REPORT

DORAN DRIVE

CASTLE HILL, NSW

PEDESTRIAN WIND STUDY
RWDI # 2203430
March 24, 2022

SUBMITTED TO

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EXECUTIVE SUMMARY

RWDI was retained to conduct a pedestrian wind assessment for the proposed development located on Doran Drive in Castle Hill, NSW (hereafter referred to as the "Proposed Development"). The assessment is based on scale-model wind-tunnel testing for the following configurations of the development site:

Existing Configuration:	Existing site with existing surrounding buildings;
Proposed Configuration:	Proposed Development with existing surrounding buildings; and
Future Configuration:	Proposed Development with existing and future precinct buildings.
Mitigation Scenario:	Proposed Development with landscaping

The wind conditions at pedestrian level within and around the site were predicted using the results from a boundary-layer wind tunnel test combined with historical meteorological wind records for the area. These were then compared against the RWDI Criteria to assess the suitability of the wind conditions around the development site for the different configurations listed above (see Figures and Table 1 in the Appendices). The following is a summary of the expected wind conditions based on the outcomes of the assessment:

Wind Safety:

- Wind speed exceeding the safety threshold are not predicted at any ground level locations around the site for all four configurations.
- A marginal exceedance in the safety criterion is noted for the Proposed and Future Configurations along the north end of the Level 02 terrace when devoid of landscaping. The inclusion of a localised canopy and landscaping (Mitigation Scenario) considerably improve the wind conditions in this area with the safety exceedance completely mitigated.

Wind Comfort:

- Wind conditions are noted to be suitable for the intended pedestrian use for most areas around the site including the proposed outdoor seating areas along Doran Drive and De Clambe Drive as well as the various entrances to the development.
- Wind speeds without the inclusion of landscaping are suitable for active use (strolling and walking) along Mandala Parade, the western plaza along Doran Drive and at the various corners of the Proposed Development during the summer season. It is understood that these spaces, particularly the plaza to the west of the site and Mandala Parade, are intended for passive activities. Therefore, additional testing was carried out with the inclusion of existing and proposed landscaping. The results for the Mitigation Scenario indicate that the wind conditions around the site improve considerably with the areas now suitable for passive use for most of the year.
- Localised high wind activity is noted on Level 02 and 06 communal terraces due to wind interaction with the proposed massing of the development. The inclusion of proposed landscaping, canopies, and screening leads to considerably calmer wind conditions within these spaces (suitable for sitting use at most locations).

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1 INTRODUCTION

RWDI Australia Pty Ltd. (RWDI) was retained to conduct a pedestrian wind assessment for the Proposed Development located on Doran Drive in Castle Hill, NSW. This report presents the project objectives, background and approach, and discusses the results from RWDI's wind tunnel assessment. Wind tunnel testing has also been carried out with the inclusion of existing and proposed landscaping.

1.1 Project Description

The proposed development is located adjacent to the Castle Hill Showgrounds, approximately 30km to the northwest of the Sydney CBD. The development site is bound by Mandala Parade to the south, Doran Drive to the west, De Clambe Drive to the north, and Andalusian Way to the east, as shown in Image 1. The proposed development consists of four residential buildings (20 storeys in height) situated atop a common podium. Retail and commercial elements are planned at the ground level with communal spaces and open terraces located on the podium and upper levels.

1.2 Objectives

The objective of the study is to assess the effect of the proposed development on local wind conditions in pedestrian areas within and around the study site. Additional testing with the inclusion of landscaping have also been performed. This quantitative assessment is based on wind speed measurements of a scale model of the proposed development and surrounding buildings in one of RWDI's boundary-layer wind tunnels. These measurements were combined with the local wind records and compared to appropriate criteria to gauge the level of wind comfort and safety along the pedestrian areas. The key outdoor pedestrian accessible areas of interest associated with the development include the various entrances around the site, the pedestrian footpaths and walkways around the development site, public open spaces and bus stops, and the various amenity spaces and terraces at the grade and upper levels.

Image 1: Aerial View of Site Extents and Surrounding Context
Source: Nearmap

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);
Proposed Configuration:	Proposed Development with Existing Surrounding Buildings (Image 2b);
Future Configuration:	Proposed Development with Existing and Future Precinct Buildings (Image 2c); and
Mitigation Scenario:	Proposed Development with Existing / Future Precinct Buildings and landscaping (Image 2d).

The wind tunnel model included all relevant surrounding buildings and topography within an approximately 360 m radius of the study site. The wind and turbulence profiles in the atmospheric boundary layer beyond the modelled area were also simulated in one of RWDI's boundary-layer wind tunnels. The wind tunnel model was instrumented with 186 specially designed wind speed sensors to measure mean and gust speeds at a full-scale height of approximately 1.5 m above local grade in the pedestrian accessible areas throughout the study area. Wind speeds were measured for 36 directions at 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. The placement of wind measurement locations was based on our experience and understanding of the pedestrian usage for this site.

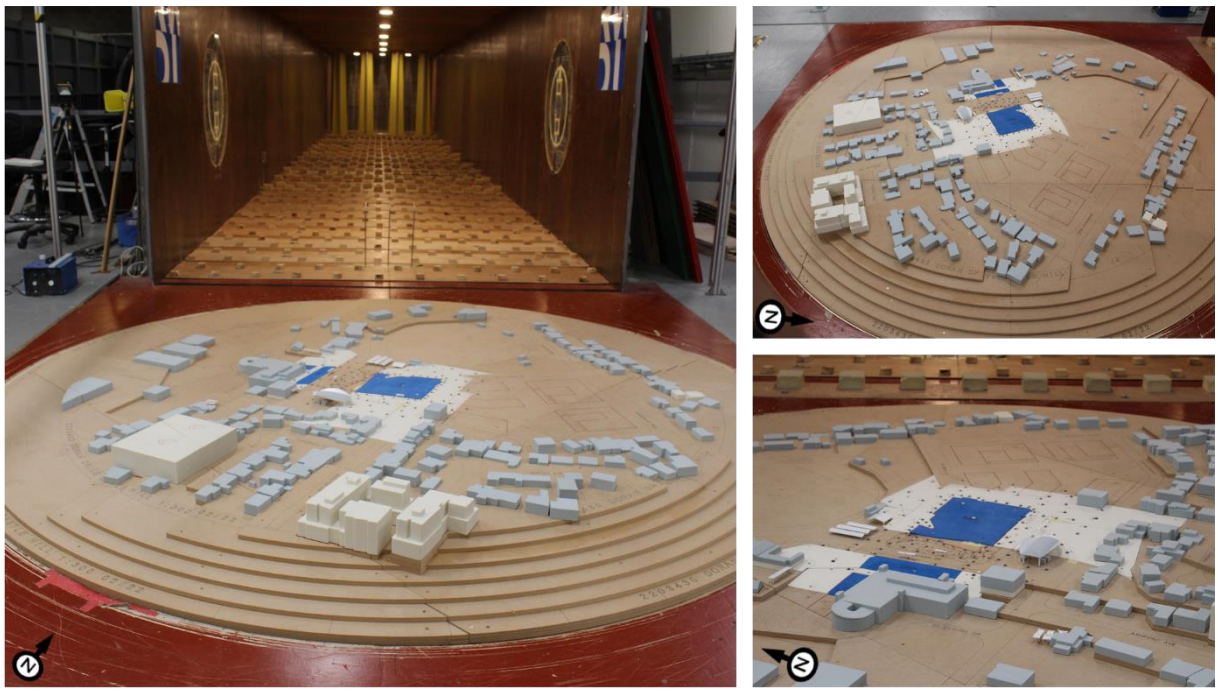


Image 2A: Wind Tunnel Study Model of the Existing Site Configuration (Existing Configuration)

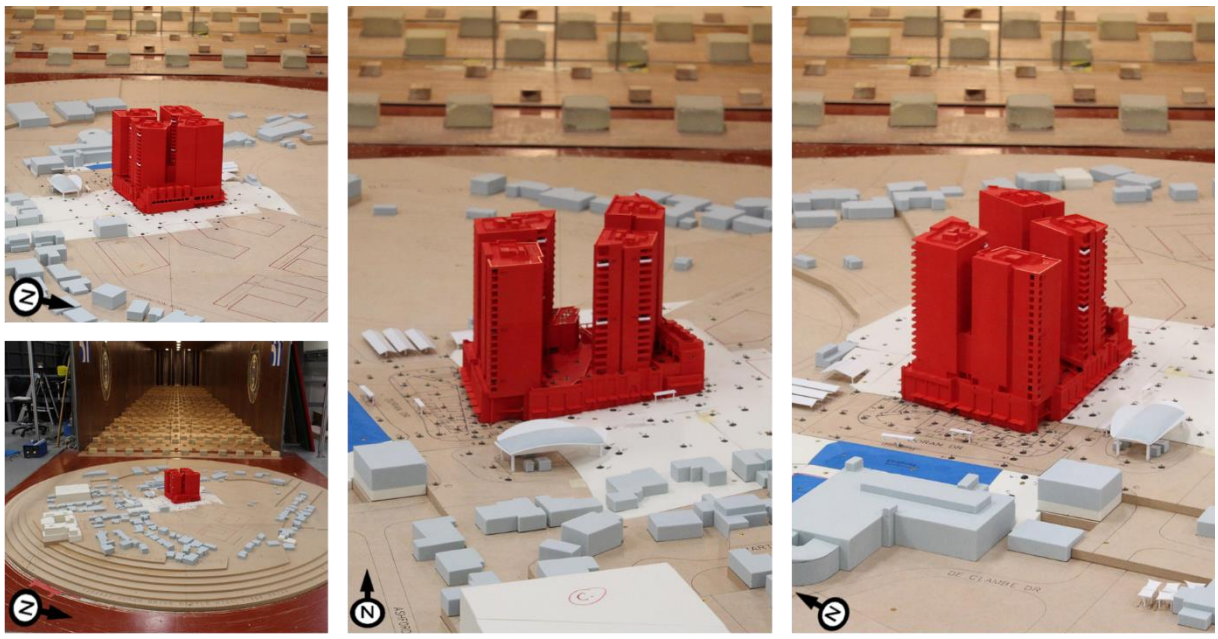


Image 2B: Wind Tunnel Study Model of the Proposed Development with Existing Configuration (Proposed Configuration)

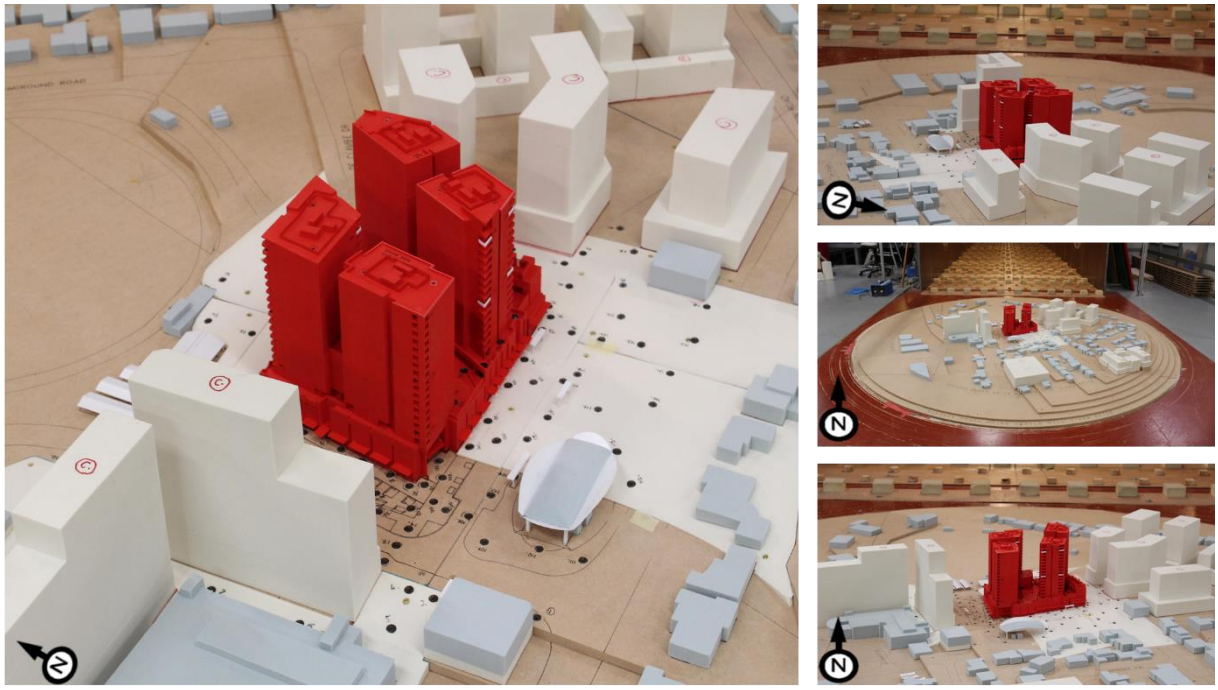


Image 2C: Wind Tunnel Study Model of the Proposed Development with Future Configuration (Future Configuration)

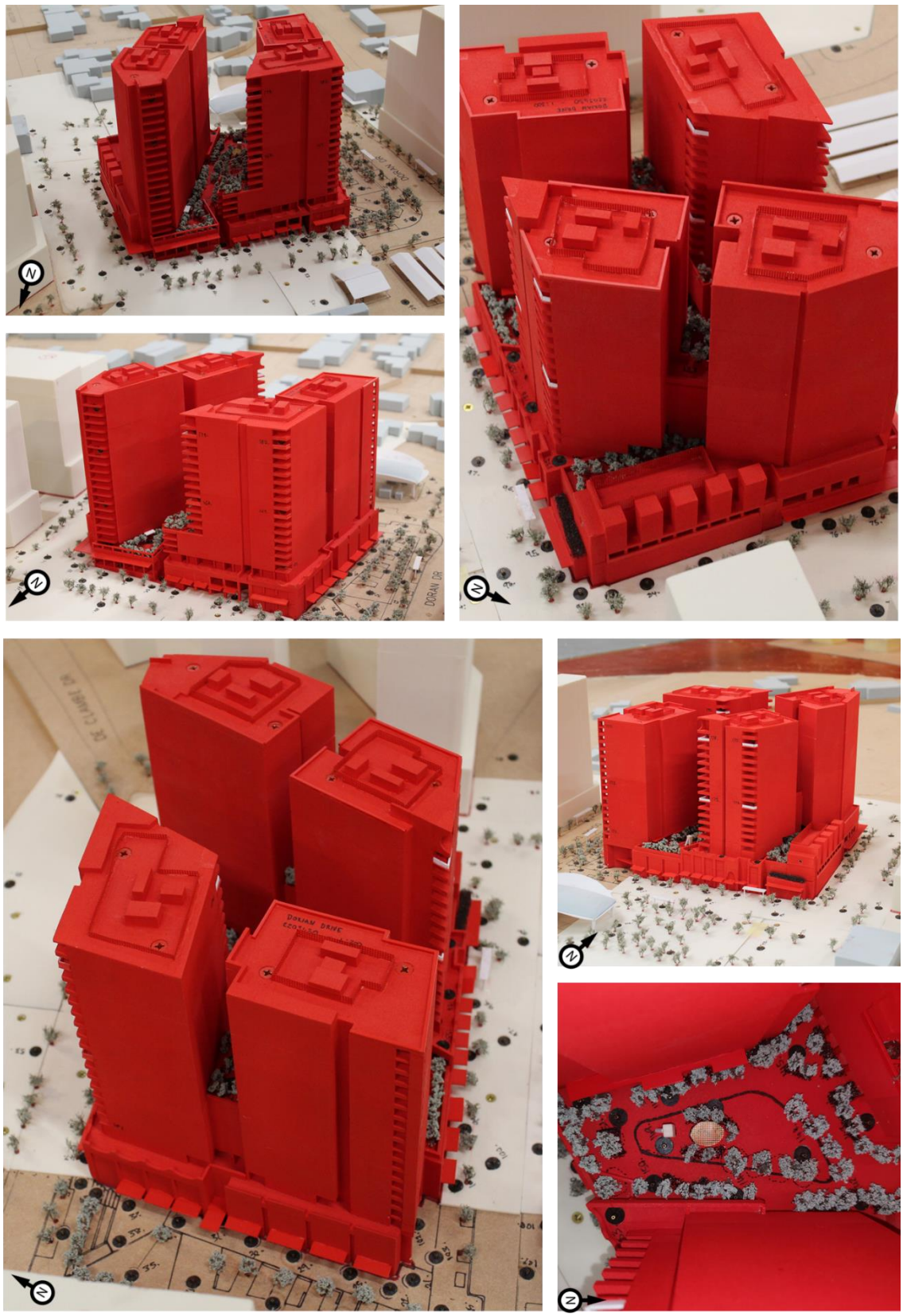


Image 2D: Wind Tunnel Study Model of the Proposed Development with Landscaping / Mitigation (Mitigation Scenario)

2.2 Meteorological Data

It is noted that the inland location of the site is less exposed to the prevailing sea breezes common in most coastal areas around Sydney. Meteorological data from Bankstown Airport (rather than data from Sydney International Airport) is, therefore, considered to be more representative for the site.

Wind statistics recorded at Bankstown Airport were analysed for the period between 1993 and 2018 (inclusive) for the summer (Nov-Apr) and winter (May-Oct) seasons. Image 3 graphically depicts the directional distributions of wind frequencies and speeds. Winds from the south-east and north-east are noted to be predominant during summers with secondary winds from the south-west direction. During winters, winds from the south-west to north-north-west sectors are predominant. Strong winds of a mean speed greater than 30 km/h measured at the airport (at an anemometer height of 10 m) occur for over 2% of the time during the summer and the winter season. Wind statistics recorded at Bankstown Airport meteorological station are generally calmer than those measured at Sydney International Airport. This is expected since the Bankstown Airport is located further away from the coast and, therefore, wind speeds are typically lower due to the sheltering provided by the upwind terrain.

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 criteria for pedestrian comfort and safety.

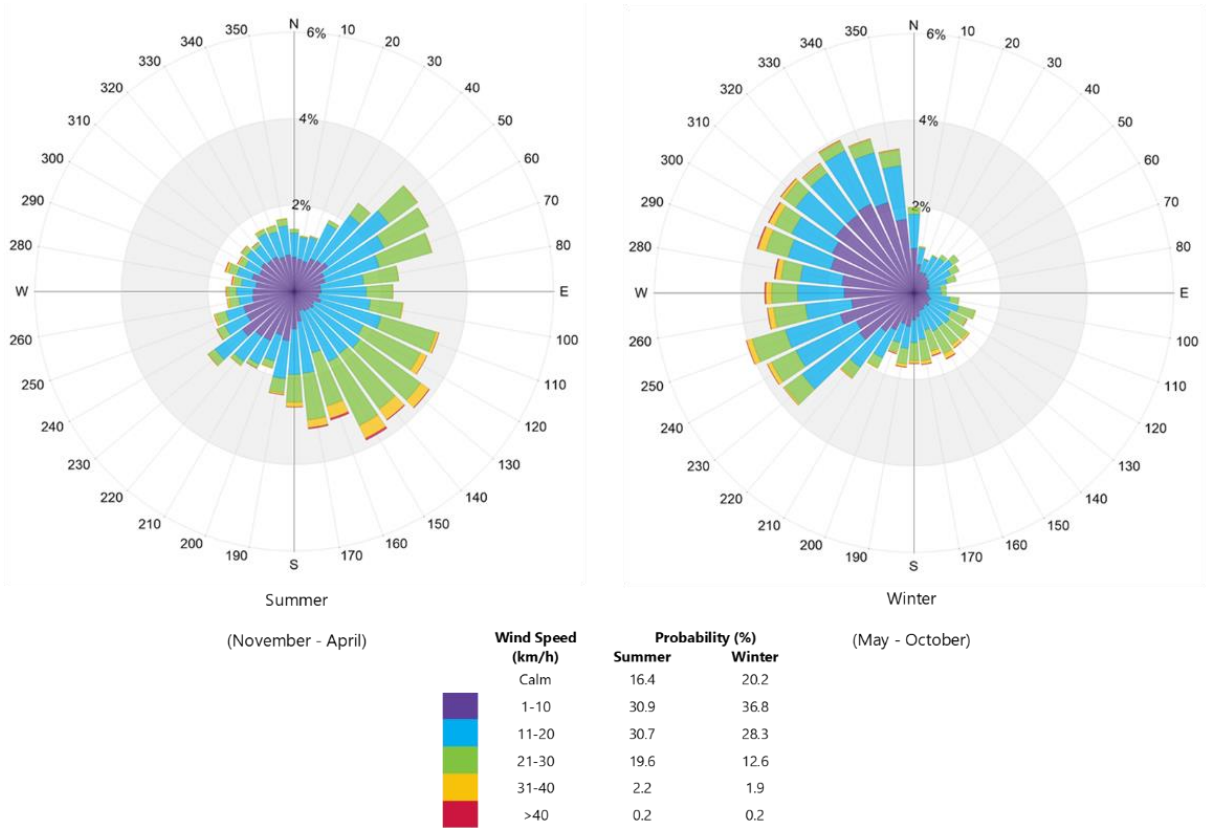


Image 3: Directional Distribution of Winds Approaching Bankstown Airport From 1993 to 2018

2.3 Pedestrian Wind Criteria

2.3.1 Wind Safety Criteria

Excessive gusts speeds can adversely affect the balance and footing of a pedestrian. The Australasian Wind Engineering Society (AWES) recommended wind speed of 23 m/s (83 km/h) has been considered in the present study. If gust speeds in excess of 83 km/h occur more than 9 hours, or 0.1% of the time, on an annual basis, the wind conditions are considered severe. This is also in accordance with the Hills Development Control Plan (DCP) 2012.

2.3.2 Wind Comfort Criteria

The Hills Development Control Plan (DCP) 2012 specifies the use of a gust-based approach for the assessment of wind comfort within the public domain. However, it is well established that the most reliable predictor of pedestrian comfort in outdoor spaces is the Gust Equivalent Mean (GEM) wind speed since it quantifies the combined effect of the mean and gust wind speeds on pedestrian comfort. An assessment based on the GEM winds, therefore, not only provides a similar classification as the Hills DCP but also gives additional information regarding the serviceability of outdoor spaces. Therefore, for this study, the assessment of wind comfort is based on the RWDI pedestrian wind criteria which is based on GEM wind speeds, listed below. These criteria have been widely accepted by municipal authorities around the world as well as by the building design and city planning community.

