

27 VISTA STREET

SURFFERS PARADISE, QUEENSLAND

PEDESTRIAN WIND ASSESSMENT

PROJECT # 2605170

27 AUGUST 2026



SUBMITTED TO

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1. INTRODUCTION



RWDI Australia Pty Ltd (RWDI) was engaged to undertake a pedestrian wind assessment of the Proposed Mixed-Use Development located at 27 Vista Street in Surfers Paradise, QLD. The development site is located at the intersection of Vista Street and Surfers Paradise Boulevard and is surrounded by a mix of building typologies ranging from low- to high-rise buildings. The location of the site within its broader existing surrounding context is shown in Image 1.

The Proposed Development consists of a 29-storey apartment building incorporating restaurants, retail spaces, and a car park at ground level. The development has frontages along Vista Street, featuring a main lobby entrance along the southern boundary, and along Surfers Paradise Boulevard, including a café entrance along the western boundary – Refer to Image 2 for project renders.

This desk-based report discusses the potential impacts of the massing of the Proposed Development on the local wind microclimate and assesses the outdoor wind comfort based on the usability of spaces. The findings of the report are informed by Computational Fluid Dynamics (CFD) simulations for the prevailing wind directions that show the likely wind flow patterns around the proposed massing. Conceptual wind control measures and design advice has also provided, where necessary, to alleviate any adverse wind conditions.

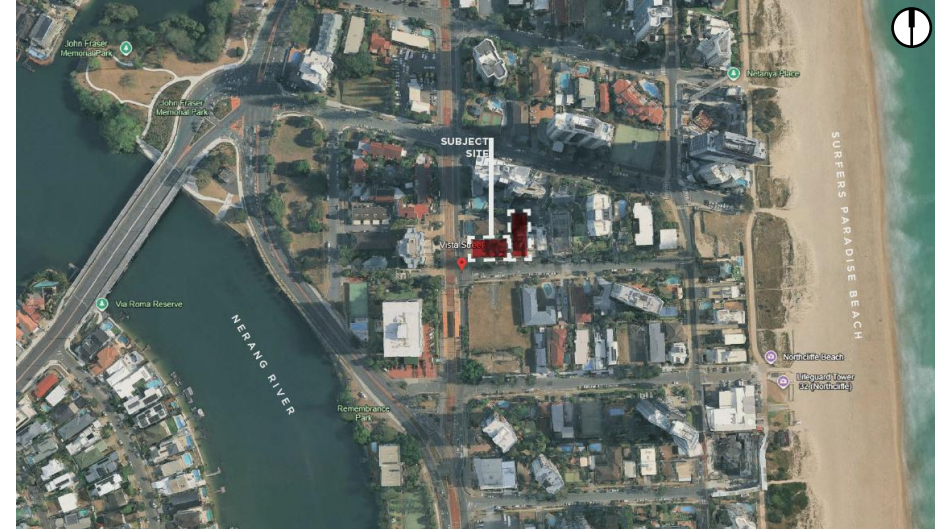


Image 1: Site Location and Existing Surrounding Context



Image 2: Renders of the Proposed Development

2. BACKGROUND AND METHODOLOGY



2.1 Objectives and Scope

The objective of this assessment is to provide an evaluation of the wind comfort conditions around the Proposed Development site using a 1:1 scale computational model. Predicting outdoor wind conditions is a complex process that involves the combined assessment of building geometry, orientation, position and height of surrounding buildings, upstream terrain and the local wind climate. Computational Fluid Dynamics is a useful tool for this as it not only combines the impact of these various parameters but can also provide a visual reference for the merits of a particular design of the building.

This analysis was, therefore, based on the following:

- A review of the regional long-term meteorological data.
- Use of the Orbital Stack Direct, an in-house CFD tool, to provide numerical estimation of potential wind conditions around the site for the prevailing winds. The simulation models have been based on the information provided to RWDI during May and June 2026.
- RWDI's engineering judgement, experience, and expert knowledge of wind flows around buildings including wind tunnel studies undertaken for similar projects in the region.

Note that other microclimate issues such as those relating to cladding and structural wind loads, door operability, building air quality, noise, vibration, etc. are not part of the scope of this assessment.

2.2 CFD in Urban Wind Modelling

CFD is a numerical technique that can be used for simulating wind flows in complex environments. For this analysis, CFD techniques were used to generate a virtual wind tunnel where flows around the site and its surroundings were simulated in full scale. The computational domain that covered the site and its surroundings was divided into millions of small cells where calculations were performed, yielding a prediction of wind conditions across the entire study domain. CFD excels as a tool for wind modelling, presenting early design advice, comparing different design and site scenarios, resolving complex flow physics, and helping diagnose problematic wind conditions.

While the computational modelling method used in the current assessment does not explicitly simulate the transient behaviour of turbulent wind, its effects were estimated based on other calculated quantities. RWDI has found this approach to be appropriate for the assessment of typical wind comfort conditions. Wind safety issues, which relate to transient, higher-speed gusts, are discussed qualitatively, based on the CFD predictions and RWDI's extensive wind-tunnel experience for other projects in the area. In order to quantify the transient behaviour of wind and refine any conceptual mitigation measures, a more detailed assessment would be required using either boundary-layer wind tunnel or more detailed transient computational modelling.

2. BACKGROUND AND METHODOLOGY



2.3 Simulation Model

Wind flows were simulated using Orbital Stack, an in-house computational fluid dynamics (CFD) tool that has been validated using RWDI's historical wind tunnel test data and experience. Simulations were conducted for the following site configurations:

- Config 1: Proposed Development with existing and under-construction surrounding buildings (see Image 3).

For this computational study, the 3D models were simplified to focus on elements most likely to influence local wind flows in and around the site. Hence, smaller architectural and accessory features on the surrounding buildings were excluded from the model. Local topographic variations were modelled to account for the changes in the wind speeds that can occur due to variations in topography.

2.4 Methodology

Winds approaching from sixteen cardinal directions were simulated accounting for the effects of the atmospheric boundary layer and terrain impacts upwind of the project site. The wind field was assumed to be steady in time and, as such, the transient effects of strong wind gusts and vortex shedding was not included directly. Turbulence was modelled in the wind simulations by a Reynolds Averaged Navier-Stokes (RANS) approach using the k-epsilon (RNG) turbulence closure. These results were then combined with the meteorological data (Section 3) to determine the variation of wind speeds in the areas of concern at typical pedestrian chest height (i.e., 1.5 m above local grade). These conditions were then assessed against the wind criteria for pedestrian comfort (Section 4) and, the spaces were categorised accordingly.

The method for CFD simulation is consistent with internationally recognised good practice, and meets the requirements set out in the Australasian Wind Engineering Society Computational Wind Engineering Quality Assurance Manual (2024)².

Qualitative reviews have also been provided for the existing site based on past simulations and wind tunnel tests of neighbouring developments.

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1. Australasian Wind Engineering Society (AWES), 2024, "Guidelines for Pedestrian Wind Effects Criteria".
 2. Australasian Wind Engineering Society, QAM-3, 2024, "AWES Computational Wind Engineering Quality Assurance Manual".

