WATERFRONT PLACE

PORT MELBOURNE

PEDESTRIAN WIND STUDY

RWDI # 2408381

18 February 2025

SUBMITTED TO

GFM Group Pty Ltd
(ACN 675 440 730) in its capacity as trustee of the GFM BTS Trust Subtrust No.4 (ABN 12 757 352 180)

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DOCUMENT CONTROL

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A	Initial	14 February 2025	MW/AMC	JG
B	Final	18 February 2025	AMC	JG

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RWDI

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QUALITY ASSURANCE

RWDI Australia Pty Ltd. operates a Quality Management System which complies with the requirements of AS/NZS ISO 9001:2015. This management system has been externally certified by SAI Global and License No. QEC 13457 has been issued for the following scope: The provision of consultancy services in acoustic engineering, air quality and wind engineering; and the sale, service, support and installation of acoustic monitoring and related systems and technologies.

EXECUTIVE SUMMARY

RWDI Australia Pty Ltd. (RWDI) was engaged to conduct a pedestrian wind assessment for the Proposed Development located at 1-7 Waterfront Place in Port Melbourne, VIC. The pedestrian-level wind microclimate assessment was conducted for the following configurations of the site:

Existing Configuration:	Existing Site with Existing Surrounding Buildings
Proposed Configuration:	Proposed Development with Existing Surrounding Buildings

The pedestrian-level wind conditions within and around the Proposed Development were predicted using the results from a boundary-layer wind tunnel test combined with historical meteorological wind records for the region. The wind speeds have been evaluated against suitable criteria to assess the pedestrian wind comfort and safety conditions within and around the site. The assessment has been carried out in response to Condition 22 of the Planning Permit (490/2020/A).

The results of the test are summarised as follows:

Pedestrian Wind Safety

- **Existing Configuration:**
  There are no areas that exceed the safety threshold for the existing configuration of the site.
- **Proposed Configuration:**
  Winds exceeding the safety threshold were observed at one location to the east of the site along Beach Road and around several locations on Level 3 private open space (POS) of both the towers.

Pedestrian Wind Comfort

- **Existing Configuration:**
  The wind conditions were observed to be generally calm with most areas assessed at and around the site achieving the criteria for sitting and standing use throughout the year. Windier conditions, suitable for active walking use, were noted along Beach Street and Waterfront Place.
- **Proposed Configuration:**
  With the inclusion of the Proposed Development, the overall wind environment was noted to remain comfortable for passive sitting to standing use at most of the locations assessed including key areas along port-cochere and entrance to the north and within the public realm access to the south. High winds exceeding the comfort levels were observed along Beach Street to the east, at the western corner of the smaller retail/civic building, and within the Level 3 POS.

Recommendations

Based on the findings of the wind tunnel study and review of latest architectural drawings (Description: Town Planning Issue, Date: 17/01/2025), the following wind mitigation strategies are recommended:

- It is recommended to include 50% porous screens with a height of at least 1.5m above the planters to the east of the private pool garden along Beach Street.
- For the POS on Level 3 of the development, it is recommended to include 1.5 m tall impermeable balustrades around the perimeter. Furthermore, it is recommended to retain the partition screens as indicated in the latest drawings. The height of these screens should be at least 1.8-2.1m,
- To improve wind comfort levels around the site, it is recommended to retain dense landscaping in the form of evergreen leafy trees to mitigate the winds.

- Outdoor seating areas should correspond to favourable wind conditions and hence should be situated in comfortable areas. Additional measures can also be implemented such as localised screening to provide buffer to winds.
- Optional Measure: For south-facing private balconies on Levels 4 to 9, if calmer conditions are desired near the corners, porous vertical screening or dense landscaping near the corners can be employed to mitigate the localised wind acceleration.

With the inclusion of these measures, it is anticipated that the wind conditions within and around the subject site will meet the required comfort and safety criteria. Additional wind tunnel testing is advised to validate the effectiveness of these proposed measures.

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1 INTRODUCTION

RWDI Australia Pty Ltd. (RWDI) was retained to conduct a pedestrian wind environment assessment for the Proposed Development located at 1-7 Waterfront Place in Port Melbourne. This report presents the project objectives, background, and approach, and discusses the results from RWDI's wind tunnel assessment. Commentary on conceptual wind control measures is also provided, if necessary.

The project site, shown within its existing surrounding context in Image 1, is bounded by Beach Street to the north and to the east and Waterfront Place to the south. The surrounding area consists of low-rise to the north and mid-rise buildings to the west with Port Melbourne to the south. The Proposed Development consists of two 11-storey (including ground level) mixed-use residential towers and a two-storey retail / civic building located at the western corner of the site.

Image 1: Project Site Location and Existing Surrounds

The objective of the study is to assess the wind conditions around the subject site to satisfy Condition 22 of the Planning Permit (490/2020/A) issued by the City of Port Philiip. This quantitative assessment is based on wind speed measurements on a scale model of the Proposed Development and its surroundings in one of RWDI's boundary-layer wind tunnels. These measurements were combined with the local wind records and compared with the appropriate criteria to gauge the wind comfort and safety in pedestrian areas. The key outdoor pedestrian-accessible areas of interest associated with the development include the pedestrian footpaths around the site, entrances to the development, and the various outdoor amenity spaces on ground and upper levels of the development.

2 BACKGROUND AND APPROACH

2.1 Wind Tunnel Study Model

To assess the wind environment within and around the Proposed Development, a 1:300 scale model of the project site and surroundings was constructed for the wind tunnel tests of the following configurations:

Existing Configuration:	Existing Site with Existing Surrounding Buildings (Image 2A); and
Proposed Configuration:	Proposed Development with Existing Surrounding Buildings (Image 2B).

The wind tunnel model included all relevant surrounding buildings and topography within a radius of 360m around the project site. This encompassed both existing structures and those currently under construction, with an expectation that these would likely be present or completed by the time the proposed subject development concludes. Additionally, the wind and turbulence profiles in the atmospheric boundary layer beyond the modelled area were simulated in RWDI's wind tunnel, incorporating spires and roughness blocks.

The wind tunnel model was instrumented with 89 specially designed wind speed sensors to measure mean and gust speeds at a full-scale height of approximately 1.5 – 2m above local ground in pedestrian areas throughout the study site. The placement of wind measurement sensors was based on our experience and understanding of the pedestrian usage for this site. Wind speeds were measured for 36 directions in 10-degree increments. The measurements at each sensor location were recorded in the form of ratios of local mean and gust speeds to the mean wind speed at a reference height above the model.

Note that no vegetation was included as part of the configurations tested in accordance with AWES Guidelines (2024). The method for testing scale models in the wind tunnel is consistent with internationally recognised good practice, and meets the requirements set out in the Australasian Wind Engineering Society Quality Assurance Manual (AWES-QAM-2019).