Comfort Category	GEM Speed (km/h)	Description
Sitting	≤ 10	Calm or light breezes desired for outdoor restaurants and seating areas where one can read a paper without having it blown away
Standing	≤ 14	Gentle breezes suitable for main building entrances, bus stops, and other places where pedestrians may linger
Strolling	≤ 17	Moderate winds that would be appropriate for window shopping and strolling along a downtown street, plaza or park
Walking	≤ 20	Relatively high speeds that can be tolerated if one's objective is to walk, run or cycle without lingering
Uncomfortable	> 20	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 considered to be comfortable if the predicted GEM speeds are within the respective thresholds for at least 80% of the time between 6:00 and 23:00. Nightly hours between 0:00 and 5:00 are excluded from the wind analysis for comfort since limited usage of outdoor spaces is anticipated.

3 RESULTS AND DISCUSSION

The wind conditions without any form of amelioration or mitigation are shown in Figures 1A through 3E 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 discussion of the suitability of the predicted wind conditions for the anticipated pedestrian use of each area of interest.

3.1 Existing Configuration

The existing wind conditions for the majority of the areas around the site are suitable for passive pedestrian use (sitting and standing). Wind conditions suitable for strolling are noted at the corner of De Clambe Drive and Andalusian Way during the summers due to the local change in terrain. Wind conditions are also noted be generally calmer during the winters with most locations suitable for short- and long-exposure activities including sitting and standing. Furthermore, no exceedances of the safety criterion are noted for the existing site.

3.2 Proposed Configuration

3.2.1 Wind Safety

The inclusion of the proposed development generally leads to an increased wind activity around the site. However, wind speeds on the ground level are noted to satisfy the stipulated safety conditions. An isolated incidence of marginal exceedance is noted at the northern end of the Level 2 terrace (Point 140). It is expected that this can be resolved through the use of a localised canopy structure.

3.2.2 Wind Comfort

Ground Level

The wind conditions at most locations around the site are expected to be suitable for passive use. This includes the proposed seating along Doran Drive and De Clambe Drive which are shielded from the prevailing regional winds. In addition, the setbacks of the various entrances around the development protect these spaces from the prevailing regional winds in turn leading to comfortable wind conditions at these locations. The south-easterly summer winds can also lead to conditions that are suitable for more active pedestrian use (strolling and walking) which are appropriate for pedestrian thoroughfares and footpaths. However, these would generally be considered windier than desired for bus stops and drop off areas located along Mandala Parade. It is also understood that the plaza located at the western aspect of the proposed development is intended for long-exposure activities (sitting and standing use), which is achieved for a majority of the area. The wind conditions are generally windier than desired for the localised area near the southwestern corner of the plaza.

It is to be noted that wind conditions generally become calmer during the winter seasons with the majority of ground level areas around the development site being suitable for passive use.

Terraces and Balconies

It is generally desirable for wind conditions on terraces intended for passive activities to be comfortable for sitting or standing use for more than 80% of the time in the summer. Wind speeds suitable for sitting or standing may be considered acceptable for most amenity activities.

The wind conditions for all private balconies within the development would be suitable for the intended passive use noted above. The majority of the communal terraces are also suitable for long-exposure activities (sitting and standing use). Higher wind activity is noted on the Level 02 terrace where the regional winds would be channelled between the proposed buildings and lead to conditions more suitable for active use (strolling and walking conditions). Similarly, the south-westerly winds can create a localised region of increased wind activity at the southern end of the Level 06 terrace. The regional winds are noted to accelerate around the north-eastern corner of the Level 02 terrace (Point 136) leading to uncomfortable wind conditions.

3.3 Future Configuration

3.3.1 Wind Safety

Similar to the Proposed Configuration, wind speeds at ground level are noted to satisfy the safety criterion. The wind activity within the precinct is generally noted to reduce with the inclusion of the future buildings. This is primarily because these future buildings would offer additional protection to the outdoor spaces in and around the development site from the prevailing winds. Reduced wind activity is also noted for the upper-level terraces; however, the marginal safety concern that occurs in the context of the Proposed Configuration on Level 2 (Point 140) persists for the Future Configuration.

3.3.2 Wind Comfort

Ground Level

With the inclusion of future buildings within the precinct, the overall wind activity is noted to improve considerably. Wind conditions along Mandala Parade are now suitable for passive use during the summers due to the increased wind buffer provided by the precinct. However, winds are expected to channel between the proposed development and the neighbouring future precinct buildings to the west creating windier conditions within the western plaza which are now suitable for strolling use at most locations.

Terraces and Balconies

The inclusion of neighbouring future buildings within the precinct also improves the overall wind conditions on the upper-level terraces. This is particularly notable along the north-east corner of the Level 02 terrace where wind conditions have significantly improved and are now suitable for active use. It is understood that the wind speeds here are still higher than the intended use of the space.

3.4 Mitigation Scenario

As noted, the wind conditions around the site can benefit from the inclusion of additional wind amelioration measures. Therefore, workshops were held with the client to better understand the usage of the spaces around the precinct and to design the landscaping / mitigation measures to enhance the overall wind amenity within and around the Proposed Development. Image 4 shows the resultant illustrative landscape plans for Ground Level and Level 02 of the development. A summary of the measures incorporated in the wind tunnel model for the Mitigation Scenario is noted below:

- Existing and proposed landscaping are included within and around the site.
- An impermeable awning above Point 140 is added to minimise the impact of downwash.
- A centrally located porous canopy and play tower have been included on Level 02.
- An operable 50% porous screen has been incorporated at the northeast corner of Level 02 to reduce the winds channelling through this location.

3.4.1 Wind Safety

The inclusion of an awning on Level 02 is noted to mitigate the marginal safety concern that occurs at Point 140 for both the Proposed and Future Configurations. The inclusion of vegetation considerably enhances the wind conditions as well.

3.4.2 Wind Comfort

Ground Level

With the inclusion of the proposed mitigation measures, the wind conditions around the site improve considerably. Within the western plaza, conditions are noted to be equivalent or better than the existing site conditions with most locations now suitable for passive use throughout the year (sitting and standing). Locations to the southwest of the proposed development (Points 22 and 24 within the plaza) still experience slightly windier conditions; however, these are also noted to be suitable for the intended passive use for at least 77% of the time during the year (compared to a target of 80%). Similarly, wind conditions along Mandala Parade are noted to be suitable for the intended passive use throughout the year.

Terraces and Balconies

The upper-level communal spaces benefit from the inclusion of the proposed landscaping. Wind conditions are noted to be suitable for passive sitting use at most locations within the Level 02 communal space. Slightly windier conditions are noted at Points 147, 149, and 150 that are suitable for standing use. However, as these are intended to be play areas, it is expected that the slightly higher wind speeds would provide much needed thermal comfort during summers. Similarly, at the north-east corner of the Level 02 terrace (Point 136), the inclusion of the operable porous screening significantly improves the wind comfort within the space now suitable passive sitting use throughout the year.

The private balconies and terraces on the upper levels are also noted to be suitable for passive use throughout the year. The windier conditions noted at Point 164 are still suitable for passive use for 77% of the time during the summers with conditions improving substantially during the winters.

Image 4: Proposed Landscaping and Mitigation Measures at Ground and Level 2

4 APPLICABILITY OF RESULTS

The drawings and information listed below were received from Turner and used to construct the scale model of the proposed development. The wind conditions presented in this report pertain to the proposed development as detailed in the architectural design drawings listed in the table below.

Should there be any design changes that deviate from this list of drawings, the wind condition predictions presented may change. Therefore, if changes in the design are made, it is recommended that RWDI be contacted and requested to review their potential effects on wind conditions.

File Name	File Type	Date Received (dd/mm/yyyy)
3D Model-Rk	3DM (Rhinoceros)	14/02/2022
3D Model-Rk-mesh	3DM (Rhinoceros)	14/02/2022

5 REFERENCES

ASCE Task Committee on Outdoor Human Comfort (2004). *Outdoor Human Comfort and Its Assessment*, 68 pages, American Society of Civil Engineers, Reston, Virginia, USA.

Williams, C.J., Hunter, M.A. and Waechter, W.F. (1990). "Criteria for Assessing the Pedestrian Wind Environment," *Journal of Wind Engineering and Industrial Aerodynamics*, Vol.36, pp.811-815.

Williams, C.J., Soligo M.J. and Cote, J. (1992). "A Discussion of the Components for a Comprehensive Pedestrian Level Comfort Criteria," *Journal of Wind Engineering and Industrial Aerodynamics*, Vol.41-44, pp.2389-2390.

Soligo, M.J., Irwin, P.A., and Williams, C.J. (1993). "Pedestrian Comfort Including Wind and Thermal Effects," *Third Asia-Pacific Symposium on Wind Engineering*, Hong Kong.

Soligo, M.J., Irwin, P.A., Williams, C.J. and Schuyler, G.D. (1998). "A Comprehensive Assessment of Pedestrian Comfort Including Thermal Effects," *Journal of Wind Engineering and Industrial Aerodynamics*, Vol.77&78, pp.753-766.

Williams, C.J., Wu, H., Waechter, W.F. and Baker, H.A. (1999). "Experiences with Remedial Solutions to Control Pedestrian Wind Problems," *Tenth International Conference on Wind Engineering*, Copenhagen, Denmark.

Lawson, T.V. (1973). "Wind Environment of Buildings: A Logical Approach to the Establishment of Criteria", *Report No. TVL 7321*, Department of Aeronautic Engineering, University of Bristol, Bristol, England.

Lawson, T.V. (1990). "The Determination of the Wind Environment of a Building Complex before Construction", Department of Aerospace Engineering, University of Bristol, Bristol, England.

AWES, Australasian Wind Engineering Society Guidelines for Pedestrian Wind Effects Criteria, 2014

The Hill Shire Council (2012). “Hills Development Control Plan (DCP) 2012”.

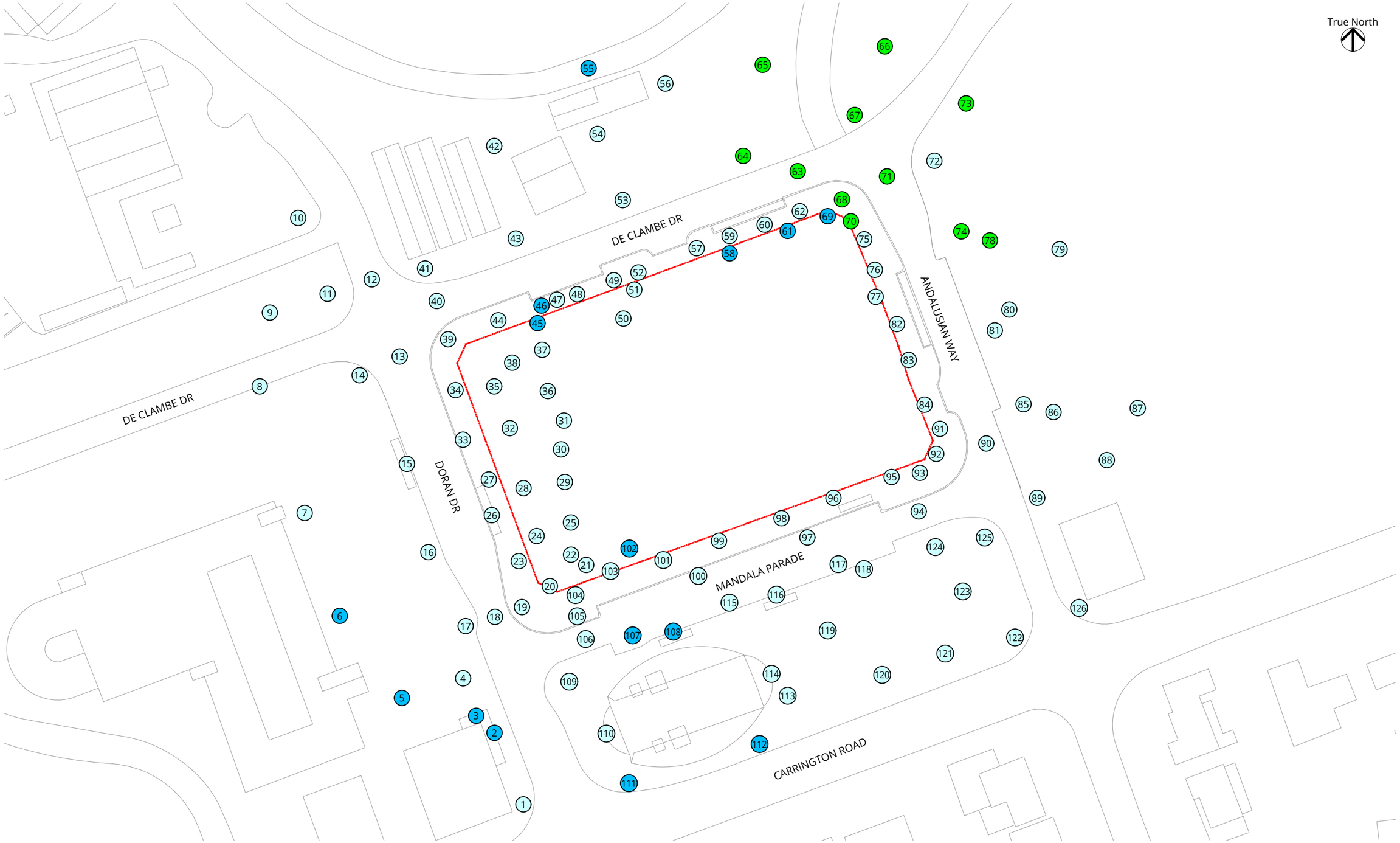
Durgin, F. H. (1997). "Pedestrian Level Wind Criteria Using the Equivalent average", *Journal of Wind Engineering and Industrial Aerodynamics*, Vol. 66, pp. 215-226.

Wu, H. and Kriksic, F. (2012). “Designing for Pedestrian Comfort in Response to Local Climate”, *Journal of Wind Engineering and Industrial Aerodynamics*, Vol.104-106, pp.397-407.

Wu, H., Williams, C.J., Baker, H.A. and Waechter, W.F. (2004), “Knowledge-based Desk-Top Analysis of Pedestrian Wind Conditions”, *ASCE Structure Congress 2004,* Nashville, Tennessee.

Williams, C.J., Wu, H., Waechter, W.F. and Baker, H.A. (1999). "Experiences with Remedial Solutions to Control Pedestrian Wind Problems," Tenth International Conference on Wind Engineering, Copenhagen, Denmark.

FIGURES



COMFORT CATEGORIES:

- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

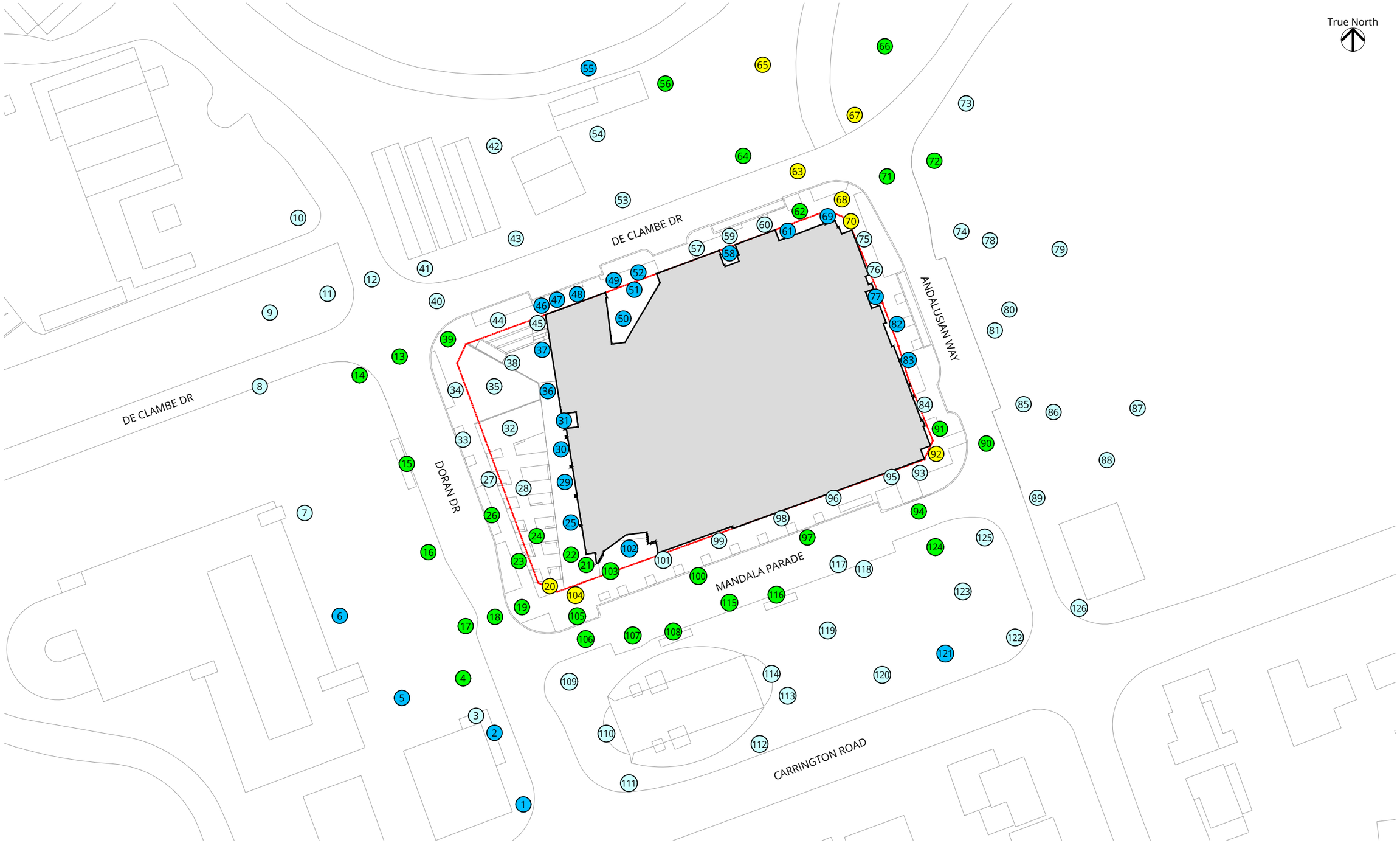
Pedestrian Wind Comfort Conditions - Ground Floor

Configuration 1: Existing Site with Existing Surrounding Buildings

Summer Season

2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

Figure: 1A



COMFORT CATEGORIES:

- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

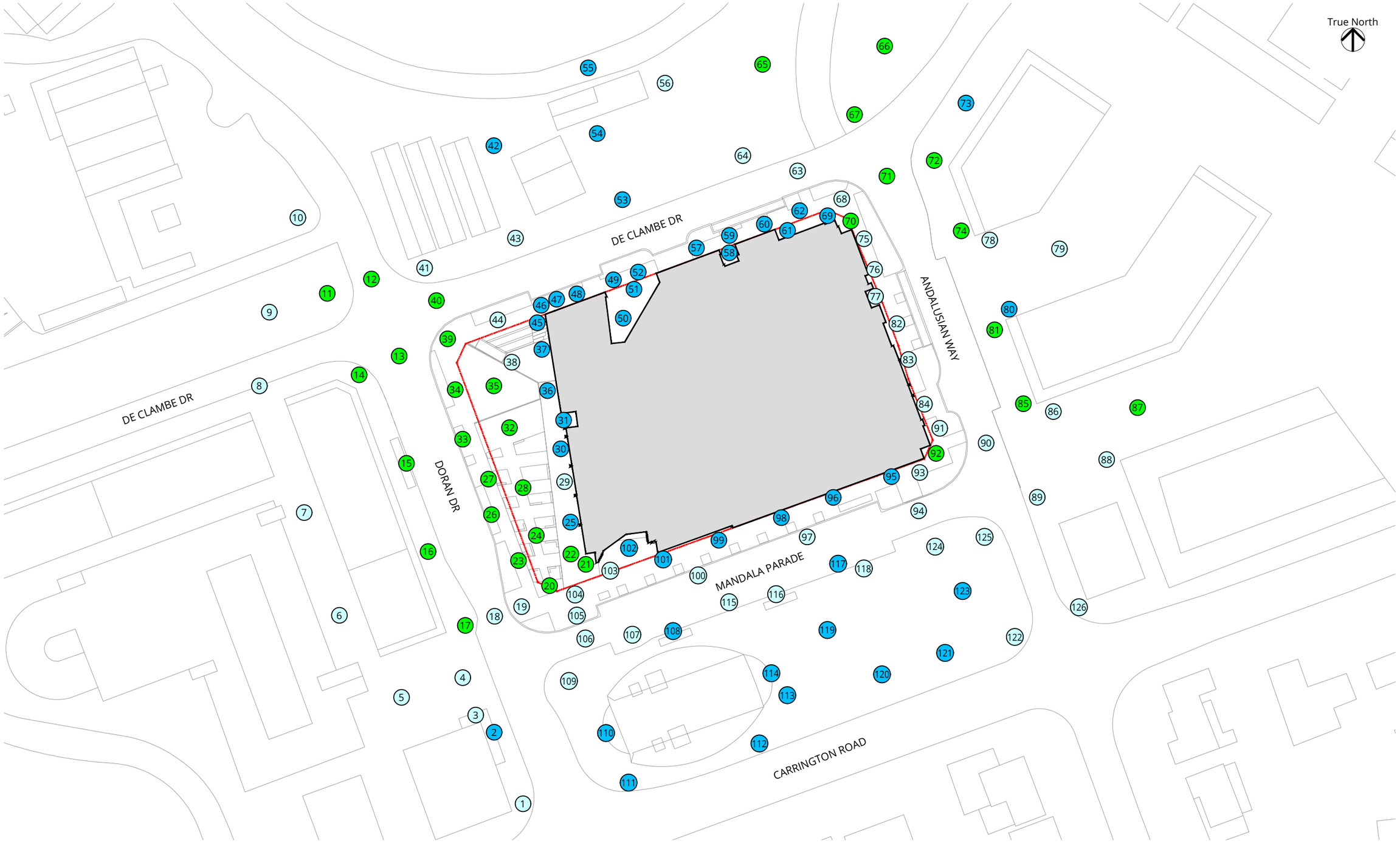
Pedestrian Wind Comfort Conditions - Ground Floor