2. BACKGROUND AND METHODOLOGY



- Proposed Development
- Existing Buildings
- Porous Surfaces/elements

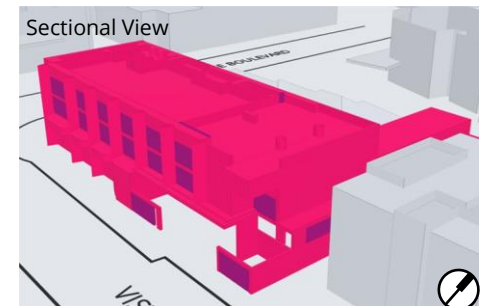
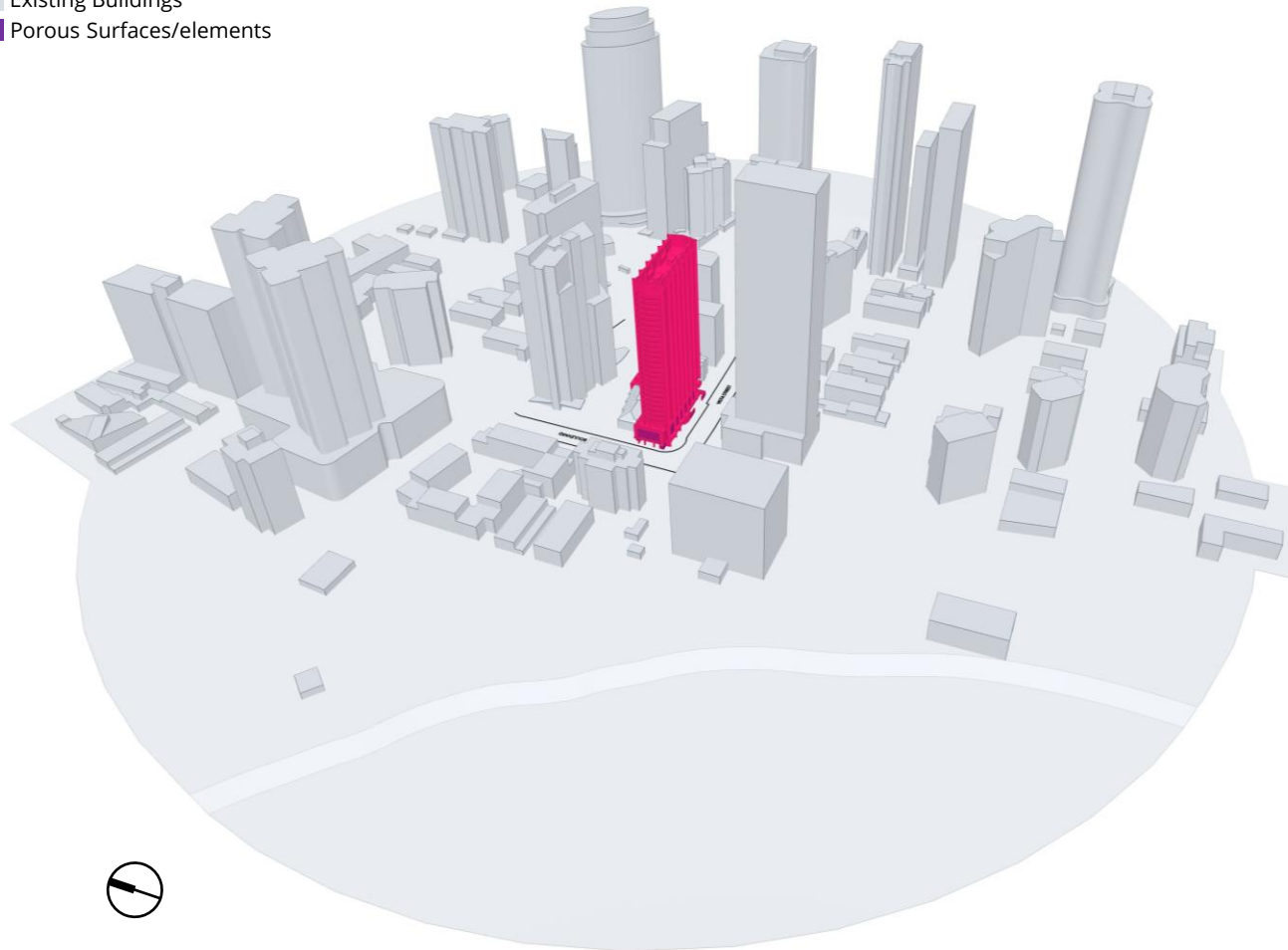


Image 3: Computer Model of the Config 1
Proposed Development with Existing Surrounding Buildings

2. BACKGROUND AND METHODOLOGY



2.5 Factors Affecting Wind Flows

In the discussion of wind conditions on and around the proposed development, reference may be made to the following generalised wind flows (see Image 4). If these building / wind combinations occur for prevailing winds, there is a greater potential for increased wind activity and uncomfortable or potentially unsafe conditions. Design details such as setting back a tower from the edges of a podium for a prevailing wind direction, deep canopies close to ground level, wind screens / tall trees with dense landscaping, etc. can help reduce high wind activity. The choice and effectiveness of these measures would depend on the exposure and orientation of the site with respect to the prevailing wind directions and the s and massing of the proposed buildings.

Conversely, in areas where higher wind velocities are desired for increased thermal comfort, design measures can be implemented to enhance wind flow. For instance, channels aligned with prevailing wind directions can be integrated into the design to promote increased wind infiltration in regions prone to stagnant conditions. Such measures are particularly beneficial in areas with generally milder wind climates and high humidity levels, such as those closer to the equator.

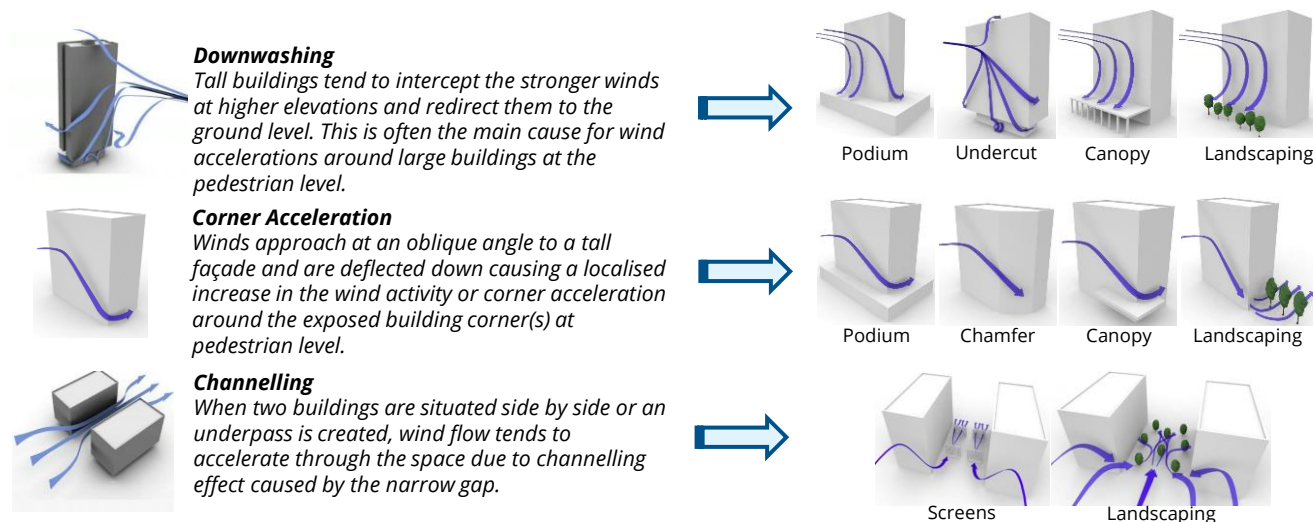


Image 4: General Wind Flow around Buildings with Examples of Common Wind Measures

3. METEOROLOGICAL DATA



Meteorological data recorded at Gold Coast Seaway from 1995 to 2023 were used as a reference to assess the wind conditions in the study area. Image 5 graphically depicts the directional distributions of wind frequencies and speeds recorded at the station over this time. Winds from the south to south-east sectors are predominant throughout the year with secondary winds from north-west and north-east sectors.

Strong winds are observed mostly from the south to the southeast sectors throughout the year. These winds can potentially be the source of uncomfortable wind conditions, depending on the site exposure or development design.