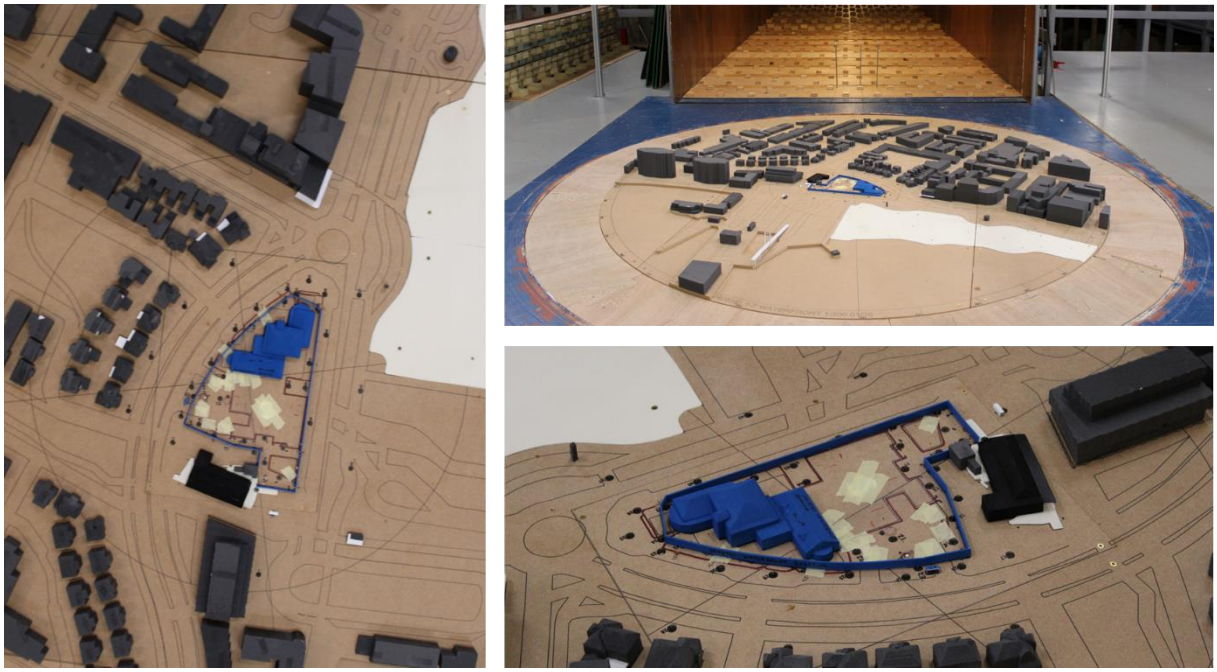

Image 2A: Wind Tunnel Study Model – Existing Configuration

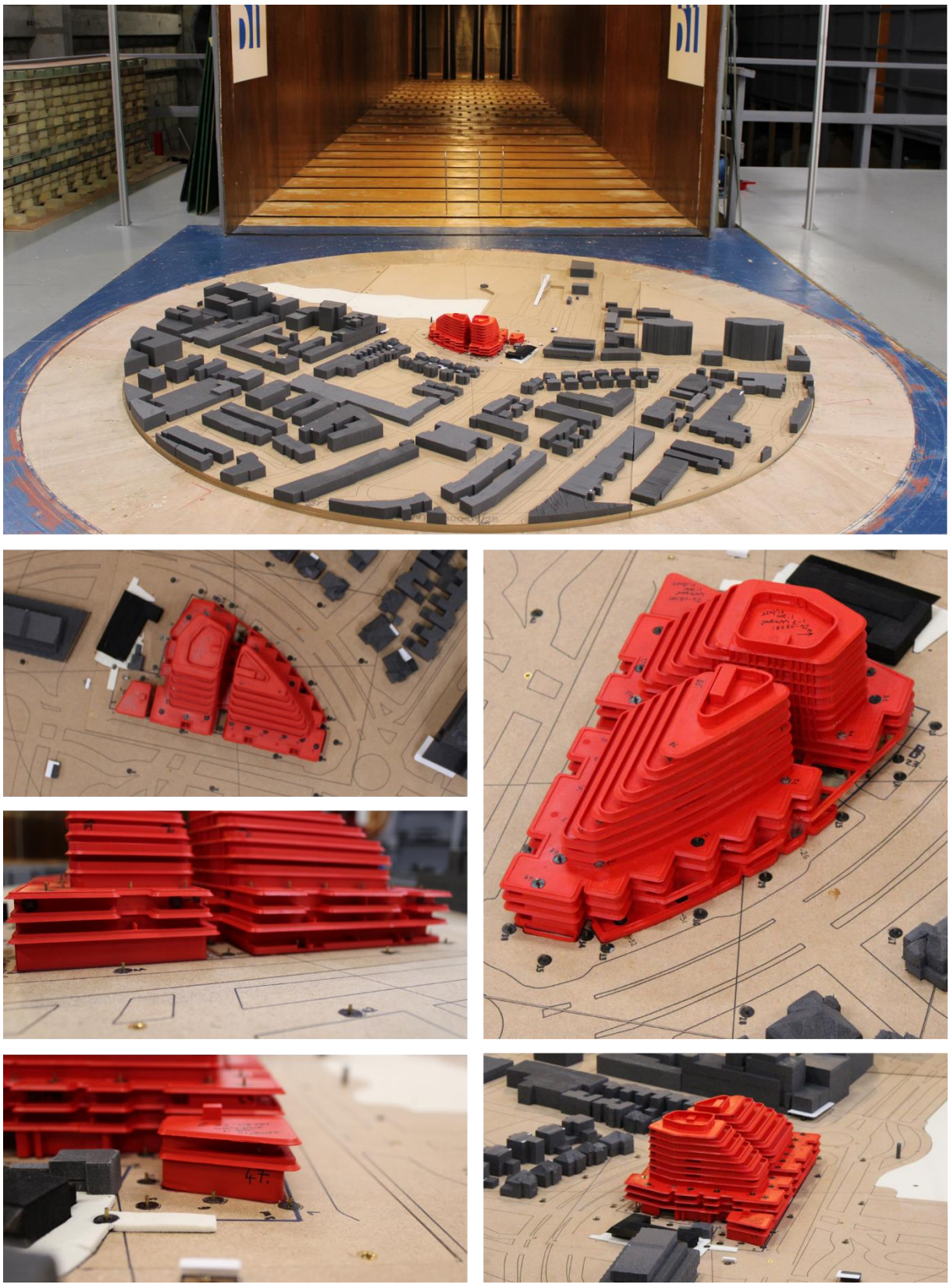

Image 2B: Wind Tunnel Study Model – Proposed Configuration

2.2 Meteorological Data

Wind statistics recorded at Melbourne Airport between 1995 and 2022 (inclusive) were analysed on an annual basis and used to assess the wind conditions in the study area. Image 3 graphically depicts the annual directional distribution of wind frequencies and speeds at the airport. Winds from the north are predominant in Melbourne with secondary winds from the south and west to south-west directions. Strong winds of a mean speed greater than 10 m/s measured at the airport (at an anemometer height of 10 m) occur 11.4% of the time on an annual basis and are mostly from the north.

Wind statistics were combined with the wind tunnel data to predict the frequency of occurrence of full-scale wind speeds. The full-scale wind predictions were then compared with the wind criteria for pedestrian comfort and safety, as described in Section 2.3.

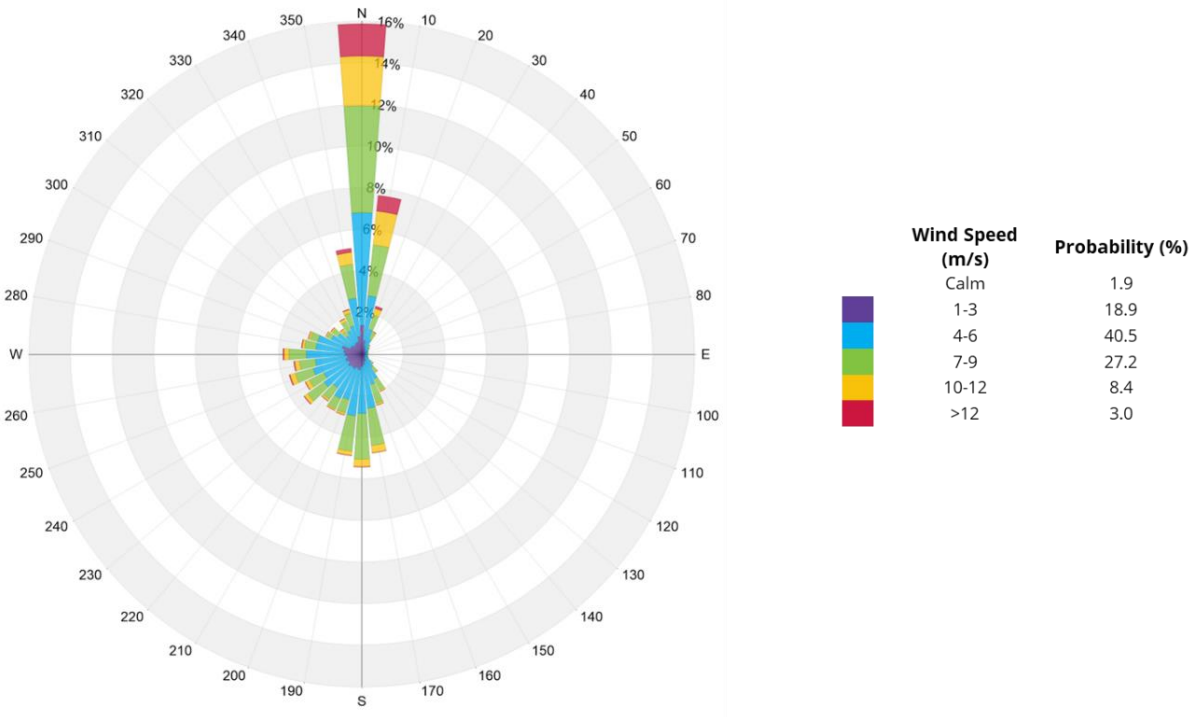

Image 3: Directional Distribution of Winds Approaching Melbourne Airport (1995 - 2022)

2.3 Pedestrian Wind Criteria

The pedestrian wind criteria specified below were used to assess wind comfort and safety conditions in the current study. The comfort and safety conditions for these criteria are based on gust-equivalent-mean (GEM) wind speeds and 3-second gust speeds, respectively.

Table: Pedestrian Wind Comfort and Safety Criteria

Comfort Category	GEM Speed (m/s)	Description
Sitting	≤ 3	Calm or light breezes are desired for outdoor restaurants and seating areas where one can read a paper without having it blown away.
Standing	3 - 4	Gentle breezes suitable for main building entrances, bus stops, communal and commercial terraces, and other places where pedestrians may linger.
Walking	4 - 5	Moderate to high winds suitable for private balconies and for strolling along downtown street, plaza, or park.
Uncomfortable	> 5	Strong winds of this magnitude are considered a nuisance for all pedestrian activities, and wind mitigation is typically recommended.

Notes:
(1) GEM speed = max (mean speed, gust speed/1.85); and Gust Speed = Mean Speed + 3*RMS Speed.
(2) Wind conditions are comfortable if the predicted GEM speeds are within the respective thresholds for at least 80% of the time.

Safety Criterion	Gust Speed (m/s)	Description
Exceeded	> 20	Excessive gust speeds can adversely affect a pedestrian's balance and footing. Wind mitigation is required.

Notes:
(1) Based on an annual exceedance of 9 hours or 0.1% of the time.
(2) Only gust speeds need to be considered in the wind safety criterion.