Configuration 2: Proposed Development with Existing Surrounding Buildings

Summer Season

2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

Figure: 1B



COMFORT CATEGORIES:

- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

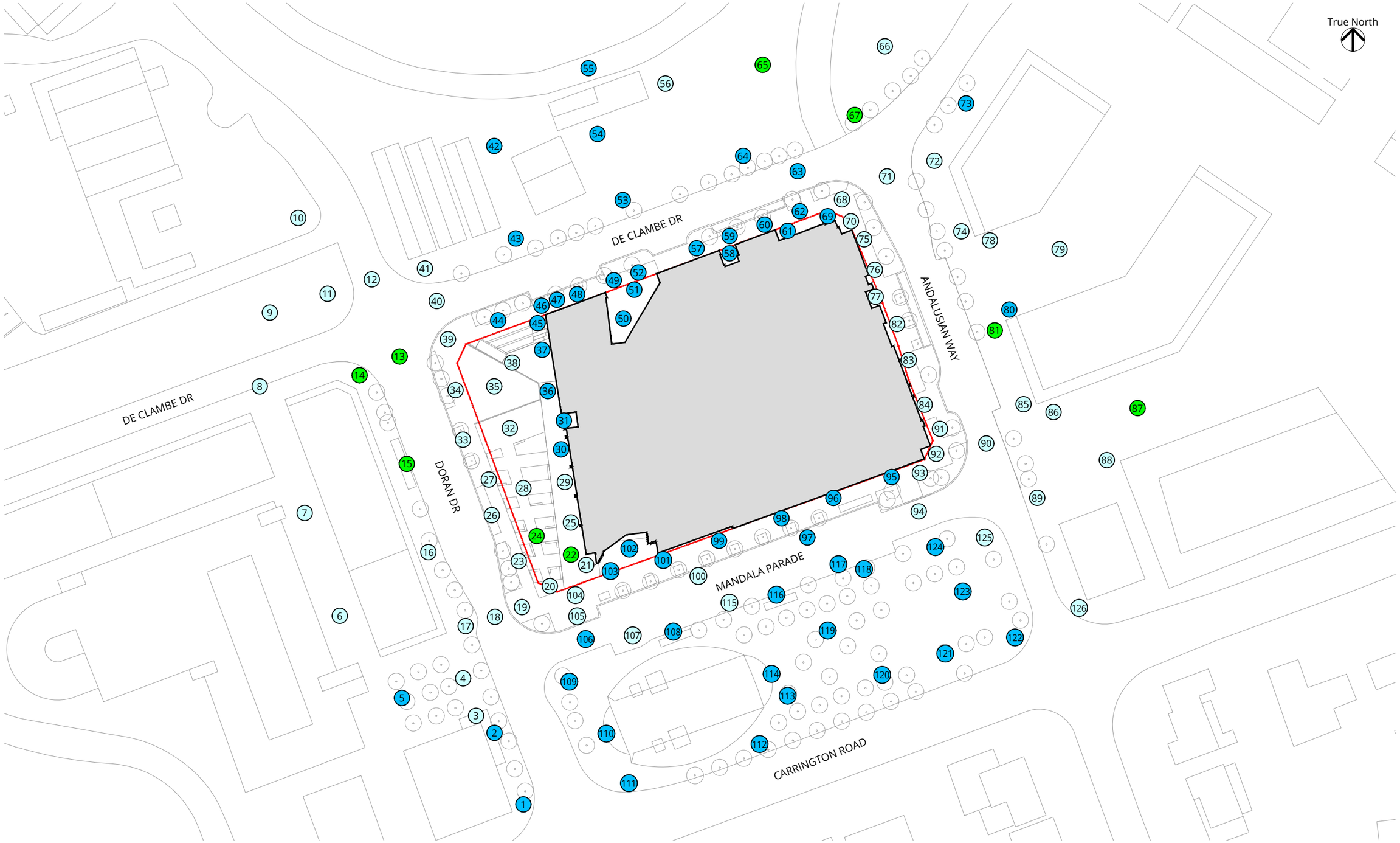
Pedestrian Wind Comfort Conditions - Ground Floor

Configuration 3: Proposed Development with Cumulative Surrounding Buildings

Summer Season

2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

Figure: 1C



COMFORT CATEGORIES:

- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

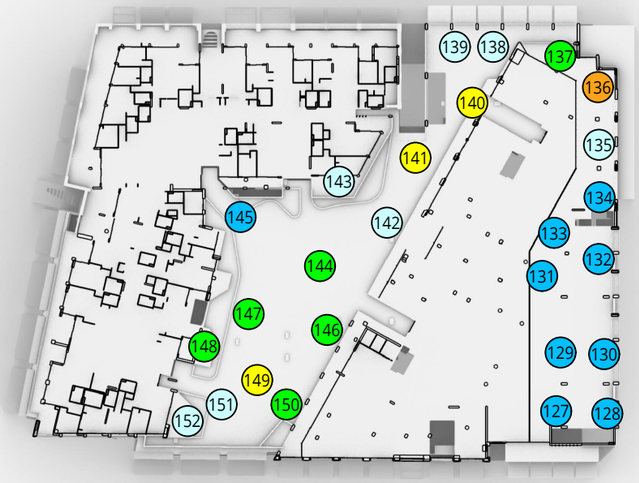
Pedestrian Wind Comfort Conditions - Ground Floor

Configuration 4: Proposed Development with Landscaping and Future Surrounding Buildings

Summer Season

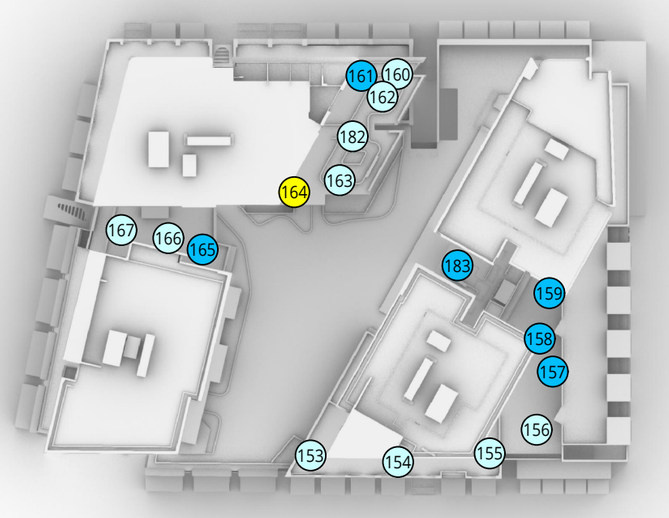
2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

Figure: 1D

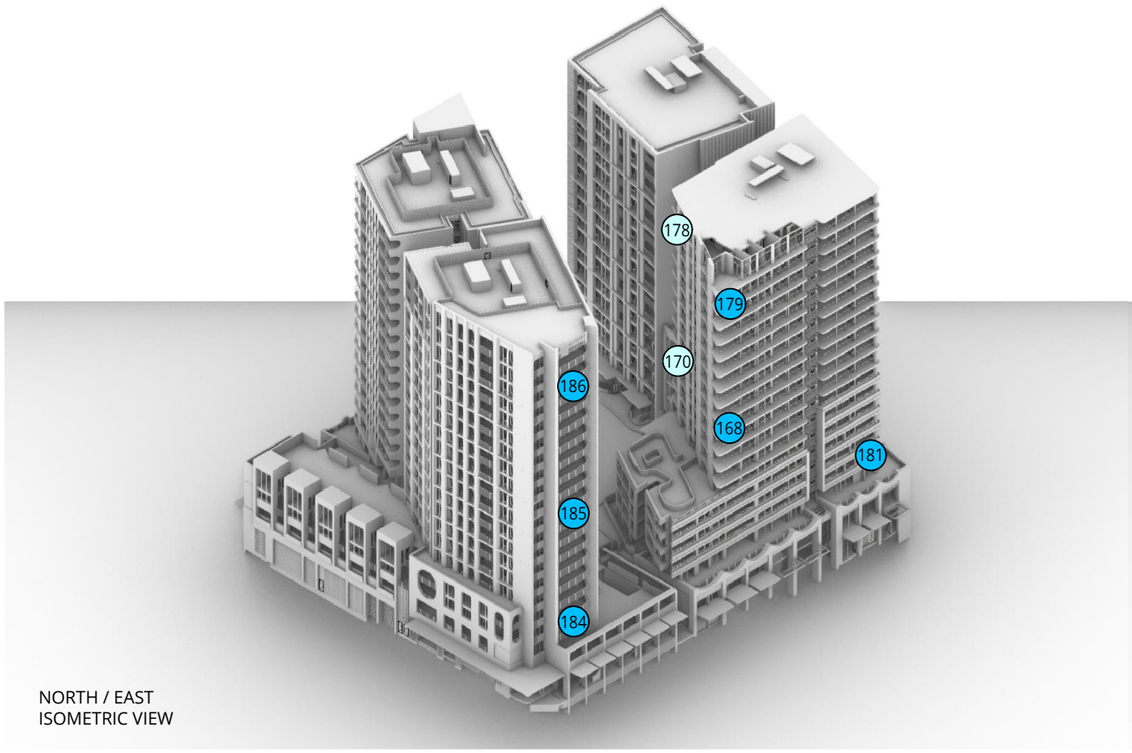


LEVEL 02
TOP VIEW

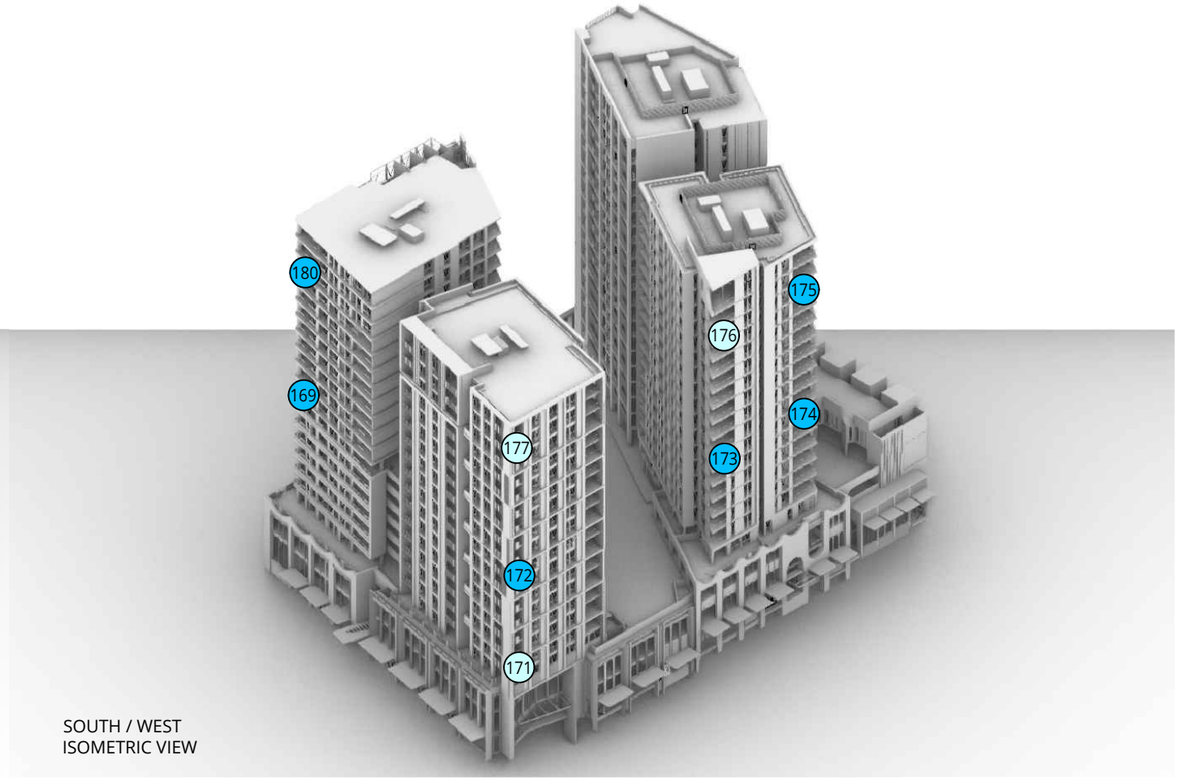
True North



ROOF LEVEL
TOP VIEW



NORTH / EAST
ISOMETRIC VIEW



SOUTH / WEST
ISOMETRIC VIEW

COMFORT CATEGORIES:

- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

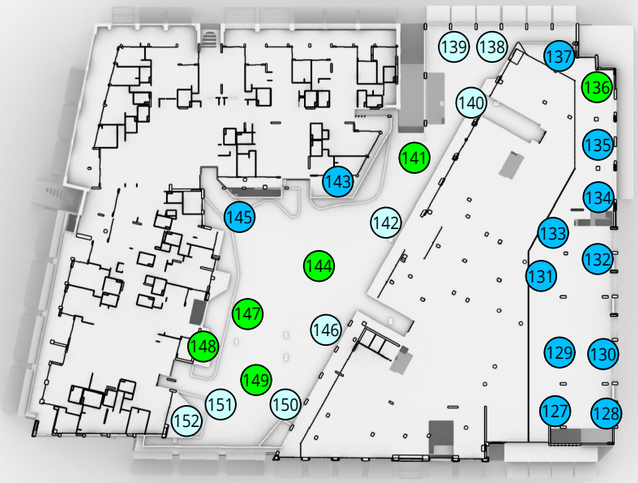
Pedestrian Wind Comfort Conditions - Elevated Levels

Configuration 2: Proposed Development with Existing Surrounding Buildings

Summer Season

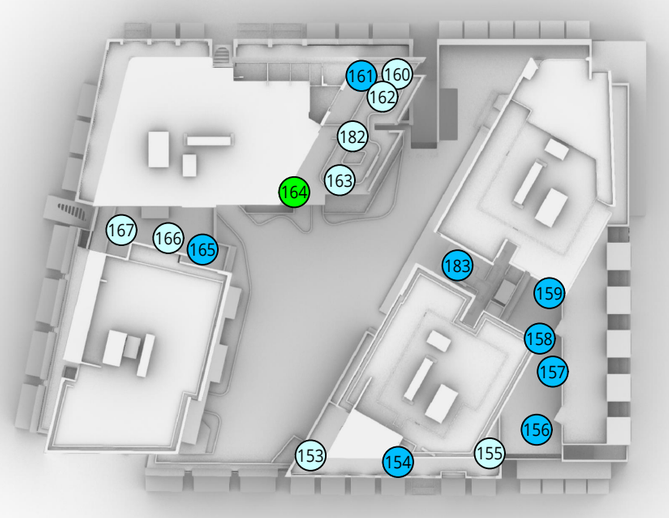
2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

Figure: 1B- ISO

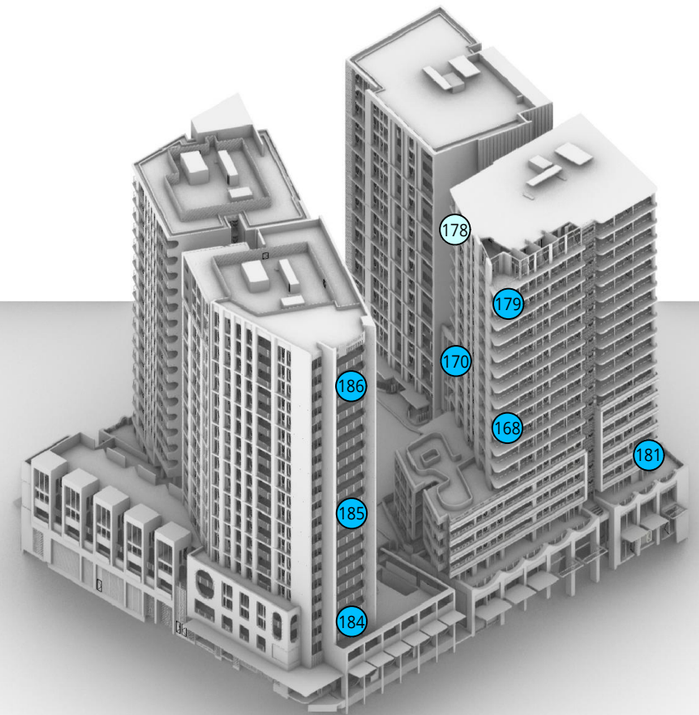


LEVEL 02
TOP VIEW

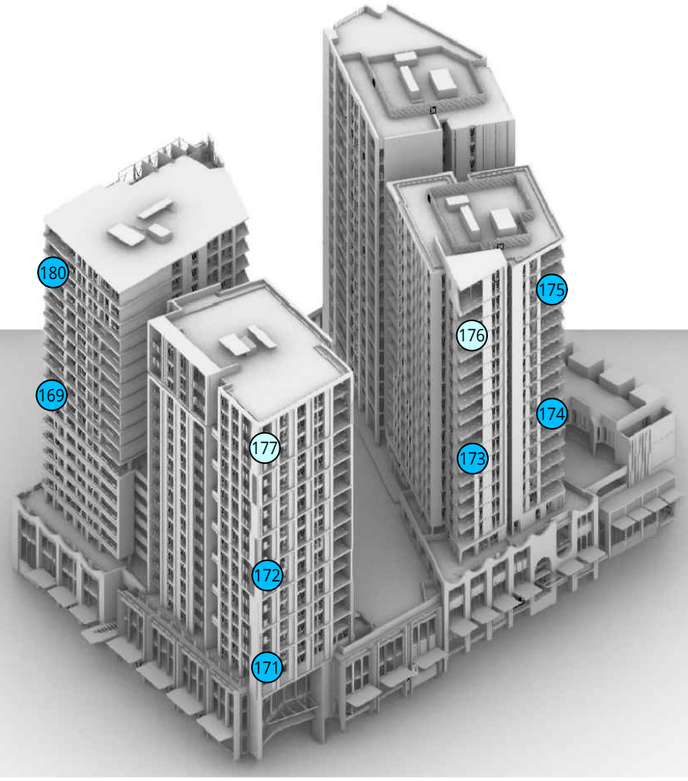
True North



ROOF LEVEL
TOP VIEW



NORTH / EAST
ISOMETRIC VIEW



SOUTH / WEST
ISOMETRIC VIEW

COMFORT CATEGORIES:

- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

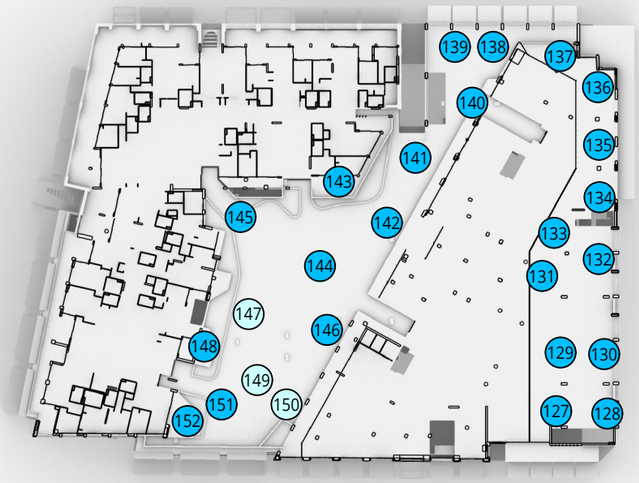
Pedestrian Wind Comfort Conditions - Elevated Levels

Configuration 3: Proposed Development with Cumulative Surrounding Buildings

Summer Season

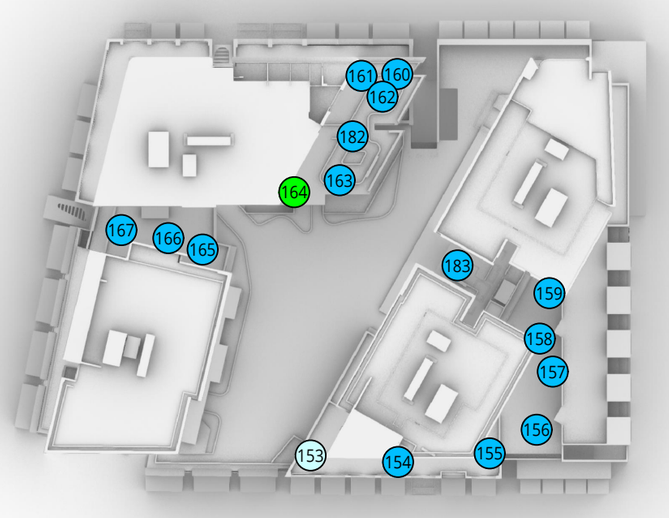
2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