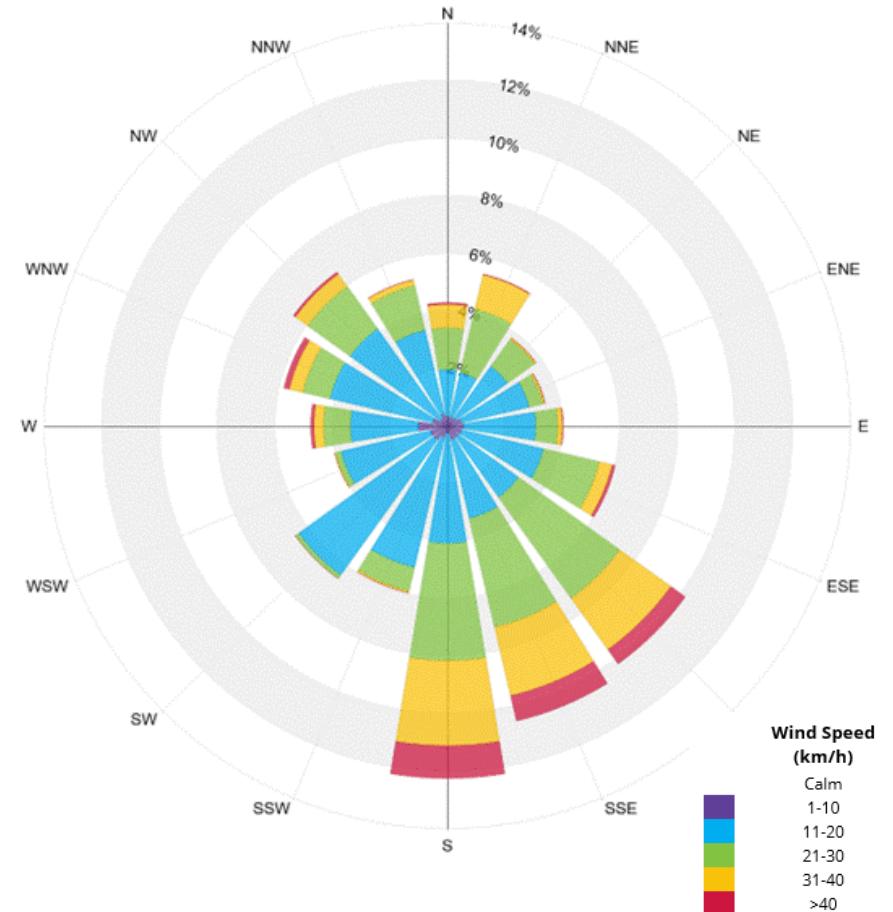


Image 5: Directional Distribution of Winds Approaching Gold Coast Seaway (1995 - 2023)

4. PEDESTRIAN WIND CRITERIA



Pedestrian wind comfort is assessed using the criteria developed by *Soligo et al.*^{1, 2}, illustrated in Image 6. The wind comfort levels are classified based on typical/intended pedestrian activity and are expressed in terms of their suitability for various levels of human activity. The categorisation is based on conservative wind speeds such that higher the activity level, the higher the wind speed one can typically tolerate while engaged in that activity.

Note that wind conditions are assessed at a typical pedestrian chest height (1.5 m above local grade) and are considered suitable for the intended use of the space if the wind conditions are expected for at least 80% of the time between usual occupancy times (6am to 11pm). Wind control measures are typically required at locations where the occurrence frequencies of wind speeds exceed the threshold values for specific pedestrian activities.

Professional judgement incorporating RWDI’s experience of a large number of similar projects both within Australia and internationally has been applied, informed by the CFD results, to identify areas within and around the proposed development that are likely to have instances of strong winds. Mitigation measures can be used to improve pedestrian comfort conditions and to reduce the frequency of, or even eliminate, any strong winds.

Note the wind safety conditions in line with the relevant local requirements are assessed qualitatively using the available information from the CFD studies and the wind tunnel data for the development and the surrounding sites.

Sitting ≤ 10 km/h		Calm or light breezes desired for outdoor seating areas where one can read a paper without having it blown away
Standing ≤ 14 km/h		Gentle breezes suitable for main building entrances, bus stops and locations where pedestrians may linger such as communal terraces
Strolling ≤ 17 km/h		Moderate winds that would be appropriate for strolling along a downtown street, plaza or park and where the objective is not to linger
Walking ≤ 20 km/h		High Winds that can be tolerated if one’s objective is to walk, run or cycle without lingering - Also suitable for certain sporting activities
Uncomfortable > 20 km/h		None of comfort categories above are met - Represents conditions that might be dangerous to the elderly and children and are of a considerable discomfort to others

Image 6: Pedestrian Wind Comfort Criteria

1. M.J. Soligo, P.A. Irwin, and C.J. Williams (1993). "Pedestrian Comfort Including Wind and Thermal Effects," Third Asia-Pacific Symposium on Wind Engineering, Hong Kong.
2. M.J. Soligo, P.A. Irwin, C.J. Williams, and G.D. Schuyler (1998). "A Comprehensive Assessment of Pedestrian Comfort Including Thermal Effects," Journal of Wind Engineering and Industrial Aerodynamics, vol. 77&78, pp. 753-766.

5. RESULTS AND DISCUSSIONS



5.1 Existing Site Conditions (Qualitative Review)

The exposure of the site to regional prevailing winds is shown in Image 7 and discussed below:

- The high-rise building to the south is likely to redirect winds from south-east along Vista Street and can significantly impact conditions along the road.
- Upwind buildings to the north-west can provide some shelter from winds approaching from this direction.

The existing site comprises of two dwellings, a carport, and two sheds, which are unlikely to significantly influence the local wind environment. Considering the site's exposure and surrounding context, wind conditions are likely to be governed by the high-rise building to the south of the site. Wind conditions are likely to range from strolling to walking use along Surfers Paradise Boulevard and along Vista Street with localised areas near the intersection of these streets likely to be impacted by strong winds.

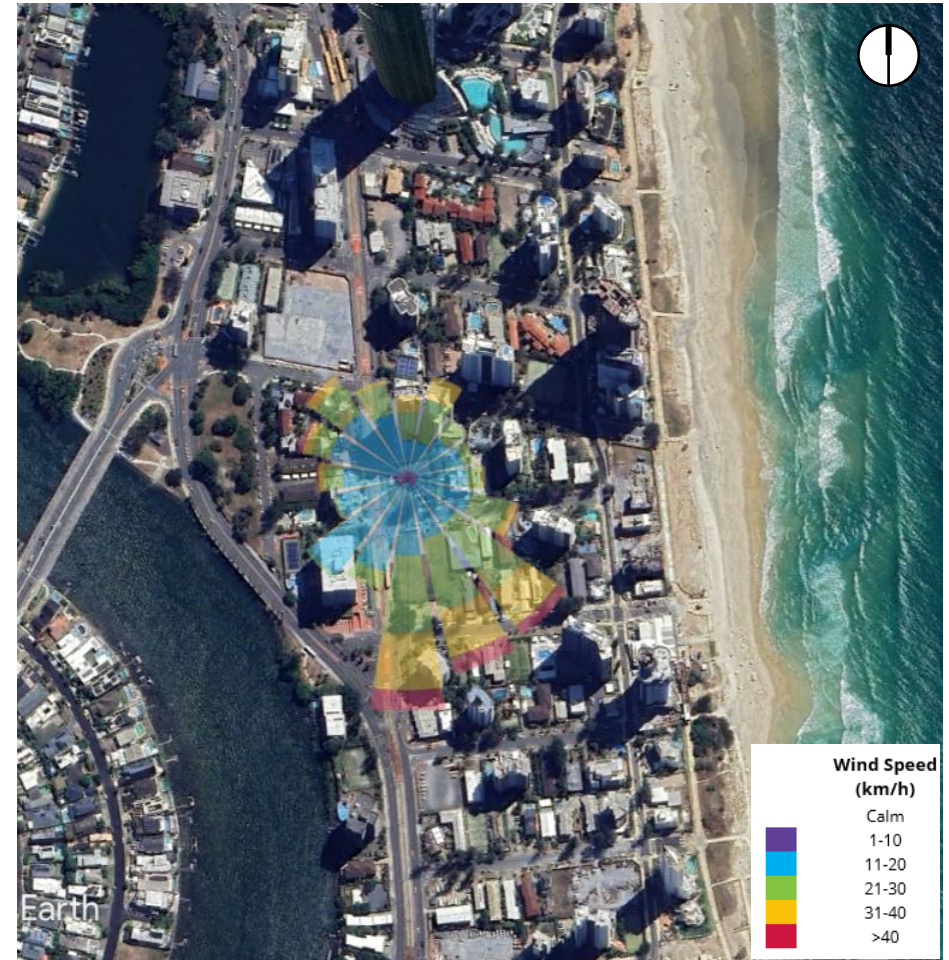


Image 7: Existing Site with Wind Rose Overlay (Source: Google Earth)

