drawings supplied by **A+ Design Group** in **February 2026**. Figures 5 and 6 show the 1:400 scaled models in the wind tunnel. A complete list of the drawings used to construct the model is provided in Appendix B of this report.

Figure 1: Aerial view of the proposed development site.

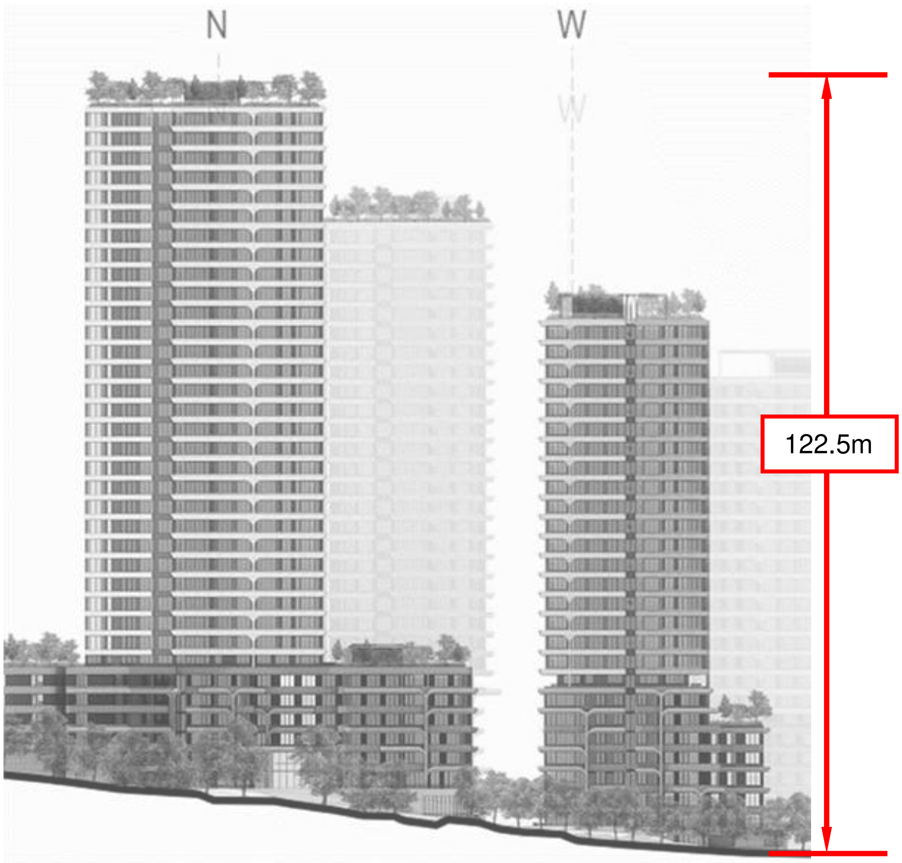


Figure 2: West elevation of the proposed development.

Figure 3: Ground floor plan with the overall dimensions overlaid.

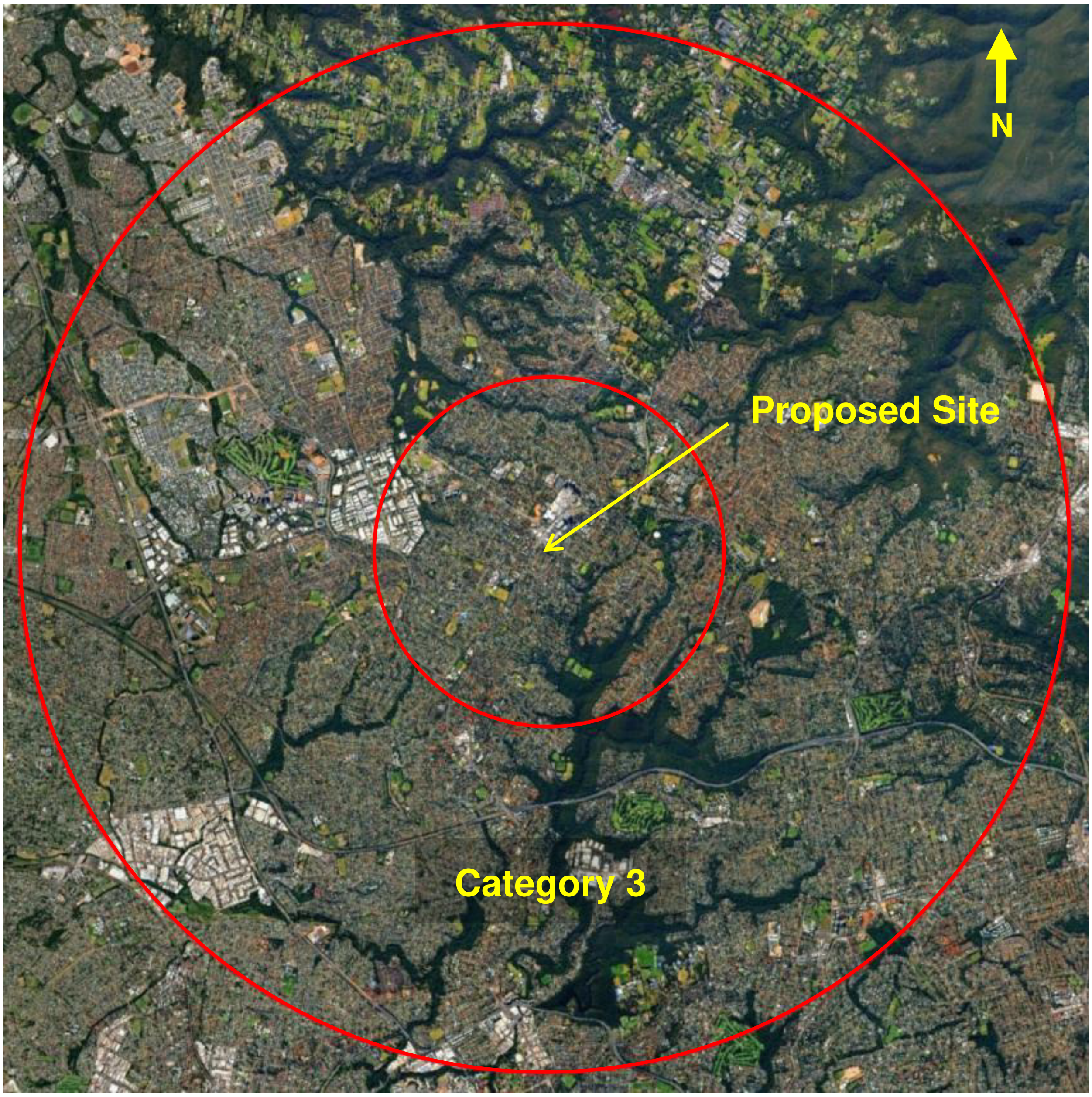


Figure 4: Assumed terrain roughness for wind speed estimation.

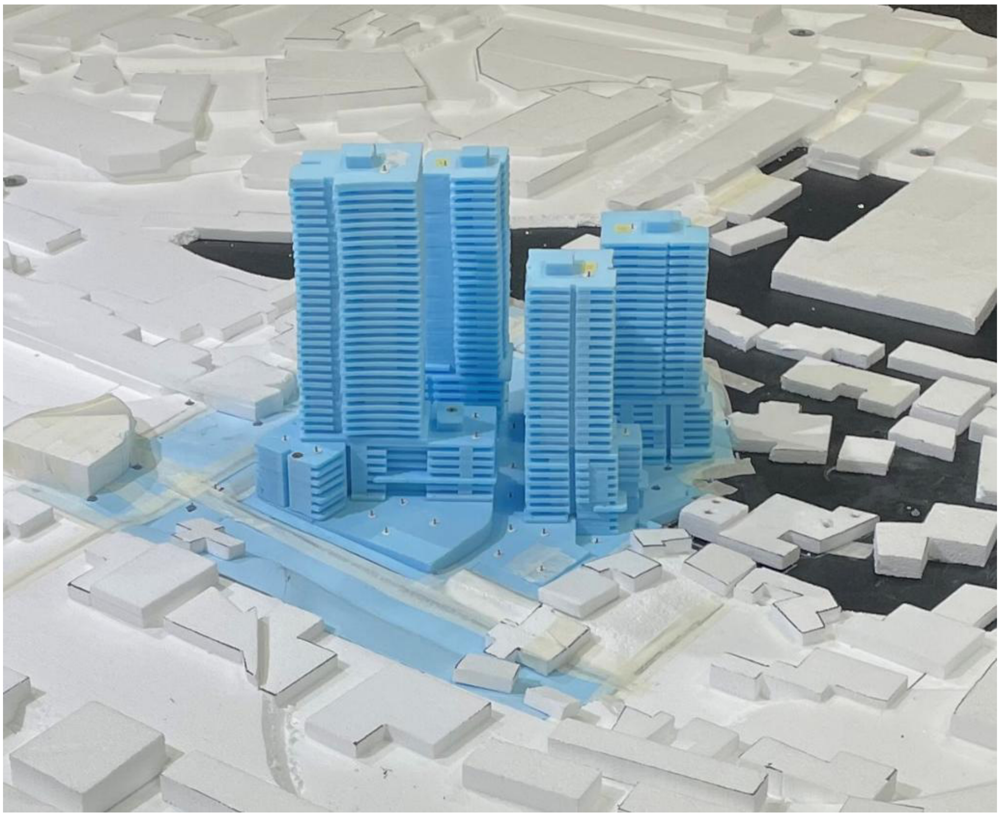


Figure 5: Overall view from west of the 1:400 scale model (without proposed landscaping) in the wind tunnel.

Figure 6: Close up view from the west of the 1:400 scaled model (with proposed landscaping) in the wind tunnel.

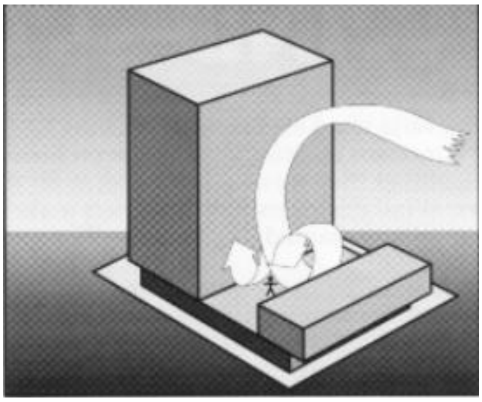
1.1 Environmental Wind Effects

Atmospheric Boundary Layer

As wind flows over the earth it encounters various roughness elements and terrain such as water, forests, houses and buildings. To varying degrees, these elements reduce the mean wind speed at low elevations and increase air turbulence. The wind above these obstructions travels with un-attenuated velocity, driven by atmospheric pressure gradients. The resultant increase in wind speed with height above ground is known as a wind velocity profile. When this wind profile encounters a tall building, some of the fast-moving wind at upper elevations is diverted down to ground level resulting in local adverse wind effects.

The terminology used to describe the wind flow patterns around the proposed Development is based on the aerodynamic mechanism, direction, and nature of the wind flow.

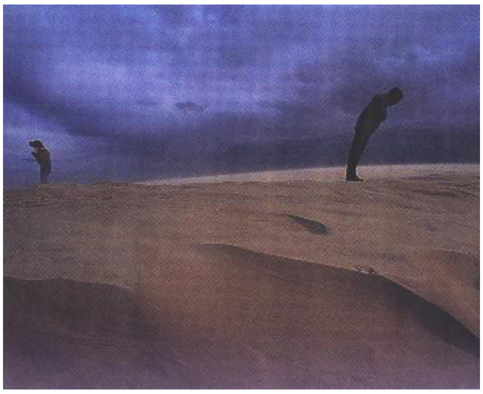
Downwash – refers to a flow of air down the exposed face of a tower. A tall tower can deflect a fast-moving wind at higher elevations downwards.



Corner accelerations – when wind flows around the corner of a building it tends to accelerate in a similar manner to airflow over the top of an aeroplane wing.

Flow separation – when wind flowing along a surface suddenly detaches from that surface and the resultant energy dissipation produces increased turbulence in the flow. Flow separation at a building corner or at a solid screen can result in gusty conditions.

Flow channelling – the well-known “street canyon” effect occurs when a large volume of air is funnelled through a constricted pathway. To maintain flow continuity the wind must speed up as it passes through the constriction. Examples of this might occur between two towers, in a narrowing street or under a bridge.



Direct exposure – a location with little upstream shielding for a wind direction of interest. The location will be exposed to the unabated mean wind and gust velocity. Piers and open water frontage may have such exposure.

2 Regional Wind Climate

The mean and gust wind speeds have been recorded in Bankstown Wind Station WS_066137 (the wind station recommended by some Councils in non-coastal areas of Sydney) for over 20 years. These data have been analysed and the directional probability distribution of wind speeds have been determined. The directional distribution of hourly mean wind speed at the gradient height once per year (i.e. 1 year return period, yearly) and with a probability of occurring 5% of the time are shown in Figure 7. The wind data at this free stream height is common to all Castle Hill sites and will be used as a reference to assess pedestrian level wind conditions at the development site.

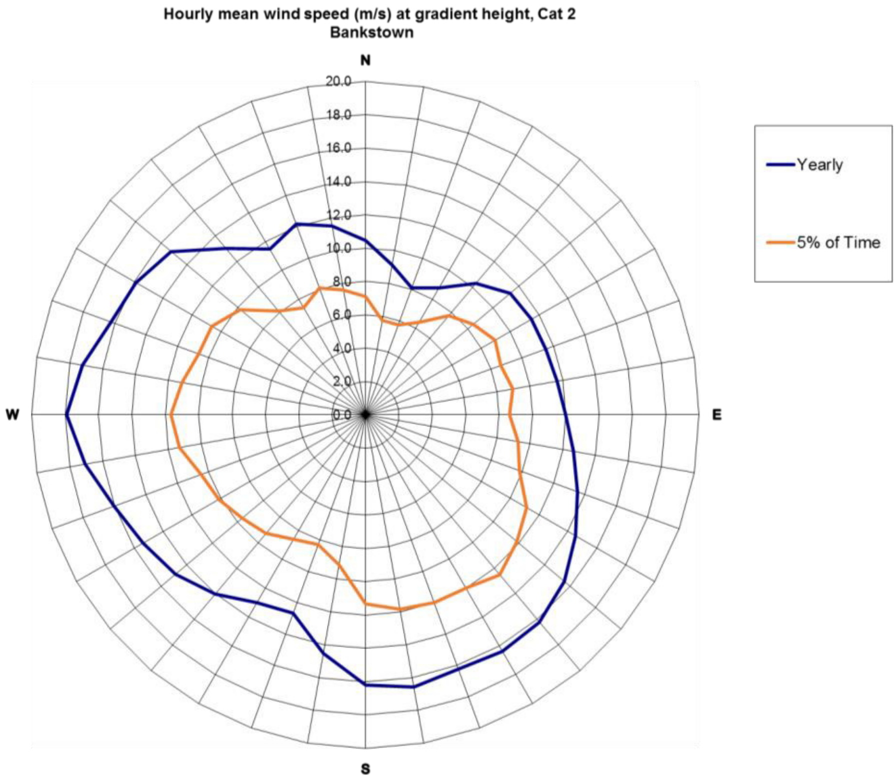


Figure 7: Directional Distribution of Mean Hourly Wind Velocities (m/s) of Annual Return Period and 5% of time at the gradient height for Castle Hill (data from Bankstown Wind Station).

3 Assessment Criteria

The wind comfort criteria from the Central Sydney Planning Strategy (for 2016-2036, updated in May 2023) has been applied to this study. The document recommends the following wind safety and comfort criteria (Table 1).

Table 1: Wind Criteria summarized from Central Sydney Planning Strategy.

Measurements	**Result on Perceived Pedestrian Comfort**
Peak wind speed (0.5 second gust) once per year, **≤24m/sec** for any direction.	Accepted international criterion for human safety to avoid a healthy pedestrian losing balance
Hourly ***mean*** wind speed*, 5% of the time, **≤8m/sec**, for each wind direction.	Acceptable for **walking** (steady steps for most pedestrians)
Hourly ***mean*** wind speed, 5% of the time, **≤6m/sec,** for each wind direction.	Acceptable for **standing** (wind shopping, vehicle drop off)
Hourly ***mean*** wind speed, 5% of the time. **≤4m/sec,** for each wind direction.	Acceptable for **sitting** (outdoor cafes, gardens, park benches)

**Note: Hourly Mean wind speed is the maximum of mathematical mean or Gust equivalent mean (Gust divided by 1.85).*

The wind speed assessment is undertaken for winds occurring between 6am and 10pm (AEST).

A comparison between the common environment wind comfort criteria is shown in Figure *8*.

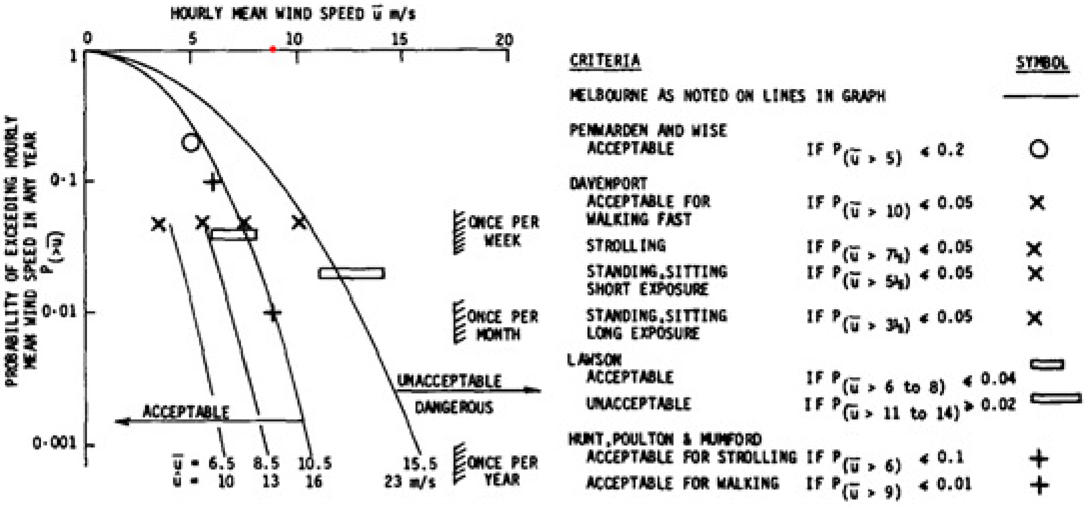


Figure 8: Comparison of various criteria for environmental wind conditions for daylight hours for a turbulence intensity of 15%.

3.1 Use of Adjacent Pedestrian Occupied Areas & Recommended Comfort Criteria

The following table lists the specific areas adjacent to the proposed development and the corresponding recommended criteria.

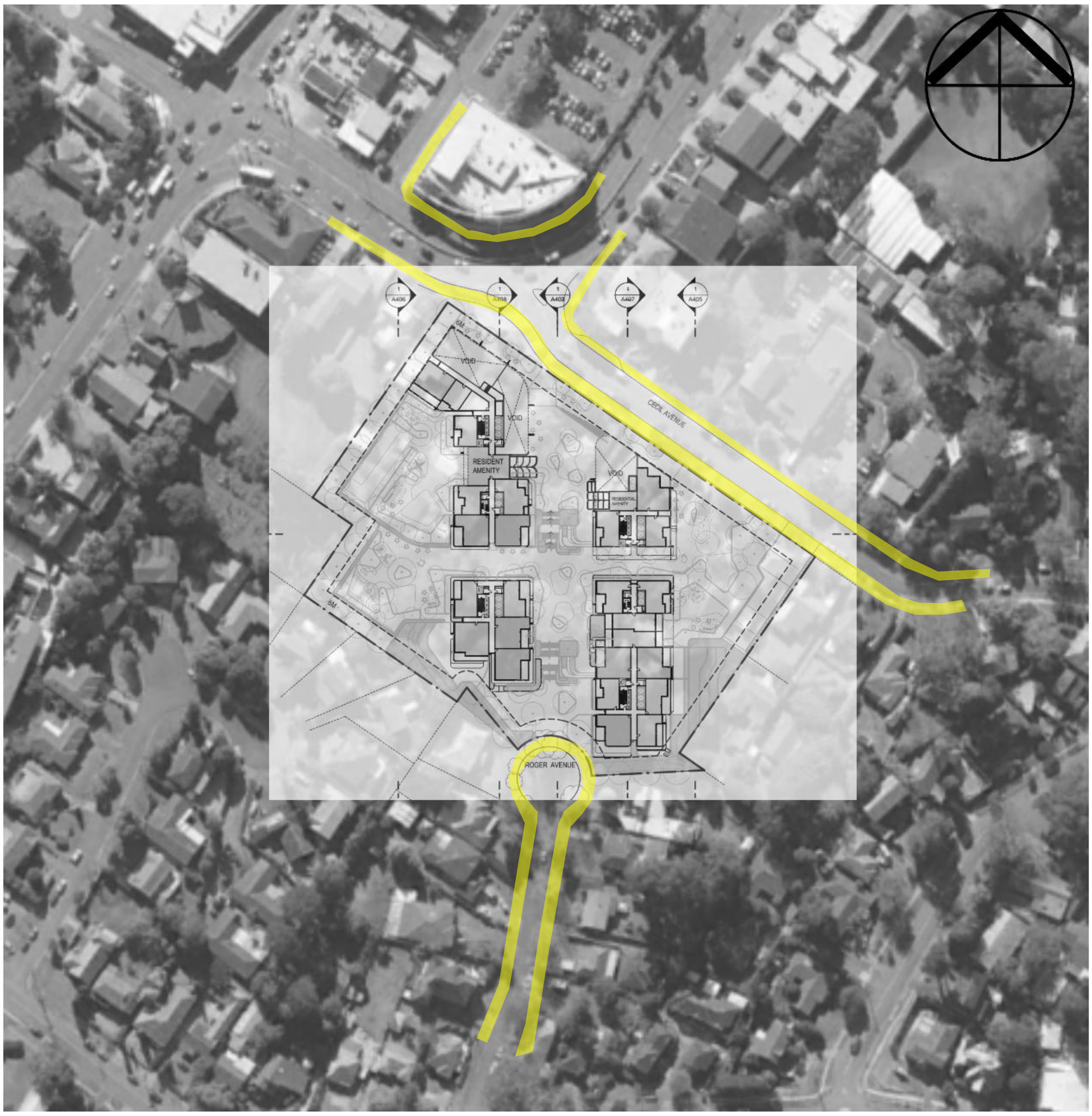
Table 2 – Recommended application of criteria.

Area	**Specific location**	**Recommended Criteria**
Public Footpaths and Access ways	Along Cecil Avenue, Roger Avenue and within the project development (Figures 9 and 10)	Walking
Building entrances	Building entrance located around the development (Figure 10)	Standing
Rooftop Terrace	Rooftop (Figure 12)	Standing
Terrace/balconies	Up the height of the building (Figures 11 and 12)	Walking (See discussion below)

3.2 Terrace / balcony Recommended Criterion Discussion

Vipac recommends as a minimum that terrace / balconies areas meet the criterion for walking since:

- these areas are not public spaces.
- These areas are subjected to infrequent use.
- many similar developments in Castle Hill and other Australian capital cities experience wind conditions on balconies and elevated deck areas in the vicinity of the criterion for walking.



Recommended to fulfil Walking

Figure 9: Ground level outside of project development plan with recommended wind criteria overlaid.

Recommended to fulfil Walking | Recommended to fulfil Standing | Recommended to fulfil Sitting

Figure 10: Ground floor plan within the development with recommended wind criteria overlaid.

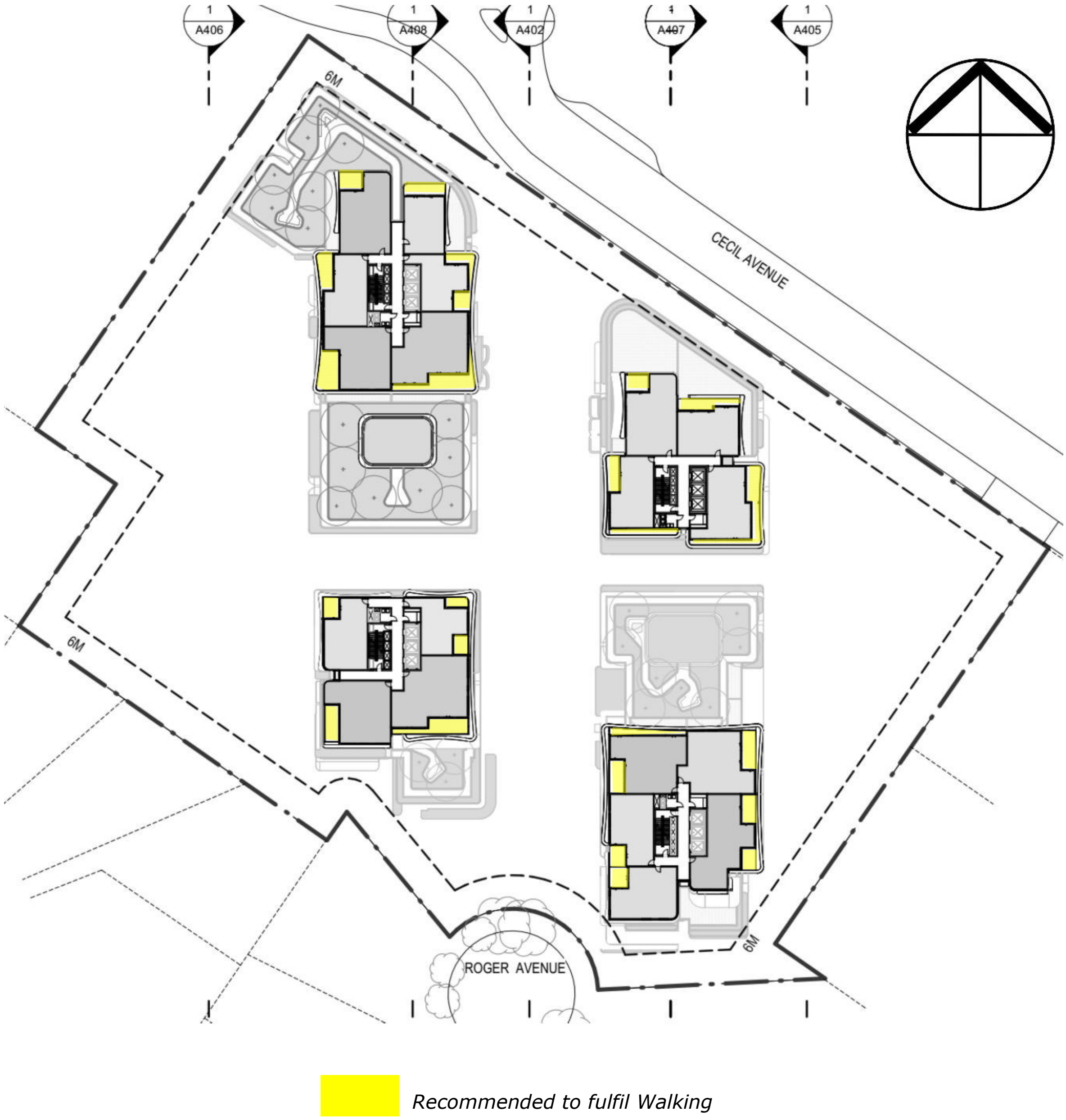


Figure 11: Level 22 plan with recommended wind criteria overlaid.