It is essential to highlight that the safety criterion proposed above leans towards a conservative stance when compared to other widely accepted standards in other regions. For instance, the wind safety criteria outlined in the Australasian Wind Engineering Society Guidelines for Pedestrian Wind Effects (2024) and by Melbourne (1978) rely on a peak 3-second gust wind speed of 23m/s, with an exceedance threshold of 0.1% of the time during the year. This criterion is the most widely used and agreed-upon safety standard in Australia. Moreover, alternative widely embraced criteria, such as those recommended by Soligo et al. (1998) and Arens et al. (2013), propose a peak 3-second gust of 25m/s (with an exceedance threshold of 0.1% of the time during the year). These criteria are more commonly used around the globe (e.g. Auckland, Middle East etc.). Therefore, it is advisable to contextualise the wind safety findings presented herein with respect to these other widely utilised criteria.

3 RESULTS AND DISCUSSION

The predicted wind conditions are shown on the plan figures in Figures 1A through 2D located in the "Figures" section of this report. These conditions and the associated wind speeds are also represented in Table 1, located in the "Tables" section of this report. The following is a detailed discussion of the suitability of the predicted wind conditions for the anticipated pedestrian use of each area of interest. Note that wind tunnel tests have been carried out without any form of vegetation to establish a baseline understanding of the wind conditions around the site.

3.1 Generalised 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, deep canopies close to ground level, windscreens / tall trees with dense landscaping, etc. as shown in Image 4 can help to reduce the 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 size and massing of the proposed buildings.

Conversely, in areas where higher wind velocities are desired, 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 climates and high humidity levels, such as those closer to the equator.

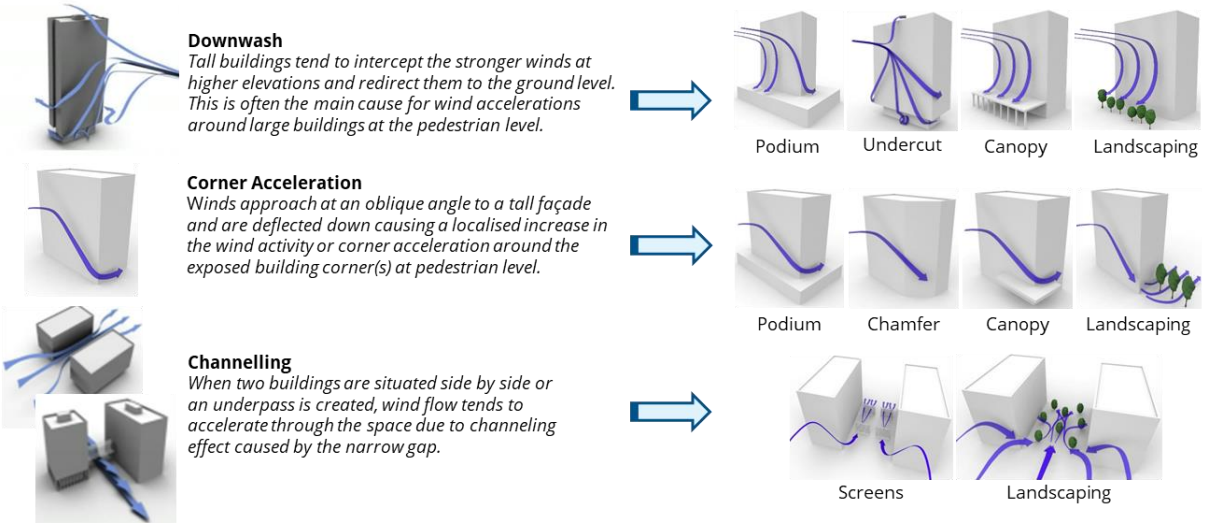

Image 4: General Wind Flows around Buildings and Examples of Wind Control Measures

3.2 Pedestrian Safety

Wind speeds exceeding the safety criterion were not observed at any locations around the existing site. However, with the inclusion of the Proposed Development the following areas were observed to exceed the safety threshold:

- Along Beach Street to the east of the Proposed Development (Sensor 33);
- Level 3 podium areas on the western tower of the Proposed Development (Sensors 56-61 and 77); and
- Level 3 podium areas on the eastern tower of the Proposed Development (Sensors 69 and 71).

3.3 Pedestrian Comfort

Wind conditions suitable for walking use are appropriate for footpaths/walkways and areas where pedestrians will be active and less likely to remain in one area for prolonged periods of time. Lower wind speeds conducive to standing are preferred at building entrances & drop-off areas, bus stops and communal outdoor terraces. Wind speeds comfortable for sitting use are preferred for areas intended for passive long-duration activities such as outdoor dining or café seating. For private balconies, the spaces can be considered suitable for use if conditions are assessed to be within the comfort thresholds. This is primarily because the usage of these spaces is elective with occupants having the option to retreat indoors during events of high winds.

3.3.1 Existing Configuration:

- For the existing configuration, the wind conditions were observed to be generally calm with most areas assessed at and around the site achieving the criteria for sitting and standing use throughout the year.
- Windier conditions, suitable for active walking use, were noted at isolated areas within the Site (Sensor 11), to the north (Sensor 18), to the east along Beach Street (Sensors 33, 35, 36 and 38), along Waterfront Place to the south (Sensors 37 and 42) and to the west on the frontage area of the cosmetic and skin clinic (Sensor 4).

3.3.2 Proposed Configuration:

Pedestrian wind comfort conditions on the Ground Level for the Proposed Configuration of the site are shown in Figure 2A. Key observations are noted below:

- With the inclusion of the Proposed Development, the overall wind environment was noted to remain comfortable for passive sitting to standing use at most of the locations around the site. This includes key areas such as the port-cochere and primary entrance along Beach Street and the public realm areas and access to the south.
- Wind conditions around the smaller retail/civic building can be windy particularly within the narrow channels to the north and east where walking use conditions are likely. The planned seating within the laneway between the retail / civic building and the podium to the larger tower will require interventions to improve conditions.
- Wind conditions at majority of the footpaths are expected to be comfortable for active walking use.
- High winds exceeding the wind comfort criteria were noted along Beach Street to the east of the site (Sensors 30, 33 and 35) and at the south-west corner of the smaller retail/civic building (Sensor 7). It should be noted that no vegetation around the Proposed Development was included for wind tunnel testing, therefore, these wind conditions show a worst-case scenario. With the inclusion of the dense

landscaping in the form of evergreen trees (as shown in the drawings), these areas are expected to have calmer wind conditions.

Pedestrian wind comfort conditions on the Upper Levels of the development are shown in Figure 2B. Key observations are noted below:

- Wind conditions within the Level 1 external courtyard between the two towers and the Level 1 terrace to the retail/civic building are expected to be suitable for passive sitting and standing use.
- Wind conditions within majority of the Level 3 private open spaces are expected to be within the comfort limits. However, windier conditions exceeding the criteria are likely to occur along the western and eastern sides of the level (Sensors 57, 58, 60 and 61 for the West Tower) and (Sensor 69 for the East Tower).
- All private terraces between Levels 4 and 9 are expected to be well-within the comfort limits. For the south-facing terraces, slightly higher winds are expected near the corners. CFD studies undertaken for the development show that the overall wind conditions within these spaces are comfortable for passive sitting to standing use at most locations with only windier conditions to occur near the corners.

3.4 Design Advice and Recommendations

Based on the findings of the wind tunnel study, the following wind mitigation strategies can be incorporated in the design of the development to improve the overall wind environment:

- Inclusion of porous screens with a maximum porosity of 50% and a height of at least 1.5m above the planters to the east of the private pool garden along Beach Street.

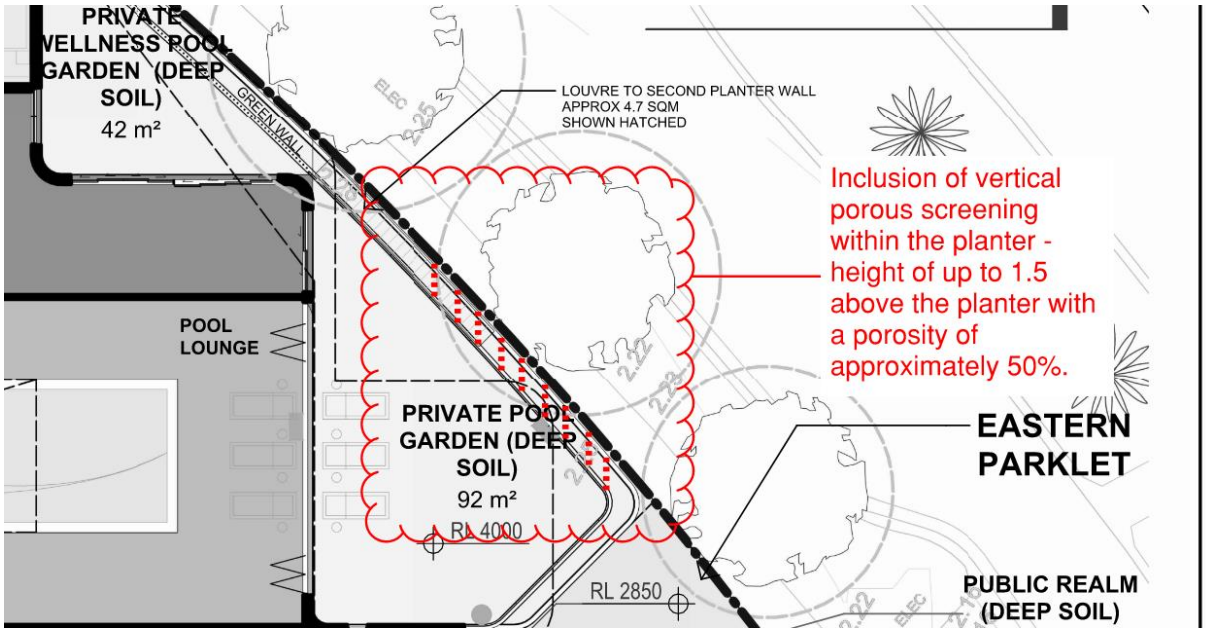

Image 5: Wind Mitigation Strategy along Beach Street

- Review of the latest architectural drawings (Description: Town Planning Issue, Date: 17/01/2025), shows that partition screens have been included in the design of Level 3 private open spaces. However, the

height of these elements could not be confirmed. Hence, it is recommended to these screens are at least 1.8 to 2.1m tall.