5. RESULTS AND DISCUSSIONS



5.2 Pedestrian Wind Comfort Conditions

The predicted wind comfort conditions are presented in Images 8a to 8d for various outdoor areas within and around the development. Interaction of the prevailing winds with the development are also shown in Appendix A (Images A1 to A4). A summary of the wind comfort conditions is noted below.

5.2.1 Ground Level:

- At ground level, wind conditions across most of the site are expected to be suitable for sitting to standing use, including at the main lobby to the south and café entrance/seating area to the west. This is primarily due to the inclusion of blade walls along the southern aspect that provide shelter to the primary entrance along Vista Street. The blade wall projecting out at the south-west corner also assists in reducing the impact of winds within the café seating space with the local screening along the southern portion of terrace also expected to provide additional shelter.
- Moderate to higher wind conditions, ranging from strolling to walking use, are anticipated along the southern footpath and along Surfers Paradise Boulevard due to the south-easterly winds.
- Higher uncomfortable wind conditions are expected further to the south-west of the site along Surfers Paradise Boulevard. These conditions are unsuitable for pedestrian activity and are likely to be pre-existing conditions, primarily driven by the acceleration of south-east and north-west winds around the existing high-rise building to the south.

5.2.2 Podium – Level 3:

- Wind conditions across the podium are generally suitable for the intended use of the space, with sitting to standing use conditions prevailing across most areas.
- More exposed areas along the eastern end (Pool Spa and Pool Shallow) are expected to be impacted by elevated wind conditions, ranging from strolling to walking use, due to the channelling and acceleration of regional winds. Uncomfortable wind conditions are also anticipated near the southeastern corners above the pool; though this is not expected to impact usage of the space as occupants will be submerged.

5.2.3 Private Balconies:

- Wind conditions across all balconies along the northern and western aspects are expected to be comfortable for their intended use.
- The eastern balconies have been partitioned into two separate zones through the inclusion of retractable louvred screens for wind protection. This measure provides shelter to the larger northern part of the balcony leading to calmer conditions suitable for long-duration sitting use within most of the space. However, the narrow eastern parts of these balconies located on mid- to high-rise levels are likely to be impacted by streaming winds from the north-east and south-east.

5. RESULTS AND DISCUSSIONS



Image 8a: Annual Wind Comfort Conditions – Proposed Configuration
Ground Plan

5. RESULTS AND DISCUSSIONS

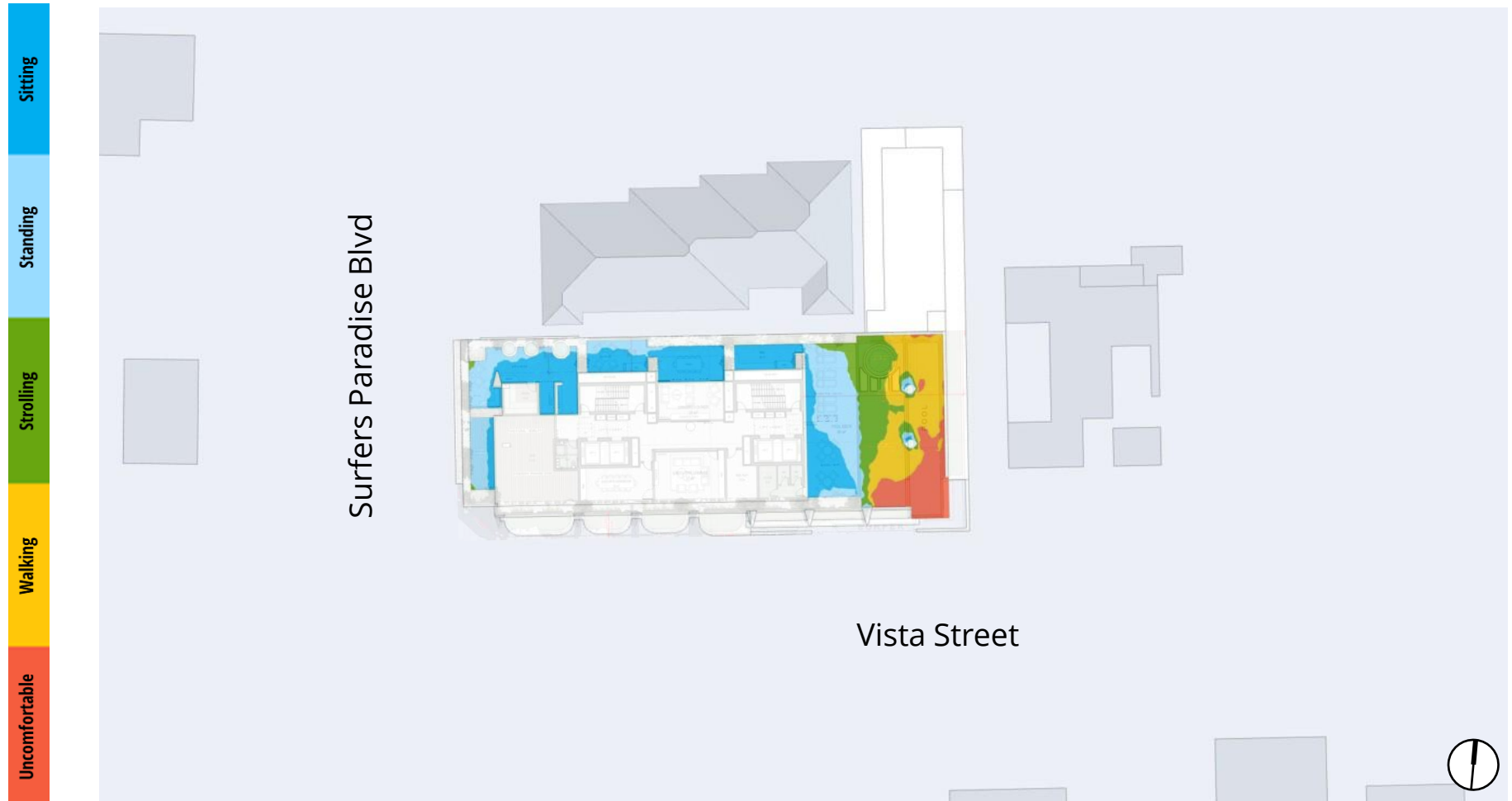


Image 8b: Annual Wind Comfort Conditions – Proposed Configuration
Podium – Level 3

