

16-20 OLD CASTLE HILL ROAD

CASTLE HILL, NSW

SSDA PEDESTRIAN WIND STUDY

RWDI # 2409879

December 17, 2025

SUBMITTED TO

Urban Property Group

Suite 110, Level 1
180 186 Burwood Road
Burwood NSW 2134

SUBMITTED BY

RWDI Australia Pty Ltd

Suite 602, Level 6, 80 William Street,
Woolloomooloo NSW 2011, Australia
ABN 86 641 303 871

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STATEMENT OF DECLARATION

The undersigned declares that the SSDA Pedestrian Wind Study (SSDA-PWS) has been prepared in accordance with relevant policy, guidelines, or legislative requirements. The SSDA-PWS Report contains all available information relevant to the environmental assessment of the development, activity or infrastructure to which the SSDA-PWS Report relates; does not contain information that is false or misleading; identifies and addresses the relevant Planning Secretary's environmental assessment requirements (SEARs) for the project; identifies and addresses the relevant statutory requirements for the project, including any relevant matters for consideration in environmental planning instruments to which the SSDA-PWS Report relates; and contains a consolidated summary of the proposed or necessary mitigation measures.



Aman Choudhry, *Ph.D., MIEAust*
Leader Microclimate APAC
RWDI Australia Pty Ltd

EXECUTIVE SUMMARY

RWDI Australia Pty Ltd (RWDI) was retained to conduct a pedestrian wind environment assessment for the Proposed Development located at 16-20 Old Castle Hill Road in Castle Hill, NSW. The pedestrian level wind tunnel 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
Future Configuration: Proposed Development with existing & future approved 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 pedestrian wind safety and comfort conditions. The results of the assessment are summarised as follows:

Pedestrian Wind Safety

- **Existing Configuration:** The wind speeds were observed to be within the acceptable threshold for pedestrian safety at all the locations within and around the site for the existing configuration of site.
- **Proposed Configuration:** Wind speeds exceeding the safety criterion were observed at one location on Garthowen Crescent, within the northwest corner balconies on Levels 30 to 39, and within the Level 30 communal outdoor terrace.
- **Future Configuration:** Wind safety exceedance noted on the ground level along Garthowen Crescent was noted to be resolved with the inclusion of future buildings. However, upper-level exceedances are likely to be persist.

Pedestrian Wind Comfort

- **Existing Configuration:** For the existing configuration, the overall site wind conditions are generally calm and suitable for the intended use of the various areas around the site.
- **Proposed Configuration:** With the inclusion of the Proposed Development, wind comfort levels on the ground level, the communal outdoor space on Level 1, and private balconies are expected to be comfortable for the intended use of these spaces. However, wind conditions within the communal outdoor terrace on Level 30 are likely to be windier.
- **Future Configuration:** The inclusion of future developments is likely to provide additional shielding to ground and lower level areas. Hence, overall wind comfort levels are expected to improve on ground and Level 1. However, higher winds are likely to persist to Level 30 communal outdoor space.

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1 PROJECT OVERVIEW

1.1 Introduction

This report supports a State Significant Development Application and Concurrent Rezoning (SSDA) being lodged with the Department of Planning, Housing and Infrastructure (DPHI) for a residential development including affordable housing at 16-20 Old Castle Hill Road, Castle Hill (the site). The proponent for the SSDA is UPG Castle Corner Pty Ltd (UPG).

State Environmental Planning Policy (Planning Systems) 2022 (Planning Systems SEPP) identifies development which is declared to be State Significant. The site was declared SSD pursuant to State Significant Declaration Order 2025 (No 7) (the Order) issued on 13 May 2025.

A separate 'Early Works' SSDA seeks approval for site establishment, tree removal, bulk excavation, infrastructure services augmentation and ancillary site works. This 'Main Works' SSDA and Concurrent Rezoning seeks approval for the built form aspects of the residential flat building.

The proposal aims to:

- Facilitate transport-oriented development within an area of high amenity, promoting increases to both market and affordable housing supply proximate to public transport, open space, and employment.
- Respond to the housing challenges facing NSW through boosting the delivery of housing in an area of growth.
- Align with the NSW Government's strategic ambitions to deliver 23,300 homes in The Hills by 2029.
- Deliver affordable housing in accordance with the in-fill affordable housing provisions of *State Environmental Planning Policy (Housing) 2021*.
- Deliver a built form that relates to the surrounding context and respects the character of its environs.

The objective of the study is to assess the wind comfort and safety conditions along pedestrian areas within and around the study site and provide recommendations for minimising adverse wind effects, if needed. 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.