Figure: 1C- ISO

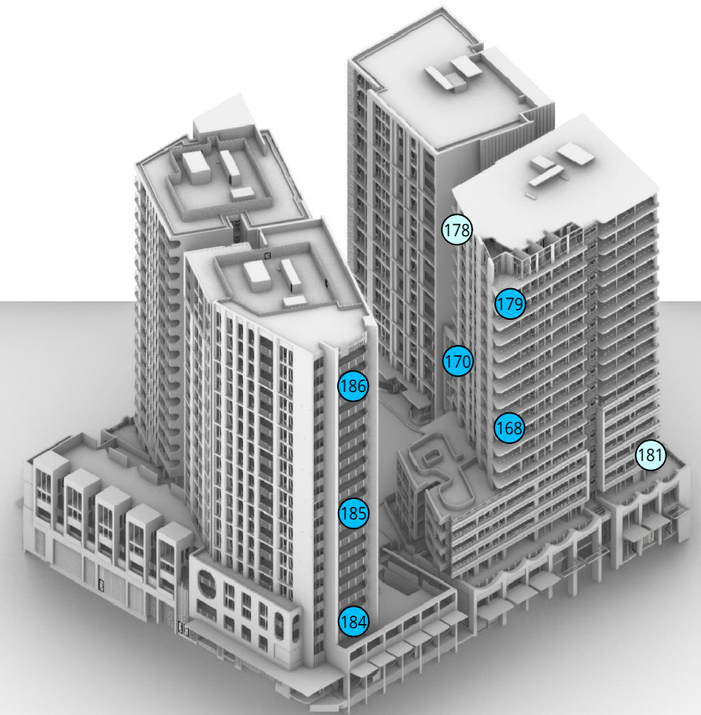


LEVEL 02
TOP VIEW

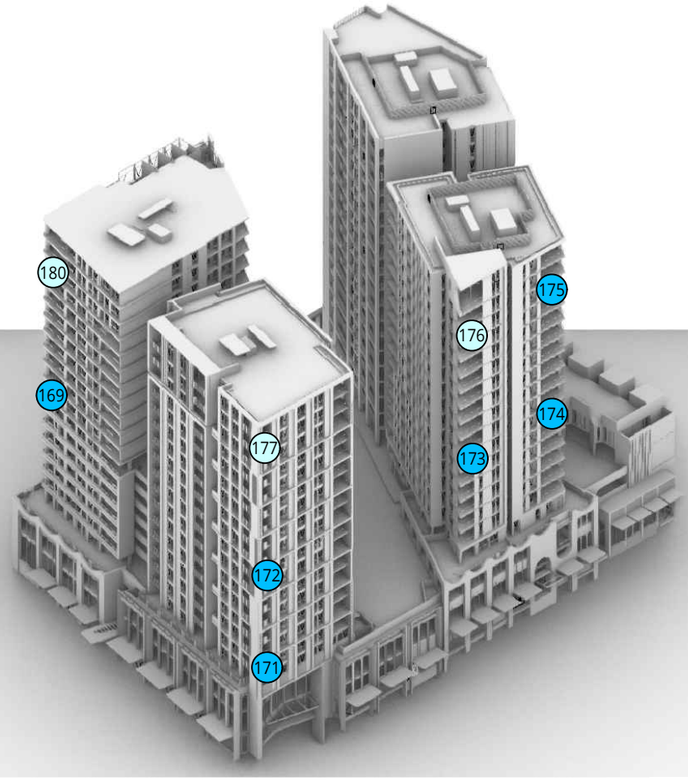
True North



ROOF LEVEL
TOP VIEW



NORTH / EAST
ISOMETRIC VIEW



SOUTH / WEST
ISOMETRIC VIEW

COMFORT CATEGORIES:

- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

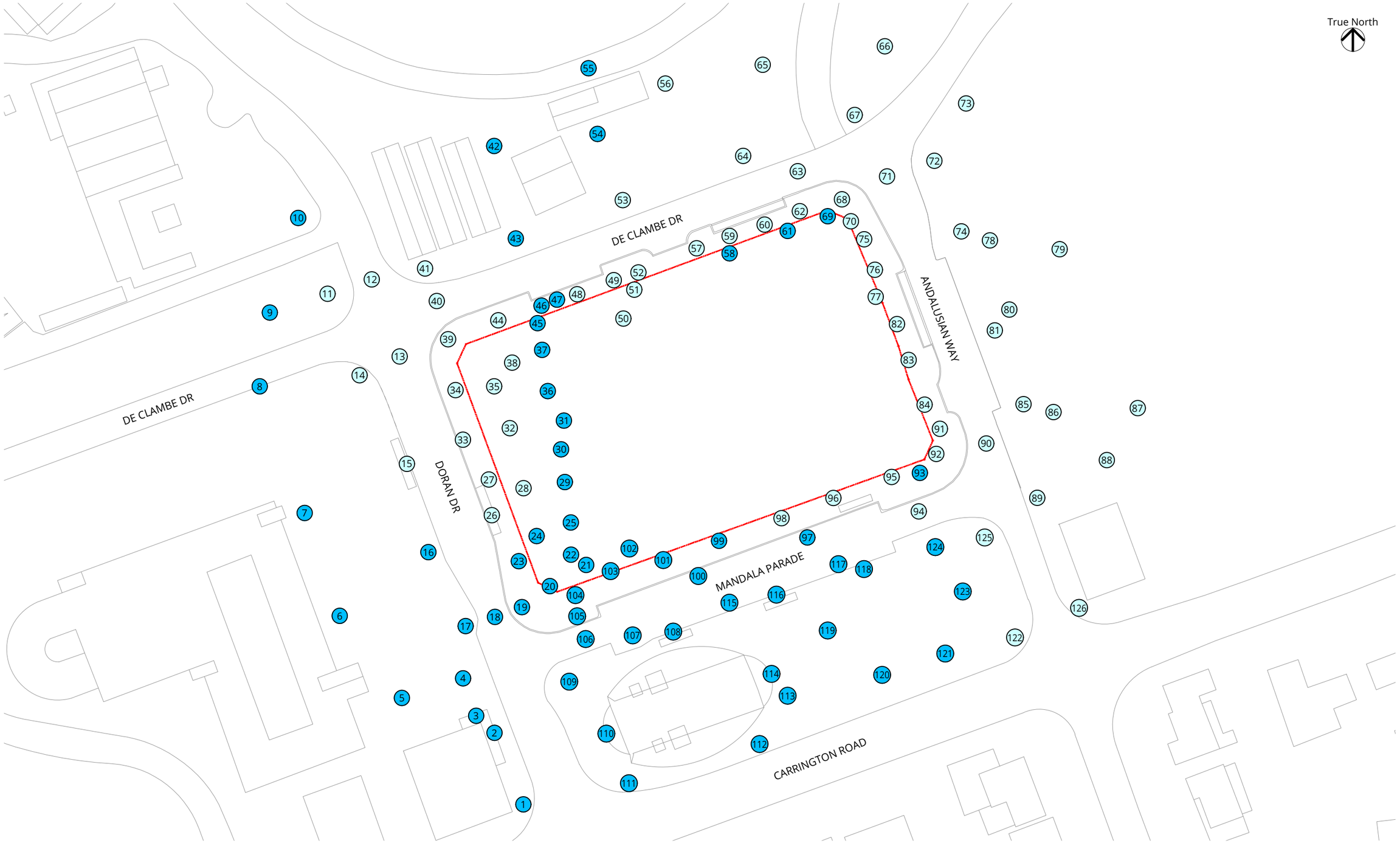
Pedestrian Wind Comfort Conditions - Elevated Levels

Configuration 4: Proposed Development with Landscaping and Future Surrounding Buildings

Summer Season

2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

Figure: 1D- ISO



COMFORT CATEGORIES:

- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

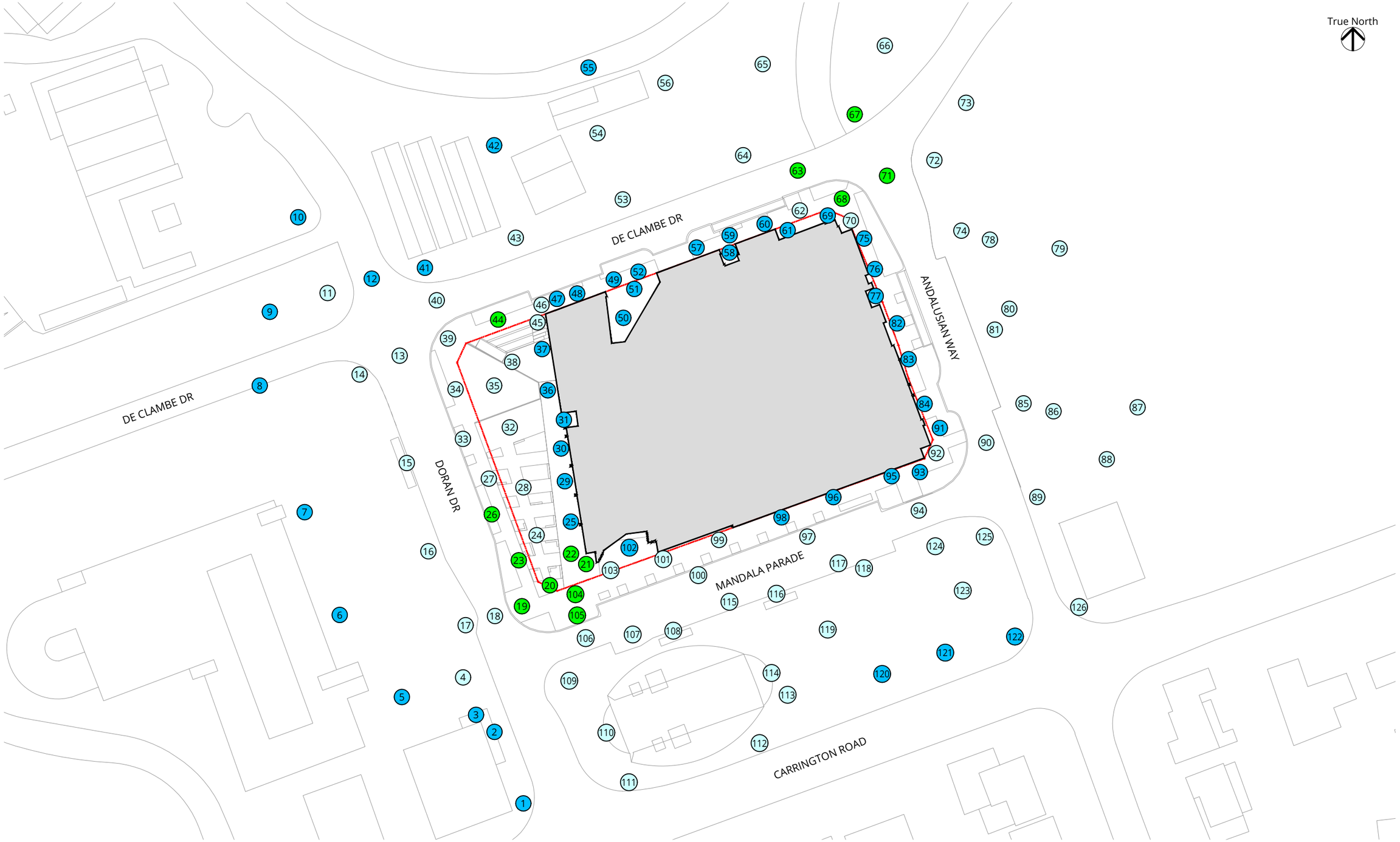
Pedestrian Wind Comfort Conditions - Ground Floor

Configuration 1: Existing Site with Existing Surrounding Buildings

Winter Season

2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

Figure: 2A



COMFORT CATEGORIES:

- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

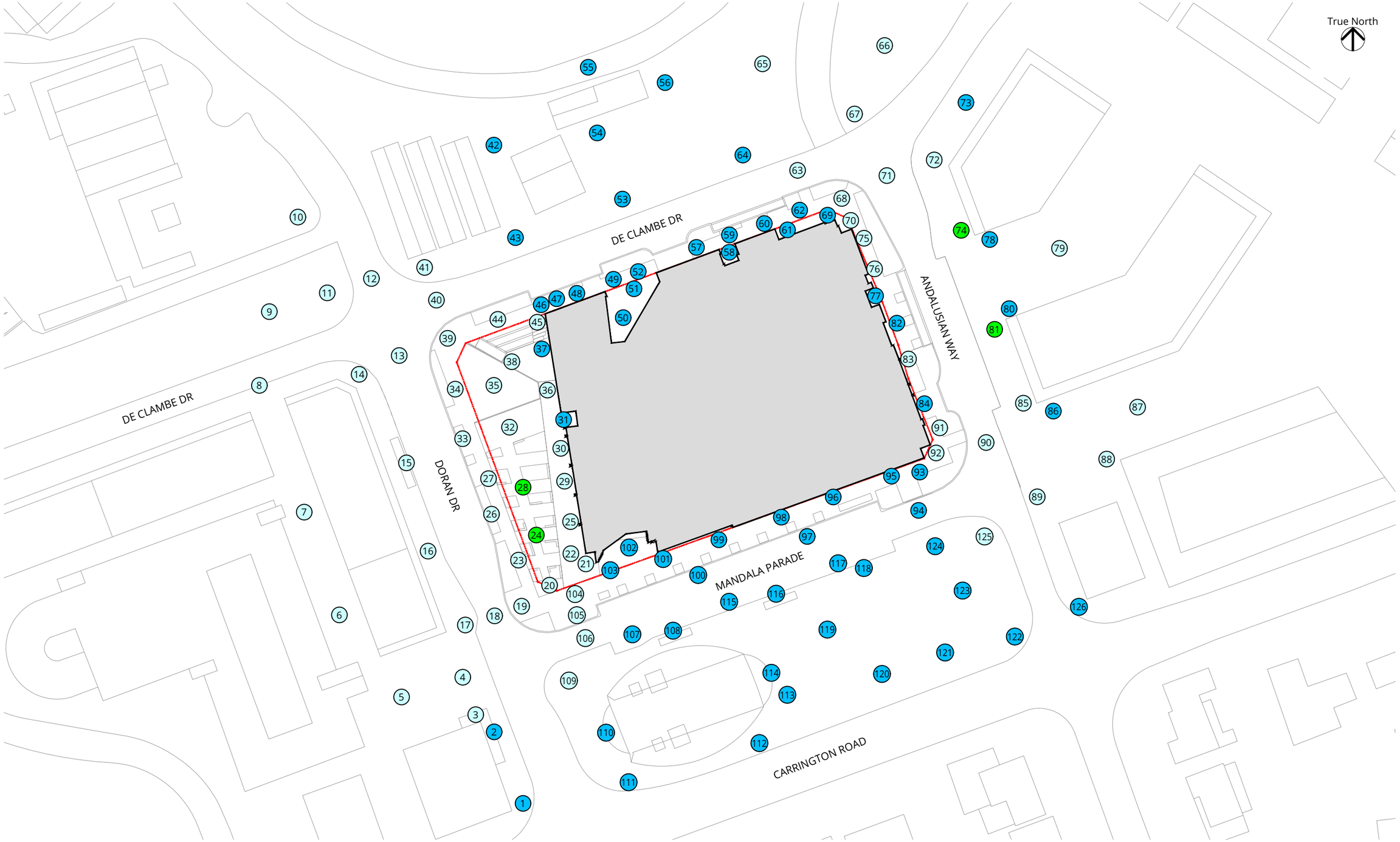
Pedestrian Wind Comfort Conditions - Ground Floor

Configuration 2: Proposed Development with Existing Surrounding Buildings

Winter Season

2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

Figure: 2B



COMFORT CATEGORIES:

- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

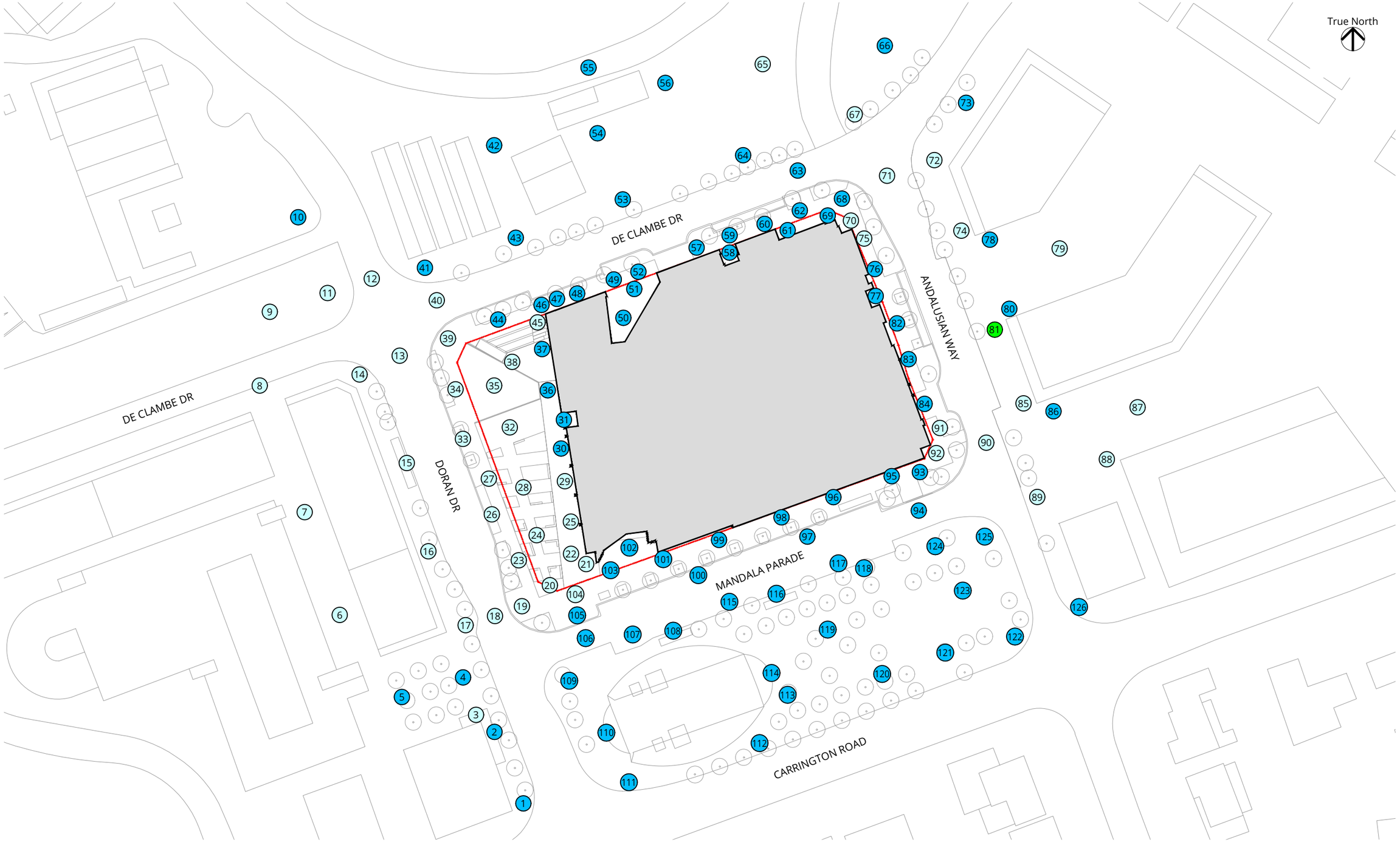
Pedestrian Wind Comfort Conditions - Ground Floor

Configuration 3: Proposed Development with Cumulative Surrounding Buildings

Winter Season

2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

Figure: 2C



COMFORT CATEGORIES:

- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

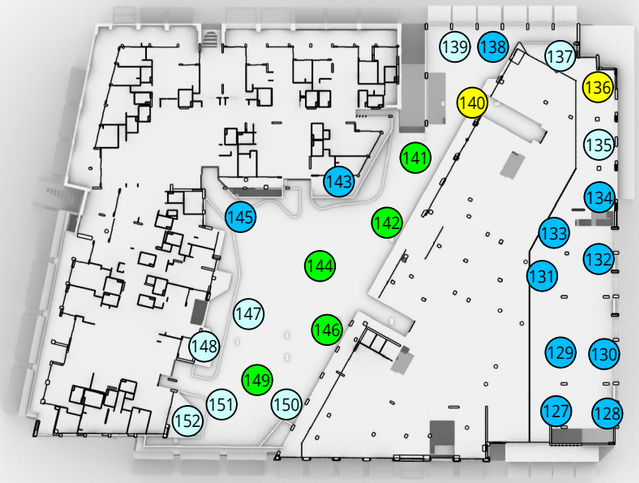
Pedestrian Wind Comfort Conditions - Ground Floor

Configuration 4: Proposed Development with Landscaping and Future Surrounding Buildings

Winter Season

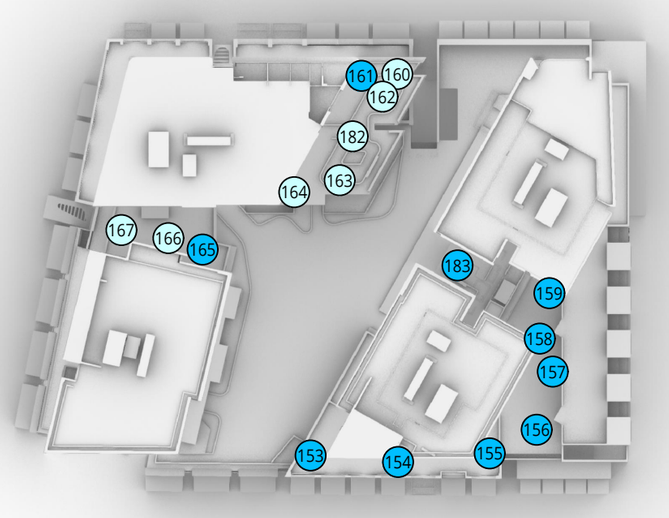
2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

Figure: 2D

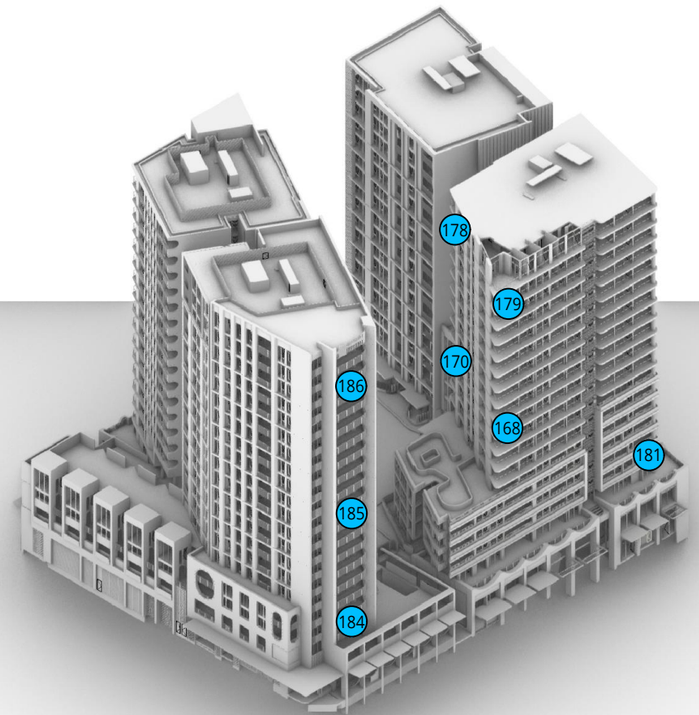


LEVEL 02
TOP VIEW

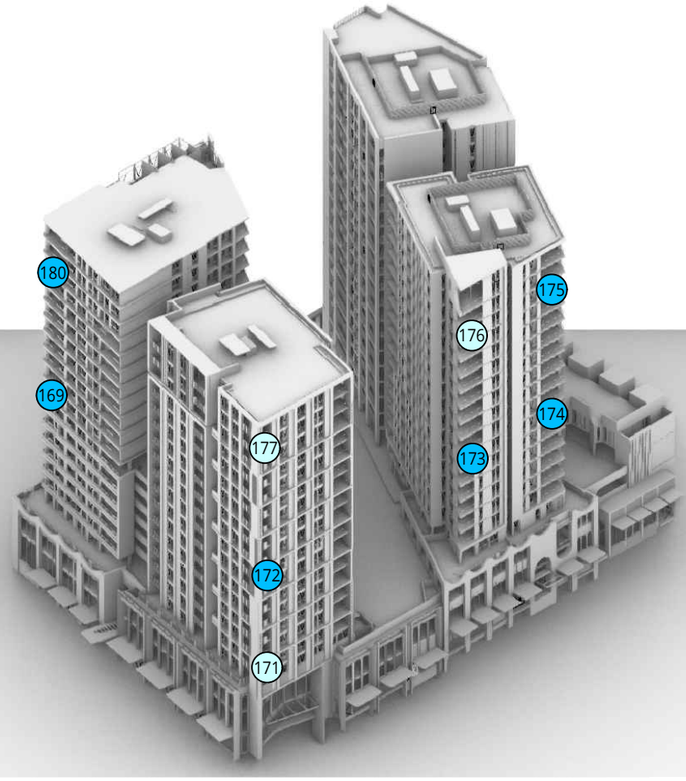
True North



ROOF LEVEL
TOP VIEW



NORTH / EAST
ISOMETRIC VIEW



SOUTH / WEST
ISOMETRIC VIEW

COMFORT CATEGORIES:

- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

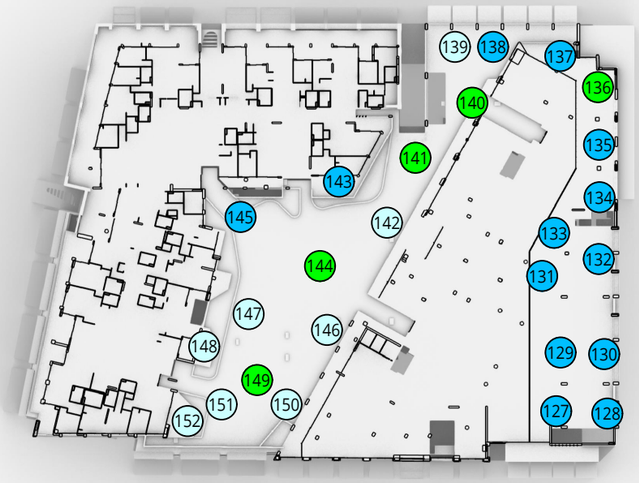
Pedestrian Wind Comfort Conditions - Elevated Levels

Configuration 2: Proposed Development with Existing Surrounding Buildings

Winter Season

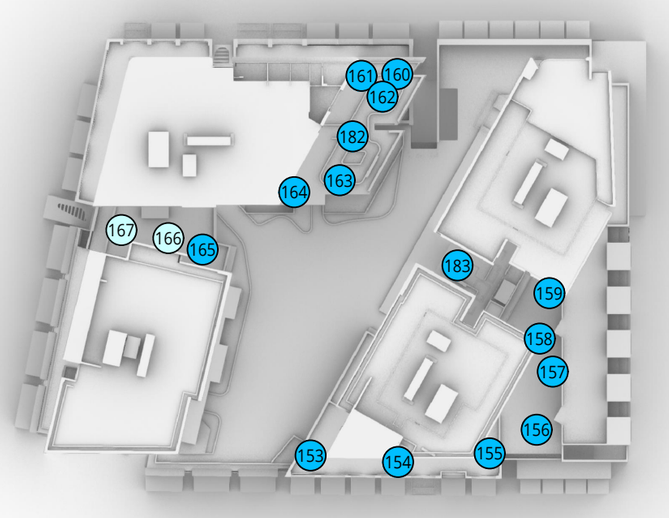
2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

Figure: 2B - ISO

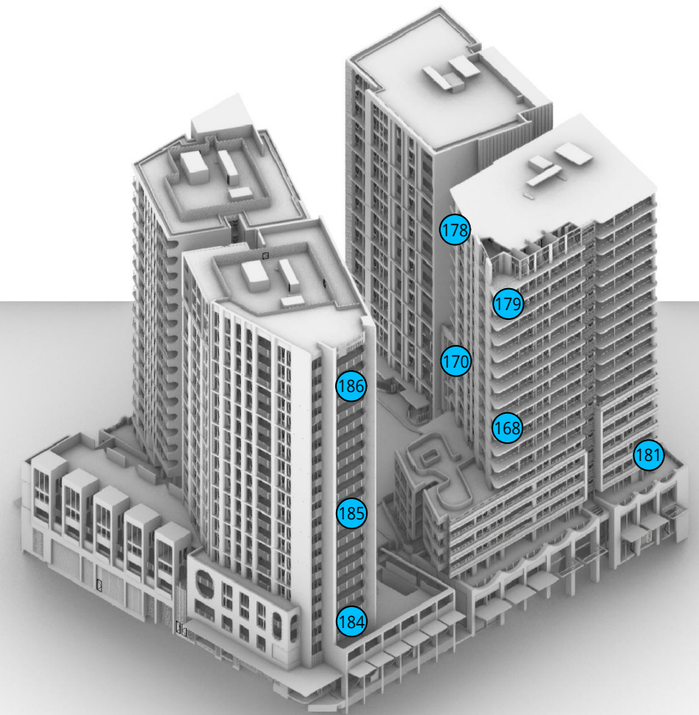


LEVEL 02
TOP VIEW

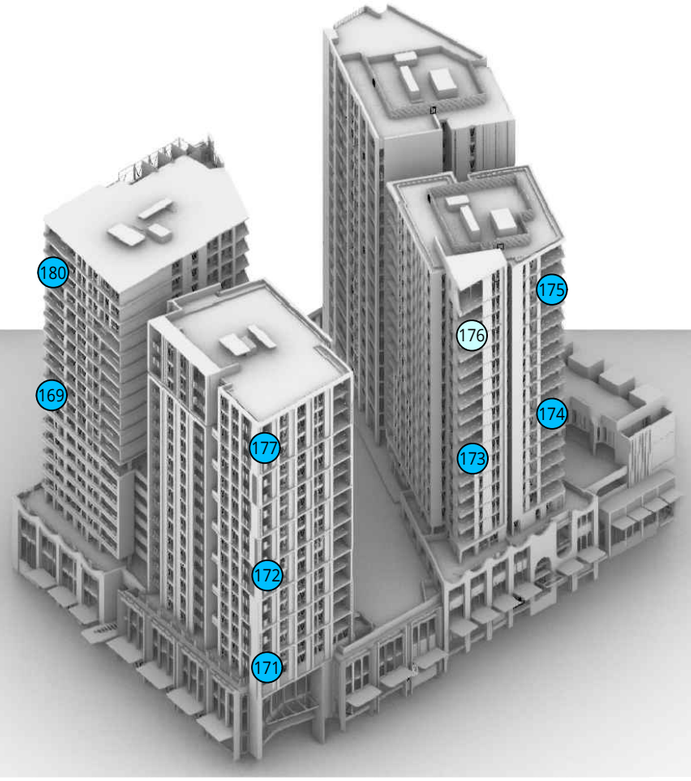
True North



ROOF LEVEL
TOP VIEW



NORTH / EAST
ISOMETRIC VIEW



SOUTH / WEST
ISOMETRIC VIEW

COMFORT CATEGORIES:

- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

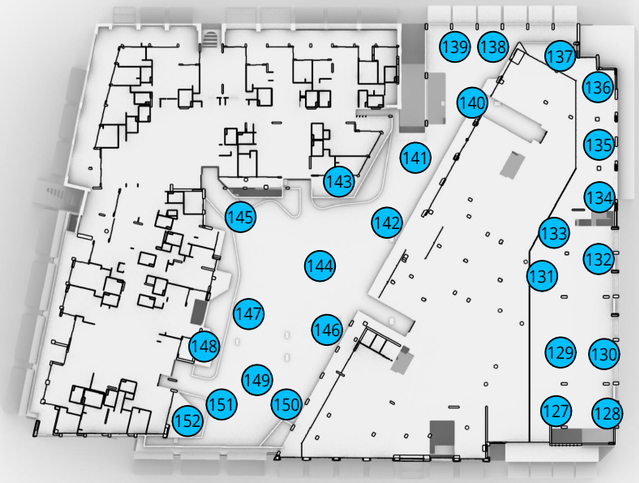
Pedestrian Wind Comfort Conditions - Elevated Levels

Configuration 3: Proposed Development with Cumulative Surrounding Buildings

Winter Season

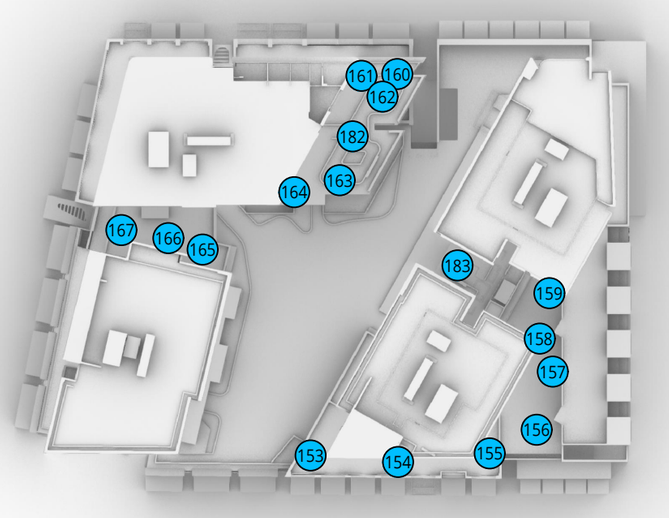
2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

Figure: 2C- ISO

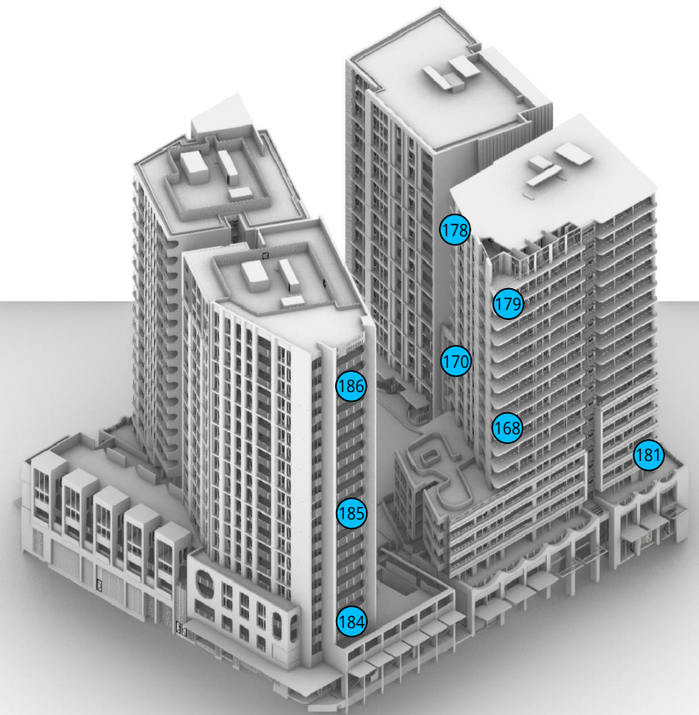


LEVEL 02
TOP VIEW

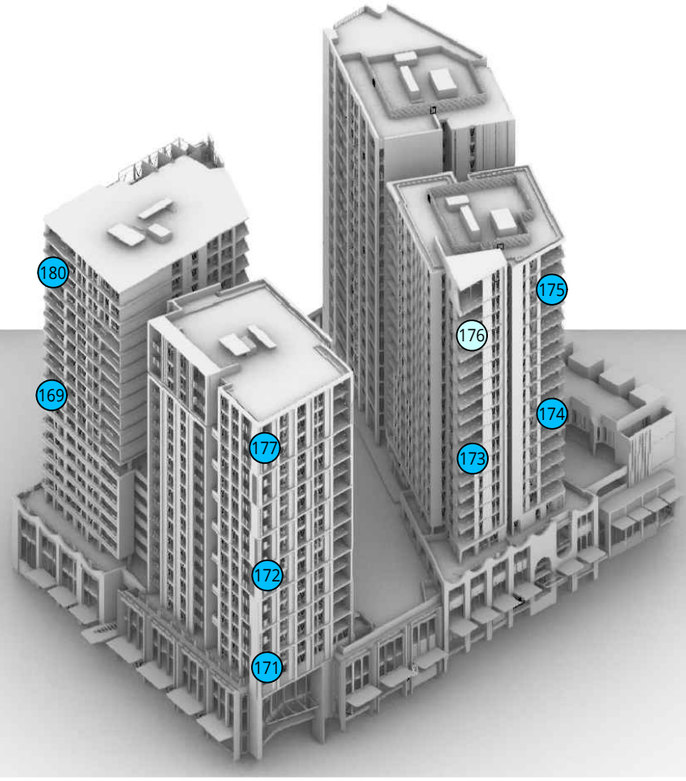
True North



ROOF LEVEL
TOP VIEW



NORTH / EAST
ISOMETRIC VIEW



SOUTH / WEST
ISOMETRIC VIEW

COMFORT CATEGORIES:

- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

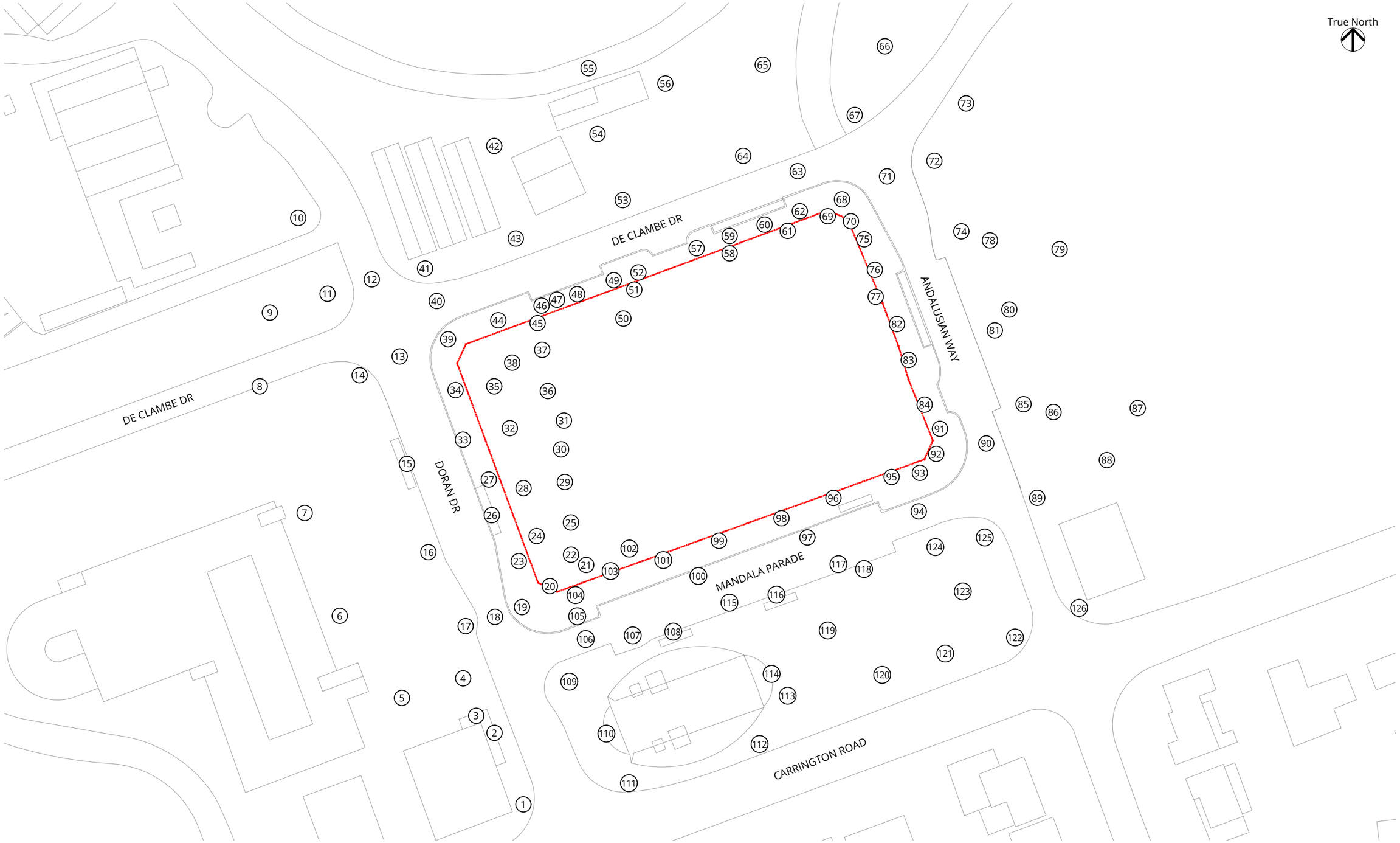
Pedestrian Wind Comfort Conditions - Elevated Levels

Configuration 4: Proposed Development with Landscaping and Future Surrounding Buildings

Winter Season

2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

Figure: 2D- ISO



SAFETY CATEGORIES:

Pass

Exceeded

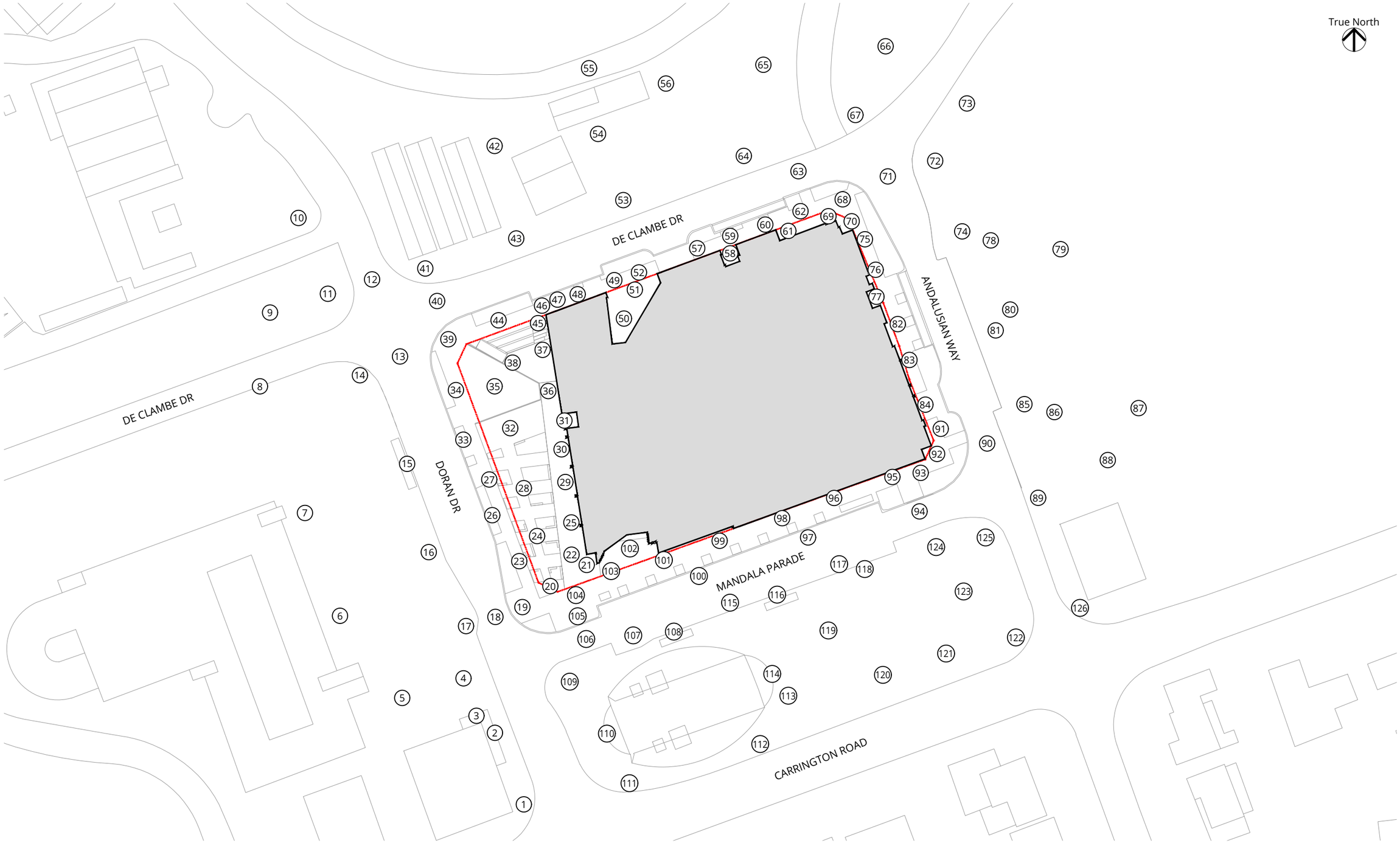
Pedestrian Wind Safety Conditions - Ground Floor

Configuration 1: Existing Site with Existing Surrounding Buildings

Annual

2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

Figure: 3A



SAFETY CATEGORIES:

Pass

Exceeded

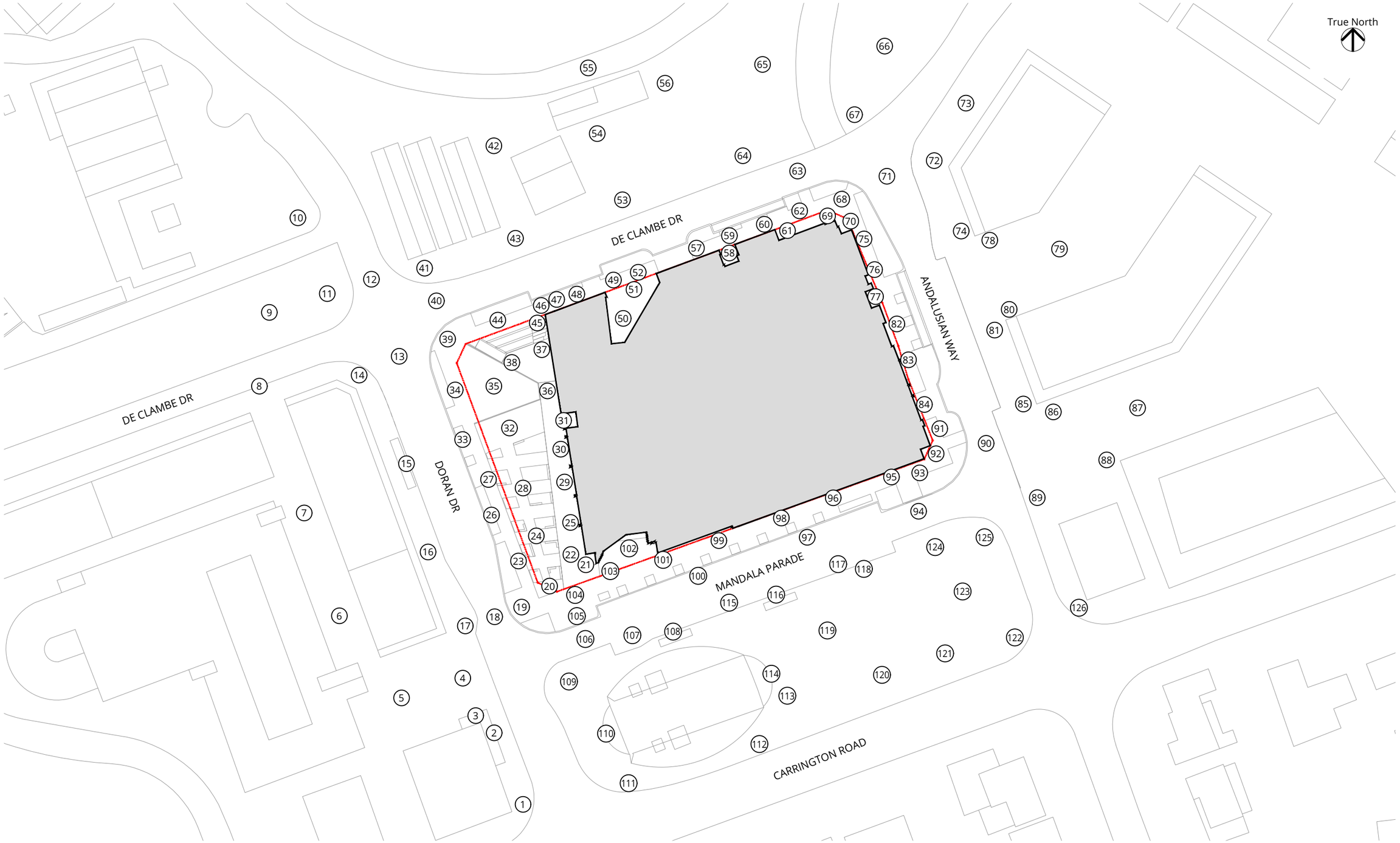
Pedestrian Wind Safety Conditions - Ground Floor

Configuration 2: Proposed Development with Existing Surrounding Buildings

Annual

2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

Figure: 3B



SAFETY CATEGORIES:

Pass

Exceeded

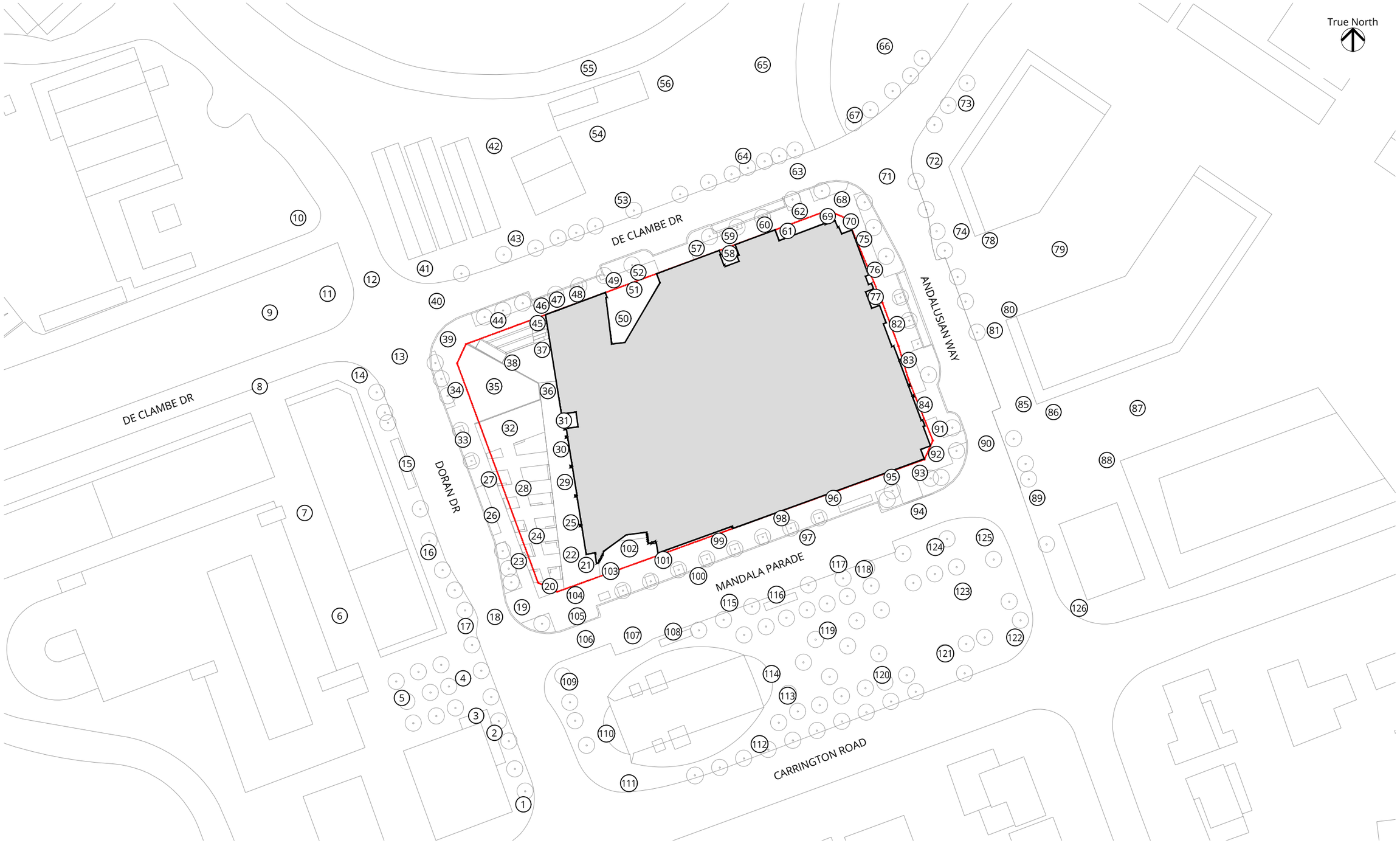
Pedestrian Wind Safety Conditions - Ground Floor

Configuration 3: Proposed Development with Cumulative Surrounding Buildings

Annual

2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

Figure: 3C



SAFETY CATEGORIES:

Pass

Exceeded

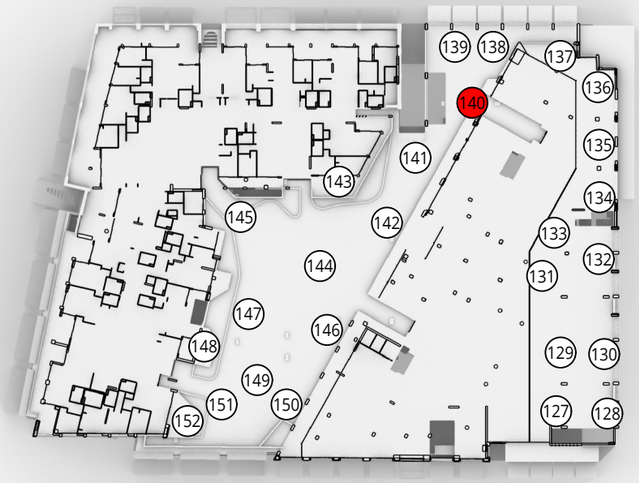
Pedestrian Wind Safety Conditions - Ground Floor

Configuration 4: Proposed Development with Landscaping and Future Surrounding Buildings

Annual

2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

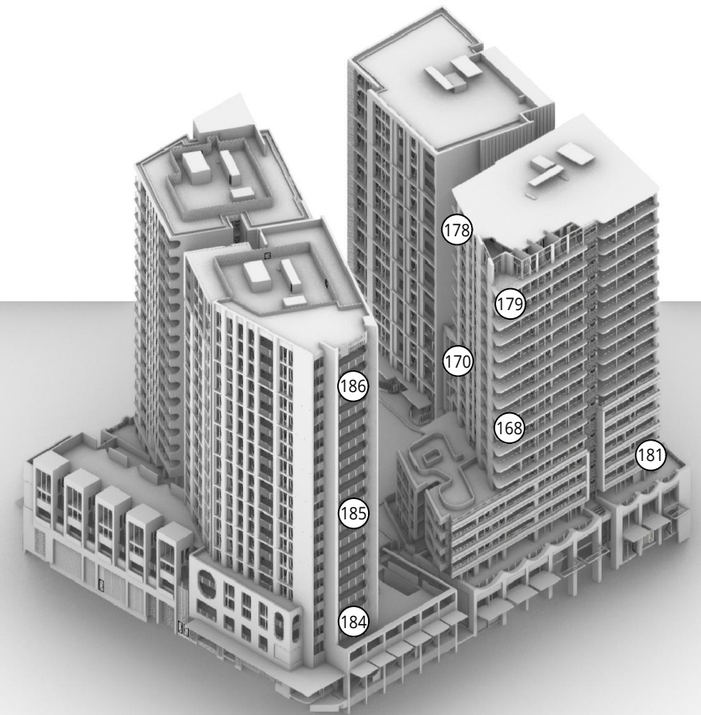
Figure: 3D



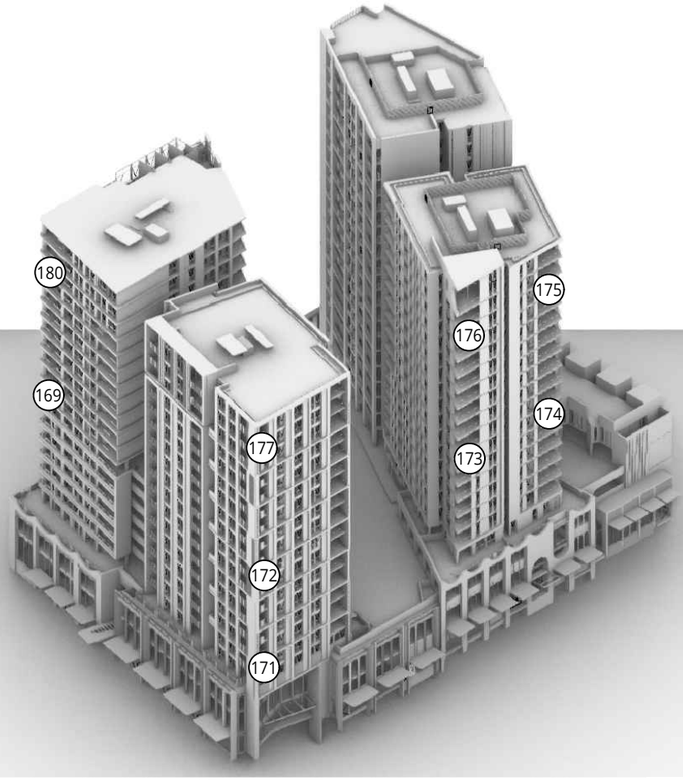
LEVEL 02
TOP VIEW

True North

ROOF LEVEL
TOP VIEW



NORTH / EAST
ISOMETRIC VIEW



SOUTH / WEST
ISOMETRIC VIEW

SAFETY CATEGORIES:

Pass

Exceeded

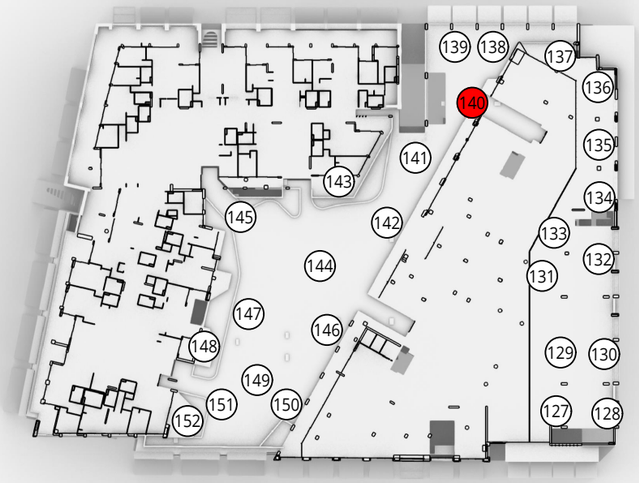
Pedestrian Wind Safety Conditions - Elevated Levels

Configuration 2: Proposed Development with Existing Surrounding Buildings

Annual

2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

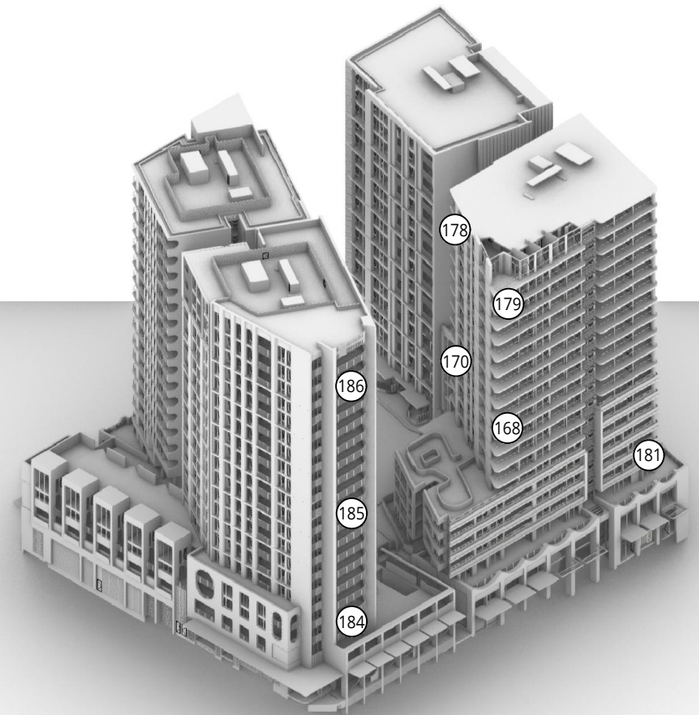
Figure: 3B- ISO



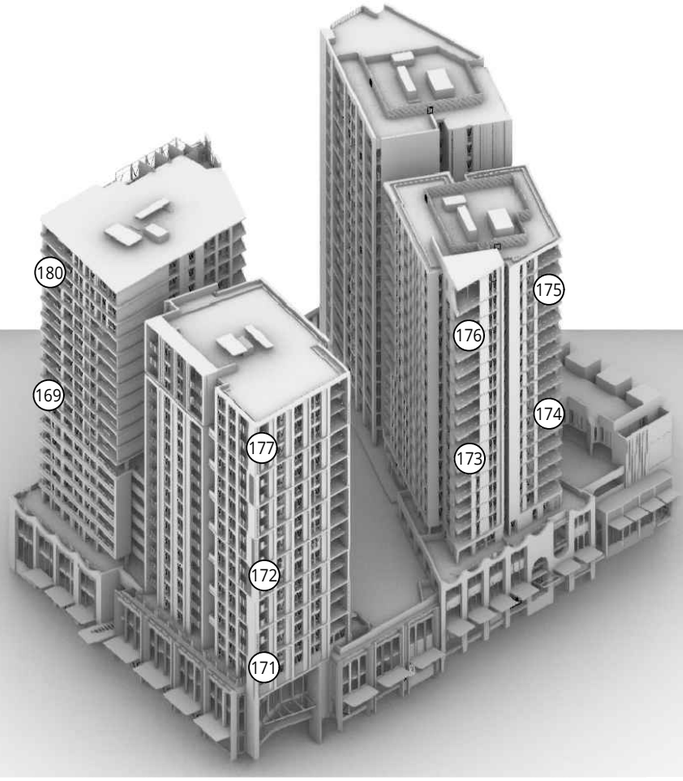
LEVEL 02
TOP VIEW

True North

ROOF LEVEL
TOP VIEW



NORTH / EAST
ISOMETRIC VIEW



SOUTH / WEST
ISOMETRIC VIEW

SAFETY CATEGORIES:

Pass

Exceeded

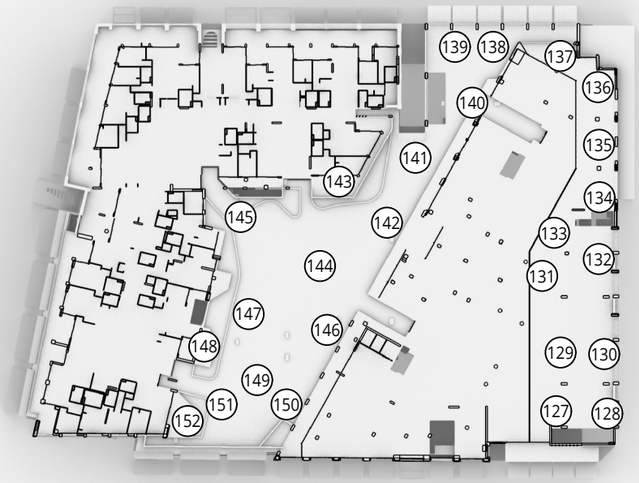
Pedestrian Wind Safety Conditions - Elevated Levels

Configuration 3: Proposed Development with Cumulative Surrounding Buildings

Annual

2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

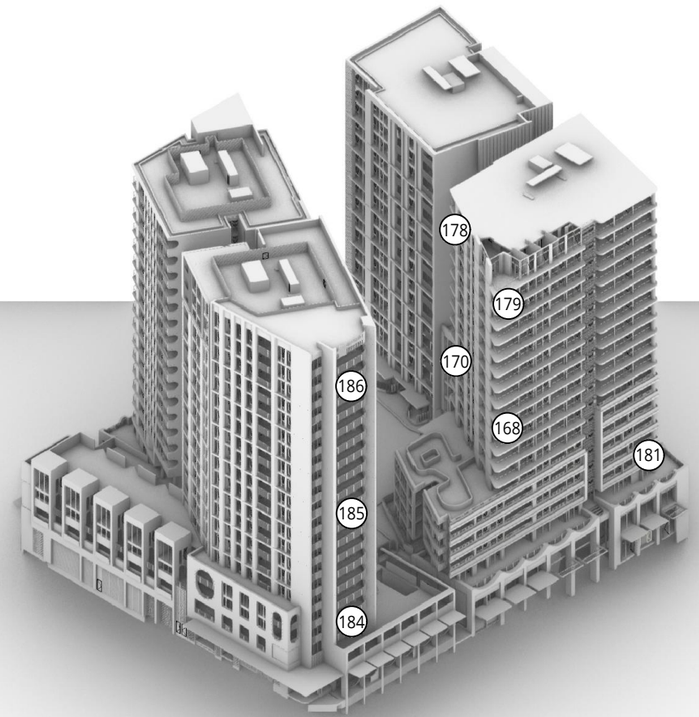
Figure: 3C- ISO



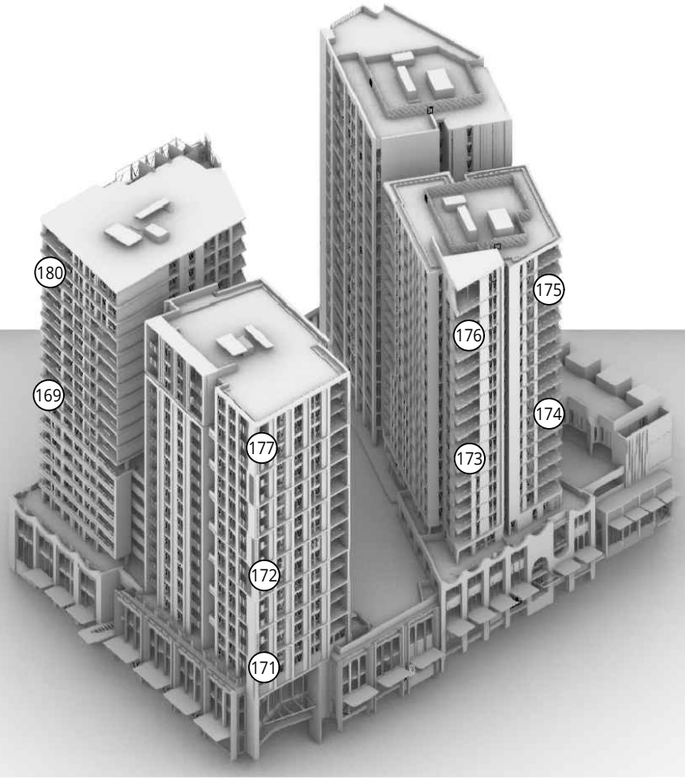
LEVEL 02
TOP VIEW

True North

ROOF LEVEL
TOP VIEW



NORTH / EAST
ISOMETRIC VIEW



SOUTH / WEST
ISOMETRIC VIEW

SAFETY CATEGORIES:

Pass

Exceeded

Pedestrian Wind Safety Conditions - Elevated Levels

Configuration 4: Proposed Development with Landscaping and Future Surrounding Buildings