5. RESULTS AND DISCUSSIONS

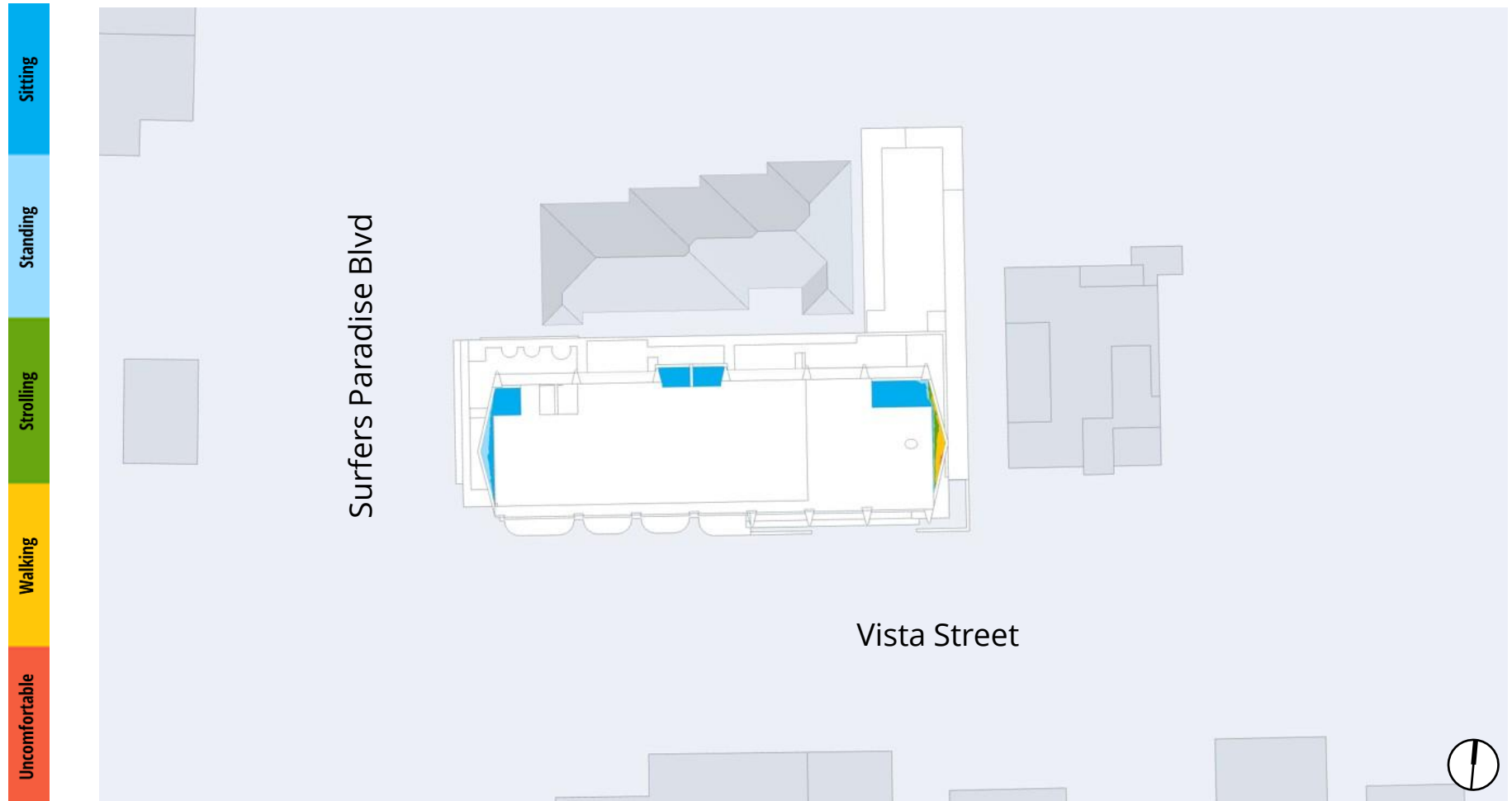


Image 8c: Annual Wind Comfort Conditions – Proposed Configuration
Private Balconies – Low-Rise

5. RESULTS AND DISCUSSIONS

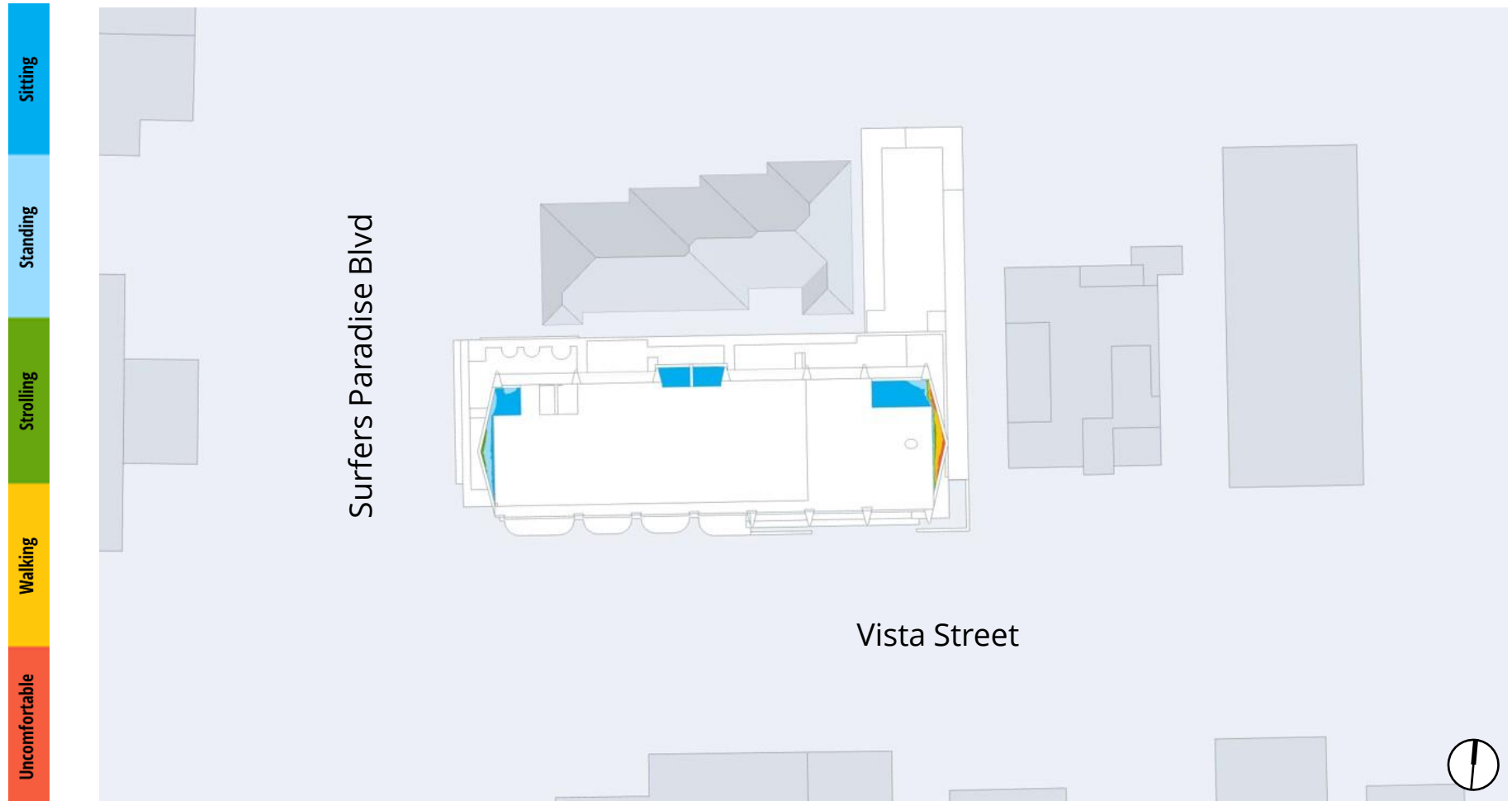


Image 8d: Annual Wind Comfort Conditions – Proposed Configuration
Private Balconies – Mid-Rise