- Impermeable balustrades with a minimum height of 1.5 m are recommended around the perimeter of Level 3. Note that the current palisade design offers little resistance to wind.
- To improve wind comfort levels around the site, it is recommended to retain dense landscaping in the form of dense evergreen trees and planting to mitigate the winds.
- Outdoor seating areas should correspond to favourable wind conditions and hence should be situated in spaces that are comfortable for passive sitting to standing use. Additional measures can also be implemented such as localised screening to provide buffer to winds.
- Optional: For south-facing private balconies on Levels 4 to 9, if calmer conditions are desired near the corners, porous vertical screening or dense landscaping can be employed to mitigate the localised accelerations.

The design advice provided above is in-principle. The efficacy of these elements should be confirmed through additional wind tunnel testing.

4 STATEMENT OF LIMITATIONS

Limitations

This report entitled '*1-7 Waterfront Place Pedestrian Wind Study*' was prepared by RWDI Australia Pty Ltd. ("RWDI") for GFM Group Pty Ltd (ACN 675 440 730) in its capacity as trustee of the GFM BTS Trust Subtrust No.4 (ABN 12 757 352 180) ("Client"). 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 available to RWDI when this report was prepared.

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.

Design Assumptions

RWDI confirms that the pedestrian wind assessment (the "**Assessment**") discussed herein was performed by RWDI in accordance with generally accepted professional standards at the time when the Assessment was performed and in the location of the Project. No other representations, warranties, or guarantees are made with respect to the accuracy or completeness of the information, findings, recommendations, or conclusions contained in this Report. This report is not a legal opinion regarding compliance with applicable laws.

The findings and recommendations set out in this report are based on the following information disclosed to RWDI. Drawings and information listed below were received and used to construct the scale model of the Proposed Development **("Project Data**").

File Name	File Type	Date Received
131042_22098_BASEMENT 02_241211- Basement 02	DWG	12 December 2024
131042_22099_BASEMENT 01_241211 - Basement 01	DWG	12 December 2024
131042_22100_GROUND PLAN_241211 – Ground Level	DWG	12 December 2024
131042_22101_LEVEL 01 PLAN (PODIUM)_241211 – Level 1	DWG	12 December 2024
131042_22102_LEVEL 02 PLAN (PODIUM)_241211 - Level 2	DWG	12 December 2024
131042_22103_LEVEL 03 PLAN (TOWER)_241211 - Level 3	DWG	12 December 2024
131042_22104_LEVEL 04 PLAN (TOWER)_241211 - Level 4	DWG	12 December 2024
131042_22105_LEVEL 05 PLAN (TOWER)_241211 - Level 5	DWG	12 December 2024
131042_22106_LEVEL 06 PLAN (TOWER)_241211 - Level 6	DWG	12 December 2024
131042_22107_LEVEL 07 PLAN (TOWER)_241211 - Level 7	DWG	12 December 2024

File Name	File Type	Date Received
131042_22108_LEVEL 08 PLAN (TOWER)_241211 - Level 8	DWG	12 December 2024
131042_22109_LEVEL 09 PLAN (TOWER)_241211 - Level 9	DWG	12 December 2024
131042_22110_LEVEL 10 ROOF PLAN_241211 – Roof Level	DWG	12 December 2024
241212_131042_Building_RWDI-BUILDING – 3D Model	Rhino 3D Model	12 December 2024

The recommendations and conclusions are based on the assumption that the Project Data and Climate Data are accurate and complete. RWDI assumes no responsibility for any inaccuracy or deficiency in information it has received from others. In addition, the recommendations and conclusions in this report are partially based on historical data and can be affected by a number of external factors, including but not limited to Project design, quality of materials and construction, site conditions, meteorological events, and climate change. As such, the conclusions and recommendations contained in this report do not list every possible outcome.

The opinions in this report can only be relied up on to the extent that the Project Data and Project Specific Conditions have not changed. Any change in the Project Data or Project Specific Conditions not reflected in this report can impact and/or alter the recommendations and conclusions in this report. Therefore, it is incumbent upon the Client and/or any other third party reviewing the recommendations and conclusions in this report to contact RWDI in the event of any change in the Project Data and Project Specific Conditions in order to determine whether any such change(s) may impact the assumptions upon which the recommendations and conclusions were made.

5 REFERENCES

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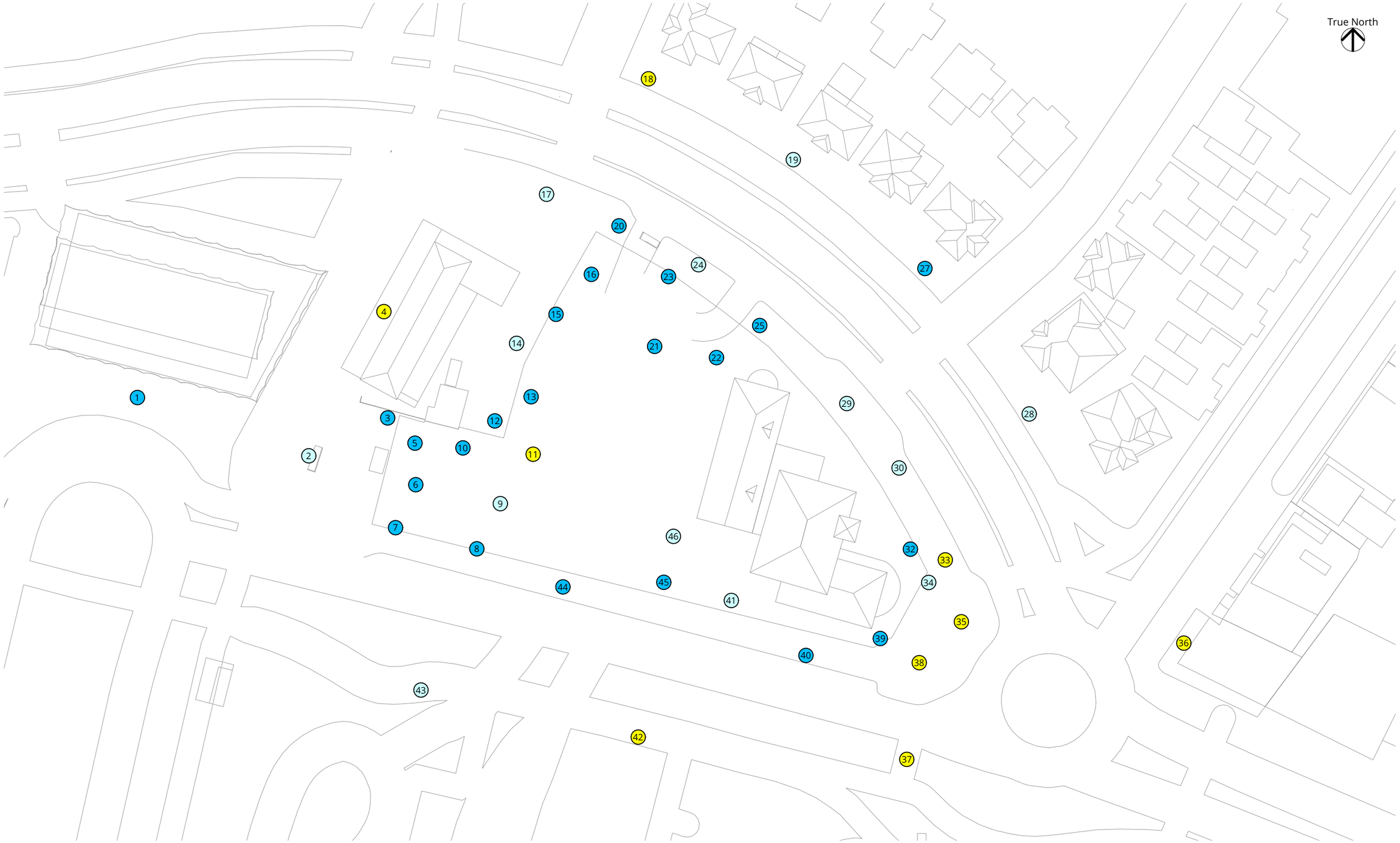
FIGURES



COMFORT CATEGORIES:

- Sitting
- Standing
- Walking
- Uncomfortable

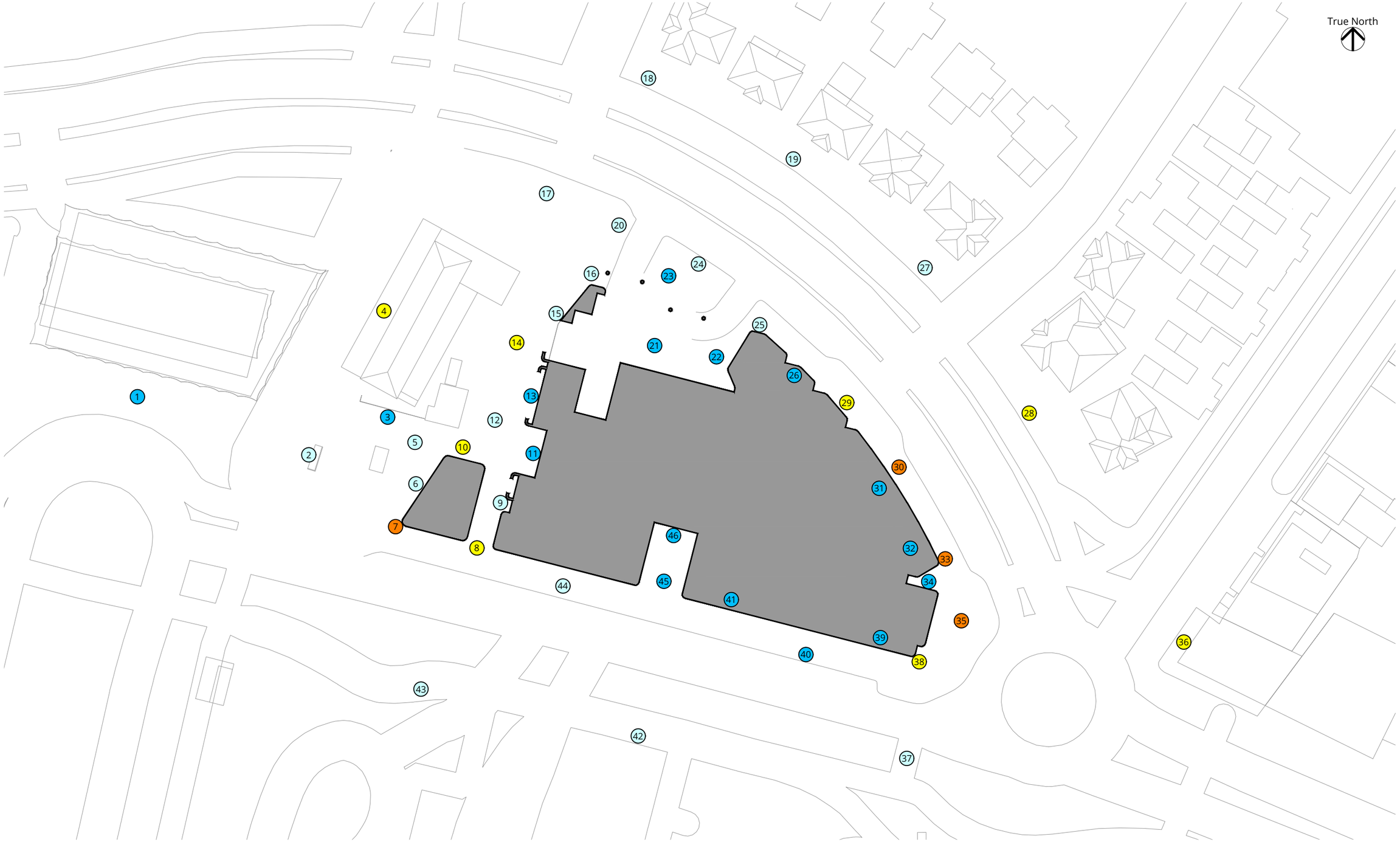
Pedestrian Wind Comfort Conditions - Ground Floor

Configuration 1: Existing Site with Existing Surrounding Buildings

Annual

2408381 1-7 Waterfront Place - Port Melbourne, Australia

Figure: 1A



COMFORT CATEGORIES:

- Sitting
- Standing
- Walking
- Uncomfortable

Pedestrian Wind Comfort Conditions - Ground Floor

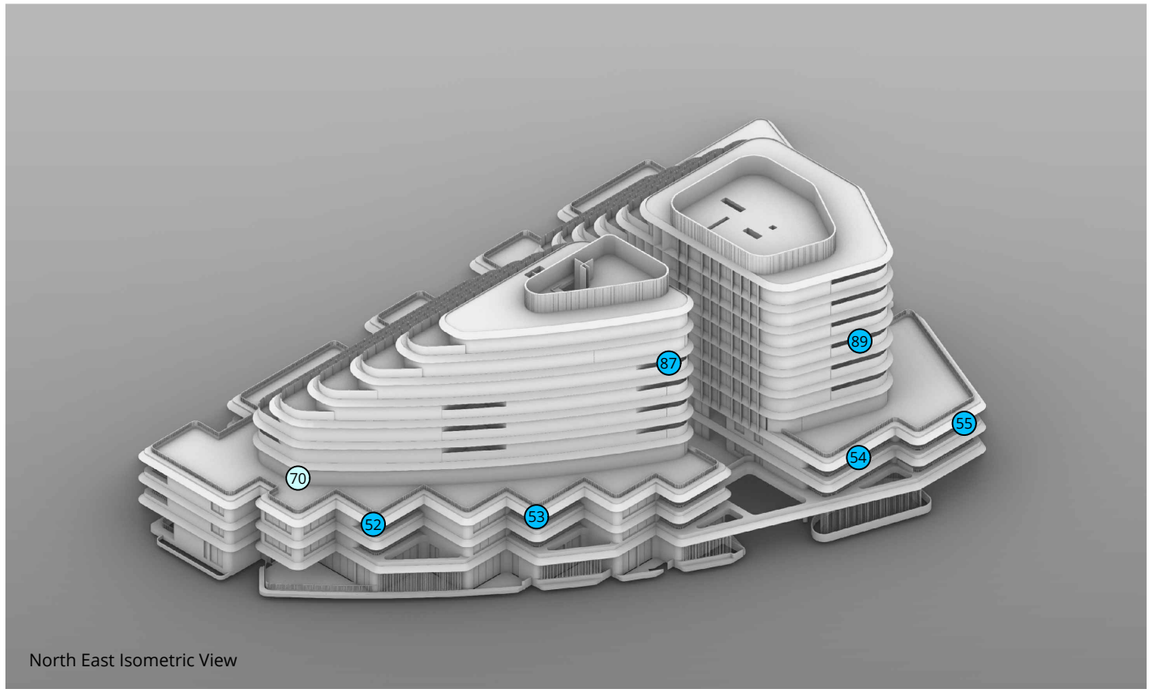
Configuration 2: Proposed Development with Existing Surrounding Buildings

Annual

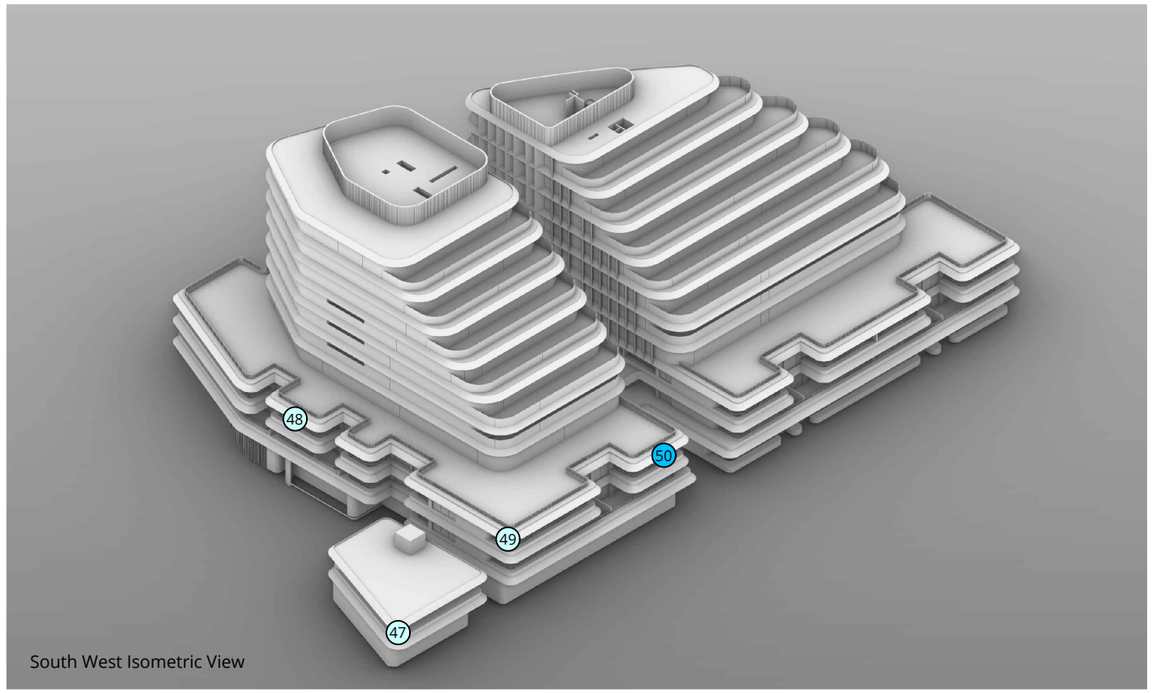
2408381 1-7 Waterfront Place - Port Melbourne, Australia