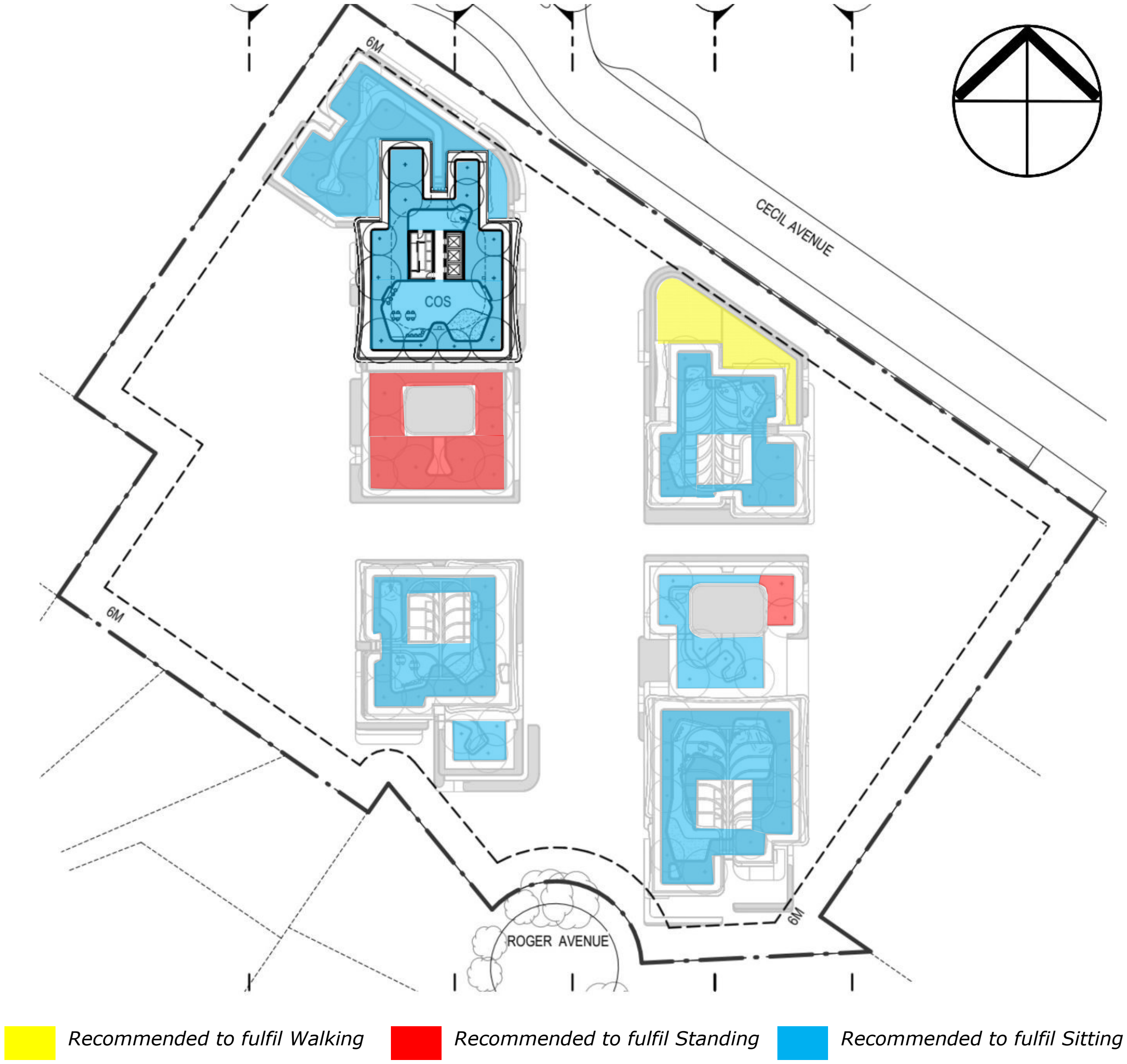


Figure 12: rooftop and podium plan with recommended wind criteria overlaid.

4 Wind Tunnel Simulation

4.1 Similarity Requirements

The validity of wind tunnel testing relies on the similarity between model and full-scale parameters. This requires undistorted length scaling (i.e. geometric similarity), similarity of flow parameters (i.e. kinematic similarity) and finally similarity of pressures and forces.

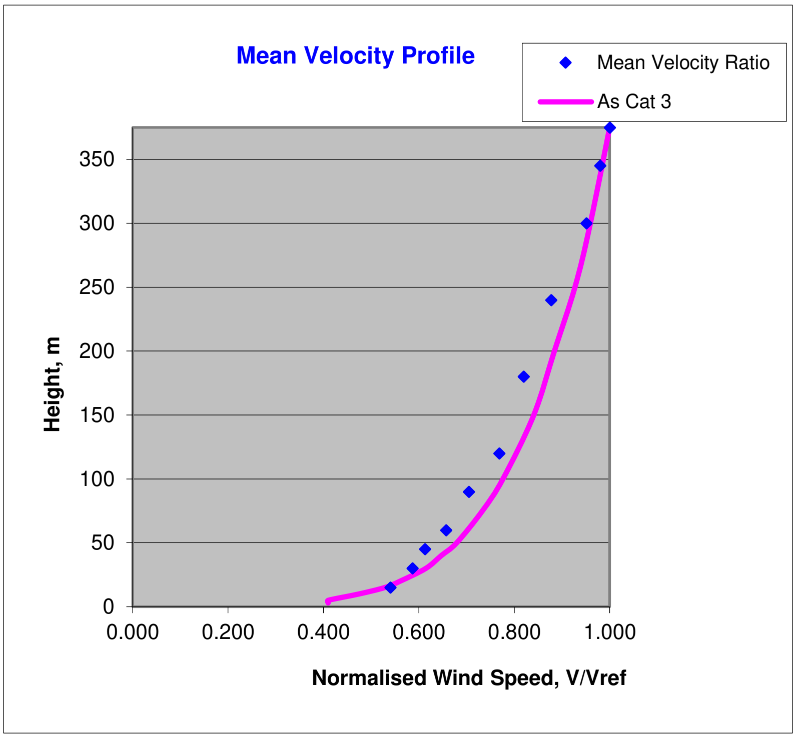
Complete similarity is usually impossible to obtain because of the competing requirements of the various non-dimensional parameters, (e.g. Reynolds Number, Rossby Number and Richardson Number). Some requirements (i.e. Reynolds Number equality) can be waived for sharp edged structures immersed in a neutrally stable atmospheric boundary layer and geometric and kinematic similarity suffice. These are the requirements specified in Section C1.4, AS/NZS 1170.2 Supplement 1: 2011 [4] and are employed in this study.

4.2 Approach Wind Simulation

The wind effects tests were carried out in the 3m wide × 2m tall × 16m long Boundary Layer Wind Tunnel at Vipac Engineers and Scientists Ltd in Melbourne. The Boundary Layer Wind Tunnel is designed to simulate the flow incident on a proposed development by modelling the upstream terrain characteristic roughness. To this end, an estimate of the upstream terrain properties for the Development has been made and reproduced in the wind tunnel.

The approaching mean and turbulent flows of the Terrain Category 3 Atmospheric Boundary Layer was modelled based on Australia Standard AS 1170.2-2021. The wind tunnel calibration velocity and turbulence intensity profiles for Terrain Categories 3 are shown in Figures 13. This represents the wind velocity and turbulence intensity profiles approaching the model of the development. Closer to the ground the wind moves more slowly but with increased turbulence. The simulated approach is indicative of full-scale planetary boundary layer velocity and turbulence intensity profiles.

Velocity correction factors are used to adjust the measured wind speed to ensure that the ratio of mean roof-height to reference height wind speed in the wind tunnel matches expected full-scale values.



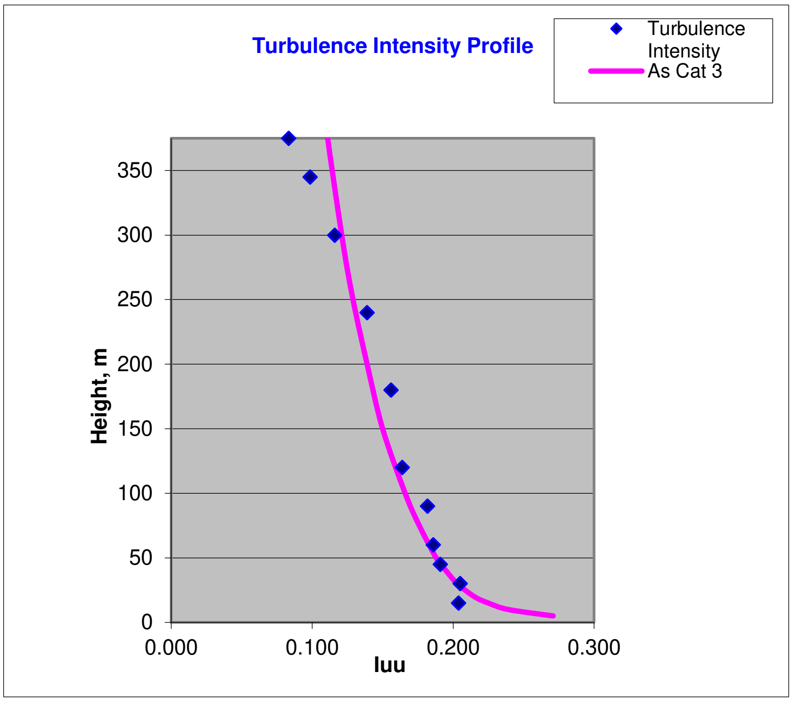


Figure 13: Mean Velocity and Turbulence Intensity Profiles for Terrain Category 3 (1:400 scale).

5 Test Procedure

The pedestrian wind environment in ground level and elevated areas were assessed using omni-directional pressure sensor measurements [4].

Velocity measurements were made using Irwin sensors (omni-directional pressure sensors) installed at different locations within the ground level and elevated areas. The test was conducted without any landscaping. The distribution of Irwin sensors has allowed the determination of the variation in velocity sufficient to capture the changes in velocity distribution that can typically occur over such areas. The resolution of measurement locations is in accordance with that prescribed in the Wind Tunnel Testing Quality Assurance Manual of the Australasian Wind Engineering Society.

PVC tubes with 1.3 mm internal diameter linked the Irwin sensors to pressure transducer device using a tuned arrangement to prevent harmonic fluctuations.

Velocity measurements were obtained at 10° wind azimuth increments starting from 0° (north) for a full 360° circle. The sampling time is determined based on the similarity criteria and corresponds to a total time of one hour in full scale. Statistical analysis was carried out on the signals for the mean and standard deviation. All velocity coefficients derived from the wind tunnel were converted to velocities by integrating the data with the regional wind climate and corresponding to design wind speeds with a probability 0.1% of time for safety criterion assessment and 5% of time for comfort criteria assessment.

A total of **64** sensors were used in order to provide a quantitative measure of the ground level wind speeds at various locations around the footpaths and garden, balconies and rooftop terrace. The sensor locations are shown in Figures 14 to 17.

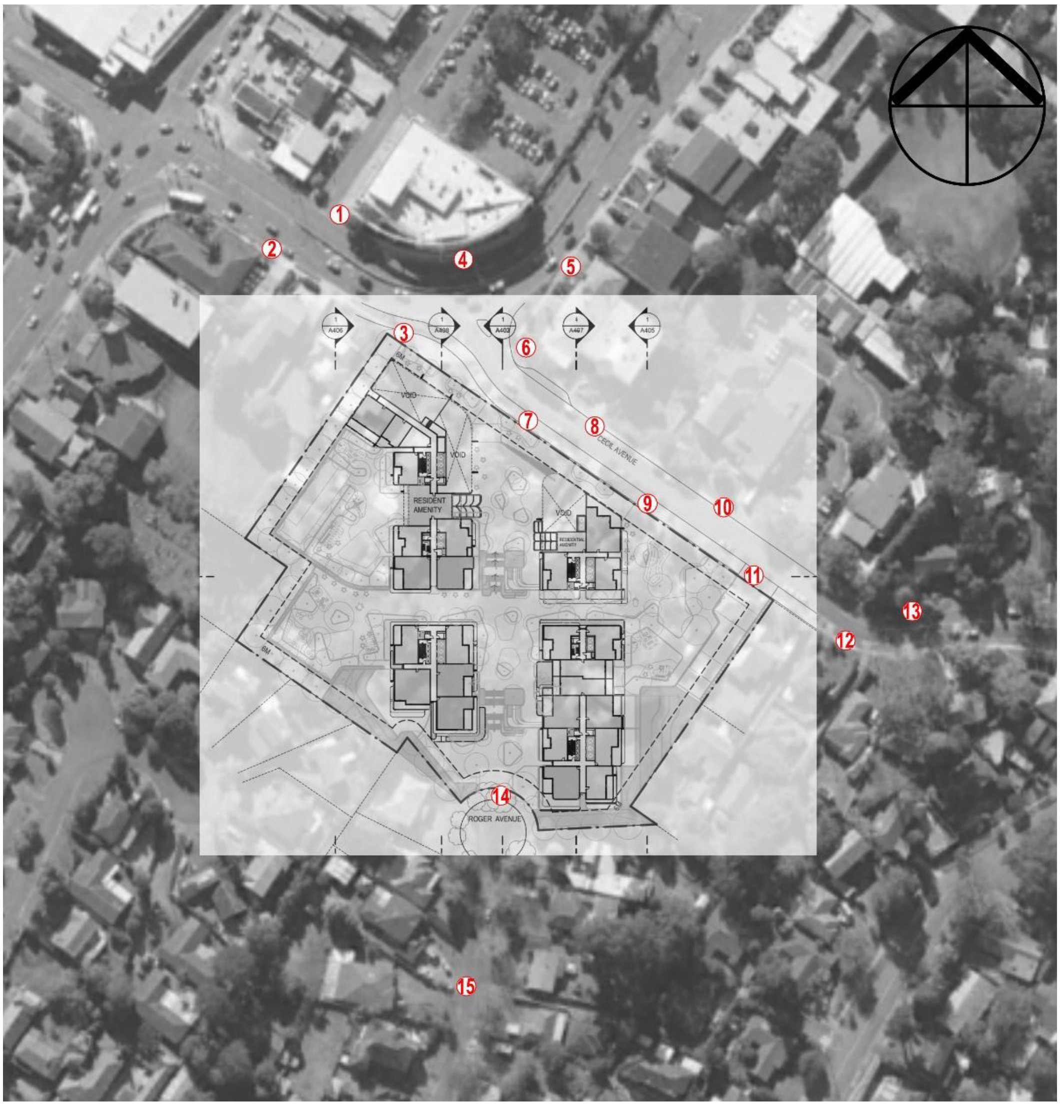


Figure 14: Sensor numbers and locations on the ground level outside of project development.

Figure 15: Sensor numbers and locations on ground level within project development.

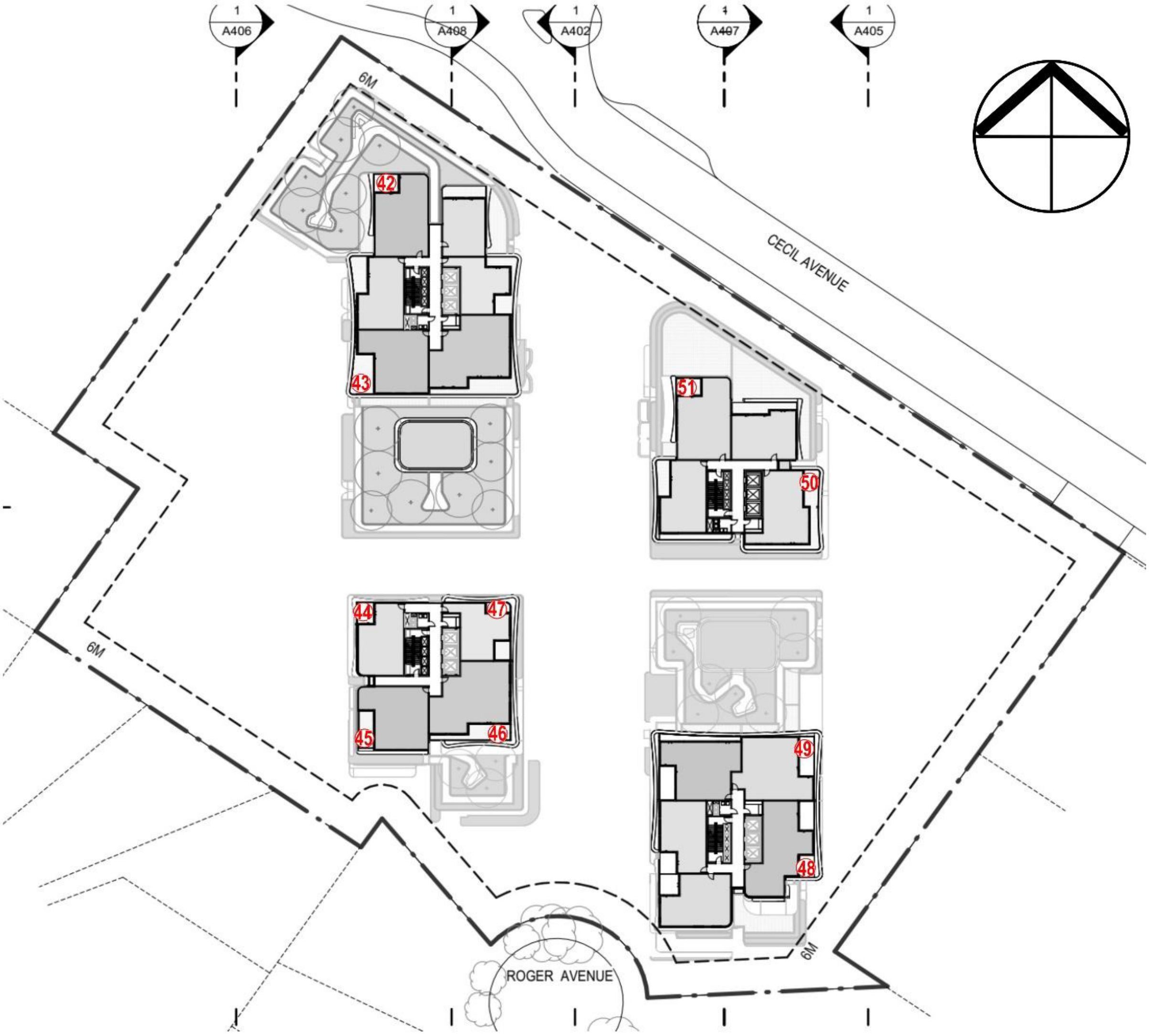


Figure 16: Sensor numbers and locations on level 22.

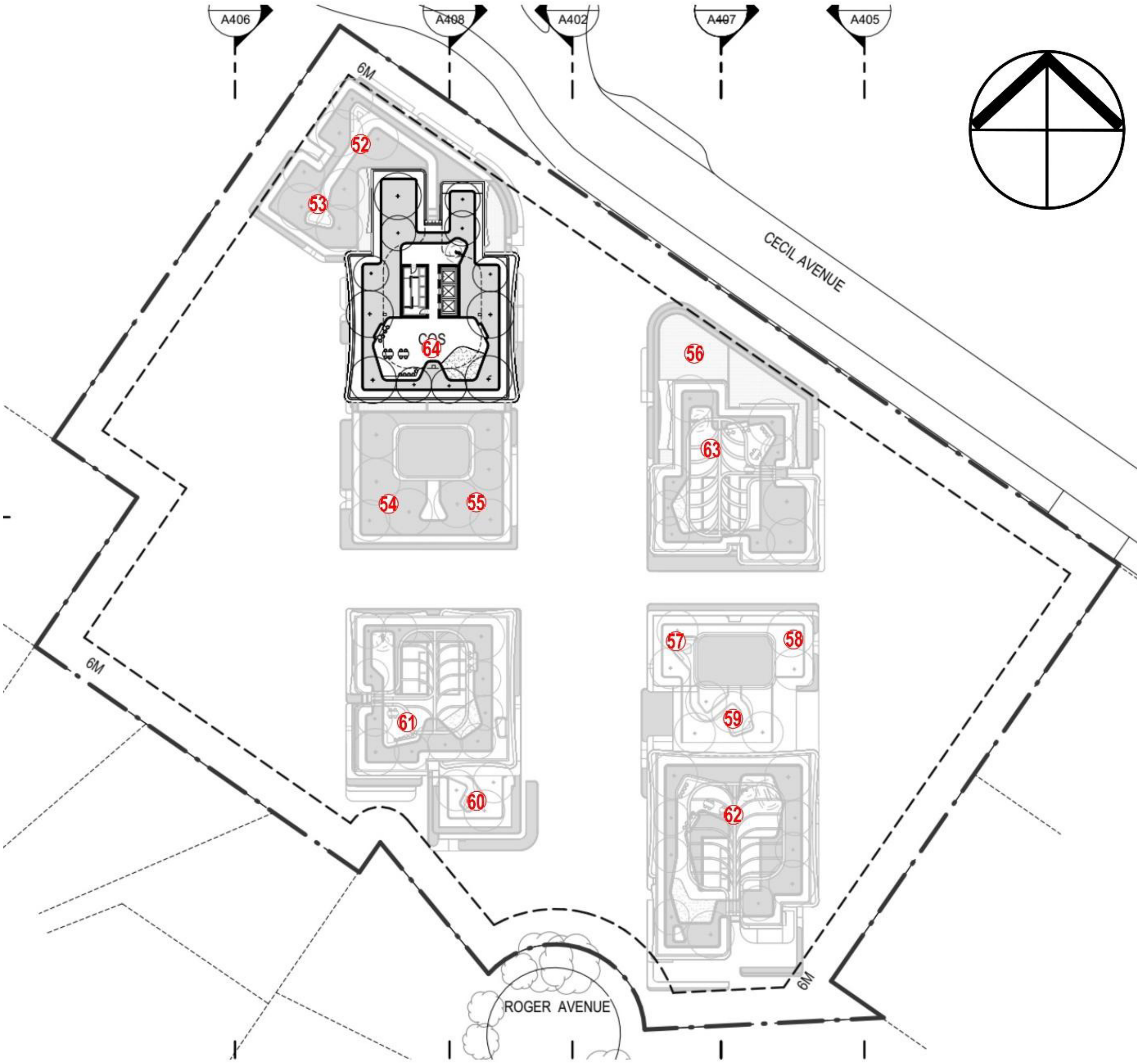


Figure 17: Sensor numbers and locations rooftop and podium areas.

6 Results and Discussion

The pedestrian wind environment in the footpath area, building entrance areas and balconies, podium and rooftop terrace were assessed using omnidirectional pressure sensor tests.

Three configurations were conducted, namely:

- **Proposed scenario:** test with the proposed development with current surroundings (Figure 18).
- **Future scenario:** test with the proposed development and all proposed and likely future developments that will be built up within about 5 years (Figure 19).
- **Existing scenario:** test with the existing site with current surroundings (Figure 20).

The tests were conducted without any street trees and existing landscaping at the ground level. The proposed landscaping were included to show the effectiveness of protection of some standing and sitting areas.

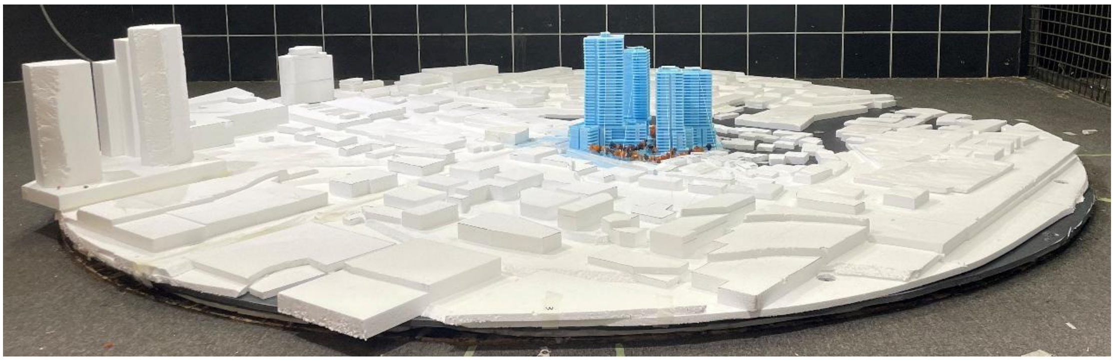


Figure 18: Overall view of the proposed development model in the wind tunnel (proposed scenario with proposed landscaping).

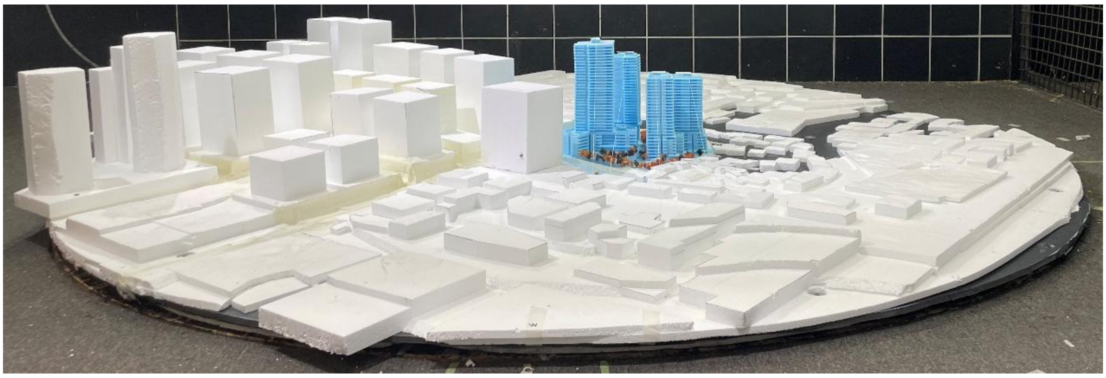


Figure 19: Overall view of the proposed development model in the wind tunnel (future scenario with proposed landscaping).

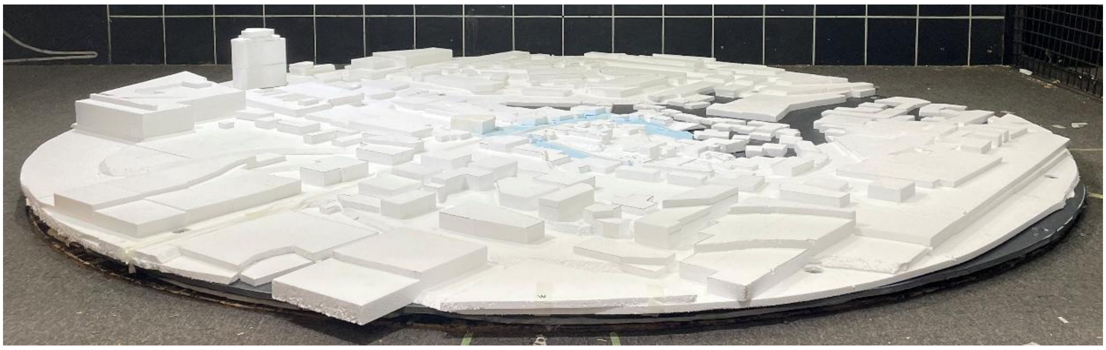


Figure 20: Overall view of the existing site in the wind tunnel (existing scenario).

The results of omnidirectional pressure sensor tests are presented as polar plots for the gust and are shown in Appendix C of this report. Figure 21 shows an example of these plots. In Figure 21, the red circle represents the gust velocities for the safety criterion and the sets of symbols with lines represent the test predicted gust velocity for the 36 directions.

Figure 21 showed that at location 18 measured wind speeds were within the safety criterion for all the scenarios.

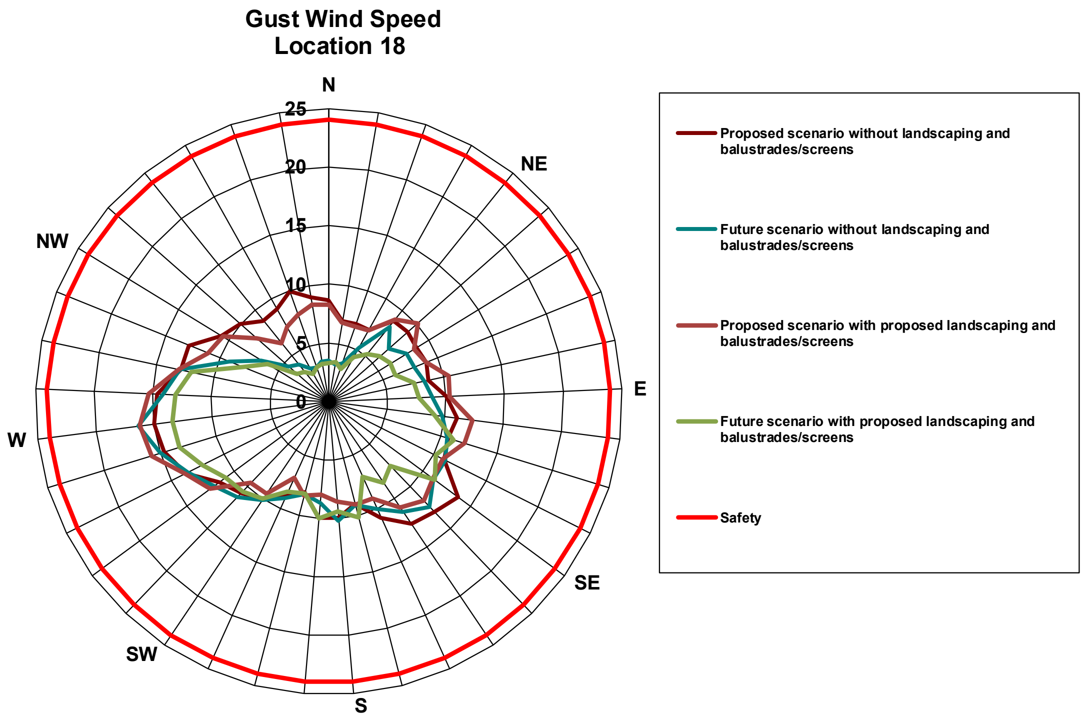


Figure 21: Polar plot of the gust wind speeds compared to the safety criterion (Location 18).

Figures *22* and *24* show the overall comparison between the comfort criteria and predicted mean wind speeds (max of statistic mean and GEM). In the figures below, the vertical colour lines represent the velocities for the different criteria and the data series (Bars) represent the predicted values of the mean wind speeds of combination for the 36 directions. For the all-wind direction combination, the up-crossing prediction method was used in the study.