5. RESULTS AND DISCUSSIONS

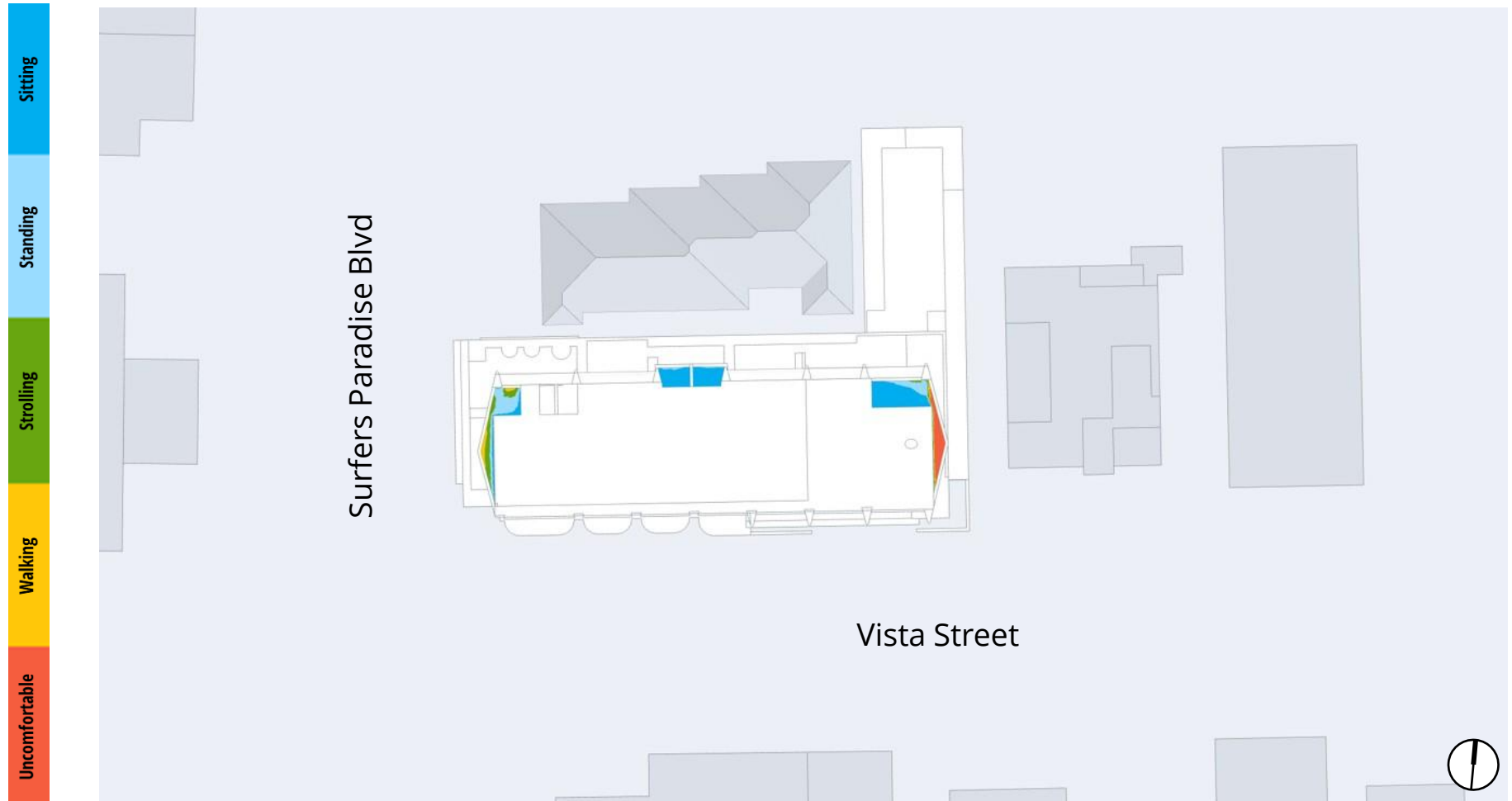


Image 8e: Annual Wind Comfort Conditions – Proposed Configuration
Private Balconies – High-Rise

5. RESULTS AND DISCUSSIONS



5.3 Review of Updated Architectural Drawings

Updated architectural drawings, received by RWDI on 25 & 27 August 2026, were reviewed to identify the key design changes relative to the earlier scheme used as the basis of the preceding simulations. A summary of the primary changes and their anticipated influence on local wind conditions is provided below.

- The 2m tall porous vertical screening along the southern perimeter of the café terrace on the Ground Floor has been removed. Sensitivity studies undertaken with 2 m and 2.5 m tall screening indicated minimal influence of the screening on the overall wind environment within the café terrace with the projected blade wall at the south-west corner likely to be the primary contributor to reduced winds. Hence, removal of the screen is not anticipated to materially alter the previously assessed wind conditions.
- Modifications to the Level 3 terrace include removal of the planters that served as partitions within the northern terraces. This is expected to allow the north-west and north-east sector winds to flow within the space without obstruction and can lead to increase in wind conditions to a mix of sitting to standing use within the space. This is, however, not likely to impact overall usability of the northern parts of the terrace. However, changes to the poolside seating within the eastern parts of the terrace are likely to result in the sunbathing area adjacent to the shallow pool being more exposed to prevailing winds, potentially reducing wind comfort within this location.

- Additional balconies have been introduced along the northern aspect. These balconies benefit from shielding from prevailing south sector winds and the extended blade walls which are likely to provide shelter from north-west and north-east winds. Overall, wind conditions are expected to be comfortable for intended use of these spaces.
- The screening employed to mitigate the wind impacts within the eastern balconies has been removed. This is likely to increase the impact of the south-east to south sector winds with conditions likely to exceed the comfort and safety criteria within the space.
- The proposed tower setback to the eastern boundary has increased by approximately 1 m. Given the reduction in building massing as a result of the increased setback, the overall impacts are likely to improve or remain similar to the assessed scheme.

Based on the review undertaken, the design changes are not anticipated to result in a significant change to the local wind environment in the public domain and podium-level communal areas. As such, additional wind simulations are not considered necessary. Refer to Section 6 for recommendations.

6. DESIGN ADVICE AND RECOMMENDATIONS



Based on the results of the wind study and review of architectural drawings, received by RWDI on 25 & 27 August 2026, the following design recommendations and wind mitigation measures are proposed to improve wind conditions:

Ground Level:

- It is recommended to include densely foliating vegetation at the south-west corner to mitigate potential wind acceleration effects. Alternatively, the porous screening on Ground Level for the café terrace along Surfers Paradise Blvd can be retained from the previous design scheme.
- It is recommended to retain the proposed landscape along Vista Street. Additional dense trees with interlocking canopies can be included to further improve wind conditions along the street.
- Porosity in the carpark levels should be maintained as it plays an important role in providing an alternative flow path for regional winds. A minimum open area of approximately 50% should be maintained.

Podium - Level 3:

The current screening provision provides shelter to the seating spaces within the parts of the terrace. This can be extended further to the east to increase shelter for the sunbathing areas adjacent to the shallow pool. Alternatively, extended planters can be incorporated between the seating spaces to reduce wind flows.

Private balconies:

It is recommended that the height of the perimeter screening along the eastern balconies be increased to a minimum of 1.4 m to improve protection from prevailing winds. In addition, the full-height screening should be located along the northern perimeter (see Image 9) to increase the usability of the narrow eastern balcony while maintaining effective wind shielding. This arrangement also reduces reliance on user operation for the previous assessed design, noting that retractable elements may not be deployed consistently in practice which can cause strong wind impacts near the north-east corner.