Figure: 2A

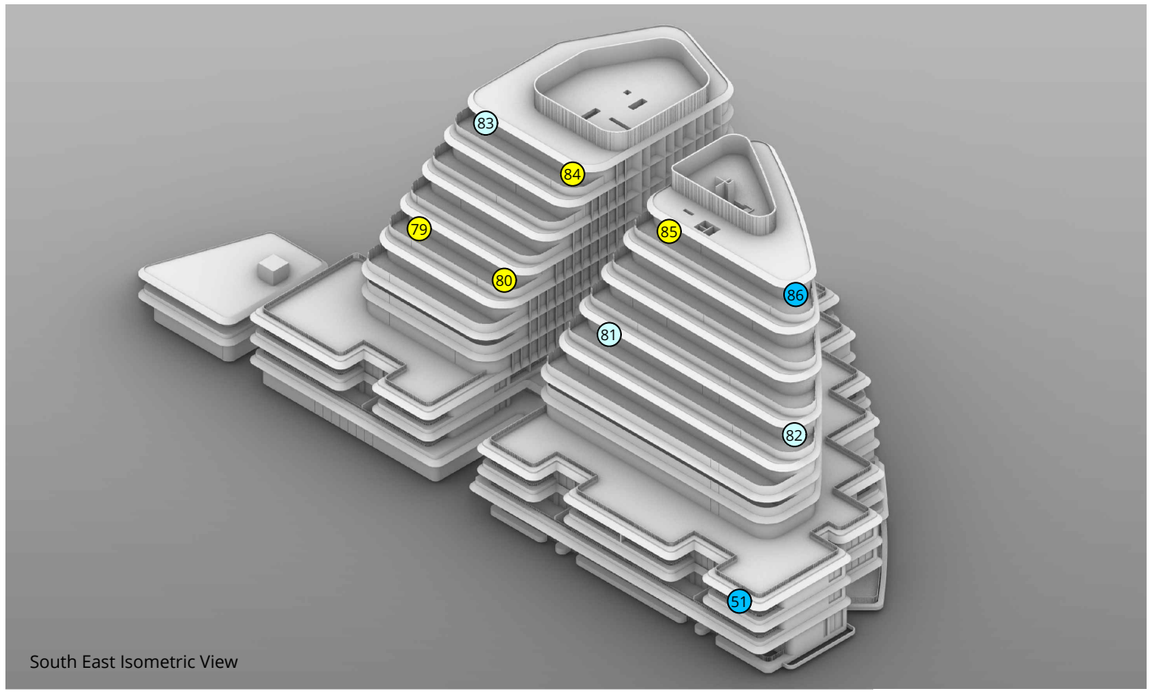
Roof View



North East Isometric View



South West Isometric View



South East Isometric View

COMFORT CATEGORIES:

Sitting

Standing

Walking

Uncomfortable

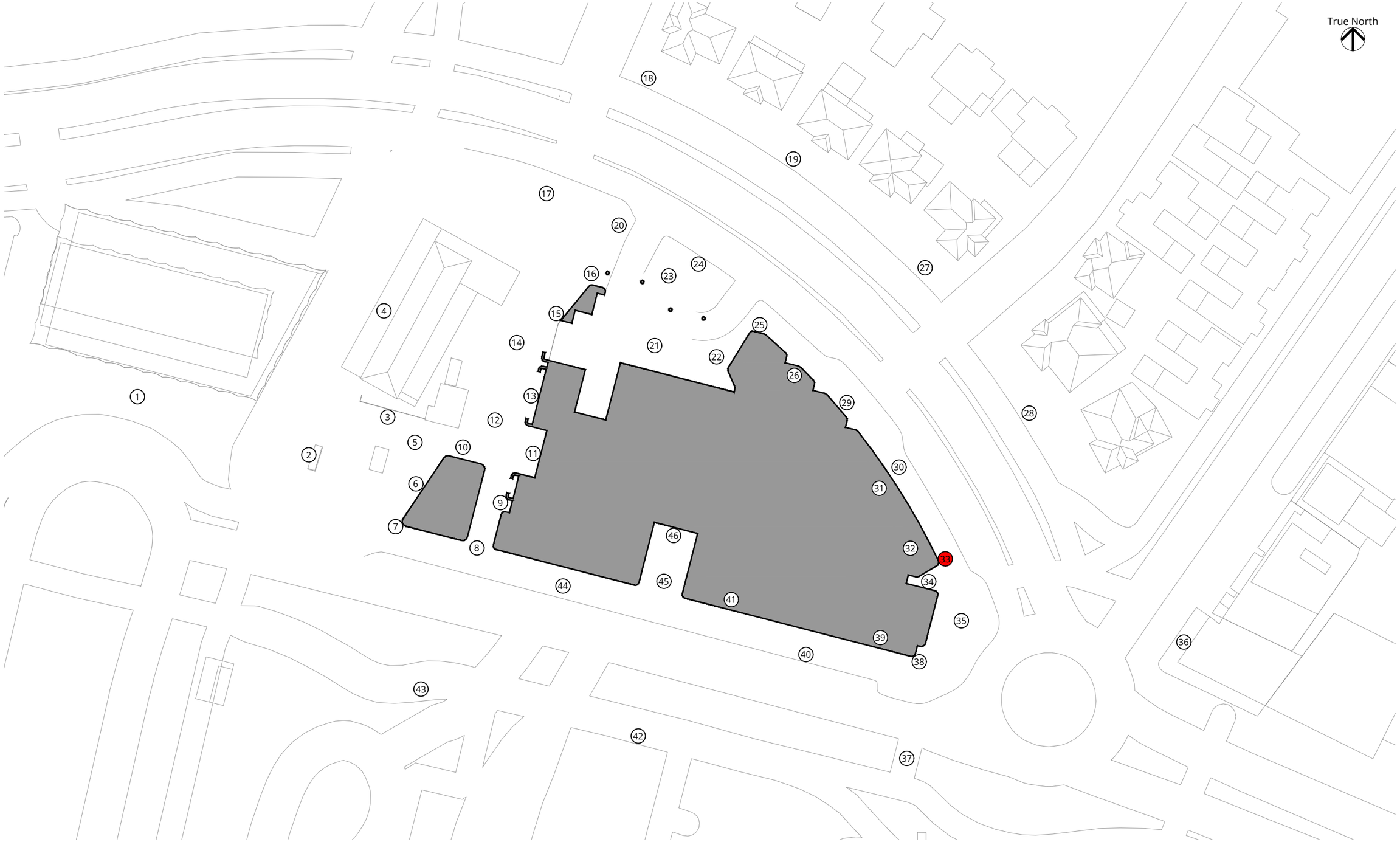
Pedestrian Wind Comfort Conditions - Ground Floor

Configuration 2: Proposed Development with Existing Surrounding Buildings

Annual

2408381 1-7 Waterfront Place - Port Melbourne, Australia

Figure: 2B



SAFETY CATEGORIES:

Pass

Exceeded

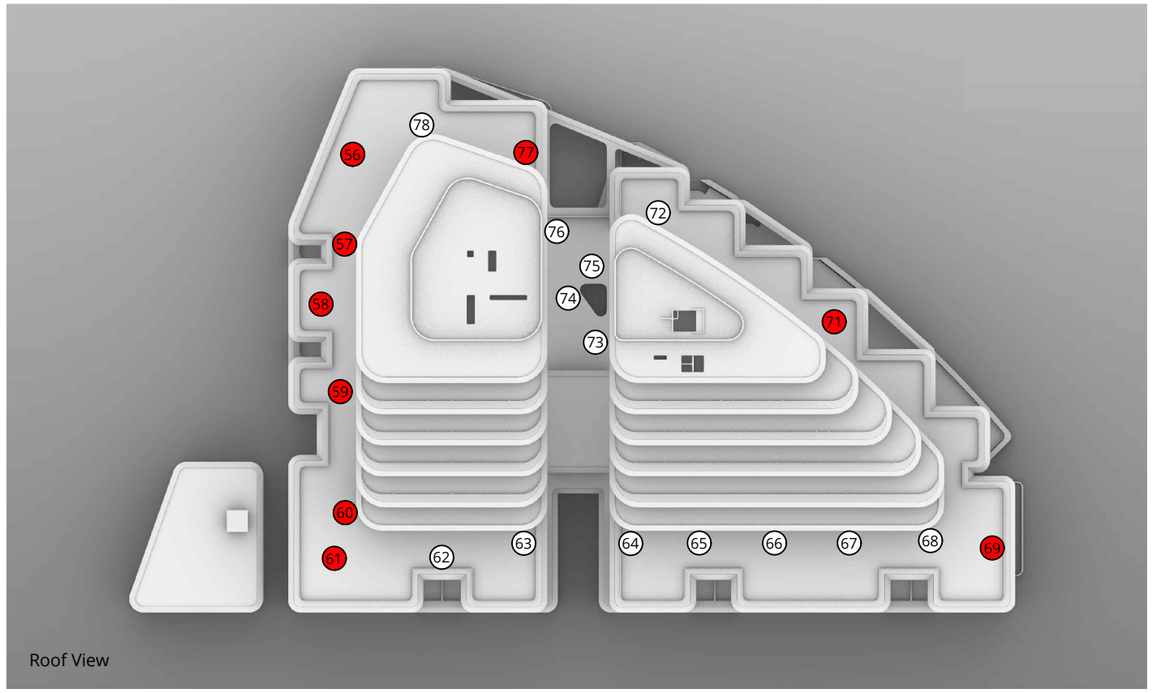
Pedestrian Wind Safety Conditions - Ground Floor