Comfort Criteria
Mean wind speed (exceeded ≤5% probability)

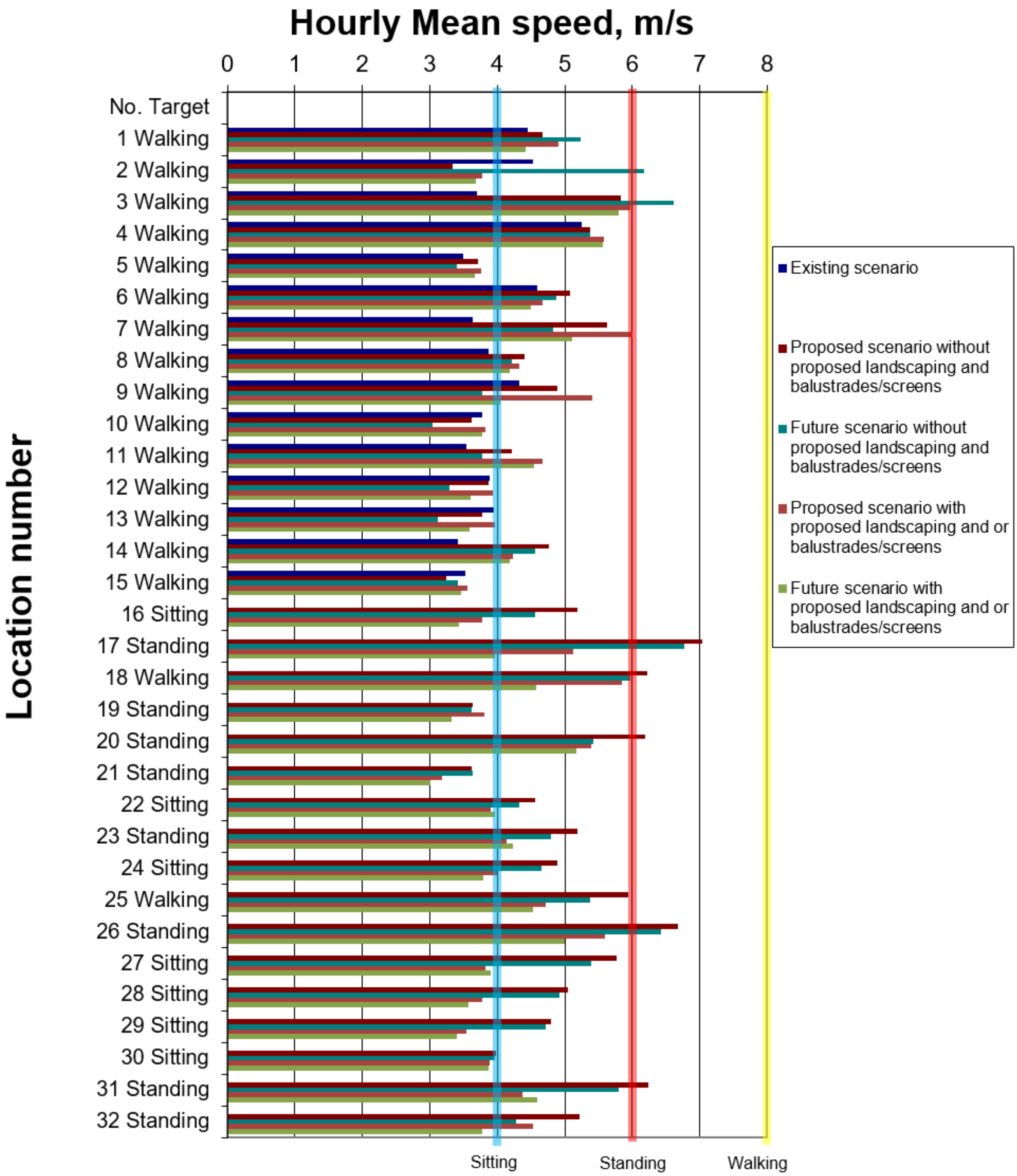


Figure 22: Bar plot of the mean wind speeds compared to the comfort criteria (for locations 1 to 32).

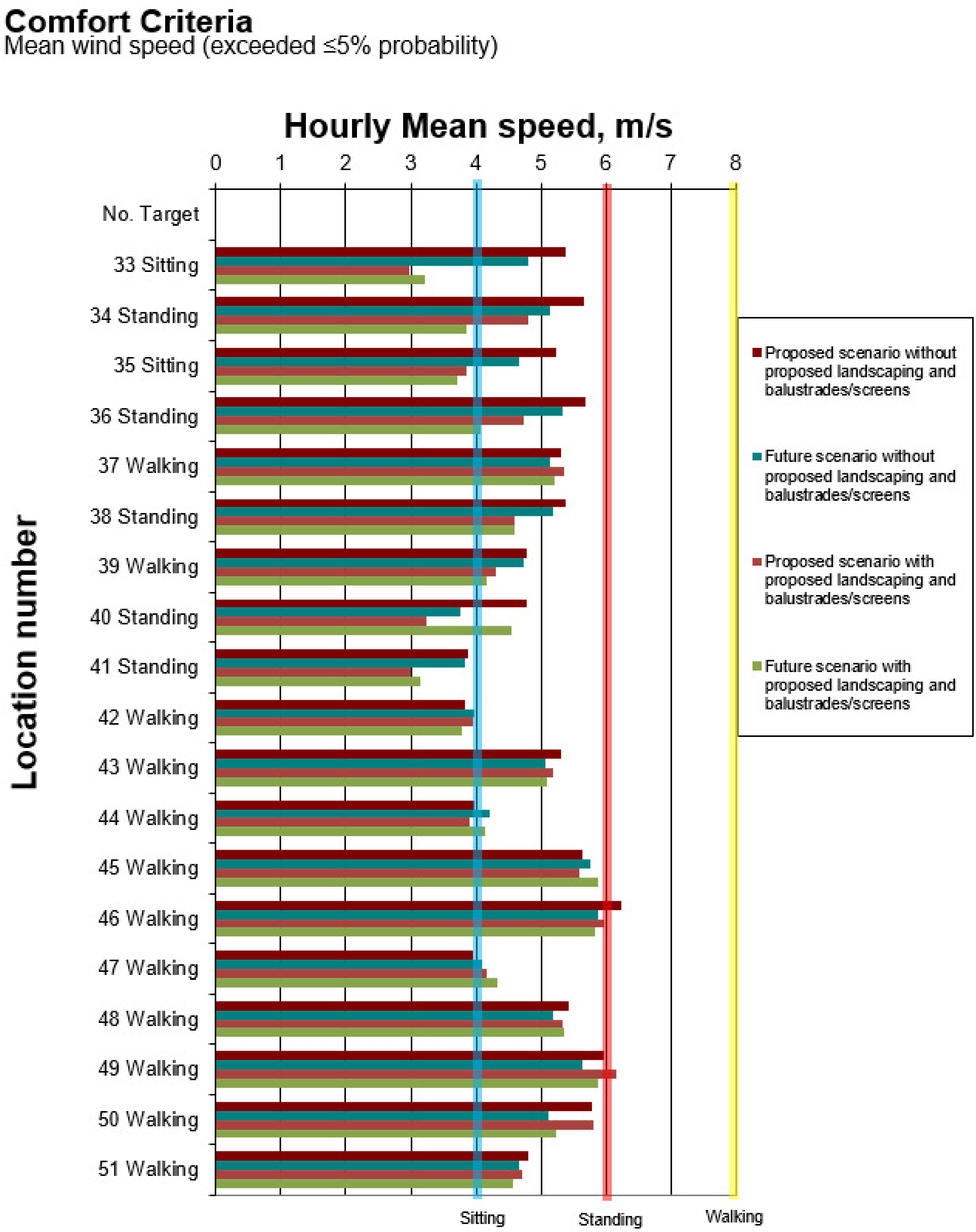


Figure 23: Bar plot of the mean wind speeds compared to the comfort criteria (for locations 33 to 51).

Comfort Criteria
Mean wind speed (exceeded ≤5% probability)

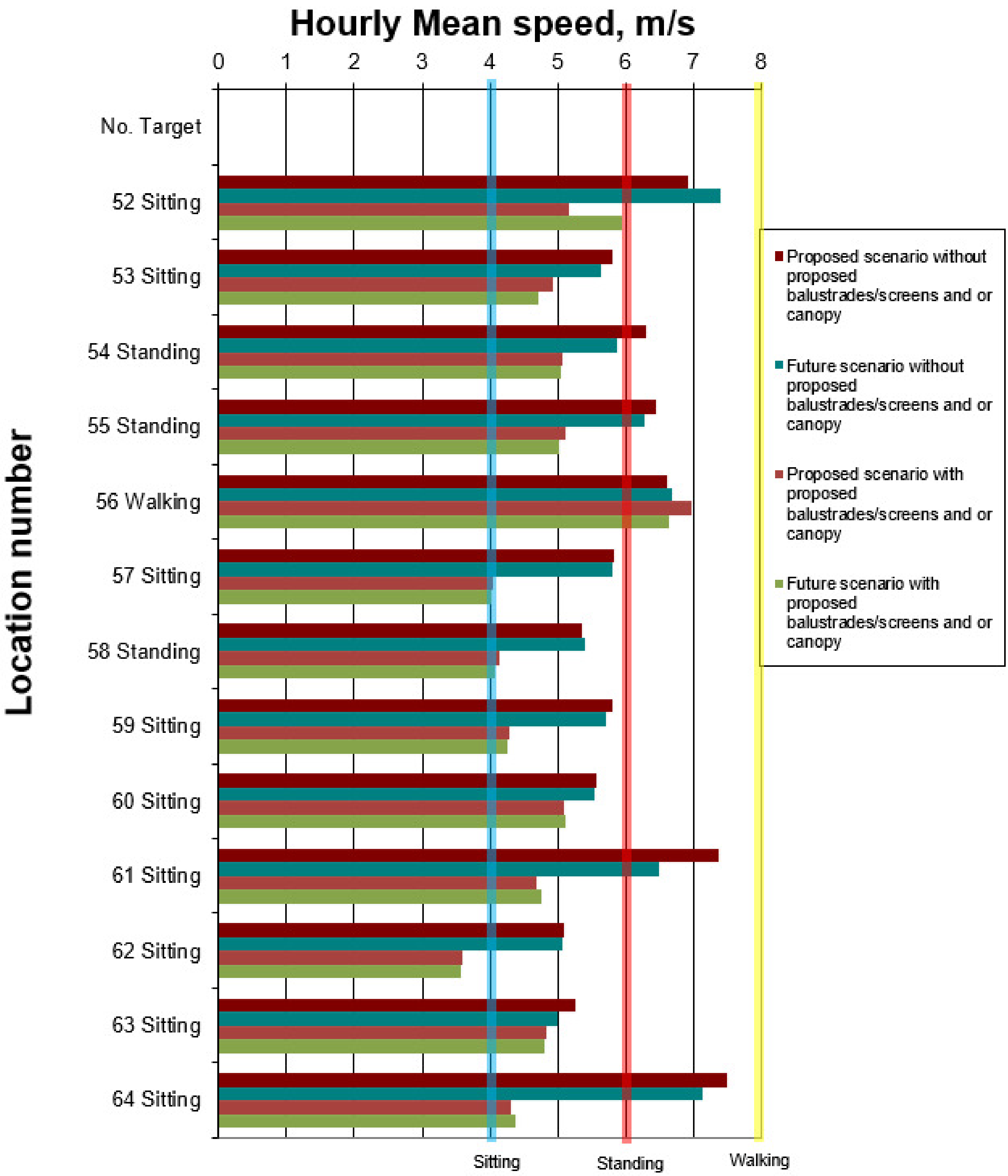


Figure 24: Bar plot of the mean wind speeds compared to the comfort criteria (for locations 52 to 64).

Based on the tests conducted, the following points were observed.

6.1 Safety Criterion

All locations within the proposed development measured gust windspeeds within the recommended safety criterion for all scenarios. As such, no additional treatments are necessary.

6.2 Comfort Criterion

All locations except 52, 53, 57, 59, 60, 61, 63 and 64 measured mean windspeeds within the recommended comfort criterion. With the inclusion of the proposed landscaping and planter box as shown in the landscape drawing ('SS25-5426 Cecil Avenue SDRP_260206.pdf') at locations 52, 53, 57, 59, 60, 61, 63 and 64, all of these locations are expected to meet the sitting comfort criteria. As such, no additional treatments are necessary.

7 Conclusion

Vipac has carried out an assessment of the pedestrian level winds for the proposed development at **93-107 Cecil Ave & 9-10 Roger Ave, Castle Hill** based on a scaled wind tunnel test.

The findings of the study are summarised as follows:

The proposed design of the development:

- All locations fulfil the recommended criterion for **safety**.
- Fulfils the recommended criterion for **walking** at all footpath locations.
- Fulfils the recommended criterion for **standing** at the building entrances and footpath activities.
- Fulfils the recommended criterion for **sitting** at the seating areas.
- Fulfils the recommended criterion for **walking** at all balconies.
- Fulfils the recommended criteria for **sitting** at the rooftop terraces.

As a general statement, common to all new developments, educating occupants about wind conditions at high-level terraces/balconies during high-wind events and tying down loose furniture are highly recommended.

Appendix A References

1. Australian/New Zealand Standard 1170.2:2002, Wind actions
2. Melbourne, W. H., "Criteria for Environmental Wind Conditions", Jour. Industrial Aerodynamics, Vol. 3, 241-249, 1978
3. Simiu E, Scanlan R, "*Wind Effects on Structures"*. Wiley-Interscience
4. Aynsley R., Melbourne W., Vickery B., *Architectural Aerodynamics* Applied Science Publishers

Appendix B Drawing List

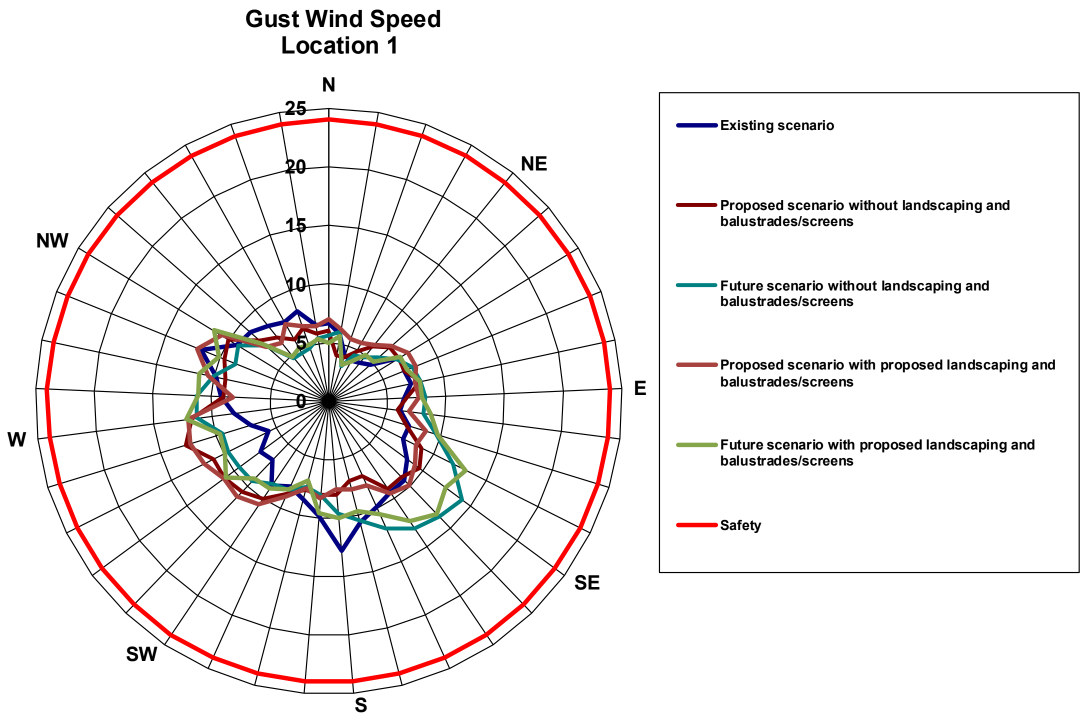
Received March 2026:

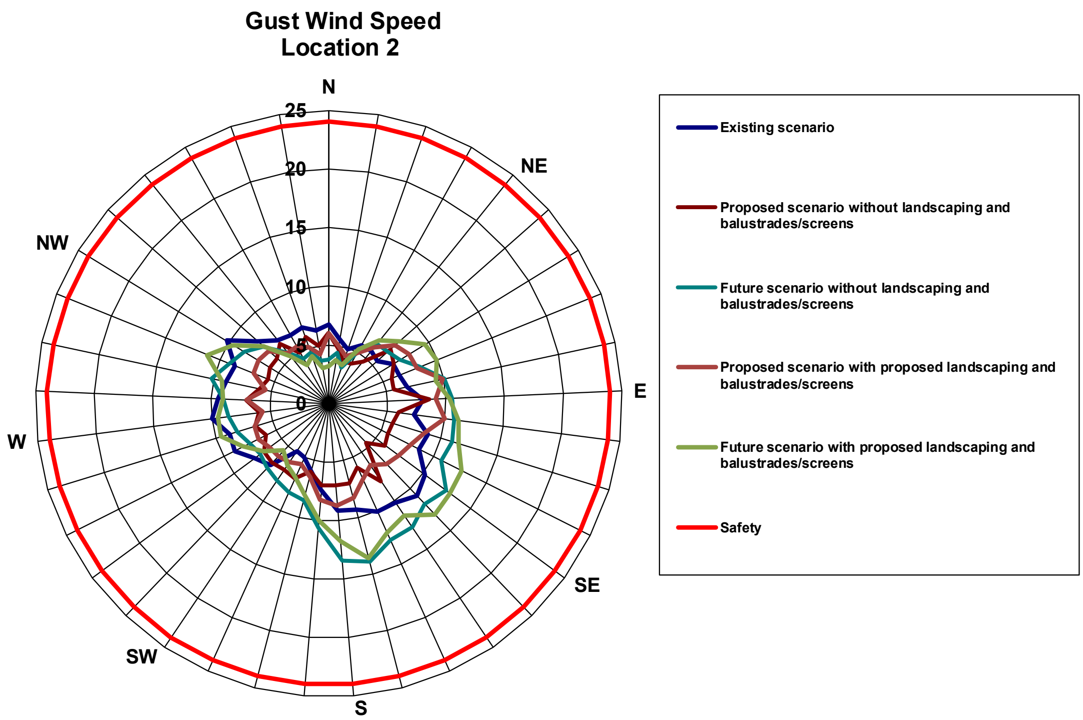
Appendix 5_Architectural Package.pdf

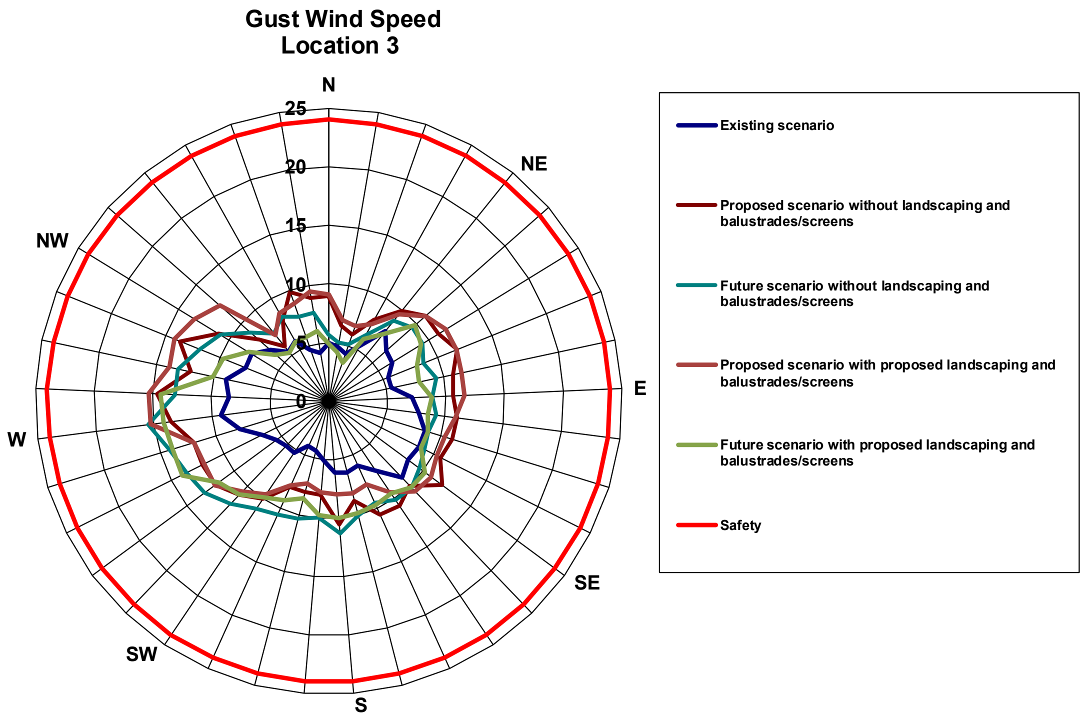
Received February 2026:

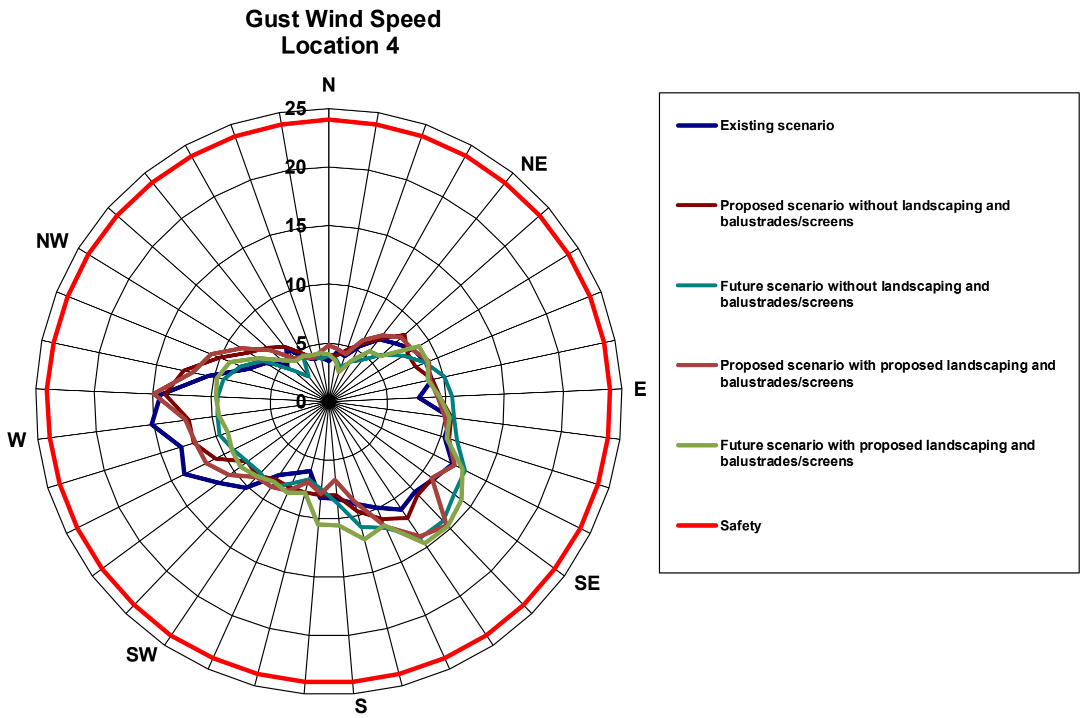
Massing.pdf
a24033_93-107 Cecil Ave. Castle Hill_Amended DA.pdf
SS25-5426 Cecil Avenue SDRP_260206.pdf

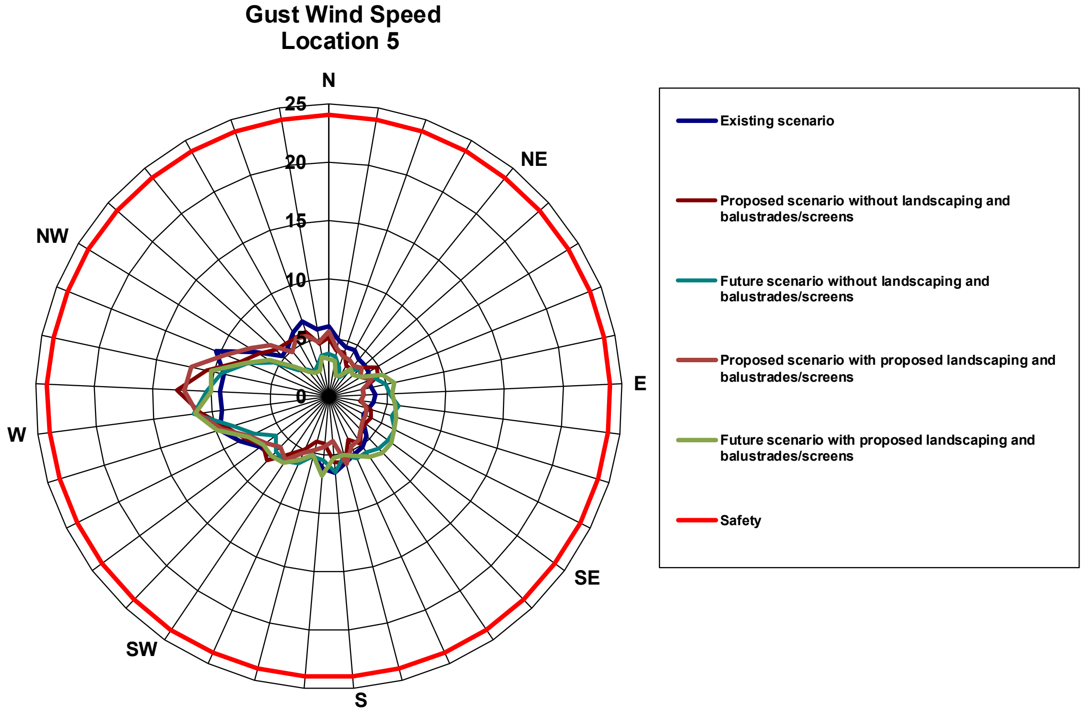
Appendix C Gust Wind Speed Polar Plots (Safety Criterion)