- 1.4 m perimeter screen (Levels 14 to 28)
- - - Full-height screen - maximum porosity of 50% (all Levels)

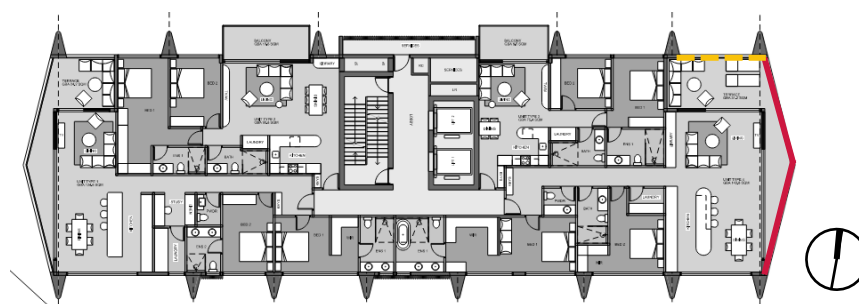


Image 9: Wind Mitigation Measures - East Private Balconies for all Levels

7. STATEMENT OF LIMITATIONS



Wind comfort conditions around the Proposed Mixed-Use Development located at 27 Vista Street in Surfers Paradise, QLD are discussed in this report. This assessment is based on the CFD analysis of the proposed massing of the buildings using Orbital Stack. The findings of the report should be assessed based on the limitations listed below:

1. The analysis presented was based on the historical climate conditions for the region.
2. It is noted that the conditions presented herein depict statistical conditions for certain seasons. It would be prudent to consider that specific seasonal trends (e.g., a heatwave) would be expected to result in ambient conditions which could create longer durations of uncomfortable conditions. Thermal comfort studies provide a more holistic assessment of perceived comfort.
3. The effect of climate change (i.e., forward predictions of trends in meteorological conditions) has not been considered in the analysis. However, the use of the latest meteorological information should give some indication.
4. The CFD simulations were conducted using a steady-state analysis. This means that the wind speed predictions represent an 'average' of the expected conditions within and around the development. As such, RWDI would expect the comfort conditions to be more dynamic in reality than the 'static' images presented herein.
5. Gusts are an important part of the overall wind microclimate that can impact safety, and these have only been considered qualitatively in the current assessment. A more detailed assessment would be required using either a boundary-layer wind tunnel or more detailed transient computational modelling to evaluate the gust response of the development as the design evolves.

8. APPLICABILITY OF ASSESSMENT



This report entitled “27 Vista Street : Pedestrian Wind Assessment”, dated 27 August 2026, was prepared by RWDI Australia Pty Ltd (“RWDI”). The findings and conclusions presented in this report have been prepared for the Client and are specific to the project described herein (“Project”). The conclusions and recommendations contained in this report are based on the information made available to RWDI between May and August 2026. In the event of any significant changes to the design, construction or operation of the building or addition of surroundings in the future, RWDI could provide an assessment of their impact on the wind conditions discussed in this report. It is the responsibility of others to contact RWDI to initiate this process.

Because the contents of this report may not reflect the final design of the Project or subsequent changes made after the date of this report, RWDI recommends that it be retained by Client during the final stages of the project to verify that the results and recommendations provided in this report have been correctly interpreted in the final design of the Project.

The conclusions and recommendations contained in this report have also been made for the specific purpose(s) set out herein. Should the Client or any other third party utilise the report and/or implement the conclusions and recommendations contained therein for any other purpose or project without the involvement of RWDI, the Client or such third party assumes any and all risk of any and all consequences arising from such use and RWDI accepts no responsibility for any liability, loss, or damage of any kind suffered by Client or any other third party arising therefrom.

Finally, it is imperative that the Client and/or any party relying on the conclusions and recommendations in this report carefully review the stated assumptions contained herein and to understand the different factors which may impact the conclusions and recommendations provided.