Annual

2203430 Doran Drive, Castle Hill - Sydney, NSW, Australia

Figure: 3D- ISO

TABLES

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
1	Existing	11	Standing	8	Sitting	49	Pass
	Proposed	10	Sitting	8	Sitting	42	Pass
	Precinct	11	Standing	10	Sitting	45	Pass
	Mitigation	9	Sitting	8	Sitting	37	Pass
2	Existing	9	Sitting	7	Sitting	38	Pass
	Proposed	10	Sitting	9	Sitting	49	Pass
	Precinct	10	Sitting	8	Sitting	44	Pass
	Mitigation	8	Sitting	6	Sitting	33	Pass
3	Existing	10	Sitting	9	Sitting	40	Pass
	Proposed	12	Standing	9	Sitting	42	Pass
	Precinct	13	Standing	12	Standing	56	Pass
	Mitigation	11	Standing	11	Standing	50	Pass
4	Existing	12	Standing	9	Sitting	41	Pass
	Proposed	15	Strolling	11	Standing	51	Pass
	Precinct	13	Standing	12	Standing	58	Pass
	Mitigation	12	Standing	10	Sitting	47	Pass
5	Existing	10	Sitting	9	Sitting	46	Pass
	Proposed	10	Sitting	9	Sitting	39	Pass
	Precinct	11	Standing	11	Standing	53	Pass
	Mitigation	10	Sitting	10	Sitting	48	Pass
6	Existing	8	Sitting	7	Sitting	32	Pass
	Proposed	10	Sitting	8	Sitting	38	Pass
	Precinct	14	Standing	12	Standing	55	Pass
	Mitigation	13	Standing	12	Standing	55	Pass
7	Existing	11	Standing	8	Sitting	40	Pass
	Proposed	14	Standing	10	Sitting	55	Pass
	Precinct	12	Standing	13	Standing	67	Pass
	Mitigation	12	Standing	13	Standing	69	Pass
8	Existing	11	Standing	9	Sitting	42	Pass
	Proposed	12	Standing	9	Sitting	49	Pass
	Precinct	14	Standing	13	Standing	62	Pass
	Mitigation	14	Standing	13	Standing	63	Pass
9	Existing	11	Standing	10	Sitting	44	Pass
	Proposed	12	Standing	10	Sitting	45	Pass
	Precinct	13	Standing	14	Standing	63	Pass
	Mitigation	14	Standing	14	Standing	64	Pass
10	Existing	11	Standing	10	Sitting	43	Pass
	Proposed	12	Standing	10	Sitting	47	Pass
	Precinct	13	Standing	11	Standing	51	Pass
	Mitigation	12	Standing	10	Sitting	47	Pass
11	Existing	13	Standing	12	Standing	48	Pass
	Proposed	13	Standing	11	Standing	52	Pass
	Precinct	15	Strolling	14	Standing	65	Pass
	Mitigation	14	Standing	13	Standing	65	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
12	Existing	12	Standing	11	Standing	45	Pass
	Proposed	12	Standing	10	Sitting	51	Pass
	Precinct	15	Strolling	12	Standing	59	Pass
	Mitigation	13	Standing	12	Standing	55	Pass
13	Existing	14	Standing	12	Standing	49	Pass
	Proposed	15	Strolling	12	Standing	59	Pass
	Precinct	17	Strolling	14	Standing	69	Pass
	Mitigation	15	Strolling	13	Standing	66	Pass
14	Existing	14	Standing	12	Standing	50	Pass
	Proposed	15	Strolling	11	Standing	58	Pass
	Precinct	16	Strolling	14	Standing	71	Pass
	Mitigation	15	Strolling	13	Standing	72	Pass
15	Existing	13	Standing	12	Standing	48	Pass
	Proposed	15	Strolling	12	Standing	64	Pass
	Precinct	17	Strolling	13	Standing	65	Pass
	Mitigation	15	Strolling	11	Standing	53	Pass
16	Existing	12	Standing	10	Sitting	43	Pass
	Proposed	15	Strolling	12	Standing	60	Pass
	Precinct	15	Strolling	11	Standing	50	Pass
	Mitigation	13	Standing	11	Standing	49	Pass
17	Existing	12	Standing	10	Sitting	43	Pass
	Proposed	16	Strolling	12	Standing	56	Pass
	Precinct	15	Strolling	12	Standing	66	Pass
	Mitigation	13	Standing	11	Standing	64	Pass
18	Existing	12	Standing	10	Sitting	43	Pass
	Proposed	17	Strolling	14	Standing	64	Pass
	Precinct	14	Standing	13	Standing	59	Pass
	Mitigation	13	Standing	11	Standing	54	Pass
19	Existing	12	Standing	10	Sitting	44	Pass
	Proposed	17	Strolling	15	Strolling	67	Pass
	Precinct	14	Standing	13	Standing	58	Pass
	Mitigation	12	Standing	11	Standing	48	Pass
20	Existing	11	Standing	10	Sitting	43	Pass
	Proposed	18	Walking	16	Strolling	67	Pass
	Precinct	15	Strolling	14	Standing	66	Pass
	Mitigation	13	Standing	11	Standing	55	Pass
21	Existing	11	Standing	10	Sitting	40	Pass
	Proposed	17	Strolling	16	Strolling	71	Pass
	Precinct	15	Strolling	12	Standing	62	Pass
	Mitigation	14	Standing	11	Standing	60	Pass
22	Existing	11	Standing	10	Sitting	42	Pass
	Proposed	16	Strolling	15	Strolling	72	Pass
	Precinct	16	Strolling	14	Standing	67	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
	Mitigation	15	Strolling	13	Standing	65	Pass
23	Existing	12	Standing	10	Sitting	43	Pass
	Proposed	17	Strolling	15	Strolling	66	Pass
	Precinct	16	Strolling	14	Standing	64	Pass
	Mitigation	13	Standing	11	Standing	50	Pass
24	Existing	12	Standing	10	Sitting	44	Pass
	Proposed	15	Strolling	14	Standing	67	Pass
	Precinct	17	Strolling	16	Strolling	68	Pass
	Mitigation	16	Strolling	13	Standing	62	Pass
25	Existing	11	Standing	10	Sitting	43	Pass
	Proposed	8	Sitting	10	Sitting	52	Pass
	Precinct	10	Sitting	11	Standing	59	Pass
	Mitigation	11	Standing	11	Standing	56	Pass
26	Existing	12	Standing	11	Standing	43	Pass
	Proposed	15	Strolling	15	Strolling	67	Pass
	Precinct	17	Strolling	14	Standing	62	Pass
	Mitigation	13	Standing	11	Standing	50	Pass
27	Existing	12	Standing	11	Standing	44	Pass
	Proposed	14	Standing	14	Standing	66	Pass
	Precinct	17	Strolling	14	Standing	66	Pass
	Mitigation	14	Standing	12	Standing	53	Pass
28	Existing	12	Standing	11	Standing	44	Pass
	Proposed	13	Standing	13	Standing	66	Pass
	Precinct	16	Strolling	15	Strolling	70	Pass
	Mitigation	14	Standing	12	Standing	64	Pass
29	Existing	12	Standing	10	Sitting	44	Pass
	Proposed	8	Sitting	9	Sitting	47	Pass
	Precinct	11	Standing	12	Standing	64	Pass
	Mitigation	11	Standing	11	Standing	61	Pass
30	Existing	12	Standing	10	Sitting	43	Pass
	Proposed	8	Sitting	9	Sitting	42	Pass
	Precinct	10	Sitting	11	Standing	62	Pass
	Mitigation	9	Sitting	10	Sitting	59	Pass
31	Existing	12	Standing	10	Sitting	44	Pass
	Proposed	3	Sitting	4	Sitting	18	Pass
	Precinct	4	Sitting	4	Sitting	18	Pass
	Mitigation	4	Sitting	3	Sitting	18	Pass
32	Existing	12	Standing	11	Standing	45	Pass
	Proposed	12	Standing	12	Standing	60	Pass
	Precinct	15	Strolling	14	Standing	66	Pass
	Mitigation	14	Standing	12	Standing	60	Pass
33	Existing	13	Standing	11	Standing	46	Pass
	Proposed	14	Standing	14	Standing	65	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
	Precinct	17	Strolling	14	Standing	68	Pass
	Mitigation	14	Standing	11	Standing	55	Pass
34	Existing	13	Standing	11	Standing	47	Pass
	Proposed	14	Standing	14	Standing	63	Pass
	Precinct	16	Strolling	14	Standing	66	Pass
	Mitigation	14	Standing	12	Standing	58	Pass
35	Existing	13	Standing	11	Standing	45	Pass
	Proposed	12	Standing	14	Standing	61	Pass
	Precinct	15	Strolling	14	Standing	62	Pass
	Mitigation	12	Standing	11	Standing	53	Pass
36	Existing	12	Standing	10	Sitting	43	Pass
	Proposed	9	Sitting	10	Sitting	46	Pass
	Precinct	10	Sitting	11	Standing	52	Pass
	Mitigation	9	Sitting	10	Sitting	50	Pass
37	Existing	11	Standing	10	Sitting	43	Pass
	Proposed	8	Sitting	10	Sitting	55	Pass
	Precinct	9	Sitting	9	Sitting	42	Pass
	Mitigation	8	Sitting	9	Sitting	44	Pass
38	Existing	12	Standing	11	Standing	45	Pass
	Proposed	11	Standing	13	Standing	60	Pass
	Precinct	14	Standing	13	Standing	58	Pass
	Mitigation	11	Standing	11	Standing	47	Pass
39	Existing	13	Standing	12	Standing	47	Pass
	Proposed	15	Strolling	14	Standing	60	Pass
	Precinct	15	Strolling	13	Standing	64	Pass
	Mitigation	12	Standing	11	Standing	54	Pass
40	Existing	13	Standing	11	Standing	47	Pass
	Proposed	14	Standing	13	Standing	58	Pass
	Precinct	15	Strolling	13	Standing	64	Pass
	Mitigation	12	Standing	11	Standing	55	Pass
41	Existing	12	Standing	11	Standing	46	Pass
	Proposed	12	Standing	10	Sitting	48	Pass
	Precinct	13	Standing	12	Standing	56	Pass
	Mitigation	12	Standing	10	Sitting	50	Pass
42	Existing	11	Standing	10	Sitting	42	Pass
	Proposed	12	Standing	10	Sitting	48	Pass
	Precinct	10	Sitting	8	Sitting	40	Pass
	Mitigation	9	Sitting	8	Sitting	32	Pass
43	Existing	11	Standing	10	Sitting	42	Pass
	Proposed	12	Standing	13	Standing	67	Pass
	Precinct	11	Standing	10	Sitting	47	Pass
	Mitigation	8	Sitting	8	Sitting	37	Pass
44	Existing	13	Standing	11	Standing	44	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
	Proposed	14	Standing	15	Strolling	67	Pass
	Precinct	14	Standing	13	Standing	57	Pass
	Mitigation	10	Sitting	10	Sitting	48	Pass
45	Existing	9	Sitting	8	Sitting	37	Pass
	Proposed	11	Standing	12	Standing	73	Pass
	Precinct	10	Sitting	12	Standing	71	Pass
	Mitigation	10	Sitting	11	Standing	64	Pass
46	Existing	9	Sitting	8	Sitting	36	Pass
	Proposed	10	Sitting	13	Standing	65	Pass
	Precinct	9	Sitting	10	Sitting	51	Pass
	Mitigation	8	Sitting	9	Sitting	49	Pass
47	Existing	11	Standing	10	Sitting	41	Pass
	Proposed	9	Sitting	9	Sitting	48	Pass
	Precinct	8	Sitting	9	Sitting	58	Pass
	Mitigation	6	Sitting	7	Sitting	43	Pass
48	Existing	12	Standing	11	Standing	44	Pass
	Proposed	9	Sitting	8	Sitting	44	Pass
	Precinct	8	Sitting	8	Sitting	51	Pass
	Mitigation	7	Sitting	7	Sitting	47	Pass
49	Existing	13	Standing	11	Standing	46	Pass
	Proposed	10	Sitting	9	Sitting	56	Pass
	Precinct	8	Sitting	8	Sitting	51	Pass
	Mitigation	7	Sitting	7	Sitting	49	Pass
50	Existing	12	Standing	11	Standing	45	Pass
	Proposed	4	Sitting	3	Sitting	17	Pass
	Precinct	3	Sitting	3	Sitting	13	Pass
	Mitigation	3	Sitting	3	Sitting	13	Pass
51	Existing	13	Standing	11	Standing	46	Pass
	Proposed	5	Sitting	5	Sitting	31	Pass
	Precinct	4	Sitting	4	Sitting	19	Pass
	Mitigation	4	Sitting	4	Sitting	17	Pass
52	Existing	12	Standing	11	Standing	50	Pass
	Proposed	9	Sitting	9	Sitting	60	Pass
	Precinct	7	Sitting	7	Sitting	51	Pass
	Mitigation	6	Sitting	6	Sitting	47	Pass
53	Existing	13	Standing	11	Standing	48	Pass
	Proposed	12	Standing	13	Standing	68	Pass
	Precinct	9	Sitting	9	Sitting	47	Pass
	Mitigation	9	Sitting	8	Sitting	37	Pass
54	Existing	12	Standing	10	Sitting	41	Pass
	Proposed	13	Standing	11	Standing	48	Pass
	Precinct	10	Sitting	8	Sitting	38	Pass
	Mitigation	9	Sitting	8	Sitting	39	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
55	Existing	9	Sitting	8	Sitting	38	Pass
	Proposed	10	Sitting	8	Sitting	40	Pass
	Precinct	8	Sitting	7	Sitting	32	Pass
	Mitigation	8	Sitting	7	Sitting	32	Pass
56	Existing	14	Standing	12	Standing	51	Pass
	Proposed	15	Strolling	12	Standing	57	Pass
	Precinct	11	Standing	9	Sitting	38	Pass
	Mitigation	11	Standing	9	Sitting	37	Pass
57	Existing	14	Standing	12	Standing	47	Pass
	Proposed	11	Standing	10	Sitting	51	Pass
	Precinct	7	Sitting	7	Sitting	50	Pass
	Mitigation	5	Sitting	6	Sitting	36	Pass
58	Existing	4	Sitting	3	Sitting	15	Pass
	Proposed	7	Sitting	8	Sitting	48	Pass
	Precinct	6	Sitting	7	Sitting	46	Pass
	Mitigation	6	Sitting	7	Sitting	47	Pass
59	Existing	14	Standing	12	Standing	51	Pass
	Proposed	12	Standing	10	Sitting	50	Pass
	Precinct	8	Sitting	8	Sitting	47	Pass
	Mitigation	5	Sitting	4	Sitting	21	Pass
60	Existing	14	Standing	12	Standing	52	Pass
	Proposed	12	Standing	10	Sitting	50	Pass
	Precinct	9	Sitting	8	Sitting	46	Pass
	Mitigation	7	Sitting	6	Sitting	30	Pass
61	Existing	3	Sitting	3	Sitting	15	Pass
	Proposed	5	Sitting	6	Sitting	38	Pass
	Precinct	5	Sitting	5	Sitting	35	Pass
	Mitigation	4	Sitting	5	Sitting	33	Pass
62	Existing	13	Standing	12	Standing	52	Pass
	Proposed	15	Strolling	12	Standing	60	Pass
	Precinct	9	Sitting	9	Sitting	52	Pass
	Mitigation	8	Sitting	7	Sitting	40	Pass
63	Existing	16	Strolling	14	Standing	55	Pass
	Proposed	18	Walking	15	Strolling	68	Pass
	Precinct	11	Standing	11	Standing	58	Pass
	Mitigation	10	Sitting	9	Sitting	53	Pass
64	Existing	15	Strolling	13	Standing	52	Pass
	Proposed	17	Strolling	14	Standing	62	Pass
	Precinct	12	Standing	10	Sitting	46	Pass
	Mitigation	10	Sitting	8	Sitting	38	Pass
65	Existing	16	Strolling	13	Standing	53	Pass
	Proposed	18	Walking	14	Standing	63	Pass
	Precinct	15	Strolling	11	Standing	54	Pass
	Mitigation	15	Strolling	11	Standing	51	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
66	Existing	16	Strolling	14	Standing	54	Pass
	Proposed	17	Strolling	14	Standing	61	Pass
	Precinct	15	Strolling	11	Standing	56	Pass
	Mitigation	13	Standing	10	Sitting	46	Pass
67	Existing	16	Strolling	14	Standing	54	Pass
	Proposed	18	Walking	15	Strolling	66	Pass
	Precinct	15	Strolling	12	Standing	55	Pass
	Mitigation	15	Strolling	11	Standing	60	Pass
68	Existing	15	Strolling	13	Standing	53	Pass
	Proposed	18	Walking	15	Strolling	67	Pass
	Precinct	14	Standing	12	Standing	59	Pass
	Mitigation	11	Standing	9	Sitting	42	Pass
69	Existing	4	Sitting	4	Sitting	18	Pass
	Proposed	5	Sitting	5	Sitting	22	Pass
	Precinct	4	Sitting	4	Sitting	22	Pass
	Mitigation	6	Sitting	9	Sitting	57	Pass
70	Existing	15	Strolling	13	Standing	51	Pass
	Proposed	18	Walking	13	Standing	60	Pass
	Precinct	15	Strolling	13	Standing	59	Pass
	Mitigation	13	Standing	12	Standing	56	Pass
71	Existing	15	Strolling	13	Standing	52	Pass
	Proposed	17	Strolling	15	Strolling	66	Pass
	Precinct	15	Strolling	13	Standing	55	Pass
	Mitigation	14	Standing	11	Standing	52	Pass
72	Existing	14	Standing	12	Standing	50	Pass
	Proposed	16	Strolling	14	Standing	66	Pass
	Precinct	16	Strolling	13	Standing	56	Pass
	Mitigation	14	Standing	12	Standing	54	Pass
73	Existing	15	Strolling	13	Standing	51	Pass
	Proposed	14	Standing	13	Standing	59	Pass
	Precinct	9	Sitting	8	Sitting	42	Pass
	Mitigation	9	Sitting	8	Sitting	40	Pass
74	Existing	15	Strolling	13	Standing	49	Pass
	Proposed	14	Standing	12	Standing	58	Pass
	Precinct	15	Strolling	15	Strolling	62	Pass
	Mitigation	14	Standing	14	Standing	61	Pass
75	Existing	14	Standing	13	Standing	50	Pass
	Proposed	14	Standing	9	Sitting	56	Pass
	Precinct	14	Standing	12	Standing	63	Pass
	Mitigation	12	Standing	12	Standing	60	Pass
76	Existing	14	Standing	13	Standing	52	Pass
	Proposed	12	Standing	8	Sitting	44	Pass
	Precinct	13	Standing	11	Standing	53	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
	Mitigation	11	Standing	10	Sitting	55	Pass
77	Existing	14	Standing	13	Standing	51	Pass
	Proposed	10	Sitting	7	Sitting	37	Pass
	Precinct	11	Standing	8	Sitting	47	Pass
	Mitigation	11	Standing	8	Sitting	46	Pass
78	Existing	15	Strolling	12	Standing	48	Pass
	Proposed	13	Standing	11	Standing	55	Pass
	Precinct	12	Standing	9	Sitting	43	Pass
	Mitigation	12	Standing	9	Sitting	42	Pass
79	Existing	14	Standing	12	Standing	48	Pass
	Proposed	12	Standing	11	Standing	63	Pass
	Precinct	12	Standing	11	Standing	49	Pass
	Mitigation	12	Standing	11	Standing	50	Pass
80	Existing	14	Standing	12	Standing	49	Pass
	Proposed	12	Standing	11	Standing	57	Pass
	Precinct	10	Sitting	10	Sitting	46	Pass
	Mitigation	10	Sitting	10	Sitting	46	Pass
81	Existing	14	Standing	13	Standing	51	Pass
	Proposed	13	Standing	11	Standing	61	Pass
	Precinct	15	Strolling	16	Strolling	72	Pass
	Mitigation	15	Strolling	15	Strolling	72	Pass
82	Existing	14	Standing	12	Standing	49	Pass
	Proposed	10	Sitting	8	Sitting	41	Pass
	Precinct	13	Standing	10	Sitting	54	Pass
	Mitigation	11	Standing	10	Sitting	48	Pass
83	Existing	14	Standing	12	Standing	49	Pass
	Proposed	10	Sitting	8	Sitting	43	Pass
	Precinct	14	Standing	11	Standing	55	Pass
	Mitigation	13	Standing	9	Sitting	50	Pass
84	Existing	13	Standing	12	Standing	48	Pass
	Proposed	12	Standing	8	Sitting	44	Pass
	Precinct	12	Standing	9	Sitting	47	Pass
	Mitigation	12	Standing	9	Sitting	48	Pass
85	Existing	14	Standing	12	Standing	50	Pass
	Proposed	14	Standing	12	Standing	61	Pass
	Precinct	15	Strolling	13	Standing	67	Pass
	Mitigation	14	Standing	12	Standing	62	Pass
86	Existing	14	Standing	12	Standing	47	Pass
	Proposed	12	Standing	12	Standing	53	Pass
	Precinct	12	Standing	8	Sitting	52	Pass
	Mitigation	12	Standing	8	Sitting	52	Pass
87	Existing	12	Standing	11	Standing	50	Pass
	Proposed	11	Standing	11	Standing	52	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
	Precinct	15	Strolling	11	Standing	63	Pass
	Mitigation	15	Strolling	11	Standing	62	Pass
88	Existing	14	Standing	12	Standing	49	Pass
	Proposed	12	Standing	11	Standing	48	Pass
	Precinct	14	Standing	12	Standing	49	Pass
	Mitigation	14	Standing	11	Standing	48	Pass
89	Existing	13	Standing	12	Standing	50	Pass
	Proposed	13	Standing	12	Standing	53	Pass
	Precinct	13	Standing	12	Standing	56	Pass
	Mitigation	13	Standing	11	Standing	52	Pass
90	Existing	13	Standing	12	Standing	50	Pass
	Proposed	16	Strolling	13	Standing	61	Pass
	Precinct	14	Standing	13	Standing	60	Pass
	Mitigation	13	Standing	12	Standing	55	Pass
91	Existing	13	Standing	11	Standing	47	Pass
	Proposed	16	Strolling	10	Sitting	64	Pass
	Precinct	14	Standing	12	Standing	62	Pass
	Mitigation	13	Standing	11	Standing	56	Pass
92	Existing	13	Standing	11	Standing	47	Pass
	Proposed	18	Walking	13	Standing	69	Pass
	Precinct	15	Strolling	12	Standing	65	Pass
	Mitigation	13	Standing	11	Standing	59	Pass
93	Existing	12	Standing	10	Sitting	44	Pass
	Proposed	14	Standing	10	Sitting	53	Pass
	Precinct	12	Standing	9	Sitting	51	Pass
	Mitigation	11	Standing	8	Sitting	44	Pass
94	Existing	12	Standing	11	Standing	46	Pass
	Proposed	15	Strolling	12	Standing	54	Pass
	Precinct	12	Standing	10	Sitting	47	Pass
	Mitigation	11	Standing	9	Sitting	45	Pass
95	Existing	13	Standing	11	Standing	46	Pass
	Proposed	12	Standing	9	Sitting	42	Pass
	Precinct	10	Sitting	8	Sitting	41	Pass
	Mitigation	9	Sitting	6	Sitting	35	Pass
96	Existing	12	Standing	11	Standing	46	Pass
	Proposed	11	Standing	10	Sitting	44	Pass
	Precinct	9	Sitting	7	Sitting	35	Pass
	Mitigation	7	Sitting	6	Sitting	30	Pass
97	Existing	12	Standing	10	Sitting	44	Pass
	Proposed	15	Strolling	12	Standing	61	Pass
	Precinct	11	Standing	9	Sitting	42	Pass
	Mitigation	10	Sitting	8	Sitting	37	Pass
98	Existing	12	Standing	11	Standing	45	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
	Proposed	12	Standing	10	Sitting	48	Pass
	Precinct	9	Sitting	7	Sitting	33	Pass
	Mitigation	7	Sitting	6	Sitting	27	Pass
99	Existing	12	Standing	10	Sitting	45	Pass
	Proposed	13	Standing	11	Standing	60	Pass
	Precinct	9	Sitting	7	Sitting	37	Pass
	Mitigation	5	Sitting	5	Sitting	23	Pass
100	Existing	12	Standing	10	Sitting	42	Pass
	Proposed	17	Strolling	13	Standing	62	Pass
	Precinct	12	Standing	9	Sitting	47	Pass
	Mitigation	11	Standing	8	Sitting	42	Pass
101	Existing	11	Standing	10	Sitting	42	Pass
	Proposed	13	Standing	11	Standing	59	Pass
	Precinct	10	Sitting	8	Sitting	42	Pass
	Mitigation	8	Sitting	7	Sitting	35	Pass
102	Existing	10	Sitting	9	Sitting	40	Pass
	Proposed	6	Sitting	6	Sitting	37	Pass
	Precinct	6	Sitting	5	Sitting	23	Pass
	Mitigation	6	Sitting	5	Sitting	25	Pass
103	Existing	12	Standing	10	Sitting	41	Pass
	Proposed	15	Strolling	12	Standing	65	Pass
	Precinct	12	Standing	8	Sitting	49	Pass
	Mitigation	10	Sitting	7	Sitting	44	Pass
104	Existing	11	Standing	10	Sitting	42	Pass
	Proposed	18	Walking	16	Strolling	69	Pass
	Precinct	14	Standing	13	Standing	66	Pass
	Mitigation	12	Standing	11	Standing	59	Pass
105	Existing	11	Standing	10	Sitting	43	Pass
	Proposed	17	Strolling	15	Strolling	66	Pass
	Precinct	13	Standing	13	Standing	62	Pass
	Mitigation	11	Standing	10	Sitting	50	Pass
106	Existing	11	Standing	9	Sitting	43	Pass
	Proposed	16	Strolling	14	Standing	61	Pass
	Precinct	12	Standing	12	Standing	55	Pass
	Mitigation	10	Sitting	10	Sitting	46	Pass
107	Existing	9	Sitting	8	Sitting	37	Pass
	Proposed	16	Strolling	14	Standing	62	Pass
	Precinct	11	Standing	10	Sitting	51	Pass
	Mitigation	11	Standing	9	Sitting	49	Pass
108	Existing	10	Sitting	9	Sitting	38	Pass
	Proposed	15	Strolling	13	Standing	62	Pass
	Precinct	10	Sitting	9	Sitting	44	Pass
	Mitigation	9	Sitting	8	Sitting	42	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
109	Existing	11	Standing	9	Sitting	44	Pass
	Proposed	14	Standing	12	Standing	60	Pass
	Precinct	11	Standing	11	Standing	53	Pass
	Mitigation	9	Sitting	9	Sitting	43	Pass
110	Existing	11	Standing	10	Sitting	42	Pass
	Proposed	11	Standing	12	Standing	67	Pass
	Precinct	10	Sitting	10	Sitting	56	Pass
	Mitigation	8	Sitting	8	Sitting	46	Pass
111	Existing	10	Sitting	9	Sitting	40	Pass
	Proposed	13	Standing	11	Standing	62	Pass
	Precinct	10	Sitting	9	Sitting	44	Pass
	Mitigation	8	Sitting	7	Sitting	36	Pass
112	Existing	10	Sitting	9	Sitting	39	Pass
	Proposed	12	Standing	11	Standing	60	Pass
	Precinct	10	Sitting	10	Sitting	51	Pass
	Mitigation	9	Sitting	9	Sitting	45	Pass
113	Existing	11	Standing	10	Sitting	43	Pass
	Proposed	12	Standing	12	Standing	65	Pass
	Precinct	10	Sitting	9	Sitting	46	Pass
	Mitigation	8	Sitting	8	Sitting	43	Pass
114	Existing	11	Standing	10	Sitting	43	Pass
	Proposed	13	Standing	11	Standing	56	Pass
	Precinct	10	Sitting	9	Sitting	44	Pass
	Mitigation	8	Sitting	8	Sitting	40	Pass
115	Existing	12	Standing	10	Sitting	43	Pass
	Proposed	17	Strolling	14	Standing	66	Pass
	Precinct	12	Standing	9	Sitting	47	Pass
	Mitigation	11	Standing	9	Sitting	45	Pass
116	Existing	12	Standing	10	Sitting	45	Pass
	Proposed	16	Strolling	14	Standing	72	Pass
	Precinct	11	Standing	9	Sitting	44	Pass
	Mitigation	10	Sitting	8	Sitting	39	Pass
117	Existing	11	Standing	10	Sitting	44	Pass
	Proposed	12	Standing	12	Standing	64	Pass
	Precinct	10	Sitting	9	Sitting	41	Pass
	Mitigation	9	Sitting	8	Sitting	41	Pass
118	Existing	11	Standing	10	Sitting	43	Pass
	Proposed	14	Standing	12	Standing	58	Pass
	Precinct	11	Standing	9	Sitting	41	Pass
	Mitigation	10	Sitting	8	Sitting	40	Pass
119	Existing	11	Standing	10	Sitting	44	Pass
	Proposed	14	Standing	12	Standing	65	Pass
	Precinct	10	Sitting	8	Sitting	40	Pass
	Mitigation	9	Sitting	7	Sitting	32	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
120	Existing	11	Standing	10	Sitting	40	Pass
	Proposed	11	Standing	10	Sitting	52	Pass
	Precinct	10	Sitting	9	Sitting	40	Pass
	Mitigation	8	Sitting	7	Sitting	30	Pass
121	Existing	11	Standing	10	Sitting	43	Pass
	Proposed	10	Sitting	10	Sitting	53	Pass
	Precinct	9	Sitting	9	Sitting	41	Pass
	Mitigation	8	Sitting	7	Sitting	31	Pass
122	Existing	12	Standing	11	Standing	48	Pass
	Proposed	11	Standing	10	Sitting	48	Pass
	Precinct	11	Standing	10	Sitting	46	Pass
	Mitigation	10	Sitting	8	Sitting	41	Pass
123	Existing	11	Standing	10	Sitting	44	Pass
	Proposed	12	Standing	11	Standing	49	Pass
	Precinct	10	Sitting	9	Sitting	41	Pass
	Mitigation	9	Sitting	8	Sitting	36	Pass
124	Existing	11	Standing	10	Sitting	44	Pass
	Proposed	15	Strolling	12	Standing	54	Pass
	Precinct	11	Standing	10	Sitting	42	Pass
	Mitigation	10	Sitting	9	Sitting	41	Pass
125	Existing	12	Standing	11	Standing	48	Pass
	Proposed	14	Standing	12	Standing	51	Pass
	Precinct	12	Standing	11	Standing	52	Pass
	Mitigation	11	Standing	10	Sitting	47	Pass
126	Existing	13	Standing	12	Standing	57	Pass
	Proposed	11	Standing	11	Standing	54	Pass
	Precinct	12	Standing	10	Sitting	47	Pass
	Mitigation	11	Standing	9	Sitting	45	Pass
127	Existing	-	-	-	-	-	-
	Proposed	5	Sitting	4	Sitting	26	Pass
	Precinct	5	Sitting	4	Sitting	26	Pass
	Mitigation	4	Sitting	4	Sitting	23	Pass
128	Existing	-	-	-	-	-	-
	Proposed	6	Sitting	5	Sitting	25	Pass
	Precinct	7	Sitting	5	Sitting	35	Pass
	Mitigation	6	Sitting	4	Sitting	37	Pass
129	Existing	-	-	-	-	-	-
	Proposed	5	Sitting	4	Sitting	18	Pass
	Precinct	5	Sitting	4	Sitting	24	Pass
	Mitigation	5	Sitting	4	Sitting	23	Pass
130	Existing	-	-	-	-	-	-
	Proposed	6	Sitting	5	Sitting	22	Pass
	Precinct	6	Sitting	5	Sitting	36	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
	Mitigation	6	Sitting	5	Sitting	36	Pass
131	Existing	-	-	-	-	-	-
	Proposed	5	Sitting	4	Sitting	23	Pass
	Precinct	5	Sitting	5	Sitting	23	Pass
	Mitigation	5	Sitting	4	Sitting	21	Pass
132	Existing	-	-	-	-	-	-
	Proposed	6	Sitting	5	Sitting	25	Pass
	Precinct	6	Sitting	5	Sitting	25	Pass
	Mitigation	6	Sitting	5	Sitting	23	Pass
133	Existing	-	-	-	-	-	-
	Proposed	7	Sitting	5	Sitting	30	Pass
	Precinct	6	Sitting	5	Sitting	24	Pass
	Mitigation	5	Sitting	5	Sitting	22	Pass
134	Existing	-	-	-	-	-	-
	Proposed	9	Sitting	7	Sitting	36	Pass
	Precinct	8	Sitting	6	Sitting	30	Pass
	Mitigation	8	Sitting	6	Sitting	28	Pass
135	Existing	-	-	-	-	-	-
	Proposed	14	Standing	11	Standing	56	Pass
	Precinct	8	Sitting	9	Sitting	49	Pass
	Mitigation	7	Sitting	5	Sitting	27	Pass
136	Existing	-	-	-	-	-	-
	Proposed	23	Uncomfortable	18	Walking	82	Pass
	Precinct	17	Strolling	16	Strolling	78	Pass
	Mitigation	6	Sitting	6	Sitting	33	Pass
137	Existing	-	-	-	-	-	-
	Proposed	17	Strolling	12	Standing	54	Pass
	Precinct	10	Sitting	10	Sitting	50	Pass
	Mitigation	7	Sitting	6	Sitting	33	Pass
138	Existing	-	-	-	-	-	-
	Proposed	11	Standing	9	Sitting	46	Pass
	Precinct	11	Standing	9	Sitting	47	Pass
	Mitigation	6	Sitting	6	Sitting	38	Pass
139	Existing	-	-	-	-	-	-
	Proposed	12	Standing	11	Standing	60	Pass
	Precinct	11	Standing	11	Standing	57	Pass
	Mitigation	5	Sitting	6	Sitting	43	Pass
140	Existing	-	-	-	-	-	-
	Proposed	20	Walking	18	Walking	87	Fail
	Precinct	13	Standing	15	Strolling	84	Fail
	Mitigation	5	Sitting	6	Sitting	34	Pass
141	Existing	-	-	-	-	-	-
	Proposed	18	Walking	16	Strolling	72	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
	Precinct	17	Strolling	16	Strolling	68	Pass
	Mitigation	9	Sitting	9	Sitting	40	Pass
142	Existing	-	-	-	-	-	-
	Proposed	14	Standing	15	Strolling	72	Pass
	Precinct	14	Standing	14	Standing	68	Pass
	Mitigation	5	Sitting	4	Sitting	21	Pass
143	Existing	-	-	-	-	-	-
	Proposed	11	Standing	9	Sitting	45	Pass
	Precinct	10	Sitting	8	Sitting	43	Pass
	Mitigation	9	Sitting	8	Sitting	38	Pass
144	Existing	-	-	-	-	-	-
	Proposed	17	Strolling	17	Strolling	80	Pass
	Precinct	16	Strolling	16	Strolling	77	Pass
	Mitigation	10	Sitting	7	Sitting	44	Pass
145	Existing	-	-	-	-	-	-
	Proposed	9	Sitting	8	Sitting	39	Pass
	Precinct	9	Sitting	7	Sitting	39	Pass
	Mitigation	6	Sitting	5	Sitting	29	Pass
146	Existing	-	-	-	-	-	-
	Proposed	15	Strolling	15	Strolling	68	Pass
	Precinct	13	Standing	14	Standing	63	Pass
	Mitigation	5	Sitting	6	Sitting	33	Pass
147	Existing	-	-	-	-	-	-
	Proposed	17	Strolling	14	Standing	62	Pass
	Precinct	16	Strolling	13	Standing	58	Pass
	Mitigation	11	Standing	7	Sitting	43	Pass
148	Existing	-	-	-	-	-	-
	Proposed	16	Strolling	12	Standing	60	Pass
	Precinct	15	Strolling	11	Standing	59	Pass
	Mitigation	9	Sitting	6	Sitting	38	Pass
149	Existing	-	-	-	-	-	-
	Proposed	18	Walking	17	Strolling	72	Pass
	Precinct	17	Strolling	16	Strolling	69	Pass
	Mitigation	13	Standing	9	Sitting	53	Pass
150	Existing	-	-	-	-	-	-
	Proposed	16	Strolling	13	Standing	63	Pass
	Precinct	14	Standing	12	Standing	60	Pass
	Mitigation	11	Standing	7	Sitting	45	Pass
151	Existing	-	-	-	-	-	-
	Proposed	12	Standing	13	Standing	64	Pass
	Precinct	12	Standing	12	Standing	64	Pass
	Mitigation	7	Sitting	6	Sitting	31	Pass
152	Existing	-	-	-	-	-	-