Gust Wind Speed
Location 1
N
NE
E
SE
S
SW
W
NW
25
20
15
10
5
0
Existing scenario
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 2
N
NE
E
SE
S
SW
W
NW
25
20
15
10
5
0
Existing scenario
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 3
N
NE
E
SE
S
SW
W
NW
25
20
15
10
5
0
Existing scenario
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 4
N
NE
E
SE
S
SW
W
NW
25
20
15
10
5
0
Existing scenario
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 5
N
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NW
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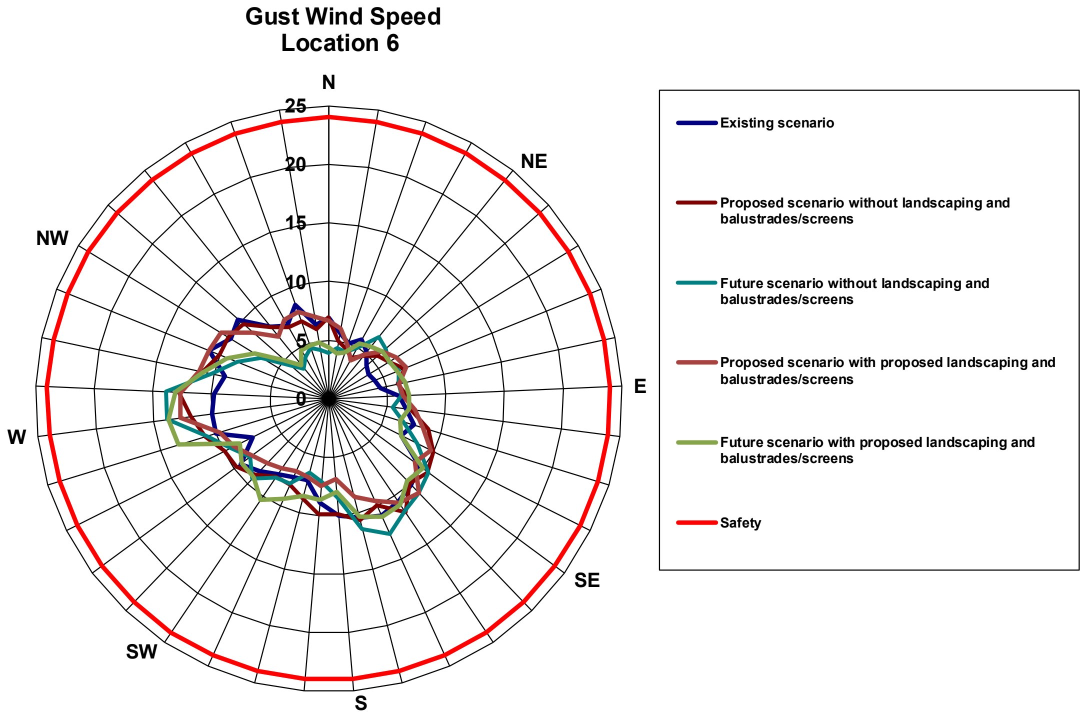
5
10
15
20
25
Existing scenario
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 6
N
NE
E
SE
S
SW
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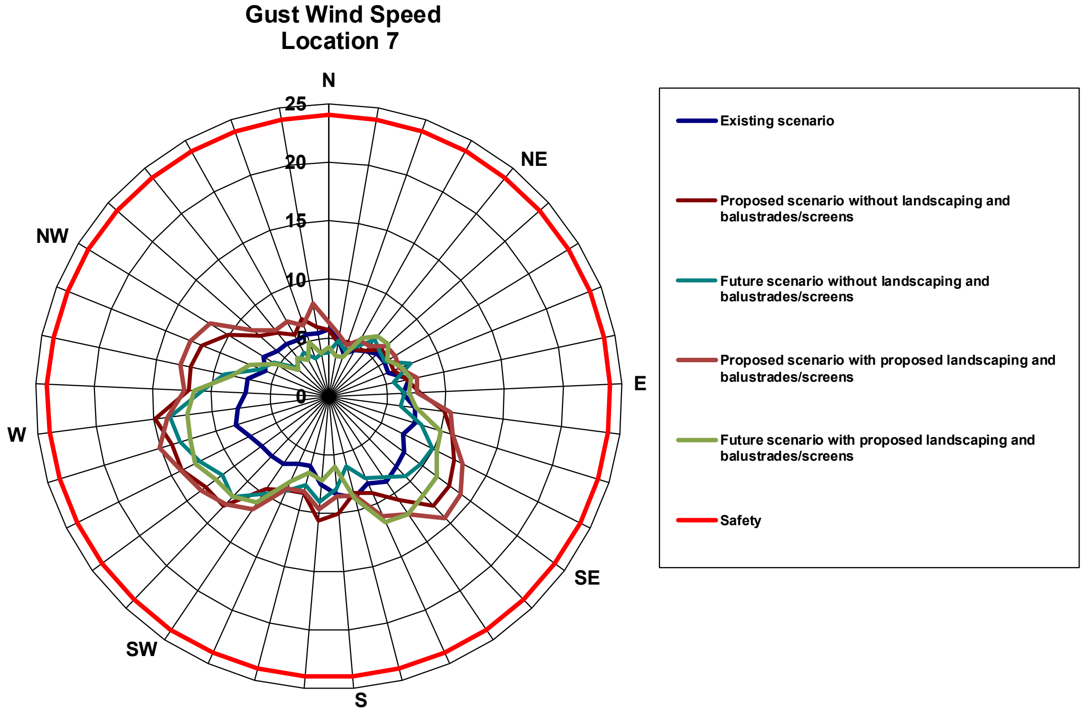
NW
0
5
10
15
20
25
Existing scenario
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 7
N
NE
E
SE
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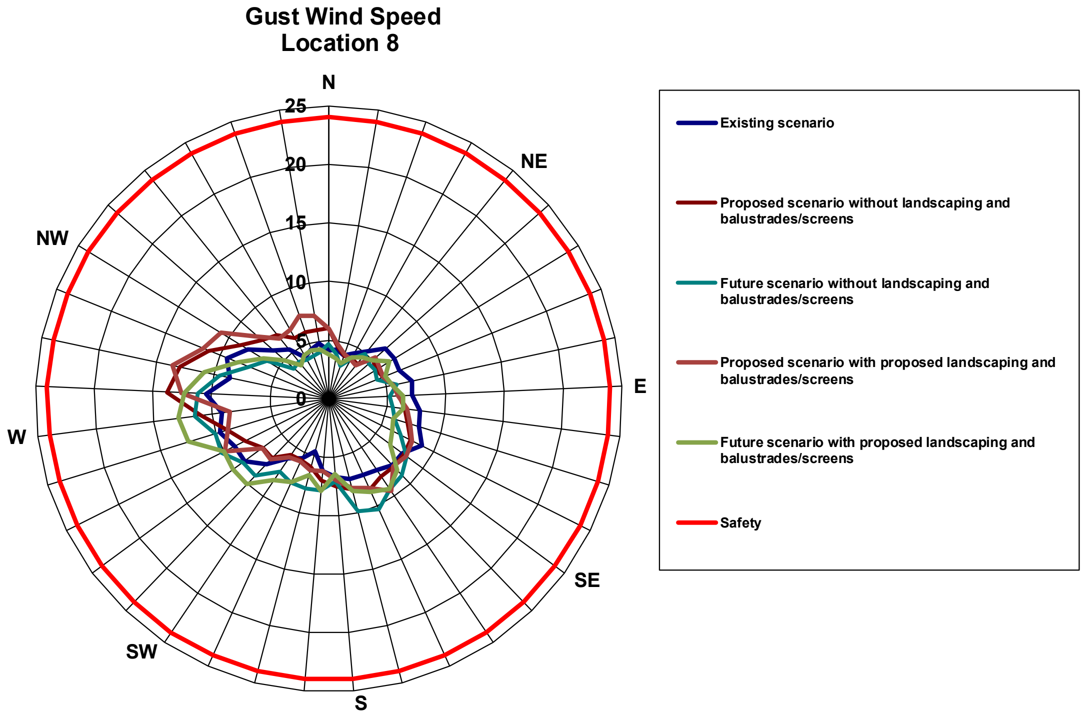
SW
W
NW
25
20
15
10
5
0
Existing scenario
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 8
N
NE
E
SE
S
SW
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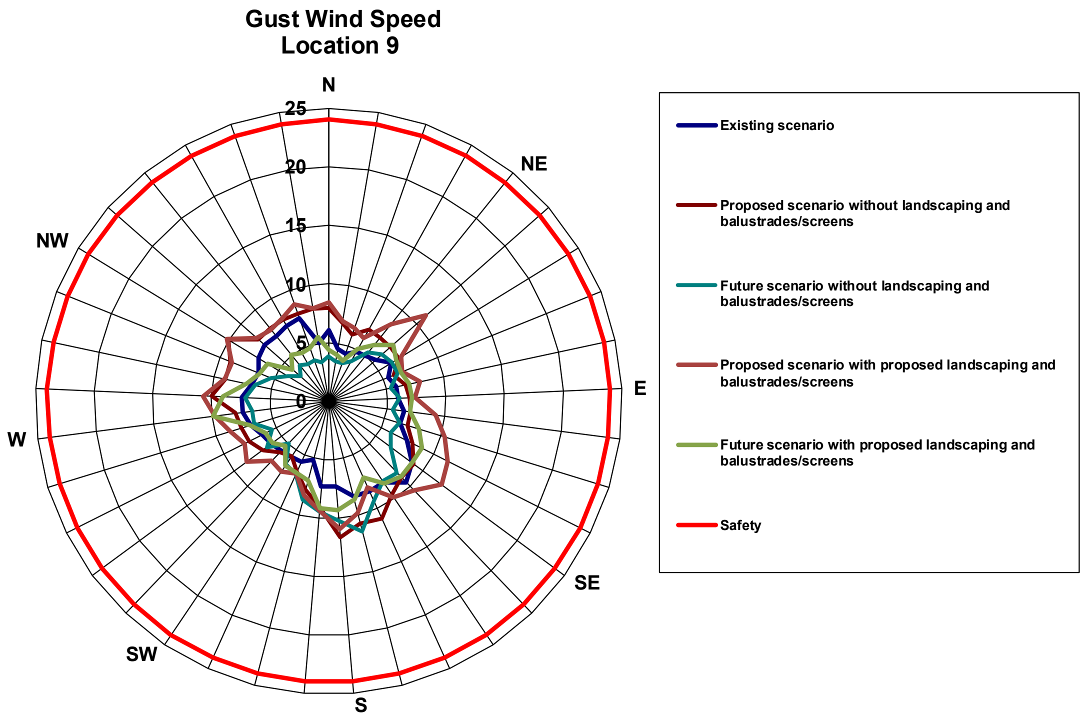
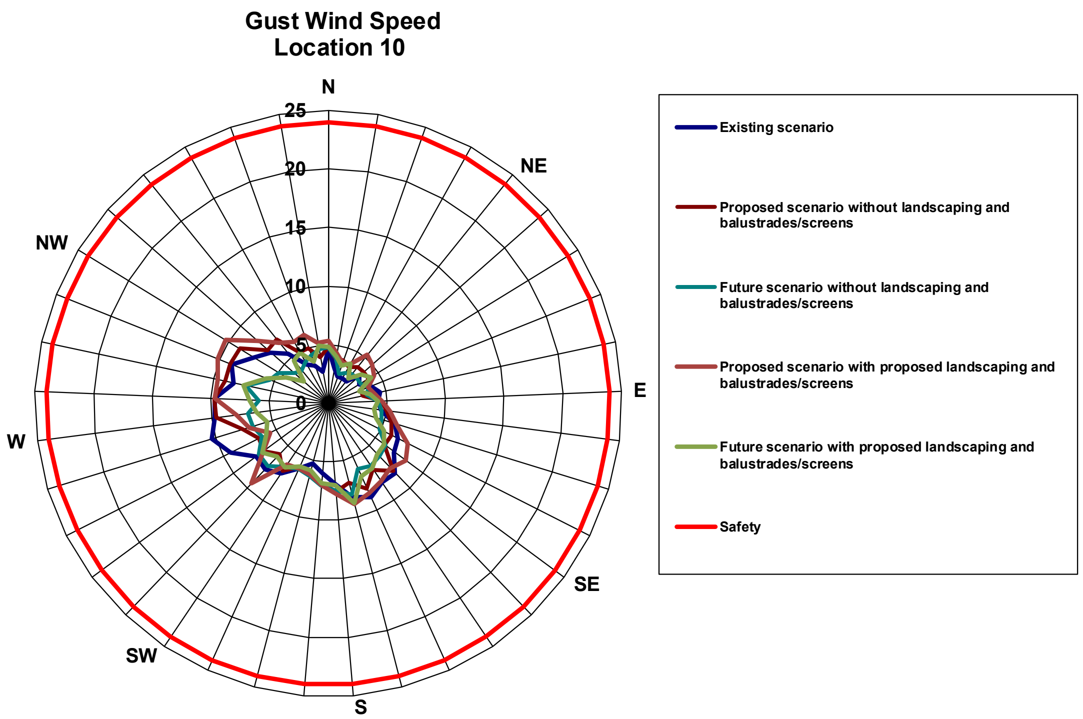
NW
25
20
15
10
5
0
Existing scenario
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 9
N
NE
E
SE
S
SW
W
NW
25
20
15
10
5
0
Existing scenario
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 10
N
NE
E
SE
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SW
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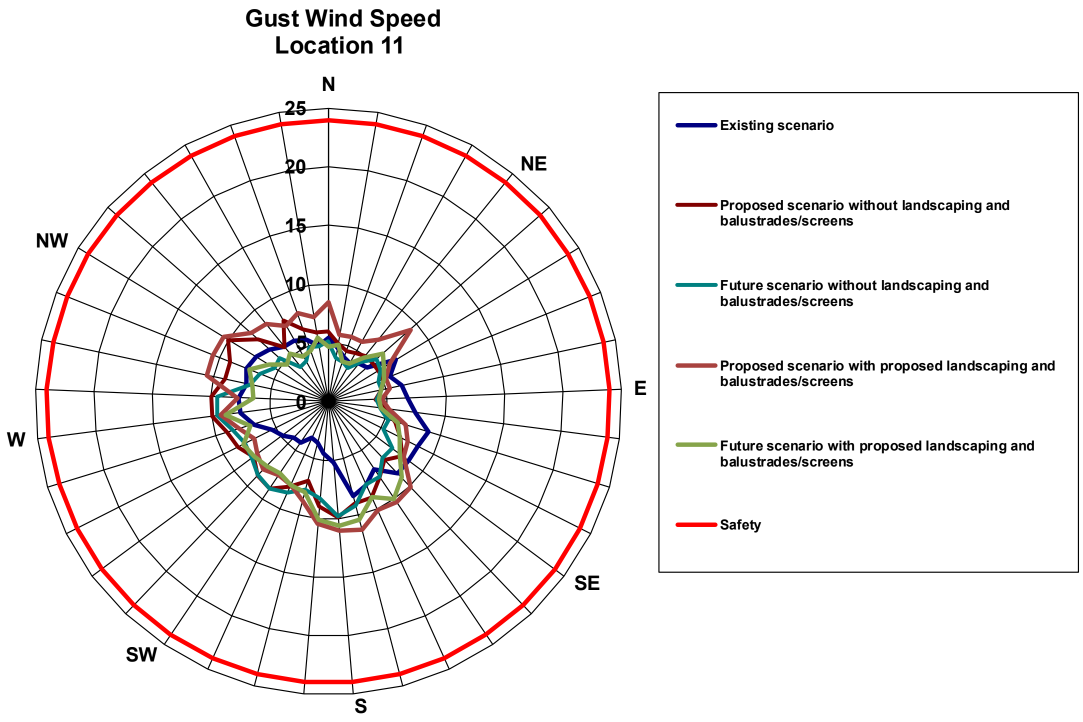
NW
25
20
15
10
5
0
Existing scenario
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 11
N
NE
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SW
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NW
25
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5
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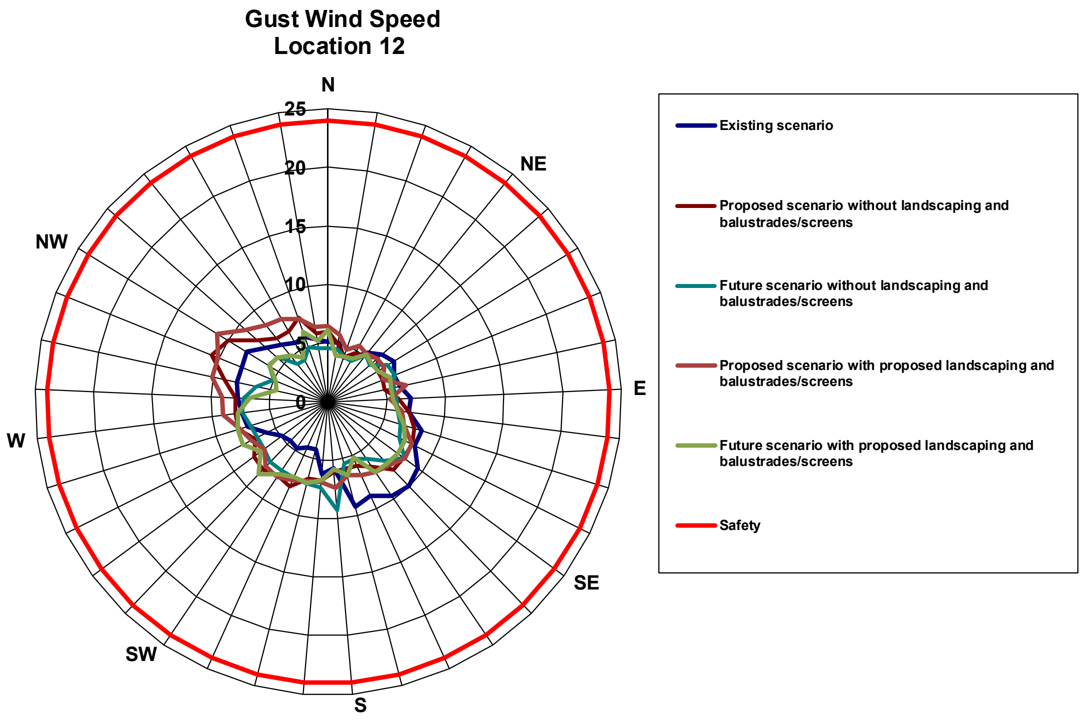
Existing scenario
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 12
N
NE
E
SE
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SW
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NW
25
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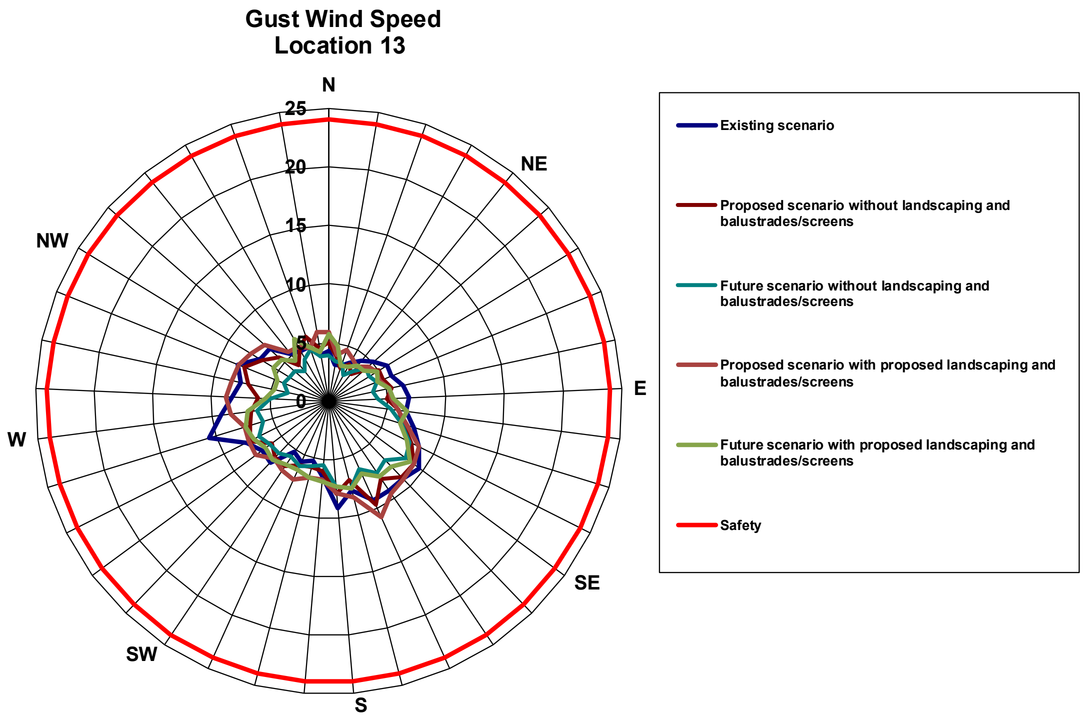
0
Existing scenario
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 13
N
NE
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SE