1.2 Site Description

The site is situated at 16-20 Old Castle Hill Road, Castle Hill, within The Hills Local Government Area (LGA). It is well located, being approximately 250m from Castle Hill Metro Station which provides services to Rouse Hill, Macquarie Park, Chatswood and the Sydney CBD. It is equally proximate to Castle Towers shopping centre, a major regional retail hub. The site has ready access to public open space being less than 100m from Arthur Whitling Park and Eric Fenton Reserve.

The site is located at the corner of Old Castle Hill Road and McMullen Avenue comprising an area of 3,180.4m². It comprises 4 lots in an irregular configuration, legally described as:

- Lot 10 in DP 881332
- Lot 11 in DP 881332
- Lot 20 in DP 222257
- Lot 1 in DP 204335

A site aerial is provided in Image 1.

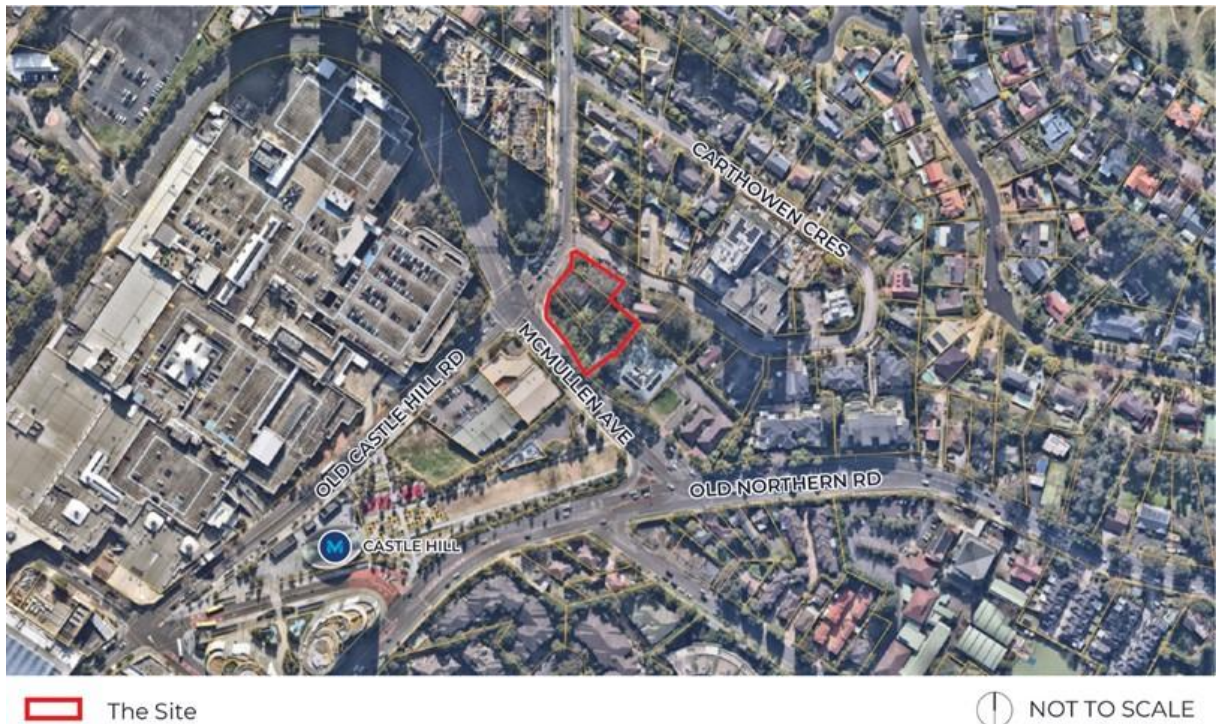


Image 1: Site Aerial Map

(Source: Nearmap, edits by Colliers Urban Planning)

The site currently contains development comprising two detached residential dwellings located on 18 and 20 Castle Hill Road. There is currently no development on 16 Castle Hill Road. The site as a whole is covered in dense vegetation and has a steep slope upwards from the north-west to the south-east.

1.3 Overview of Proposed Development

A high-level summary of the Proposed Development is described below, with further details provided within the Environmental Impact Assessment and Rezoning Report (EIS).

The SSDA seeks approval for:

- The construction and operation of a 40-storey residential flat building, comprising the following:
 - Market and affordable housing units;
 - Basement parking; and
 - Communal open space;
- Associated landscaping and public domain works.

1.4 Secretary’s Environmental Assessment Requirements

In accordance with section 4.39 of the Environmental Planning & Assessment Act 1979 (EP&A Act), Secretary’s Environmental Assessment Requirements (SEARs) for SSD-85238209 has been issued. This report has been prepared to respond to the issued SEARs, as set out in table below.