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
	Proposed	12	Standing	11	Standing	60	Pass
	Precinct	12	Standing	11	Standing	60	Pass
	Mitigation	9	Sitting	7	Sitting	38	Pass
153	Existing	-	-	-	-	-	-
	Proposed	13	Standing	10	Sitting	54	Pass
	Precinct	13	Standing	9	Sitting	55	Pass
	Mitigation	11	Standing	8	Sitting	51	Pass
154	Existing	-	-	-	-	-	-
	Proposed	11	Standing	9	Sitting	48	Pass
	Precinct	9	Sitting	7	Sitting	43	Pass
	Mitigation	9	Sitting	7	Sitting	42	Pass
155	Existing	-	-	-	-	-	-
	Proposed	13	Standing	10	Sitting	61	Pass
	Precinct	11	Standing	9	Sitting	60	Pass
	Mitigation	10	Sitting	9	Sitting	58	Pass
156	Existing	-	-	-	-	-	-
	Proposed	12	Standing	9	Sitting	47	Pass
	Precinct	10	Sitting	8	Sitting	46	Pass
	Mitigation	8	Sitting	6	Sitting	33	Pass
157	Existing	-	-	-	-	-	-
	Proposed	9	Sitting	7	Sitting	48	Pass
	Precinct	9	Sitting	6	Sitting	46	Pass
	Mitigation	5	Sitting	4	Sitting	19	Pass
158	Existing	-	-	-	-	-	-
	Proposed	9	Sitting	7	Sitting	36	Pass
	Precinct	8	Sitting	6	Sitting	35	Pass
	Mitigation	4	Sitting	3	Sitting	15	Pass
159	Existing	-	-	-	-	-	-
	Proposed	7	Sitting	5	Sitting	31	Pass
	Precinct	6	Sitting	5	Sitting	24	Pass
	Mitigation	5	Sitting	4	Sitting	20	Pass
160	Existing	-	-	-	-	-	-
	Proposed	13	Standing	11	Standing	48	Pass
	Precinct	12	Standing	10	Sitting	46	Pass
	Mitigation	6	Sitting	6	Sitting	36	Pass
161	Existing	-	-	-	-	-	-
	Proposed	9	Sitting	8	Sitting	47	Pass
	Precinct	8	Sitting	8	Sitting	45	Pass
	Mitigation	9	Sitting	9	Sitting	48	Pass
162	Existing	-	-	-	-	-	-
	Proposed	13	Standing	11	Standing	51	Pass
	Precinct	13	Standing	10	Sitting	50	Pass
	Mitigation	6	Sitting	6	Sitting	35	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
163	Existing	-	-	-	-	-	-
	Proposed	12	Standing	11	Standing	50	Pass
	Precinct	11	Standing	10	Sitting	50	Pass
	Mitigation	6	Sitting	5	Sitting	23	Pass
164	Existing	-	-	-	-	-	-
	Proposed	19	Walking	12	Standing	72	Pass
	Precinct	17	Strolling	10	Sitting	71	Pass
	Mitigation	15	Strolling	8	Sitting	61	Pass
165	Existing	-	-	-	-	-	-
	Proposed	9	Sitting	9	Sitting	56	Pass
	Precinct	9	Sitting	9	Sitting	46	Pass
	Mitigation	7	Sitting	5	Sitting	28	Pass
166	Existing	-	-	-	-	-	-
	Proposed	13	Standing	11	Standing	68	Pass
	Precinct	14	Standing	12	Standing	63	Pass
	Mitigation	8	Sitting	6	Sitting	38	Pass
167	Existing	-	-	-	-	-	-
	Proposed	14	Standing	11	Standing	68	Pass
	Precinct	14	Standing	11	Standing	66	Pass
	Mitigation	8	Sitting	7	Sitting	43	Pass
168	Existing	-	-	-	-	-	-
	Proposed	6	Sitting	6	Sitting	43	Pass
	Precinct	6	Sitting	6	Sitting	42	Pass
	Mitigation	7	Sitting	6	Sitting	40	Pass
169	Existing	-	-	-	-	-	-
	Proposed	7	Sitting	7	Sitting	42	Pass
	Precinct	6	Sitting	7	Sitting	42	Pass
	Mitigation	6	Sitting	7	Sitting	42	Pass
170	Existing	-	-	-	-	-	-
	Proposed	11	Standing	7	Sitting	45	Pass
	Precinct	10	Sitting	7	Sitting	44	Pass
	Mitigation	10	Sitting	7	Sitting	43	Pass
171	Existing	-	-	-	-	-	-
	Proposed	11	Standing	11	Standing	64	Pass
	Precinct	10	Sitting	7	Sitting	59	Pass
	Mitigation	10	Sitting	7	Sitting	60	Pass
172	Existing	-	-	-	-	-	-
	Proposed	10	Sitting	10	Sitting	63	Pass
	Precinct	9	Sitting	8	Sitting	50	Pass
	Mitigation	9	Sitting	8	Sitting	51	Pass
173	Existing	-	-	-	-	-	-
	Proposed	9	Sitting	7	Sitting	54	Pass
	Precinct	9	Sitting	7	Sitting	54	Pass
	Mitigation	9	Sitting	7	Sitting	54	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
174	Existing	-	-	-	-	-	-
	Proposed	8	Sitting	6	Sitting	40	Pass
	Precinct	8	Sitting	6	Sitting	39	Pass
	Mitigation	8	Sitting	6	Sitting	39	Pass
175	Existing	-	-	-	-	-	-
	Proposed	8	Sitting	6	Sitting	45	Pass
	Precinct	8	Sitting	6	Sitting	46	Pass
	Mitigation	8	Sitting	6	Sitting	46	Pass
176	Existing	-	-	-	-	-	-
	Proposed	13	Standing	11	Standing	64	Pass
	Precinct	13	Standing	12	Standing	66	Pass
	Mitigation	13	Standing	12	Standing	65	Pass
177	Existing	-	-	-	-	-	-
	Proposed	13	Standing	14	Standing	79	Pass
	Precinct	12	Standing	10	Sitting	55	Pass
	Mitigation	12	Standing	10	Sitting	55	Pass
178	Existing	-	-	-	-	-	-
	Proposed	13	Standing	8	Sitting	60	Pass
	Precinct	12	Standing	7	Sitting	60	Pass
	Mitigation	12	Standing	7	Sitting	60	Pass
179	Existing	-	-	-	-	-	-
	Proposed	8	Sitting	8	Sitting	49	Pass
	Precinct	8	Sitting	7	Sitting	50	Pass
	Mitigation	8	Sitting	8	Sitting	50	Pass
180	Existing	-	-	-	-	-	-
	Proposed	7	Sitting	8	Sitting	51	Pass
	Precinct	7	Sitting	8	Sitting	51	Pass
	Mitigation	8	Standing	8	Sitting	80	Pass
181	Existing	-	-	-	-	-	-
	Proposed	7	Sitting	8	Sitting	63	Pass
	Precinct	8	Sitting	9	Sitting	63	Pass
	Mitigation	9	Standing	9	Sitting	80	Pass
182	Existing	-	-	-	-	-	-
	Proposed	14	Standing	11	Standing	55	Pass
	Precinct	13	Standing	10	Sitting	53	Pass
	Mitigation	6	Sitting	6	Sitting	30	Pass
183	Existing	5	Sitting	5	Sitting	29	Pass
	Proposed	9	Sitting	7	Sitting	33	Pass
	Precinct	10	Sitting	7	Sitting	35	Pass
	Mitigation	8	Sitting	5	Sitting	29	Pass
184	Existing	-	-	-	-	-	-
	Proposed	7	Sitting	7	Sitting	35	Pass
	Precinct	6	Sitting	6	Sitting	33	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
	Mitigation	7	Sitting	6	Sitting	33	Pass
185	Existing	-	-	-	-	-	-
	Proposed	7	Sitting	7	Sitting	41	Pass
	Precinct	7	Sitting	7	Sitting	39	Pass
	Mitigation	7	Sitting	7	Sitting	39	Pass
186	Existing	-	-	-	-	-	-
	Proposed	7	Sitting	7	Sitting	35	Pass
	Precinct	7	Sitting	7	Sitting	37	Pass
	Mitigation	7	Sitting	7	Sitting	37	Pass

Season	Months	Hours
Summer	May - October	6:00 - 23:00 for comfort
Winter	November - April	6:00 - 23:00 for comfort
Annual	January - December	0:00 - 23:00 for safety

Configurations	
Existing	Existing site and surroundings
Proposed	Project with existing surroundings
Future	Project with future surroundings
Mitigation	Project with landscaping and future surroundings

Comfort Speed (km/h)		Safety Speed (km/h)	
(20% Seasonal Exceedance)		(0.1% Annual Exceedance)	
≤ 10	Sitting	≤ 90	Pass
11 - 14	Standing	> 90	Exceeded
15 - 17	Strolling		
18 - 20	Walking		
> 20	Uncomfortable		