Configuration 2: Proposed Development with Existing Surrounding Buildings

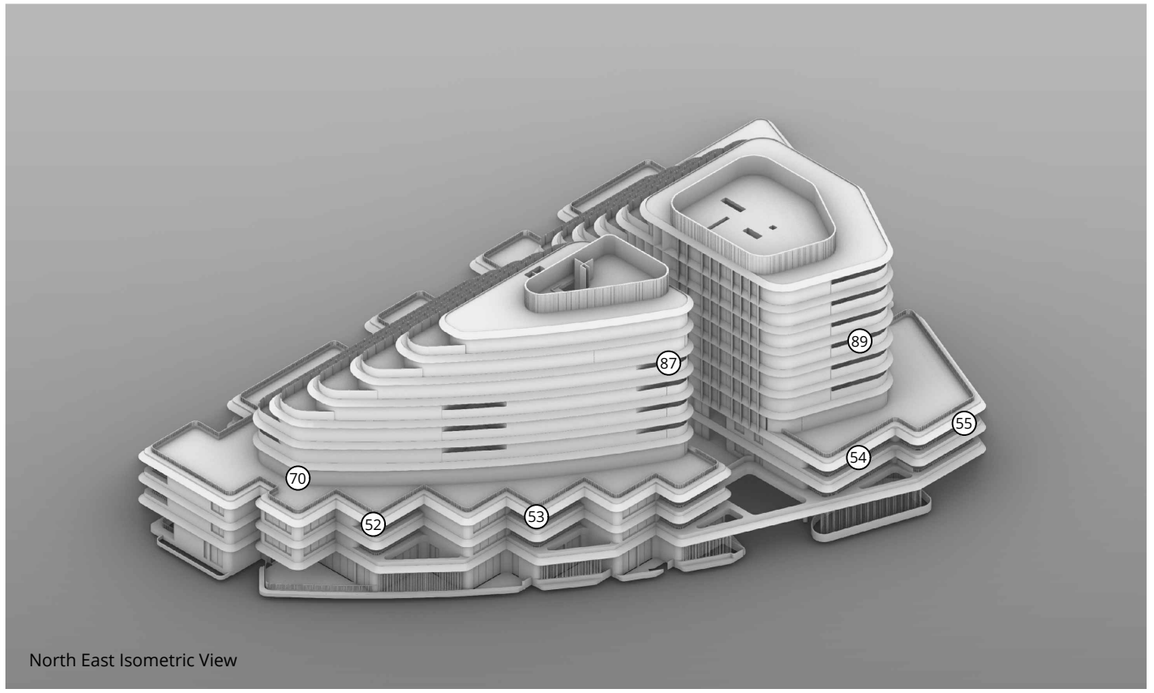
Annual

2408381 1-7 Waterfront Place - Port Melbourne, Australia

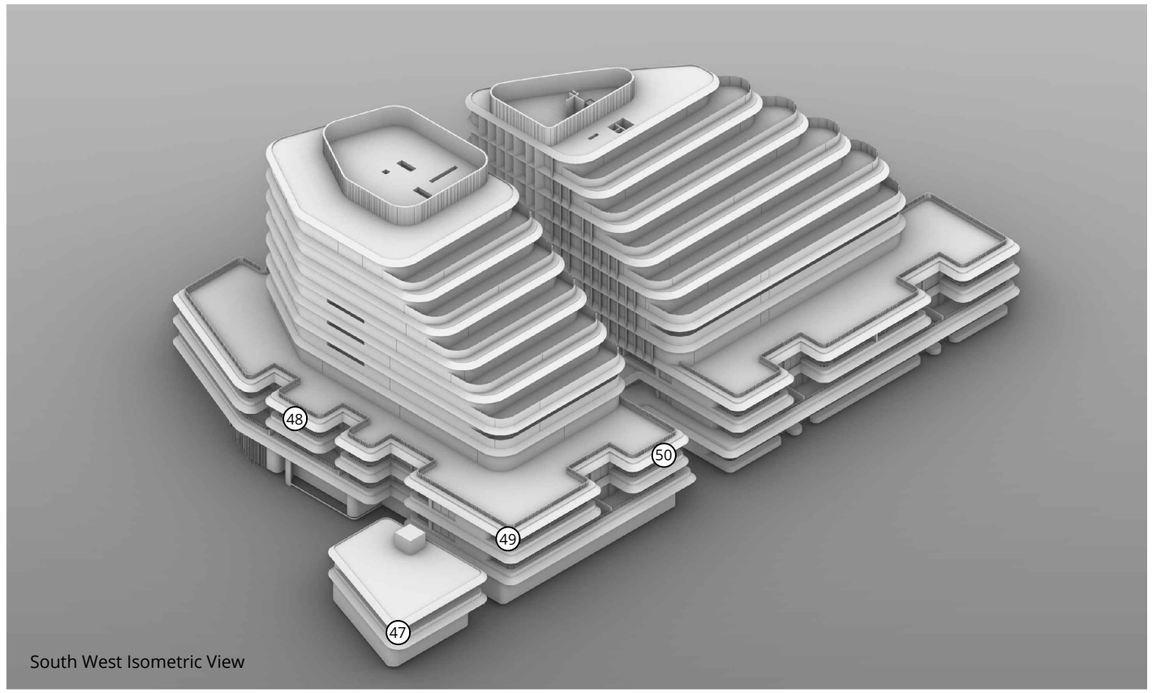
Figure: 2C



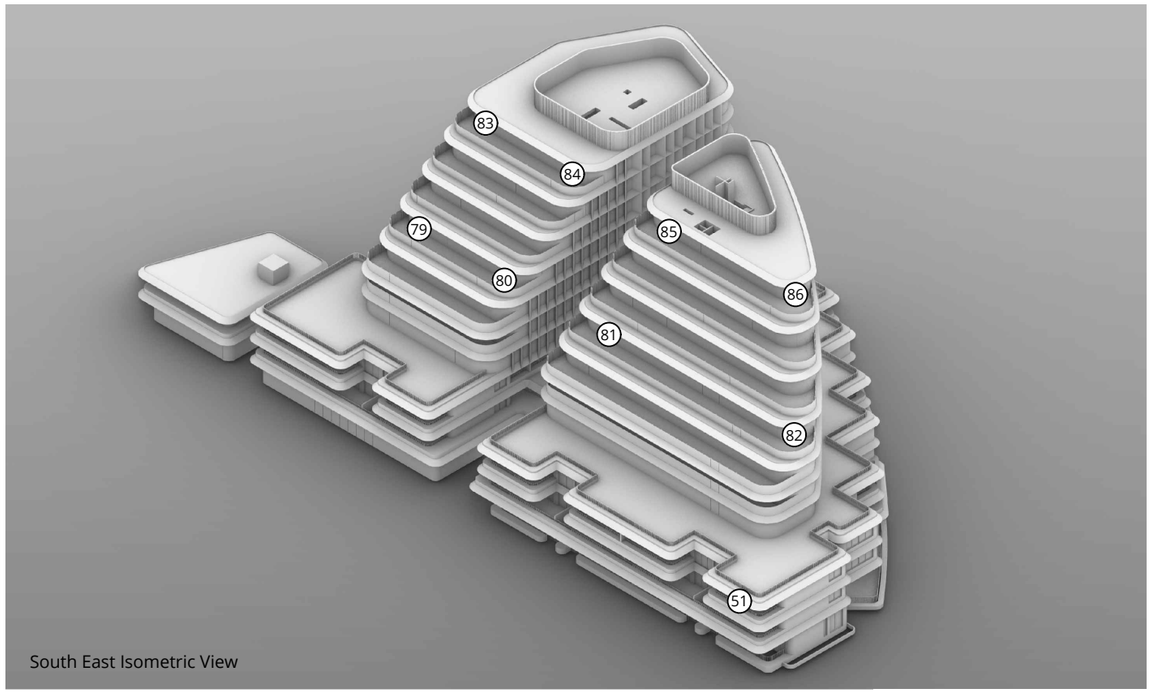
Roof View



North East Isometric View



South West Isometric View



South East Isometric View

SAFETY CATEGORIES:

Pass

Exceeded

Pedestrian Wind Safety Conditions - Elevated Levels

Configuration 2: Proposed Development with Existing Surrounding Buildings

Annual

2408381 1-7 Waterfront Place - Port Melbourne, Australia

Figure: 2D

TABLES

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Season	Configuration	Wind Comfort		Wind Safety	
			Speed (m/s)	Rating	Speed (m/s)	Rating
1	Annual	C1	3.0	Sitting	13	Pass
		C2	3.0	Sitting	13	Pass
2	Annual	C1	3.7	Standing	15	Pass
		C2	3.8	Standing	16	Pass
3	Annual	C1	2.5	Sitting	10	Pass
		C2	2.9	Sitting	12	Pass
4	Annual	C1	4.2	Walking	17	Pass
		C2	4.1	Walking	18	Pass
5	Annual	C1	2.6	Sitting	10	Pass
		C2	3.6	Standing	14	Pass
6	Annual	C1	2.8	Sitting	12	Pass
		C2	3.4	Standing	15	Pass
7	Annual	C1	2.8	Sitting	13	Pass
		C2	5.4	Uncomfortable	18	Pass
8	Annual	C1	2.2	Sitting	12	Pass
		C2	4.6	Walking	16	Pass
9	Annual	C1	3.6	Standing	14	Pass
		C2	4.0	Standing	14	Pass
10	Annual	C1	3.0	Sitting	14	Pass
		C2	4.3	Walking	15	Pass
11	Annual	C1	4.3	Walking	18	Pass
		C2	2.1	Sitting	8	Pass
12	Annual	C1	2.5	Sitting	10	Pass
		C2	3.5	Standing	13	Pass
13	Annual	C1	2.9	Sitting	15	Pass
		C2	2.9	Sitting	11	Pass
14	Annual	C1	3.5	Standing	15	Pass
		C2	4.5	Walking	19	Pass
15	Annual	C1	2.7	Sitting	11	Pass
		C2	3.7	Standing	17	Pass
16	Annual	C1	2.6	Sitting	10	Pass
		C2	3.6	Standing	17	Pass
17	Annual	C1	3.9	Standing	17	Pass
		C2	3.3	Standing	16	Pass
18	Annual	C1	4.3	Walking	18	Pass
		C2	3.9	Standing	16	Pass
19	Annual	C1	3.1	Standing	12	Pass
		C2	3.5	Standing	15	Pass
20	Annual	C1	2.9	Sitting	12	Pass
		C2	3.6	Standing	16	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Season	Configuration	Wind Comfort		Wind Safety	
			Speed (m/s)	Rating	Speed (m/s)	Rating
21	Annual	C1	3.0	Sitting	12	Pass
		C2	2.1	Sitting	11	Pass
22	Annual	C1	2.8	Sitting	11	Pass
		C2	2.3	Sitting	12	Pass
23	Annual	C1	2.9	Sitting	14	Pass
		C2	3.0	Sitting	13	Pass
24	Annual	C1	3.3	Standing	13	Pass
		C2	3.4	Standing	14	Pass
25	Annual	C1	2.9	Sitting	13	Pass
		C2	3.2	Standing	15	Pass
26	Annual	C1	-	-	-	-
		C2	2.3	Sitting	9	Pass
27	Annual	C1	2.9	Sitting	12	Pass
		C2	4.0	Standing	15	Pass
28	Annual	C1	3.2	Standing	12	Pass
		C2	4.1	Walking	15	Pass
29	Annual	C1	3.3	Standing	14	Pass
		C2	4.2	Walking	19	Pass
30	Annual	C1	4.0	Standing	15	Pass
		C2	5.2	Uncomfortable	20	Pass
31	Annual	C1	-	-	-	-
		C2	1.8	Sitting	9	Pass
32	Annual	C1	2.5	Sitting	10	Pass
		C2	2.6	Sitting	14	Pass
33	Annual	C1	4.8	Walking	16	Pass
		C2	5.4	Uncomfortable	21	Exceeded
34	Annual	C1	3.8	Standing	14	Pass
		C2	2.5	Sitting	10	Pass
35	Annual	C1	4.8	Walking	16	Pass
		C2	5.9	Uncomfortable	20	Pass
36	Annual	C1	4.1	Walking	20	Pass
		C2	4.1	Walking	19	Pass
37	Annual	C1	4.4	Walking	15	Pass
		C2	4.0	Standing	17	Pass
38	Annual	C1	4.3	Walking	15	Pass
		C2	4.2	Walking	17	Pass
39	Annual	C1	2.6	Sitting	10	Pass
		C2	2.5	Sitting	12	Pass
40	Annual	C1	2.7	Sitting	11	Pass
		C2	2.9	Sitting	13	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Season	Configuration	Wind Comfort		Wind Safety	
			Speed (m/s)	Rating	Speed (m/s)	Rating
41	Annual	C1	3.9	Standing	15	Pass
		C2	2.0	Sitting	9	Pass
42	Annual	C1	4.1	Walking	14	Pass
		C2	3.7	Standing	16	Pass
43	Annual	C1	4.0	Standing	14	Pass
		C2	3.8	Standing	14	Pass
44	Annual	C1	2.6	Sitting	10	Pass
		C2	3.1	Standing	14	Pass
45	Annual	C1	2.8	Sitting	13	Pass
		C2	2.4	Sitting	11	Pass
46	Annual	C1	3.3	Standing	14	Pass
		C2	2.3	Sitting	9	Pass
47	Annual	C1	-	-	-	-
		C2	3.7	Standing	17	Pass
48	Annual	C1	-	-	-	-
		C2	3.6	Standing	18	Pass
49	Annual	C1	-	-	-	-
		C2	3.1	Standing	18	Pass
50	Annual	C1	-	-	-	-
		C2	2.6	Sitting	12	Pass
51	Annual	C1	-	-	-	-
		C2	2.7	Sitting	12	Pass
52	Annual	C1	-	-	-	-
		C2	2.2	Sitting	13	Pass
53	Annual	C1	-	-	-	-
		C2	1.7	Sitting	7	Pass
54	Annual	C1	-	-	-	-
		C2	1.9	Sitting	8	Pass
55	Annual	C1	-	-	-	-
		C2	2.7	Sitting	14	Pass
56	Annual	C1	-	-	-	-
		C2	4.9	Walking	22	Exceeded
57	Annual	C1	-	-	-	-
		C2	5.9	Uncomfortable	27	Exceeded
58	Annual	C1	-	-	-	-
		C2	5.5	Uncomfortable	25	Exceeded
59	Annual	C1	-	-	-	-
		C2	5.0	Walking	21	Exceeded
60	Annual	C1	-	-	-	-
		C2	6.0	Uncomfortable	24	Exceeded

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Season	Configuration	Wind Comfort		Wind Safety	
			Speed (m/s)	Rating	Speed (m/s)	Rating
61	Annual	C1 C2	- 6.5	- Uncomfortable	- 23	- Exceeded
62	Annual	C1 C2	- 4.2	- Walking	- 16	- Pass
63	Annual	C1 C2	- 3.4	- Standing	- 17	- Pass
64	Annual	C1 C2	- 3.3	- Standing	- 15	- Pass
65	Annual	C1 C2	- 2.9	- Sitting	- 14	- Pass
66	Annual	C1 C2	- 3.0	- Sitting	- 15	- Pass
67	Annual	C1 C2	- 3.2	- Standing	- 15	- Pass
68	Annual	C1 C2	- 3.9	- Standing	- 19	- Pass
69	Annual	C1 C2	- 5.8	- Uncomfortable	- 23	- Exceeded
70	Annual	C1 C2	- 3.9	- Standing	- 18	- Pass
71	Annual	C1 C2	- 4.8	- Walking	- 24	- Exceeded
72	Annual	C1 C2	- 3.0	- Sitting	- 15	- Pass
73	Annual	C1 C2	- 2.8	- Sitting	- 17	- Pass
74	Annual	C1 C2	- 4.0	- Standing	- 17	- Pass
75	Annual	C1 C2	- 3.0	- Sitting	- 12	- Pass
76	Annual	C1 C2	- 3.1	- Standing	- 11	- Pass
77	Annual	C1 C2	- 4.2	- Walking	- 24	- Exceeded
78	Annual	C1 C2	- 4.3	- Walking	- 20	- Pass
79	Annual	C1 C2	- 4.1	- Walking	- 16	- Pass
80	Annual	C1 C2	- 4.3	- Walking	- 16	- Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Season	Configuration	Wind Comfort		Wind Safety	
			Speed (m/s)	Rating	Speed (m/s)	Rating
81	Annual	C1	-	-	-	-
		C2	3.7	Standing	16	Pass
82	Annual	C1	-	-	-	-
		C2	3.1	Standing	13	Pass
83	Annual	C1	-	-	-	-
		C2	3.9	Standing	14	Pass
84	Annual	C1	-	-	-	-
		C2	4.5	Walking	16	Pass
85	Annual	C1	-	-	-	-
		C2	4.6	Walking	19	Pass
86	Annual	C1	-	-	-	-
		C2	2.4	Sitting	11	Pass
87	Annual	C1	-	-	-	-
		C2	2.7	Sitting	15	Pass
88	Annual	C1	-	-	-	-
		C2	-	-	-	-
89	Annual	C1	-	-	-	-
		C2	2.5	Sitting	12	Pass

Seasons	Months	Hours	Wind Comfort (m/s)		Wind Safety (m/s)	
Annual	January - December	0:00 - 23:00	≤ 3	Sitting	≤ 20	Pass
			≤ 4	Standing	> 20	Exceeded
			≤ 5	Walking		
			> 5	Uncomfortable		

Configurations	
Existing	Existing Site and Exisitng Surrounding Buildings
Proposed	Proposed Development with Existing Surrounding Buildings