APPENDIX A

STREAMLINES AND WIND FLOWS

APPENDIX A

Config 1

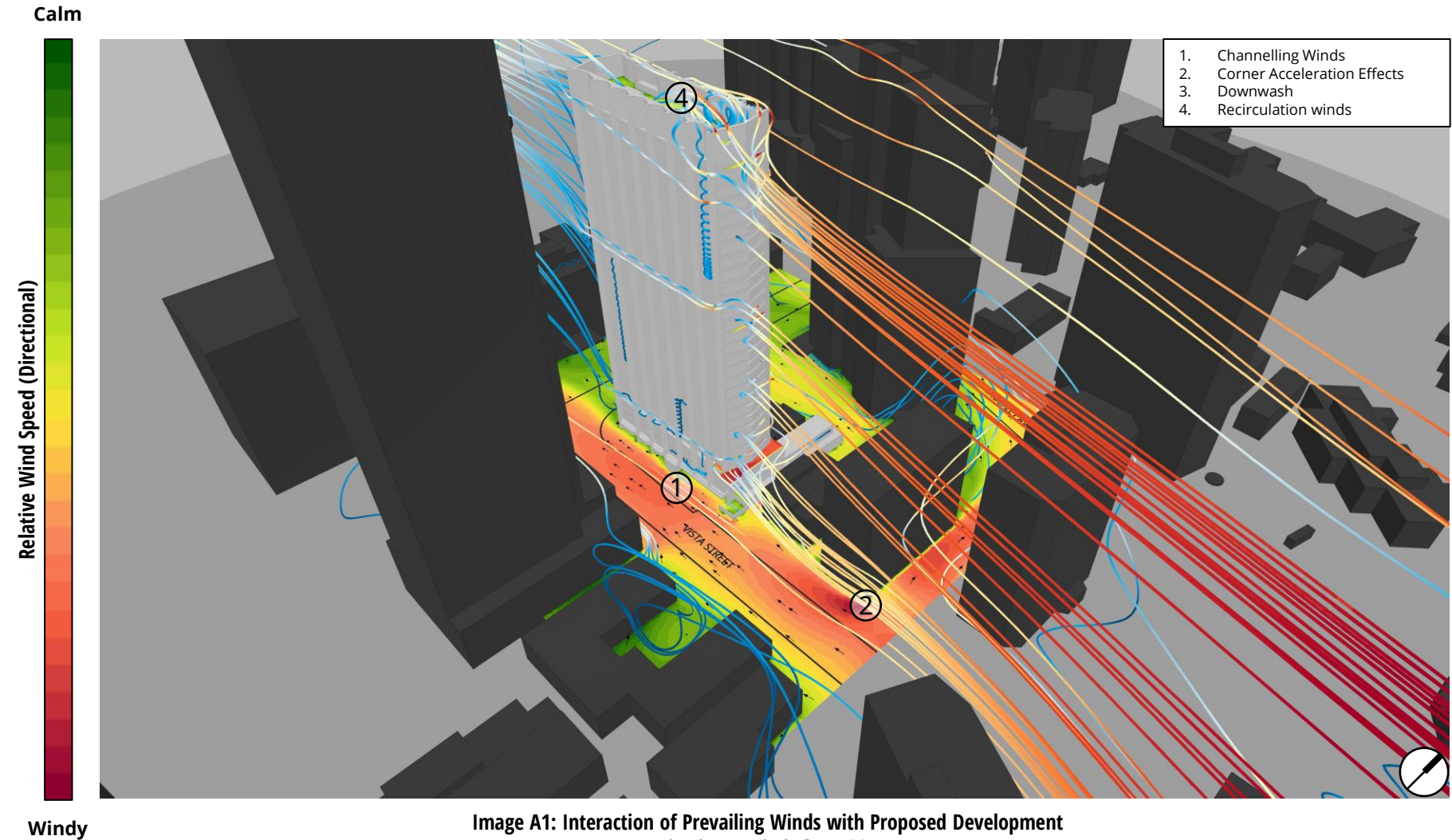
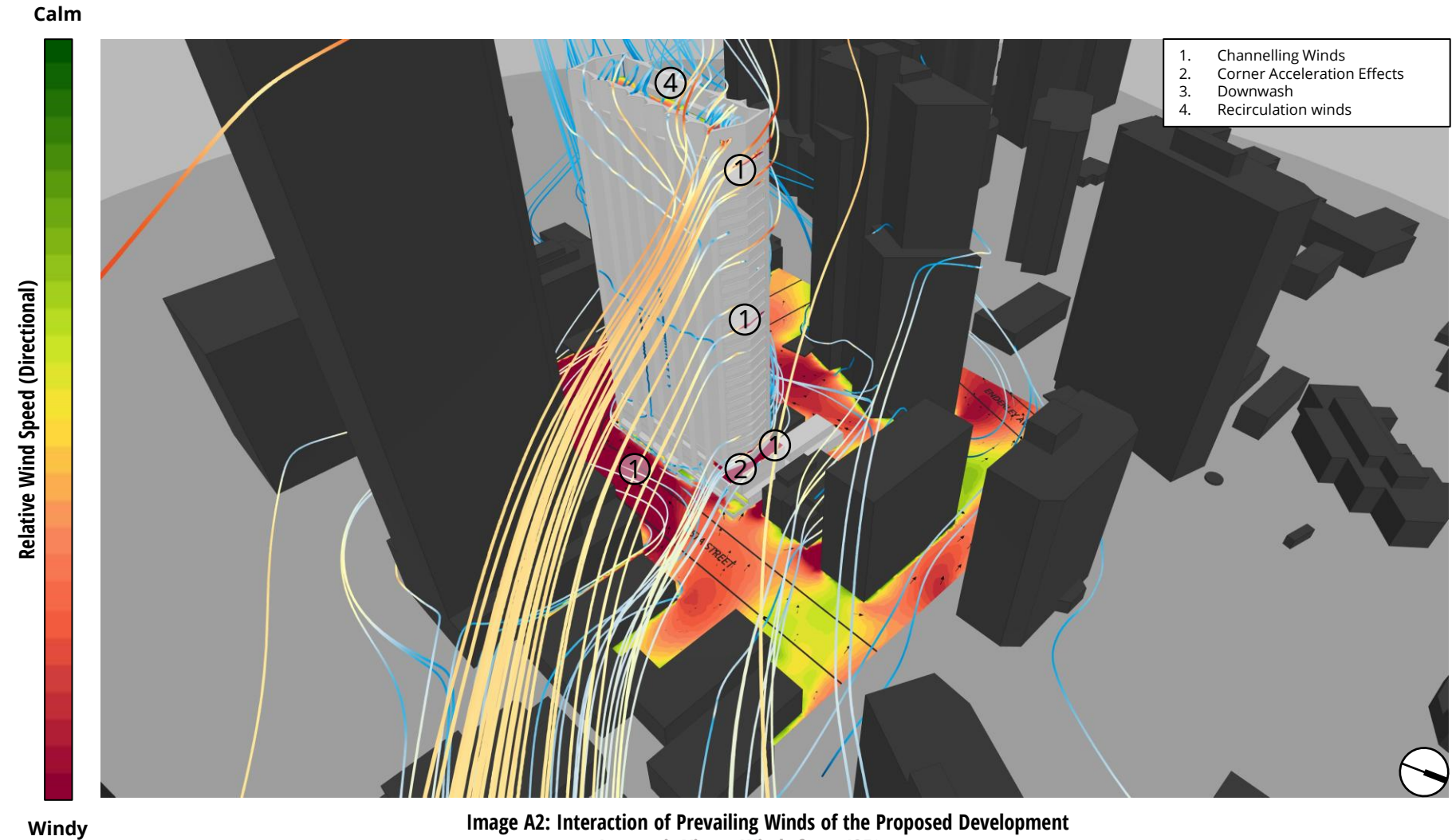
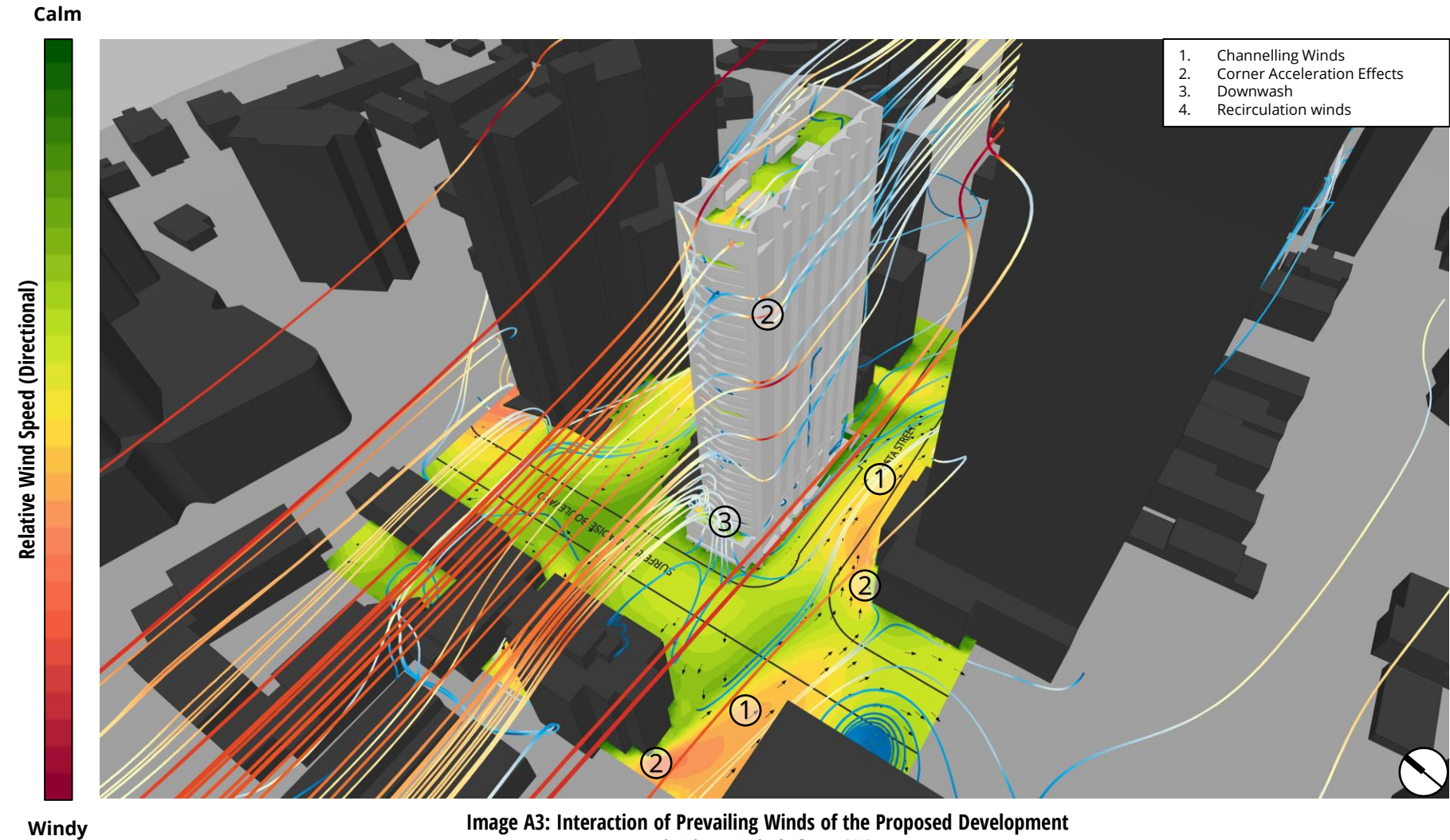


Image A1: Interaction of Prevailing Winds with Proposed Development
Isometric View - Winds from 90° sector

APPENDIX A
Config 1



APPENDIX A
Config 1



APPENDIX A

Config 1