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SW
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25
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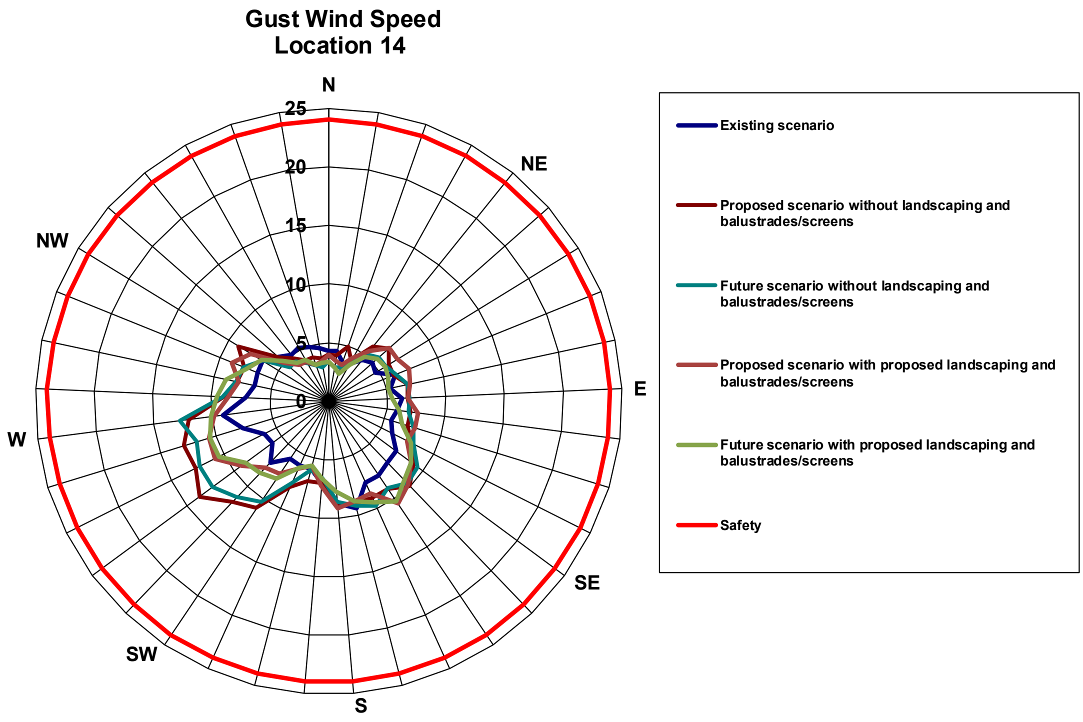
Existing scenario
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 14
N
NE
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NW
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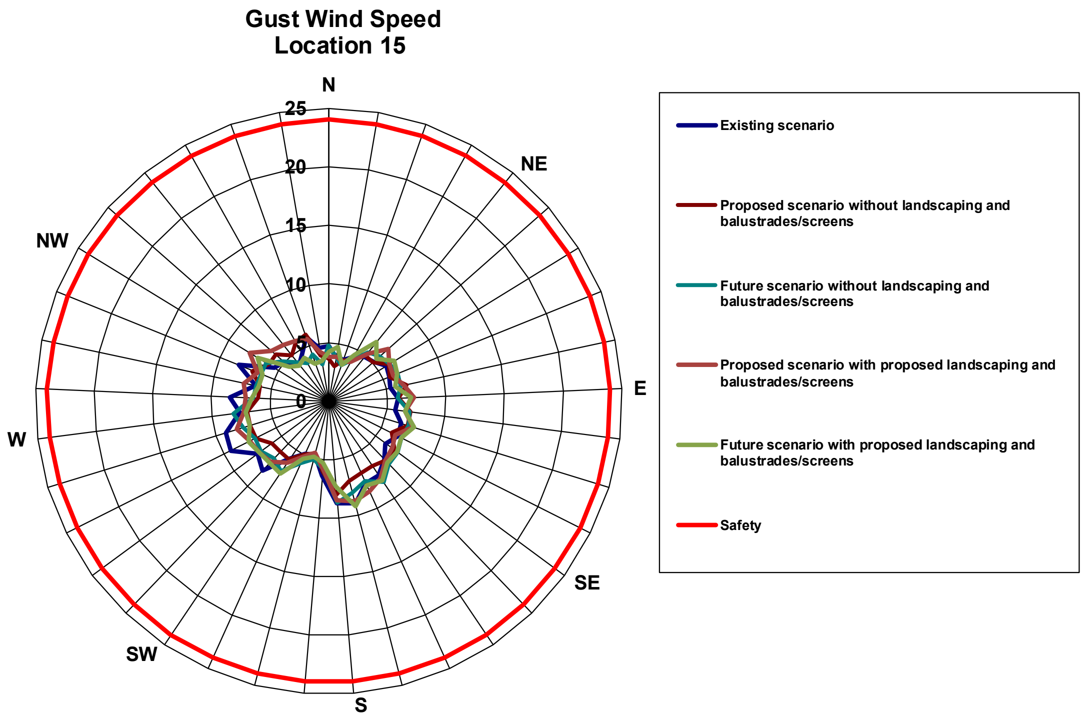
Existing scenario
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 15
N
NE
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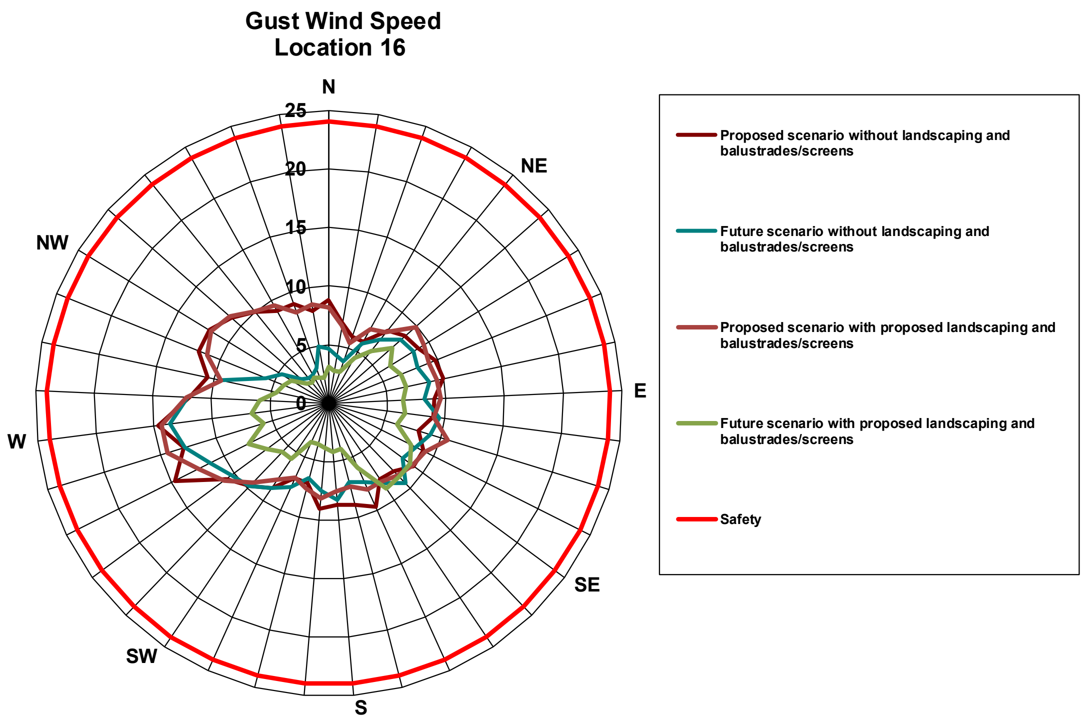
Existing scenario
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 16
N
NE
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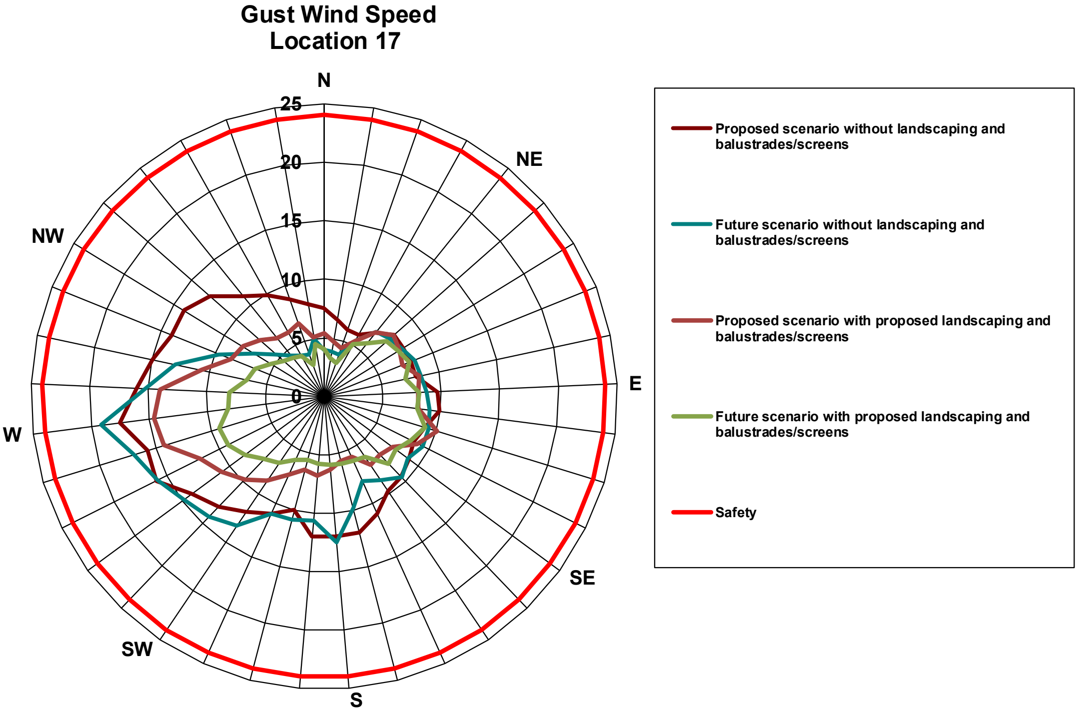
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 17
N
NE
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SW
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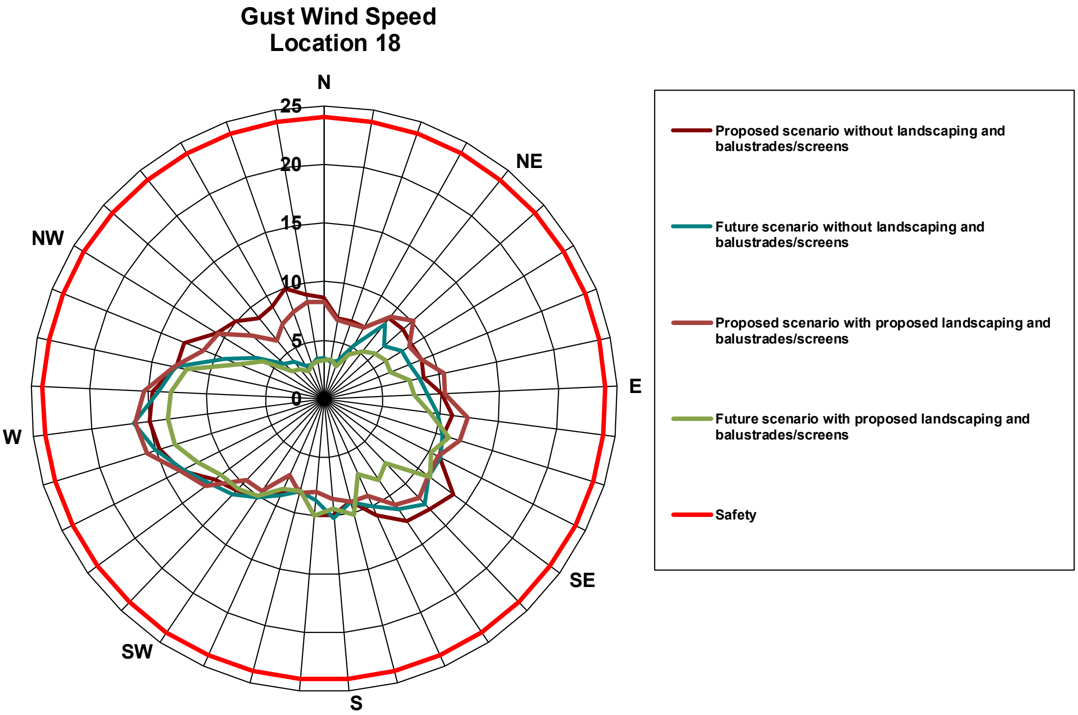
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 18
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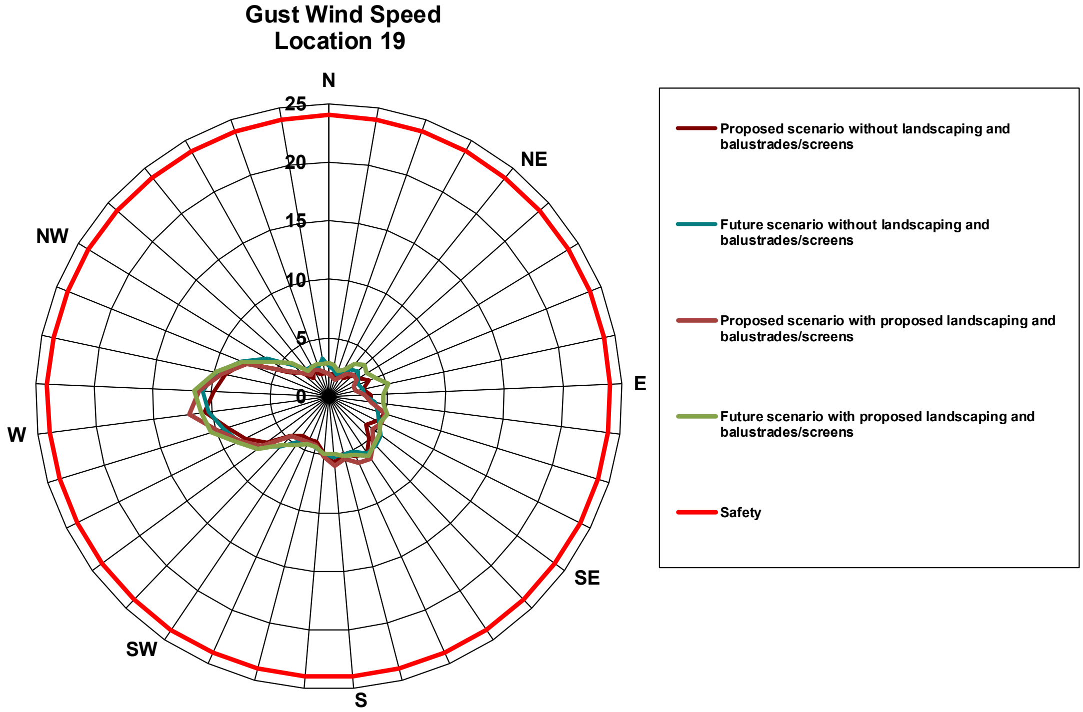
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 19
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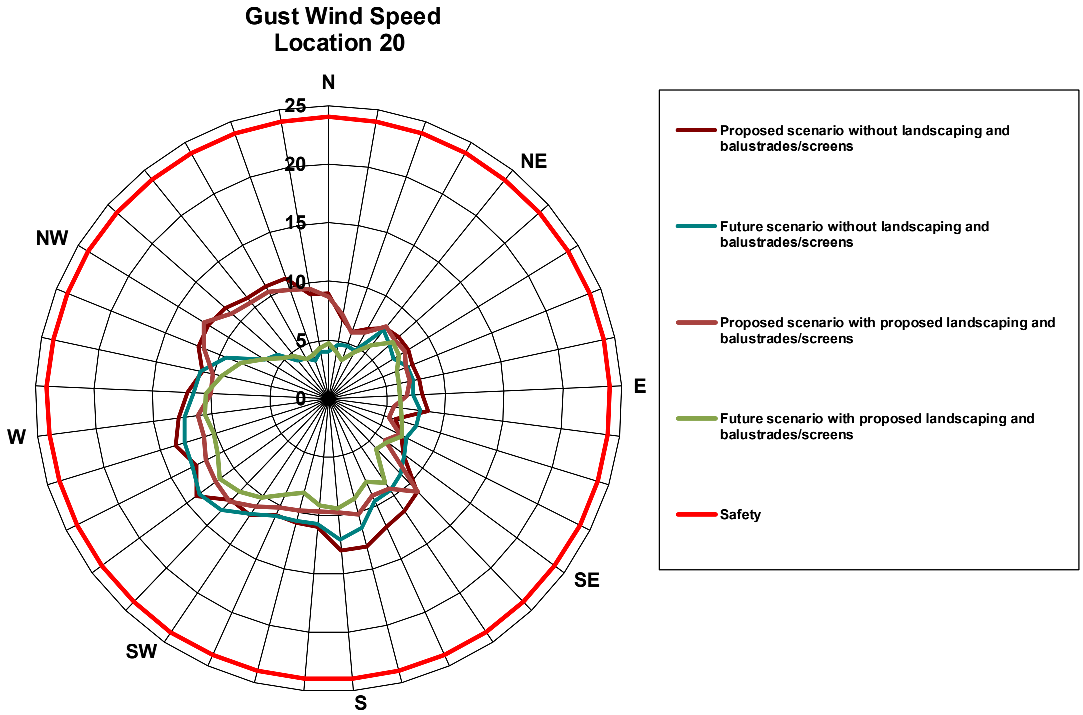
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 20
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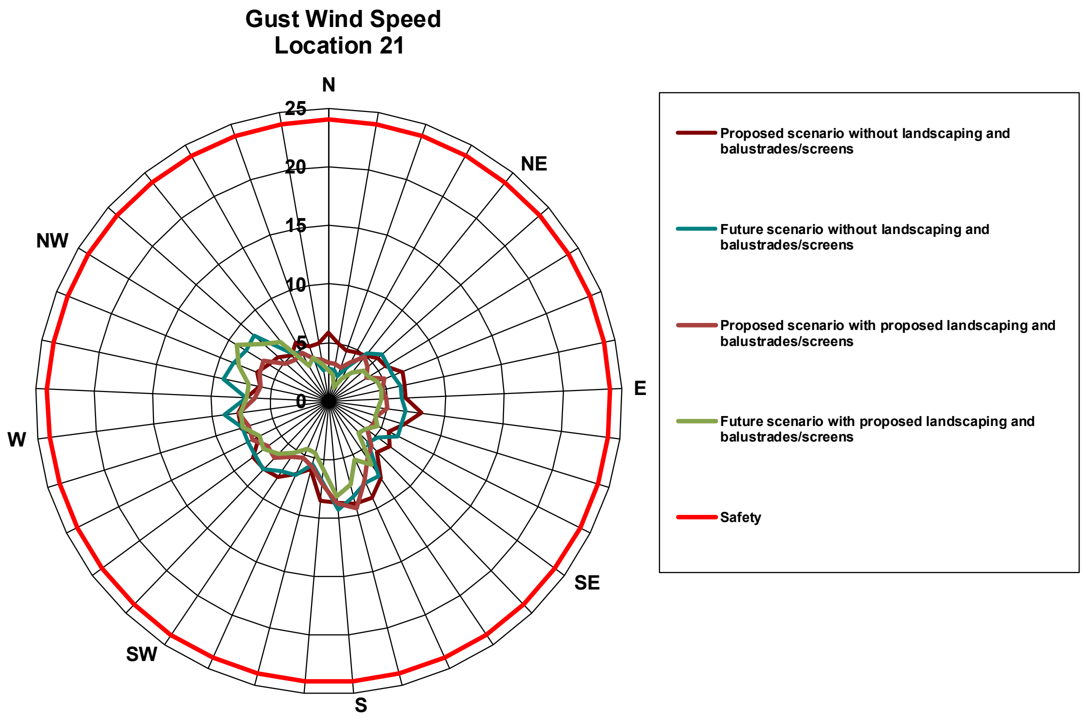
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 21
N
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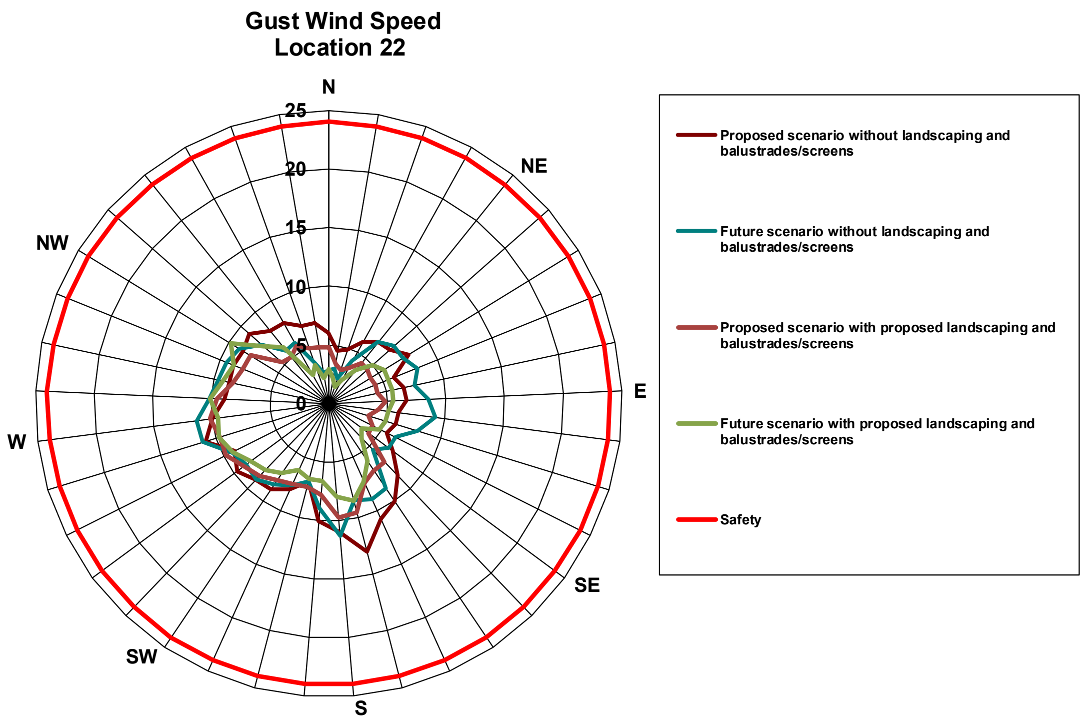
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 22
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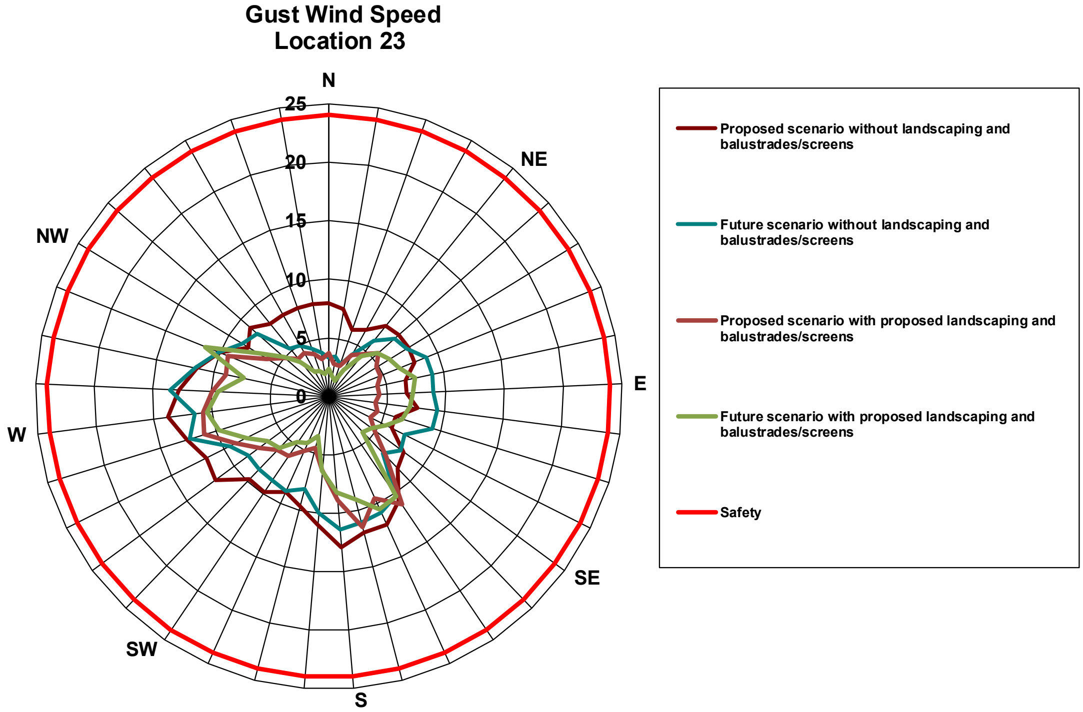
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 23
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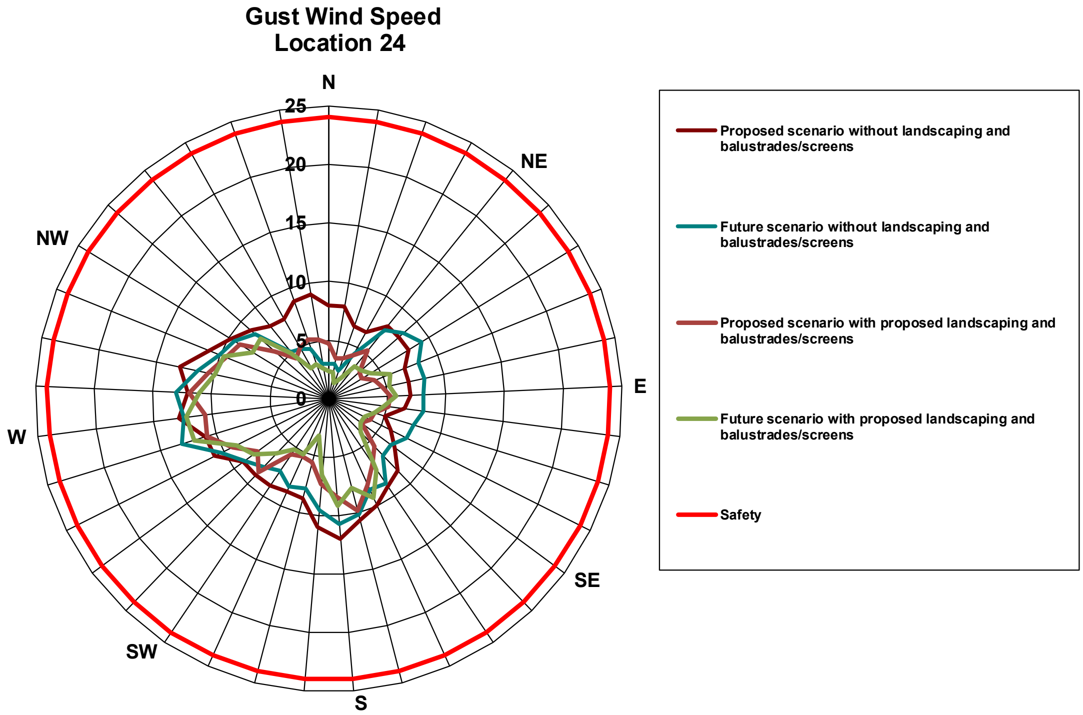
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 24
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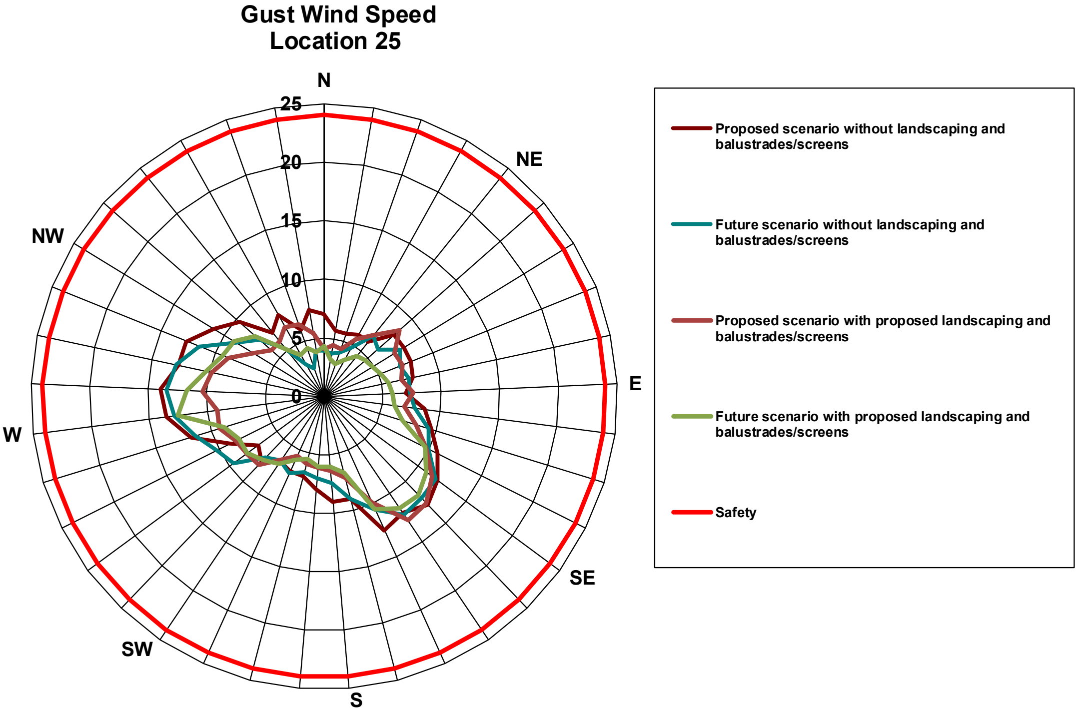
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 25
N
NE
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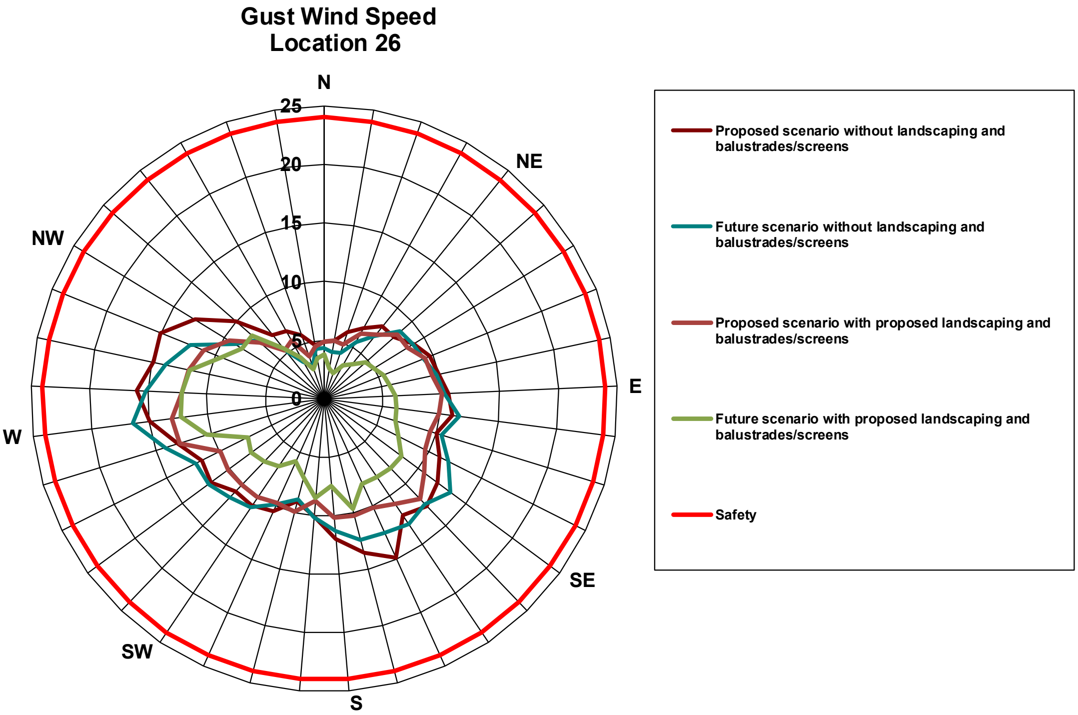
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 26
N
NE
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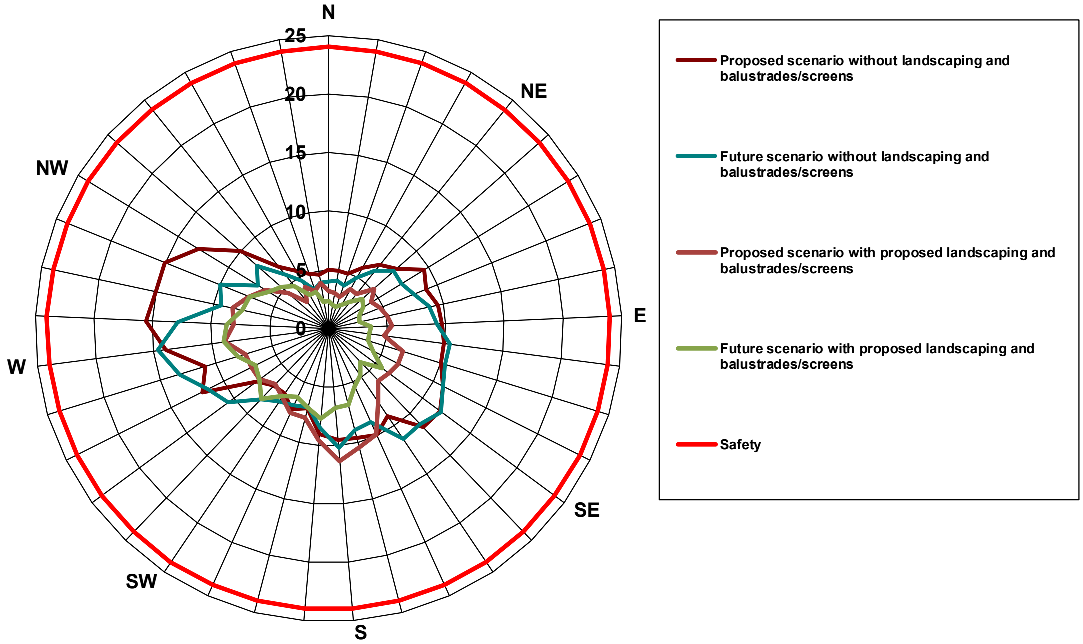
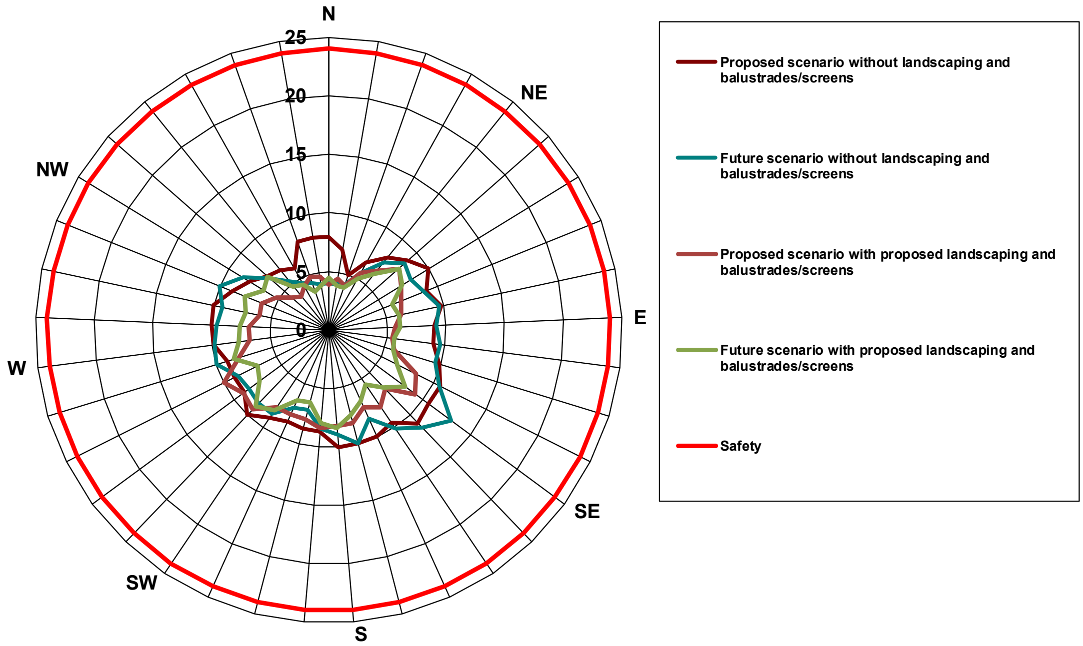
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety

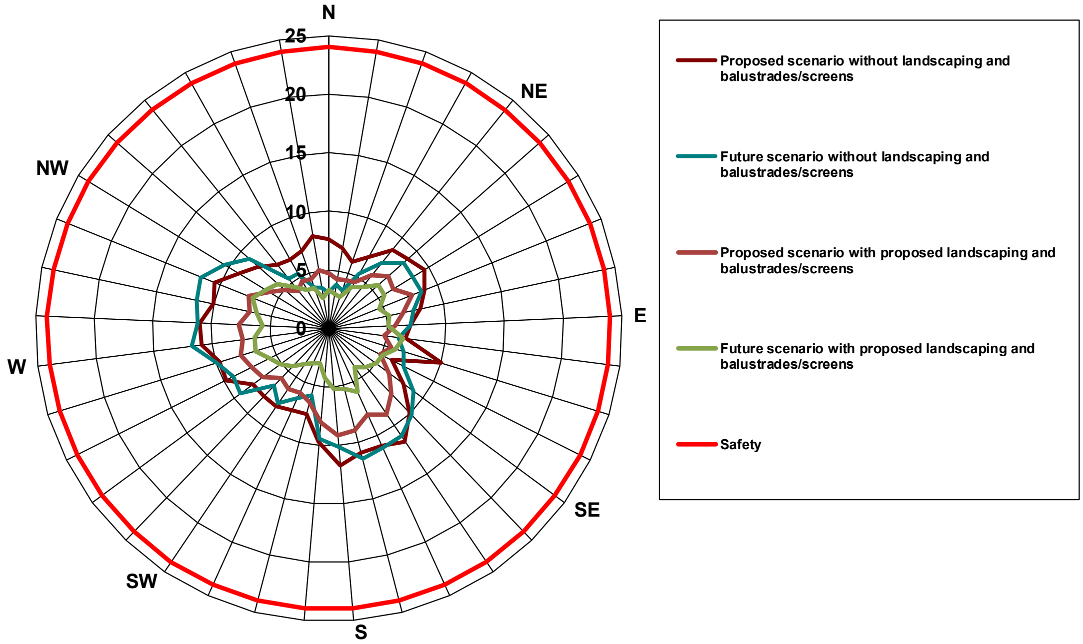
**Gust Wind Speed
Location 27**



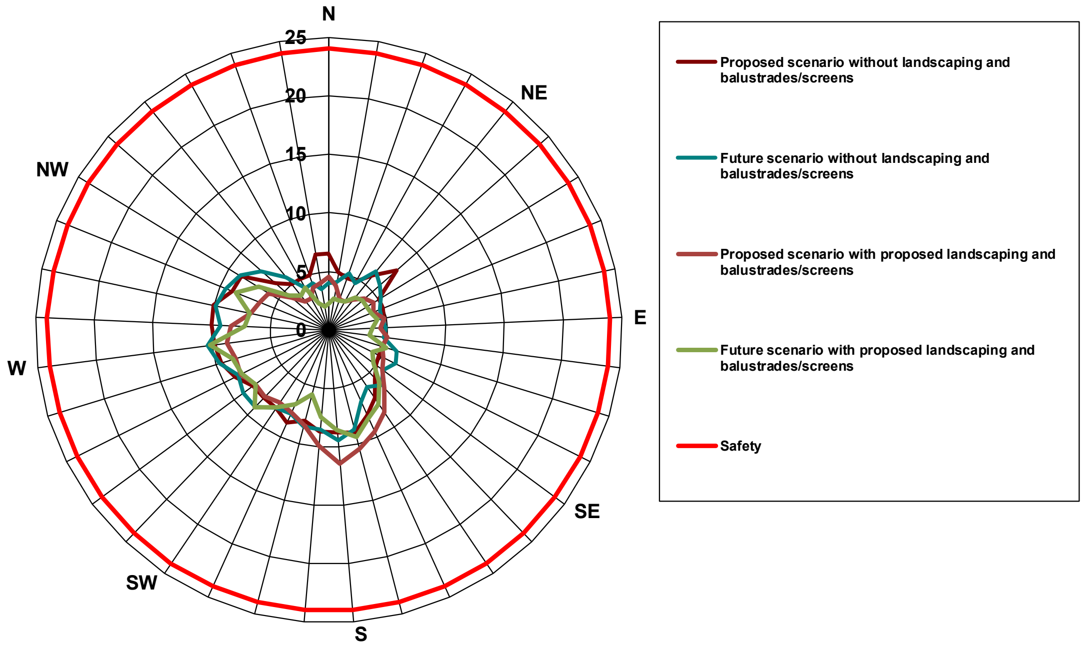
**Gust Wind Speed
Location 28**

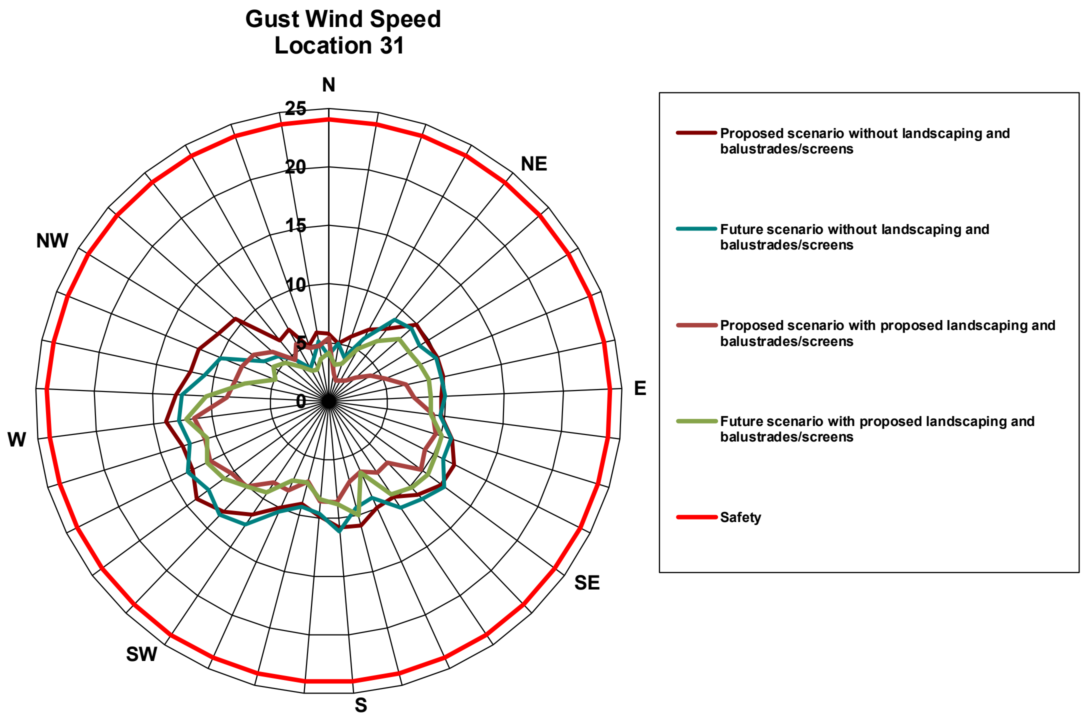


Gust Wind Speed
Location 29



Gust Wind Speed
Location 30




Gust Wind Speed
Location 31
N
NE
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SW
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NW
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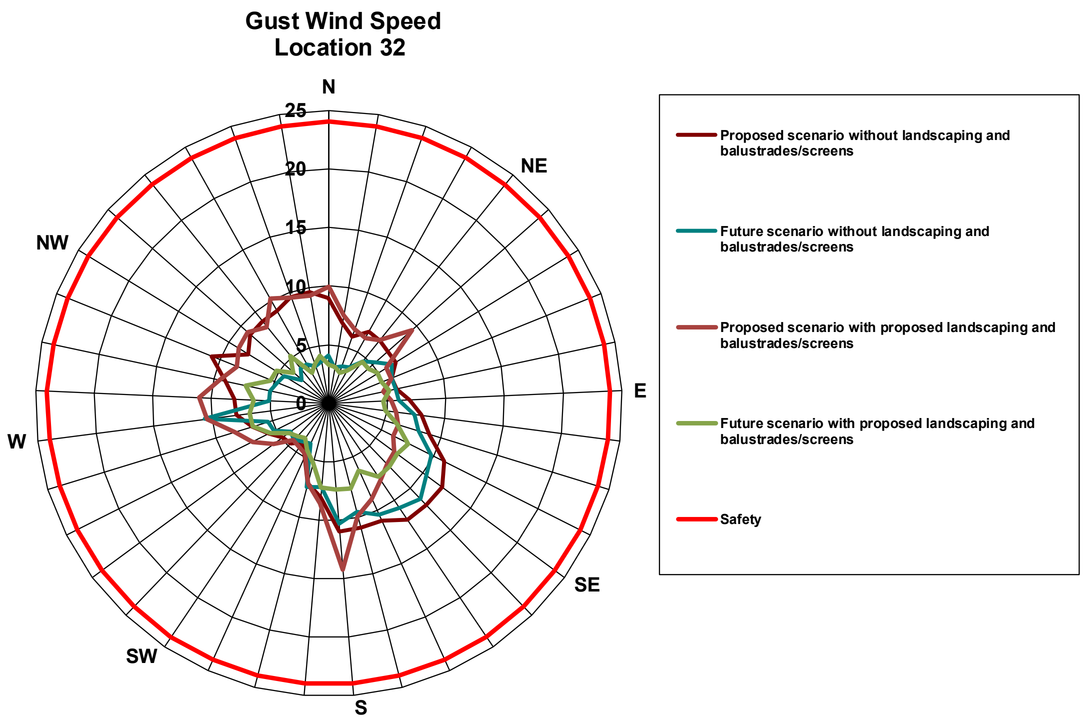
0
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 32
N
NE
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NW
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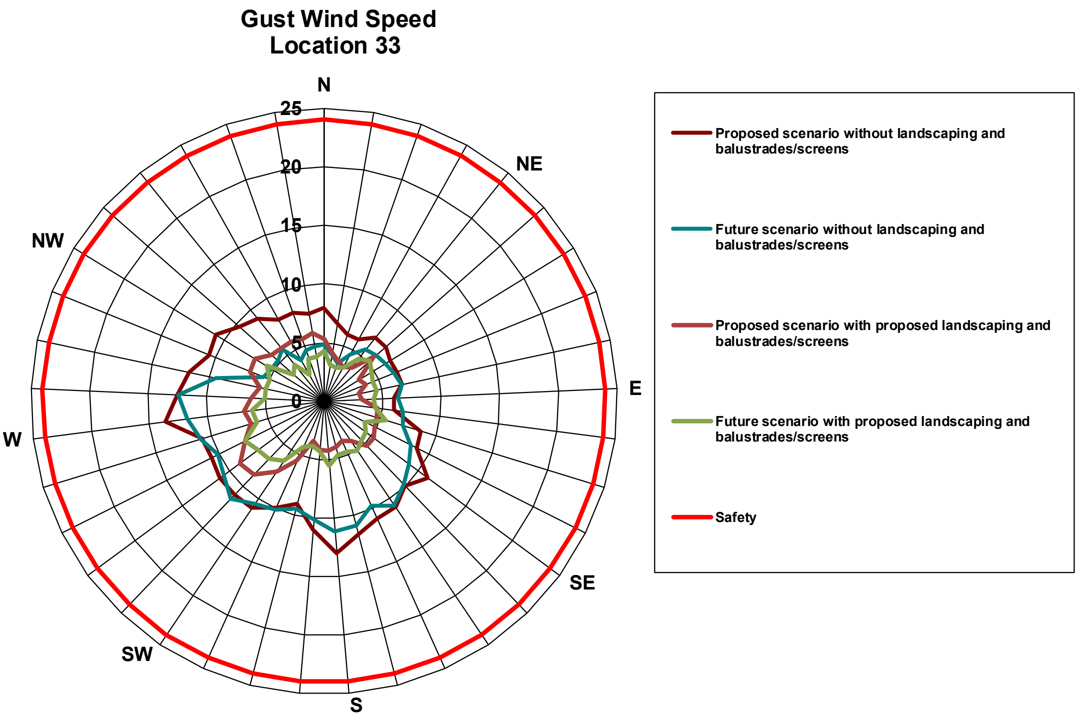
0
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 33
N
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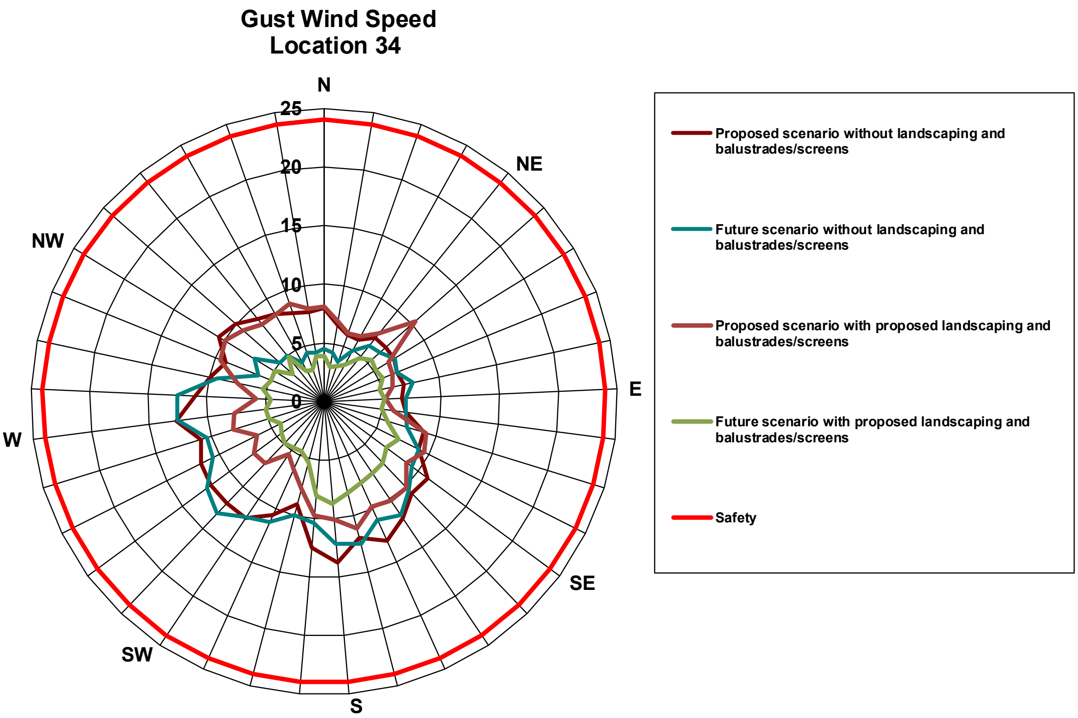
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 34
N
NE
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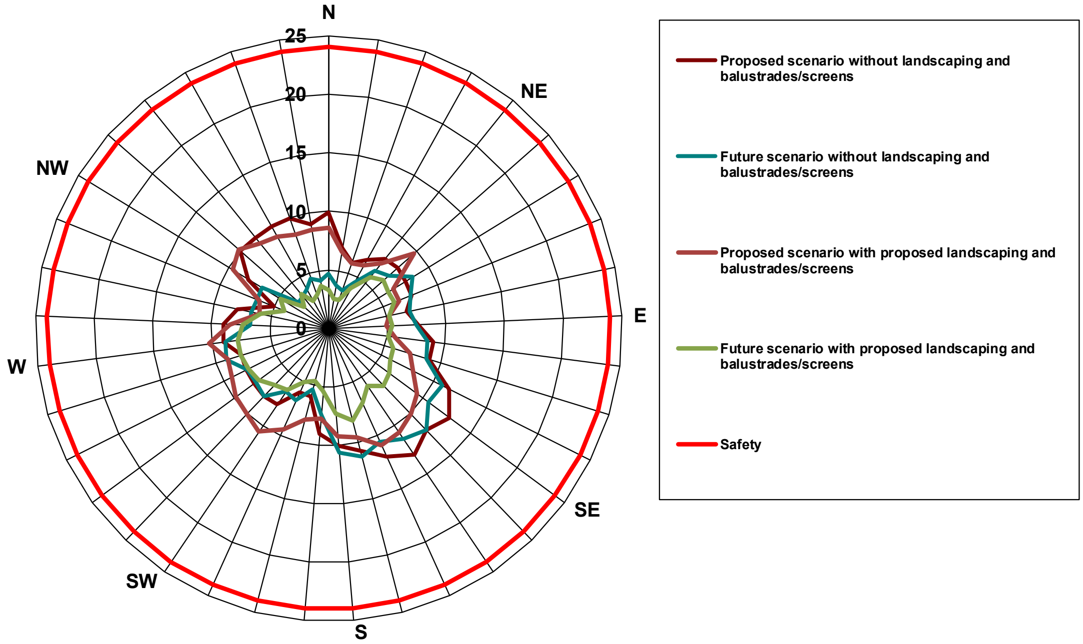
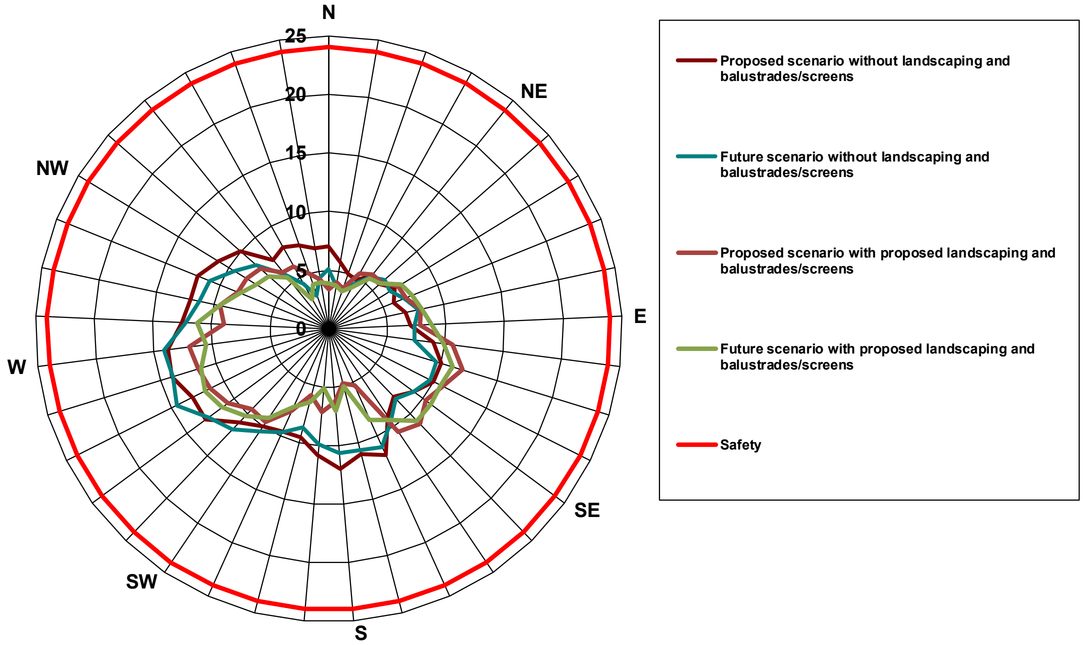
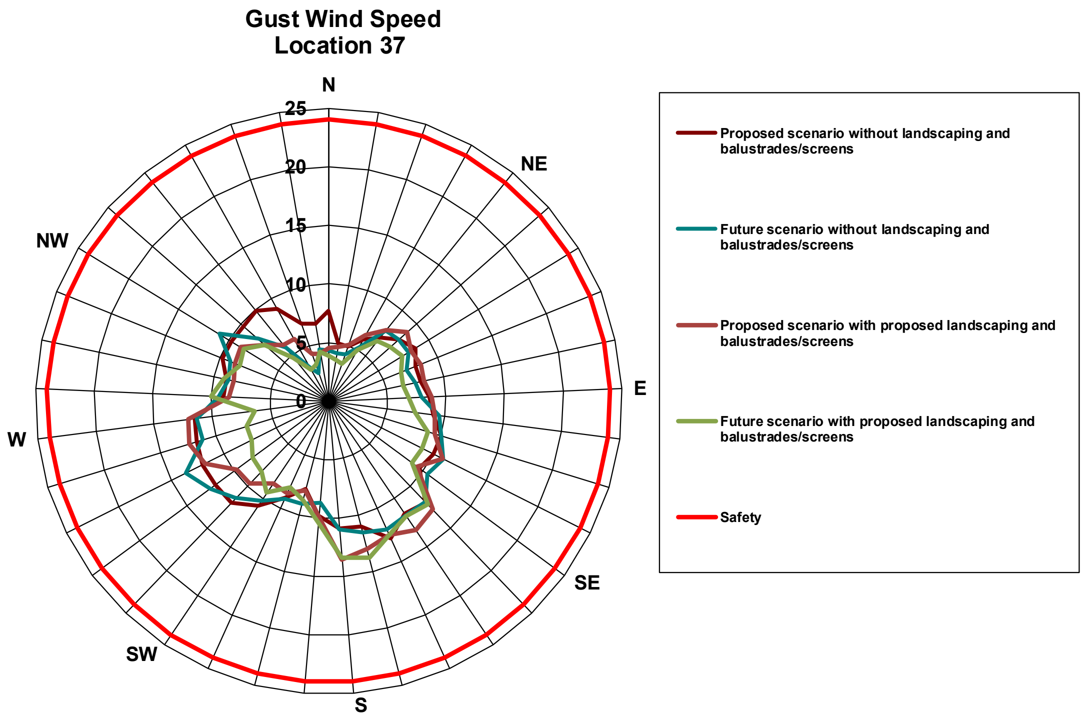
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety

Gust Wind Speed
Location 35



Gust Wind Speed
Location 36




Gust Wind Speed
Location 37
N
NE
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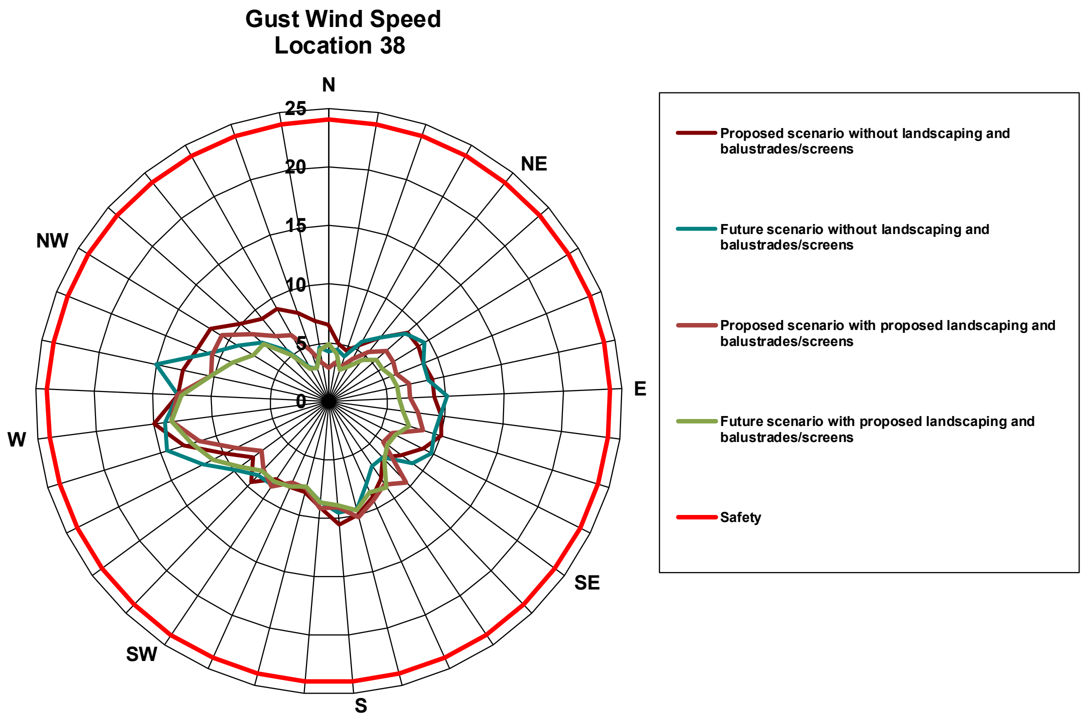
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 38
N
NE
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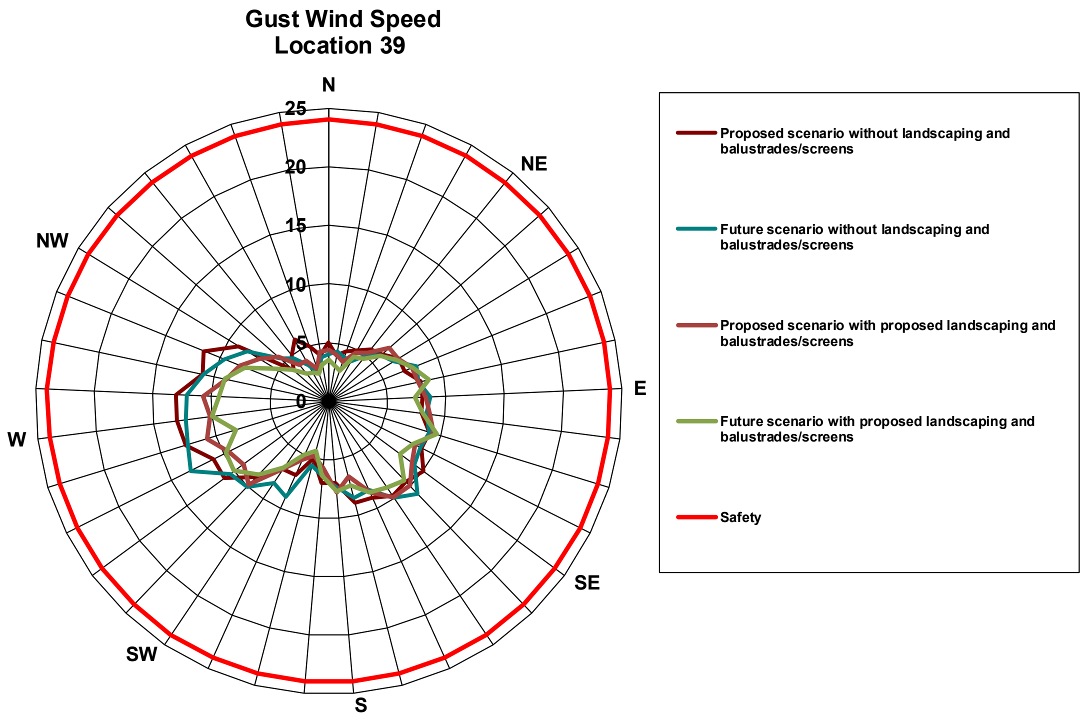
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 39
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NE
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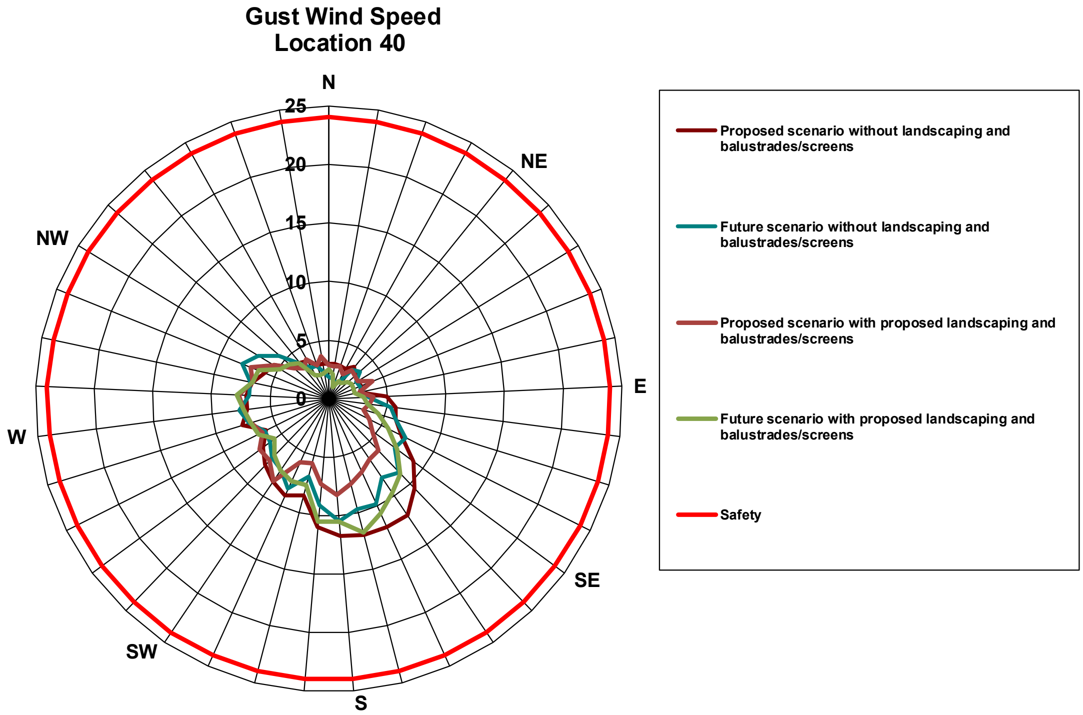
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 40
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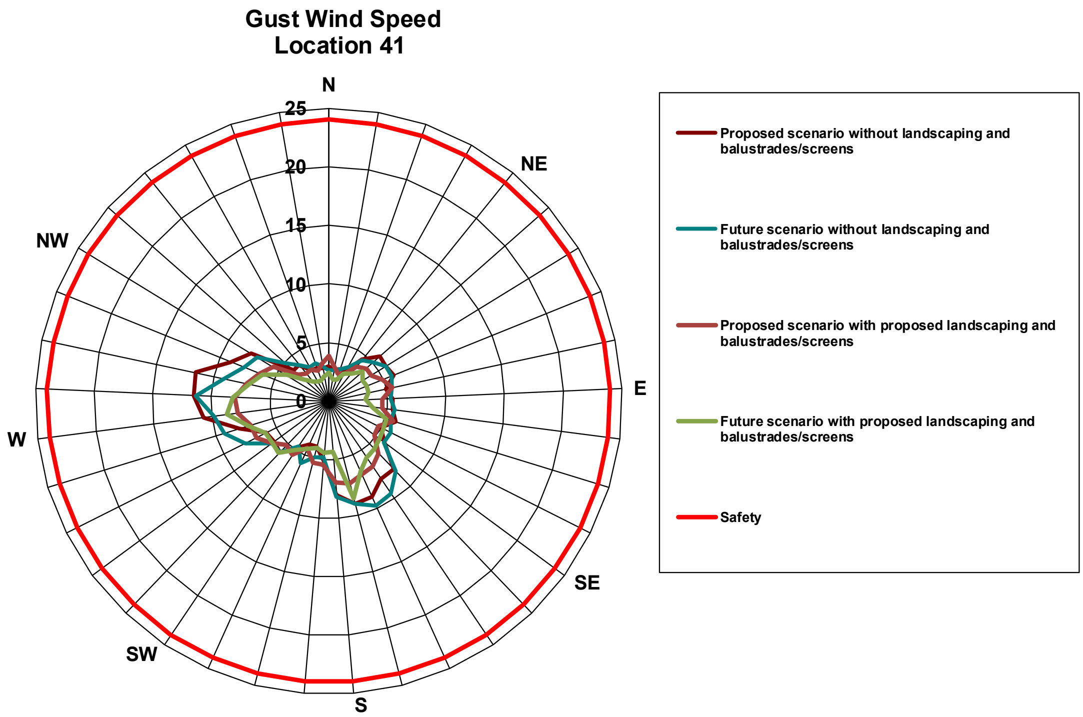
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 41
N
NE
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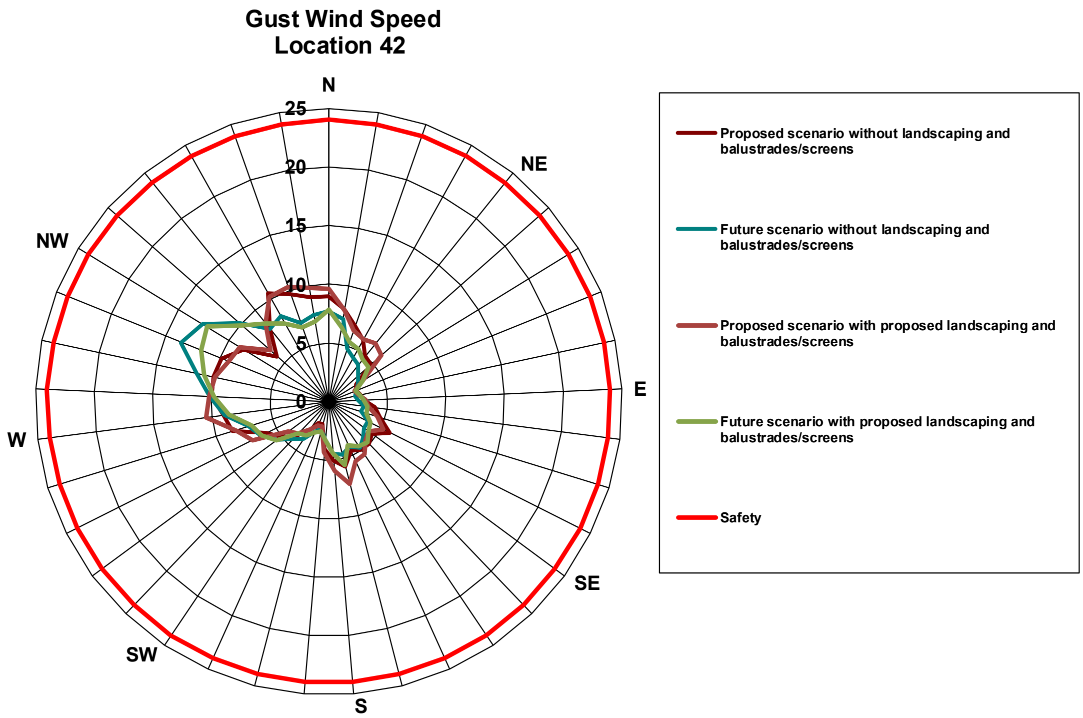
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 42
N
NE
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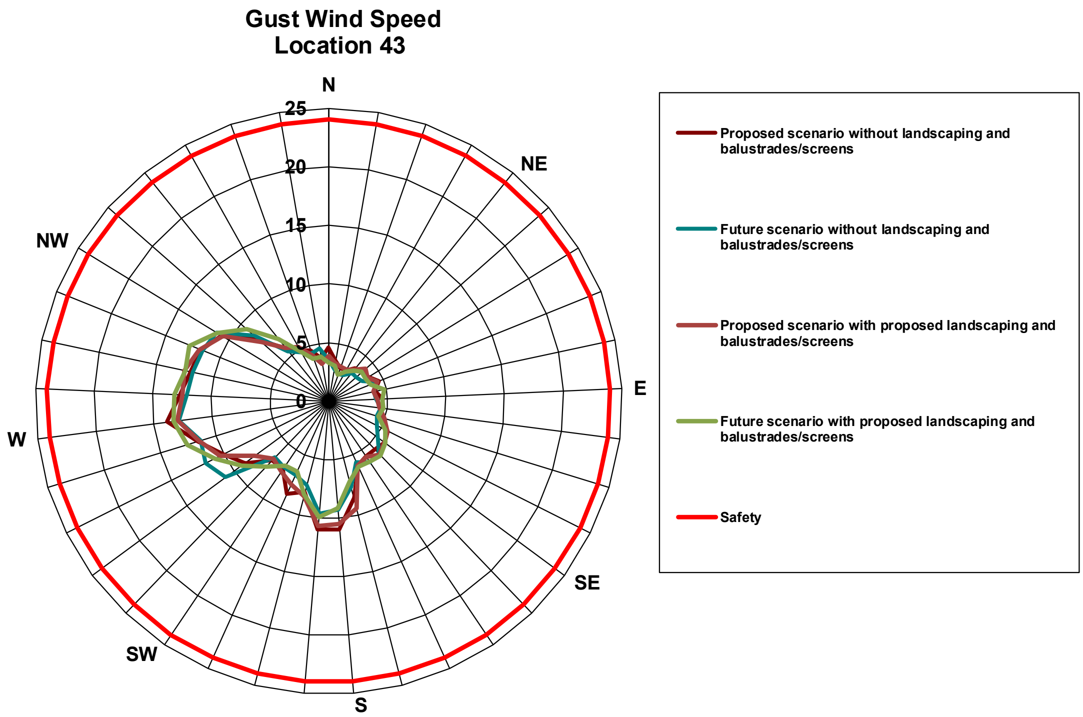
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 43
N
NE
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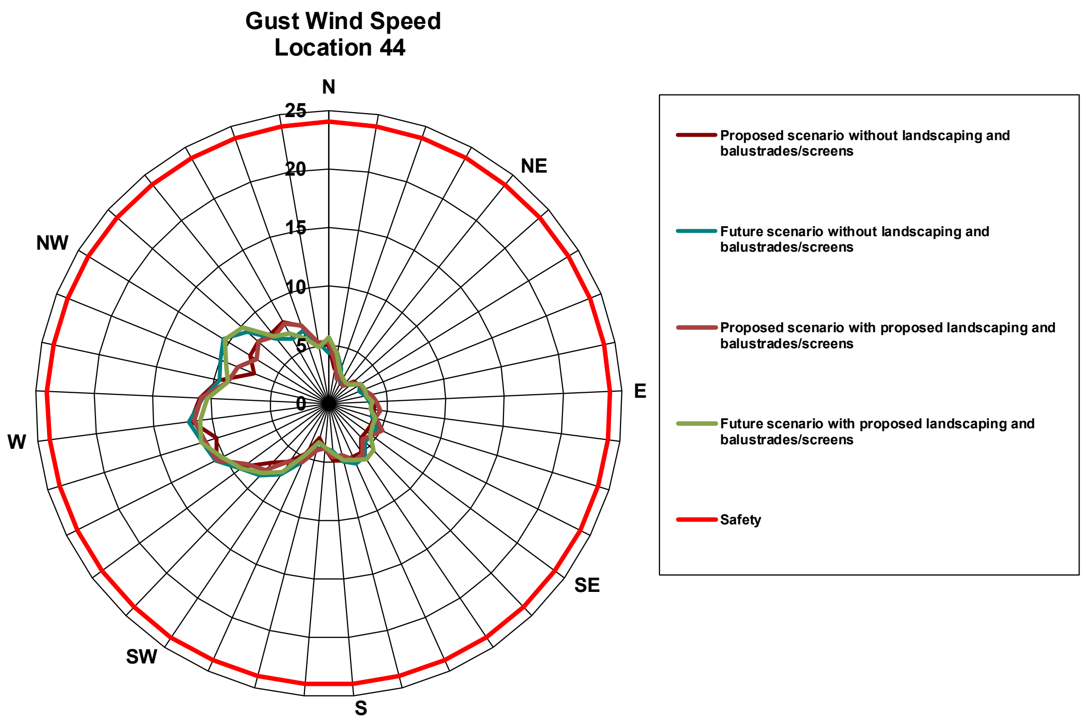
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 44
N
NE
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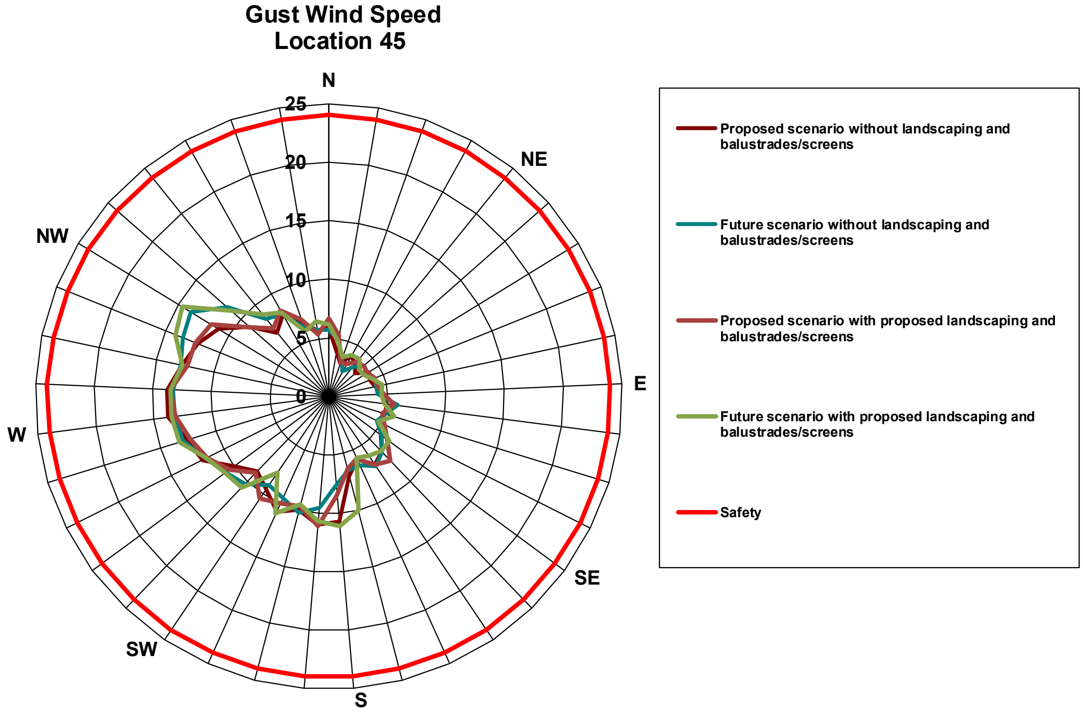
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 45
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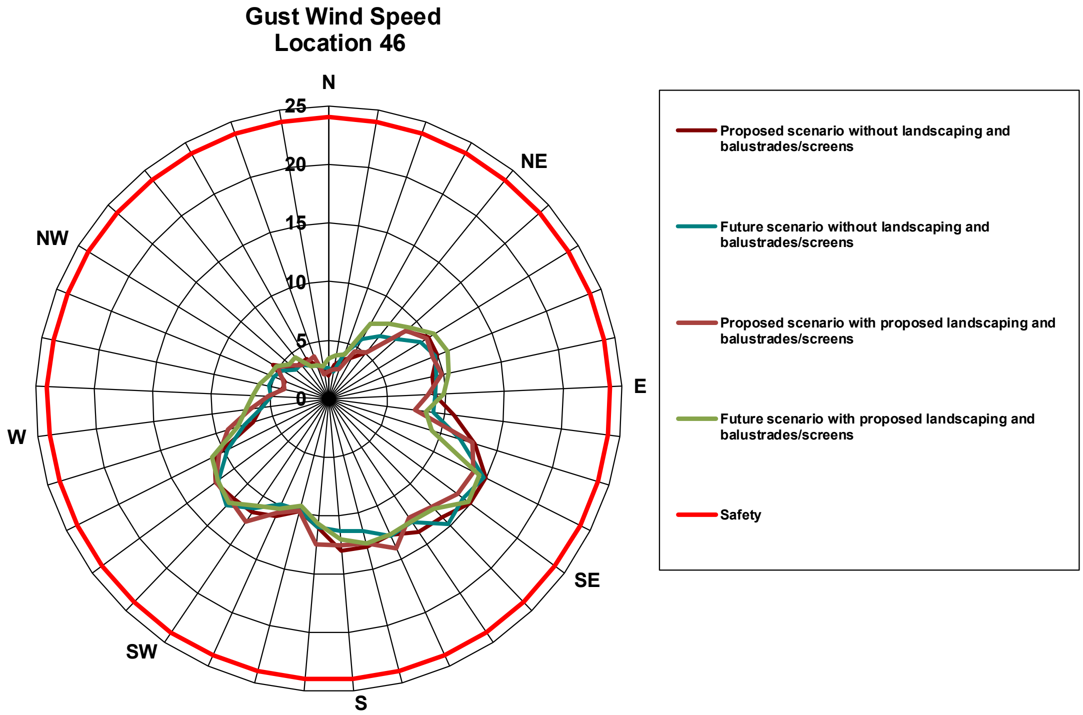
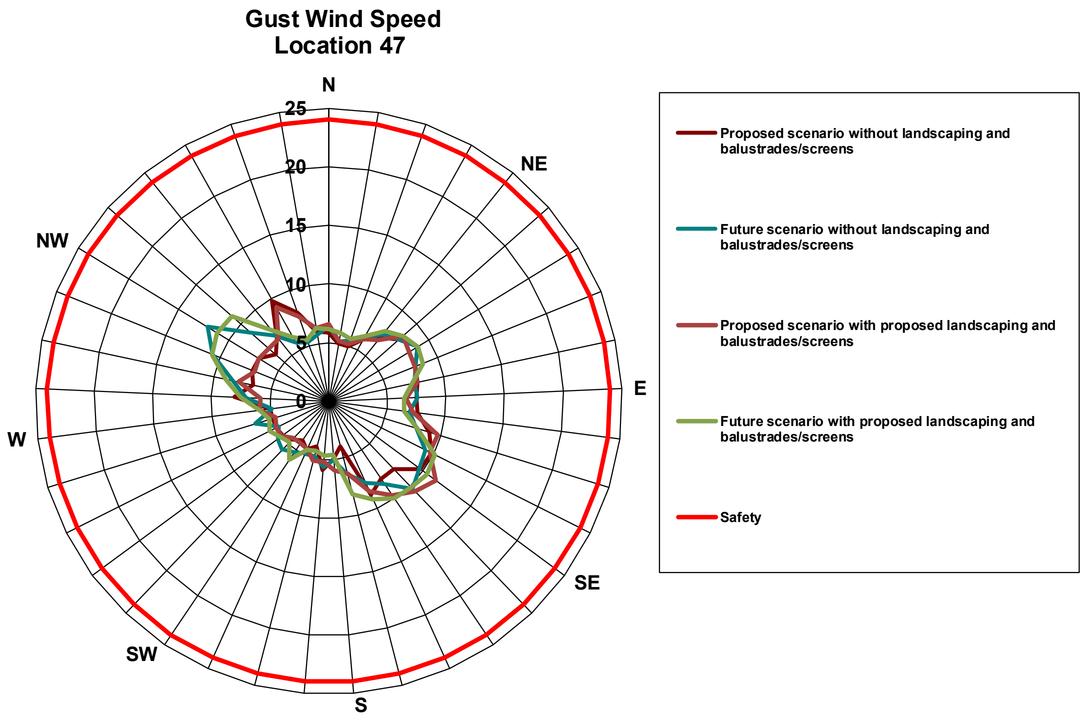
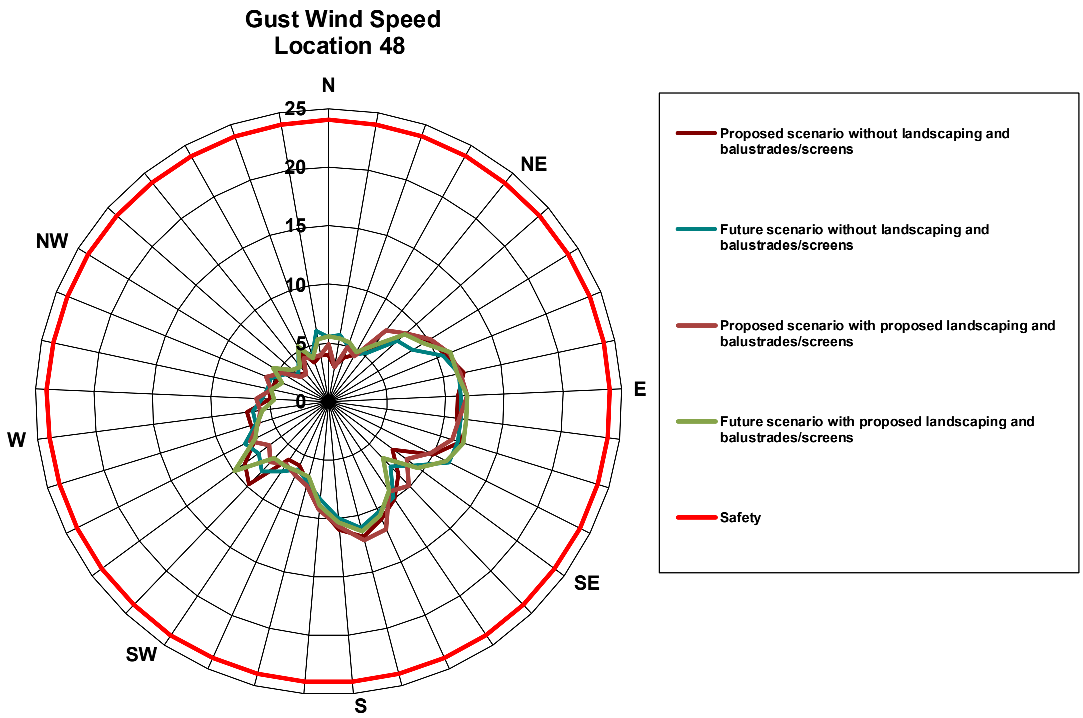
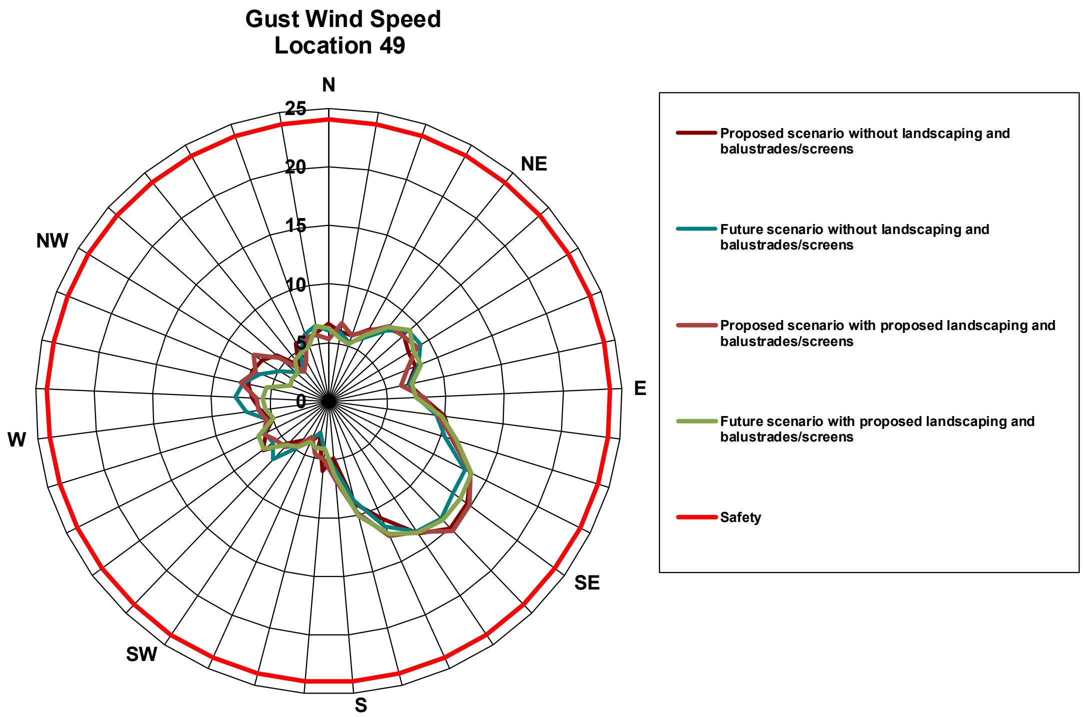
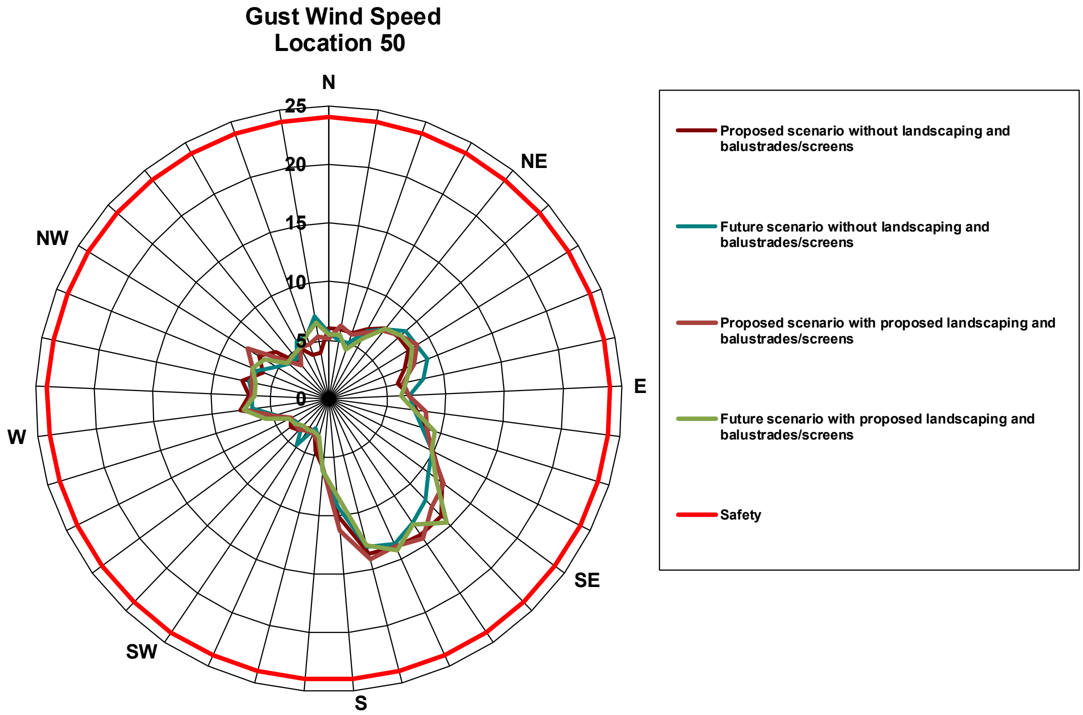
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety

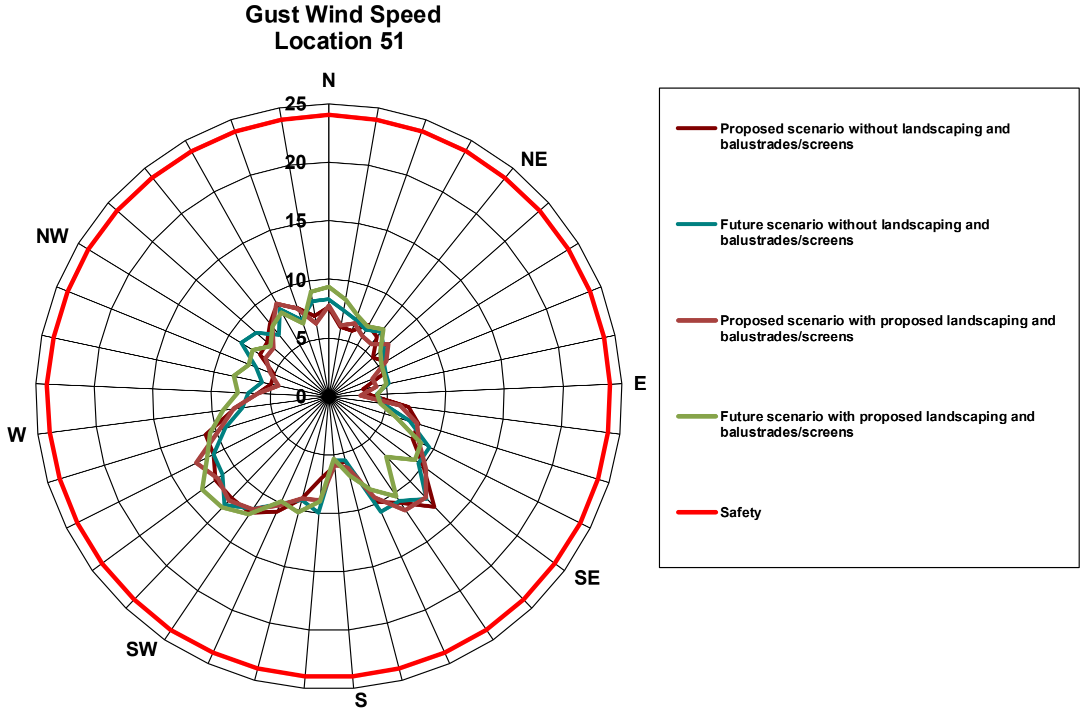

Gust Wind Speed
Location 46
N
NE
E
SE
S
SW
W
NW
25
20
15
10
5
0
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety

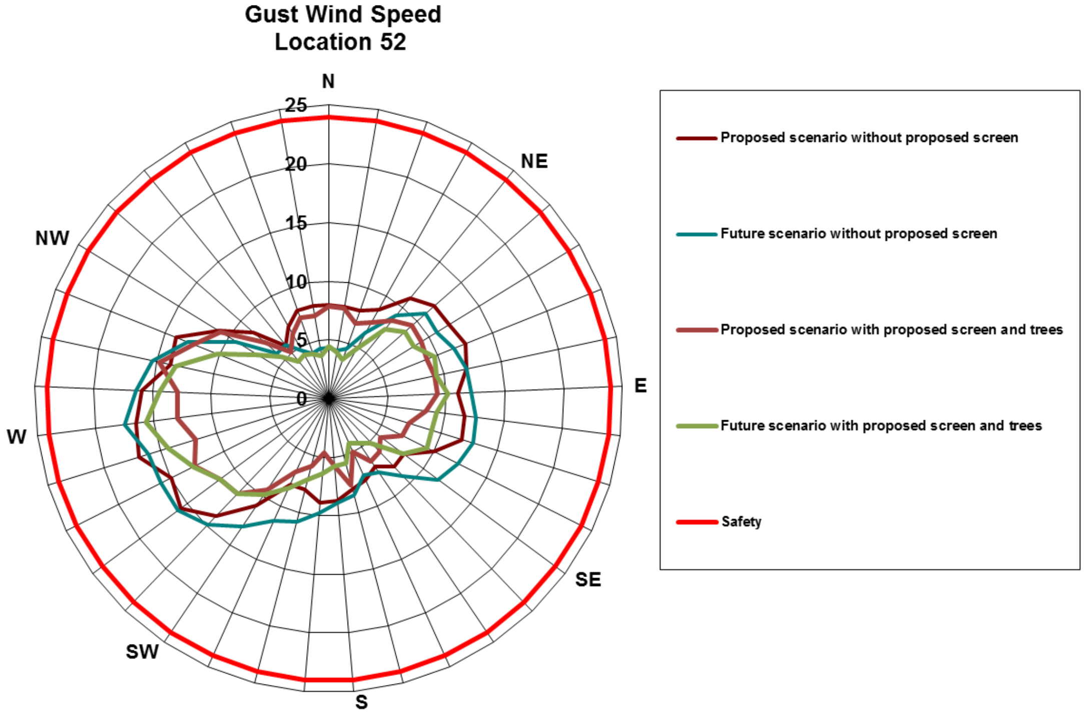

Gust Wind Speed
Location 47
N
NE
E
SE
S
SW
W
NW
0
5
10
15
20
25
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety

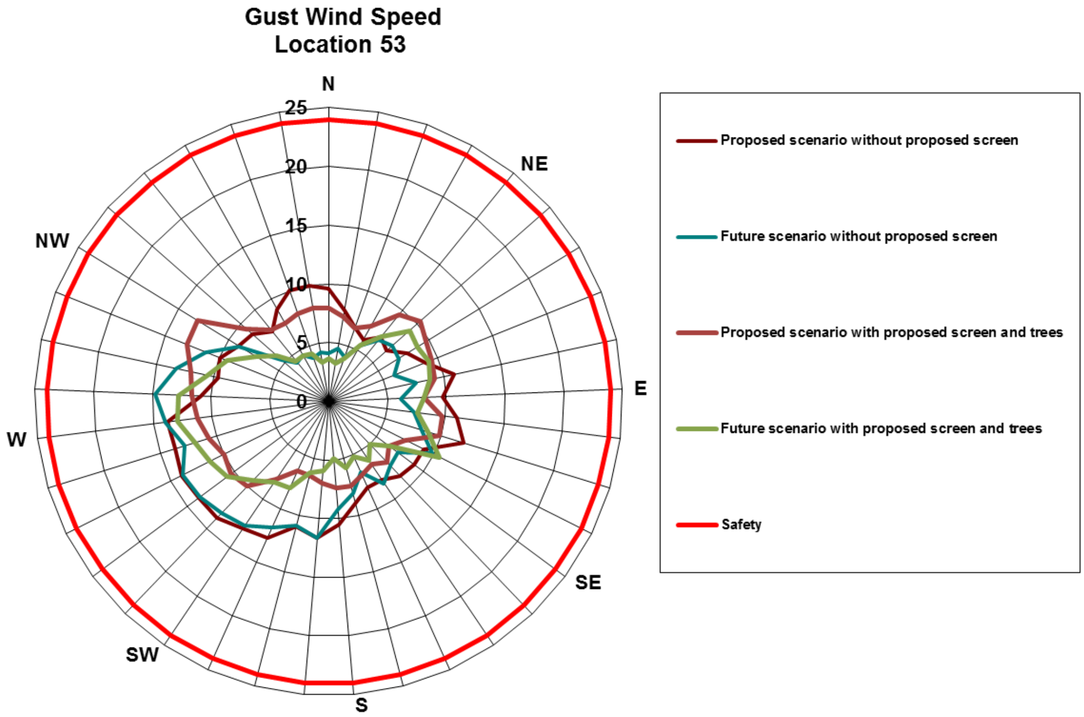

Gust Wind Speed
Location 48
N
NE
E
SE
S
SW
W
NW
0
5
10
15
20
25
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety

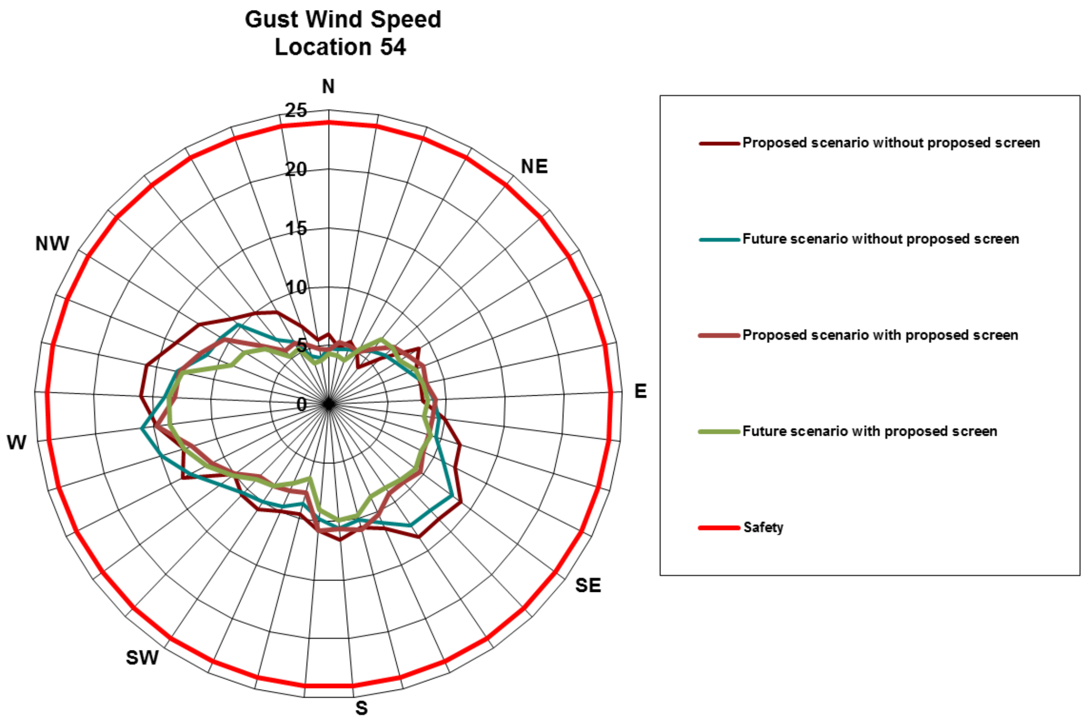

Gust Wind Speed
Location 49
N
NE
E
SE
S
SW
W
NW
25
20
15
10
5
0
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety

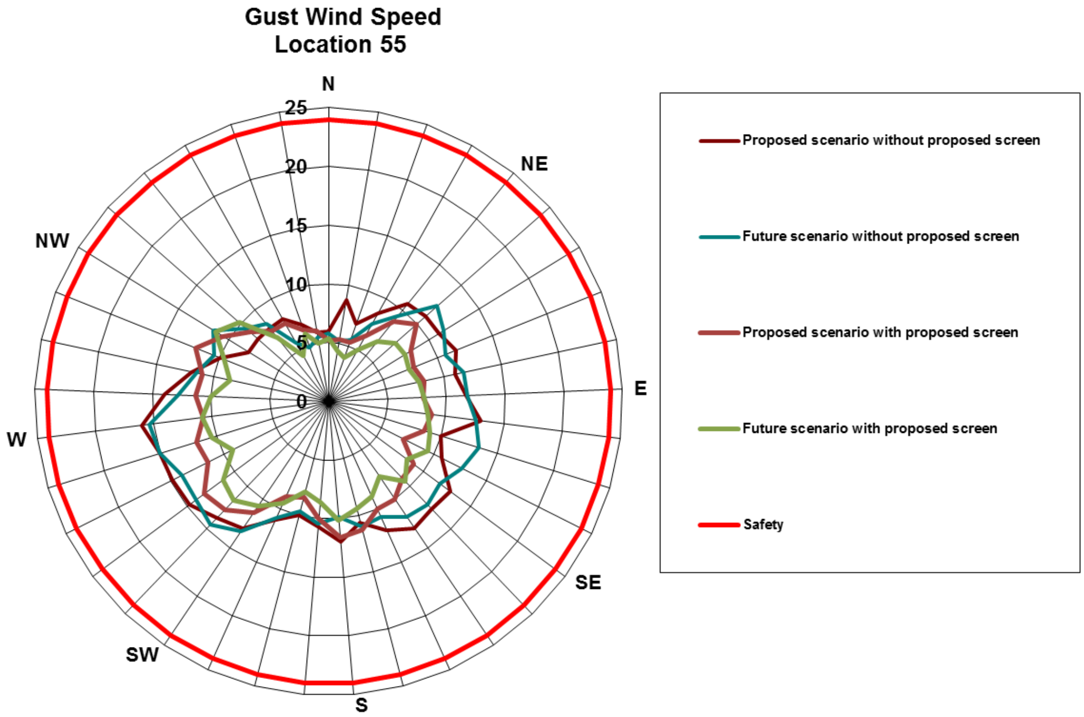

Gust Wind Speed
Location 50
N
NE
E
SE
S
SW
W
NW
25
20
15
10
5
0
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety

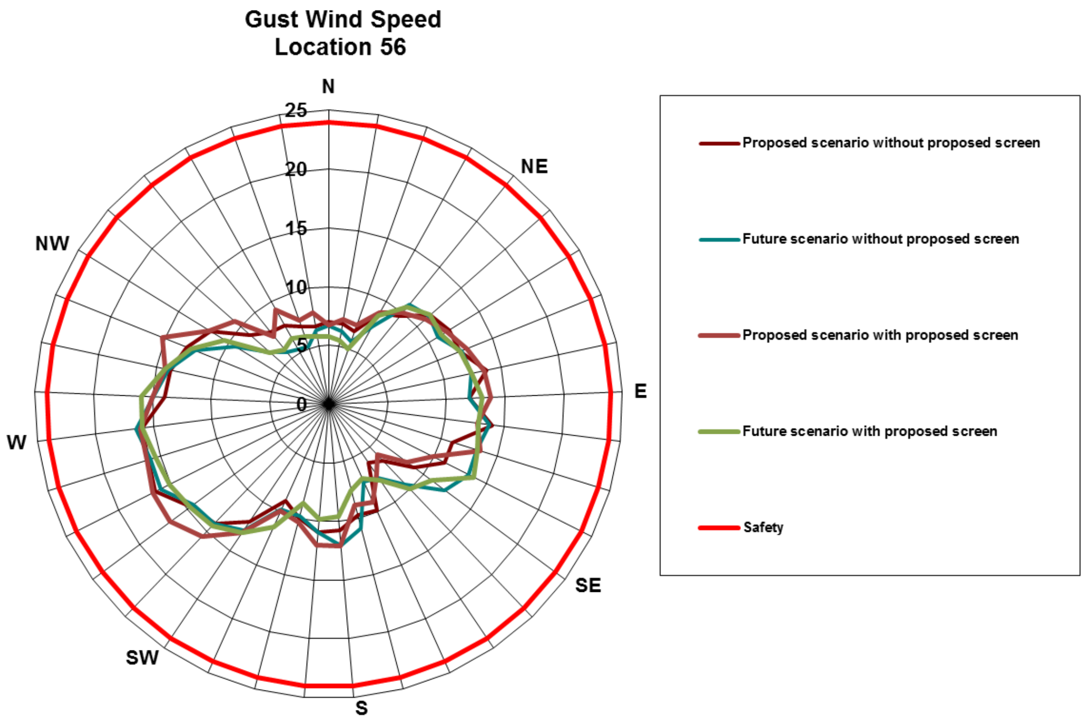

Gust Wind Speed
Location 51
N
NE
E
SE
S
SW
W
NW
25
20
15
10
5
0
Proposed scenario without landscaping and balustrades/screens
Future scenario without landscaping and balustrades/screens
Proposed scenario with proposed landscaping and balustrades/screens
Future scenario with proposed landscaping and balustrades/screens
Safety


Gust Wind Speed
Location 52
N
NE
E
SE
S
SW
W
NW
25
20
15
10
5
0
Proposed scenario without proposed screen
Future scenario without proposed screen
Proposed scenario with proposed screen and trees
Future scenario with proposed screen and trees
Safety

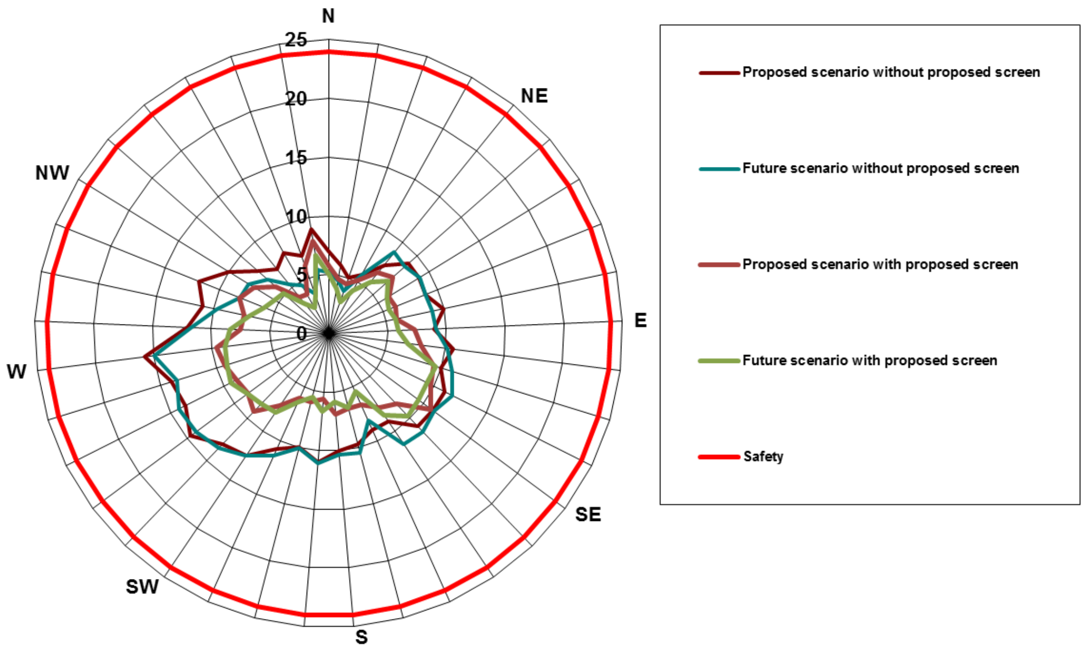

Gust Wind Speed
Location 53
N
NE
E
SE
S
SW
W
NW
0
5
10
15
20
25
Proposed scenario without proposed screen
Future scenario without proposed screen
Proposed scenario with proposed screen and trees
Future scenario with proposed screen and trees
Safety


Gust Wind Speed
Location 54
N
NE
E
SE
S
SW
W
NW
0
5
10
15
20
25
Proposed scenario without proposed screen
Future scenario without proposed screen
Proposed scenario with proposed screen
Future scenario with proposed screen
Safety

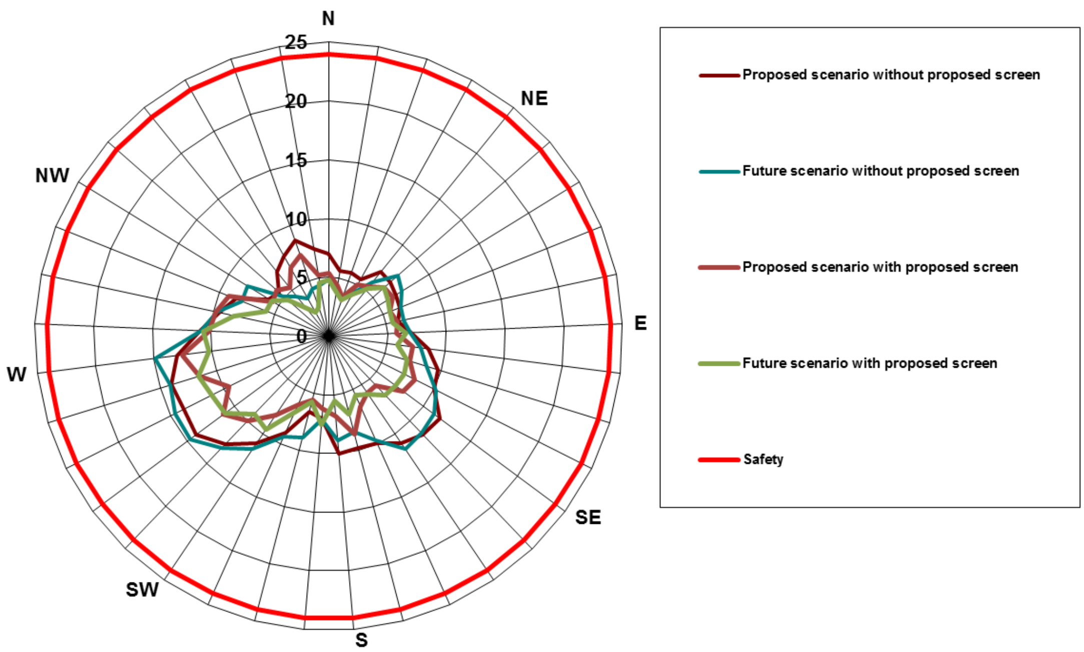

Gust Wind Speed
Location 55
N
NE
E
SE
S
SW
W
NW
25
20
15
10
5
0
Proposed scenario without proposed screen
Future scenario without proposed screen
Proposed scenario with proposed screen
Future scenario with proposed screen
Safety

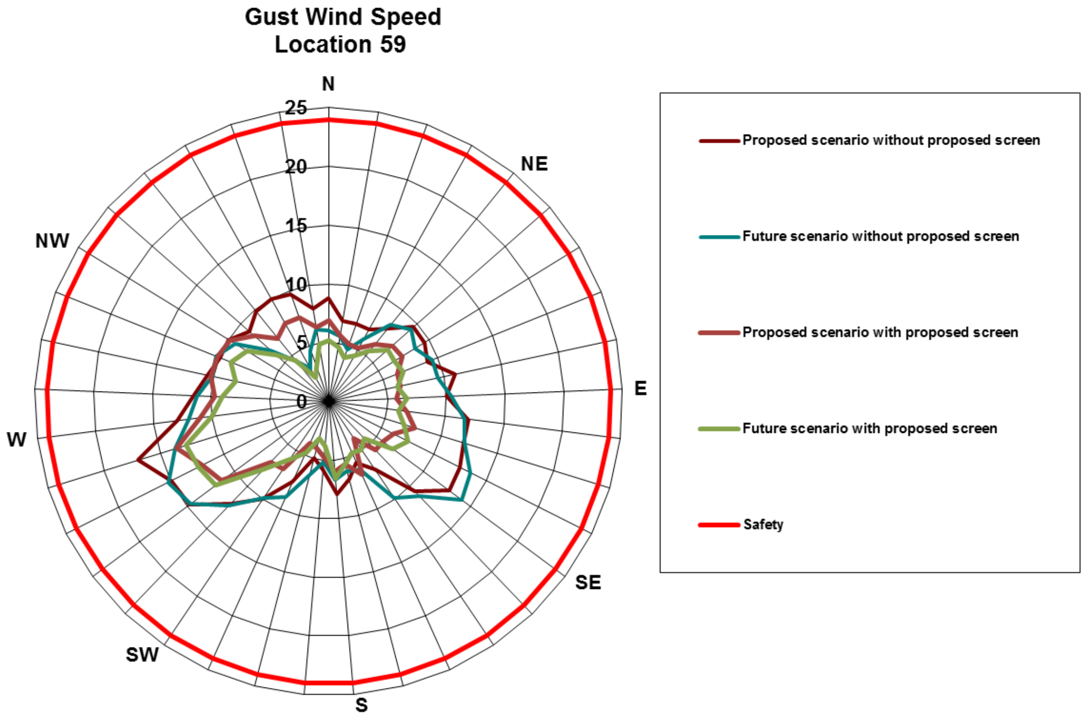

Gust Wind Speed
Location 56
N
NE
E
SE
S
SW
W
NW
25
20
15
10
5
0
Proposed scenario without proposed screen
Future scenario without proposed screen
Proposed scenario with proposed screen
Future scenario with proposed screen
Safety

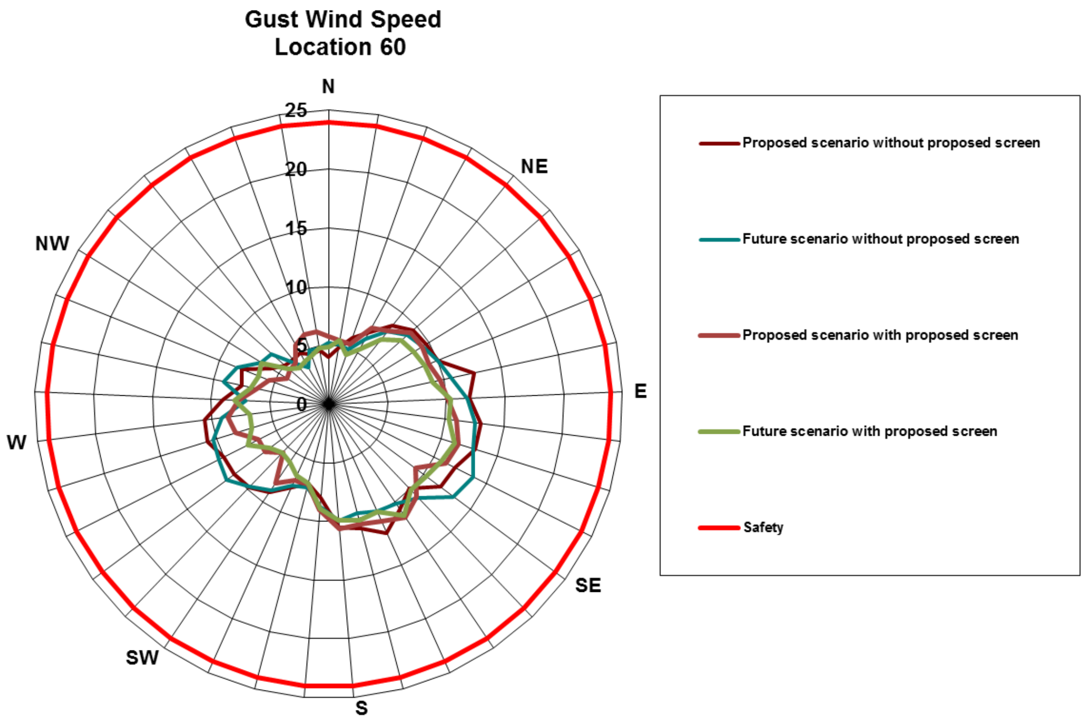
Gust Wind Speed
Location 57



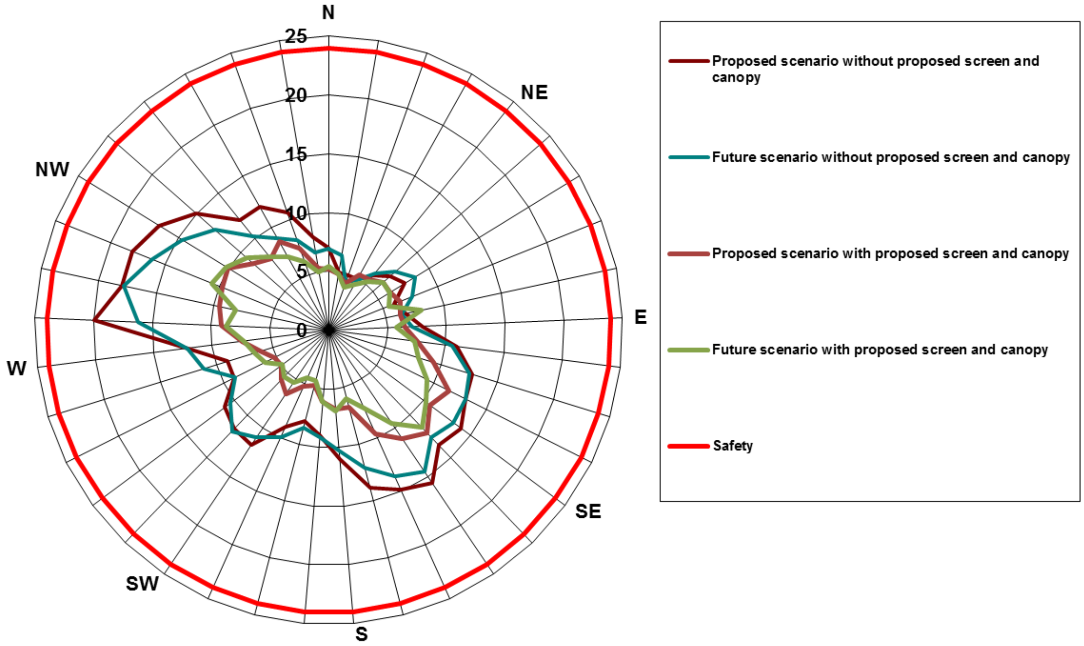
Gust Wind Speed
Location 58



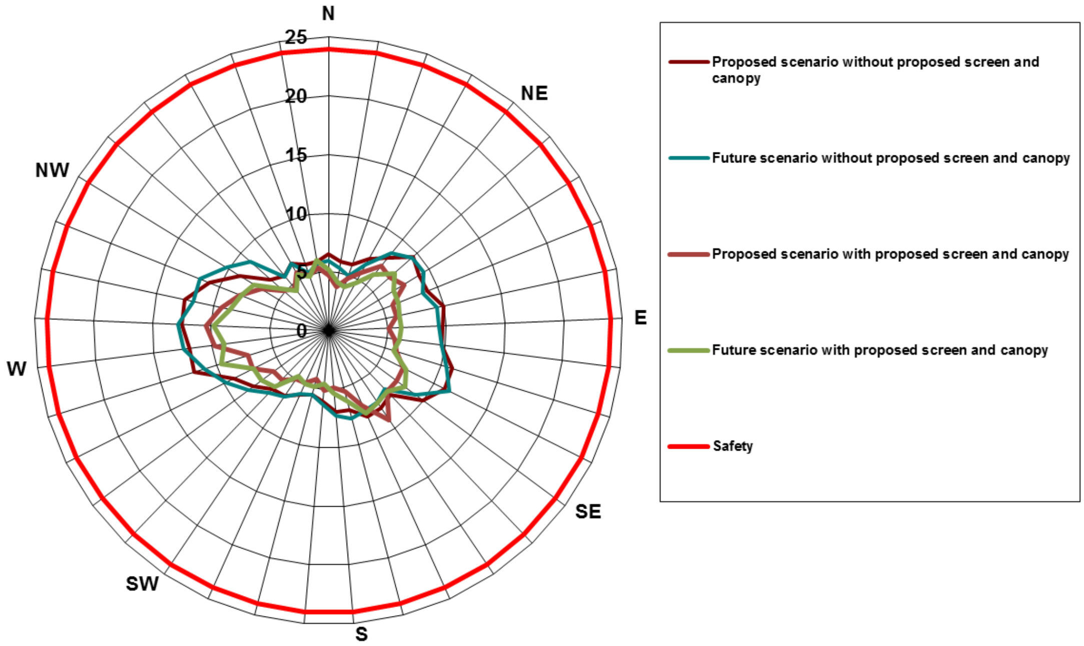

Gust Wind Speed
Location 59
N
NE
E
SE
S
SW
W
NW
0
5
10
15
20
25
Proposed scenario without proposed screen
Future scenario without proposed screen
Proposed scenario with proposed screen
Future scenario with proposed screen
Safety

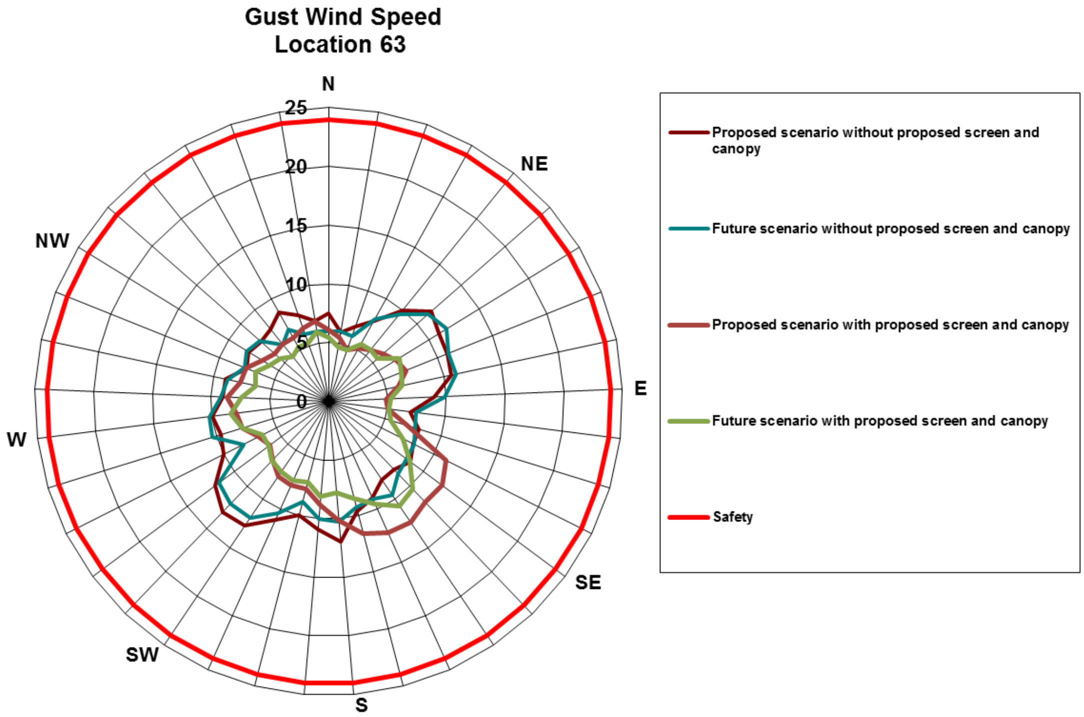

Gust Wind Speed
Location 60
N
NE
E
SE
S
SW
W
NW
0
5
10
15
20
25
Proposed scenario without proposed screen
Future scenario without proposed screen
Proposed scenario with proposed screen
Future scenario with proposed screen
Safety

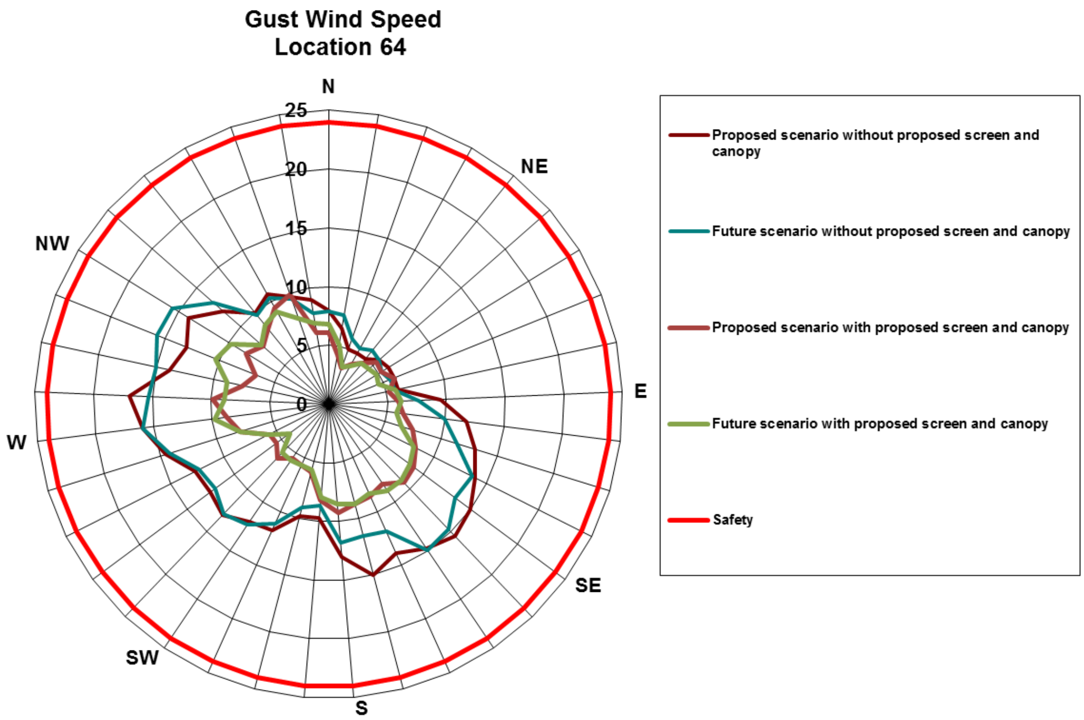
Gust Wind Speed
Location 61



Gust Wind Speed
Location 62




Gust Wind Speed
Location 63
N
NE
E
SE
S
SW
W
NW
0
5
10
15
20
25
Proposed scenario without proposed screen and canopy
Future scenario without proposed screen and canopy
Proposed scenario with proposed screen and canopy
Future scenario with proposed screen and canopy
Safety


Gust Wind Speed
Location 64
N
NE
E
SE
S
SW
W
NW
0
5
10
15
20
25
Proposed scenario without proposed screen and canopy
Future scenario without proposed screen and canopy
Proposed scenario with proposed screen and canopy
Future scenario with proposed screen and canopy
Safety