Table: SSD-85238209 SEARs Compliance Table

SEARS Request	Response / Location in Report
<p>7. Environmental Amenity</p> <ul style="list-style-type: none"> Assess amenity impacts on the surrounding locality, including solar access, visual privacy, view loss and view sharing, as well as wind, lighting and reflectivity impacts. A high level of environmental amenity for any surrounding residential or other sensitive land uses must be demonstrated. 	<p>Section 3.2 & 3.3</p>
<p>23. Public Space</p> <ul style="list-style-type: none"> If public space is proposed as part of the development, demonstrate how the development: <ul style="list-style-type: none"> maximises the amenity of public spaces in line with their intended use, such as through adequate facilities, solar access, shade and wind protection. 	<p>Section 3.4</p>

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 Config:** Existing Site with Existing Surrounding Buildings (Image 2A);
- Proposed Config:** Proposed Development with Existing Surrounding Buildings (Image 2B); and
- Future Config:** Proposed Development with Existing and Future Approved Surrounding Buildings (Image 2C).

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 76 specially designed wind speed sensors to measure mean and gust speeds at a full-scale height of approximately 1.5 m above local ground in pedestrian areas throughout the study site. The placement of wind measurement sensors was based on RWDI's 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).

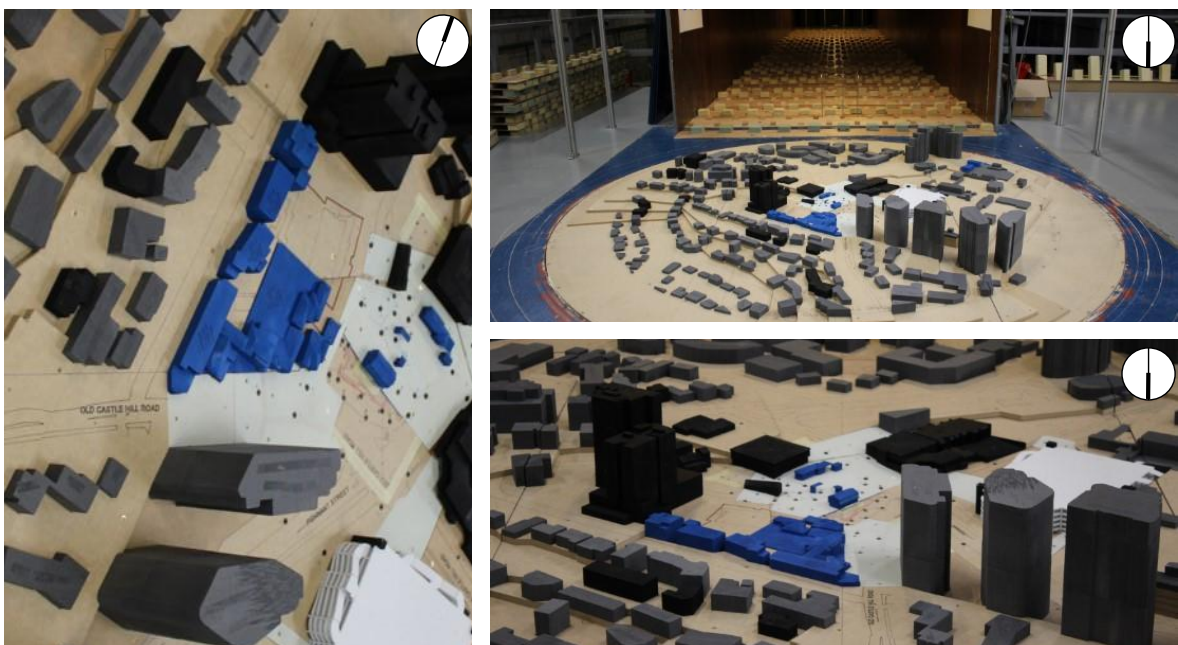


Image 2A: Wind Tunnel Study Model – Existing Configuration

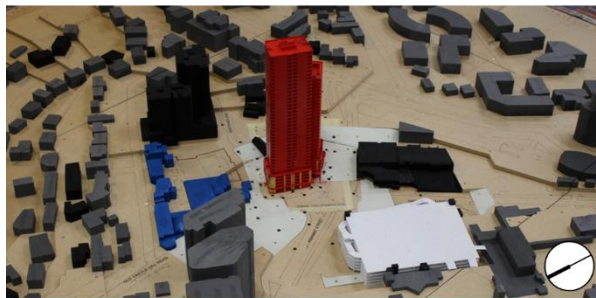


Image 2B: Wind Tunnel Study Model - Proposed Configuration

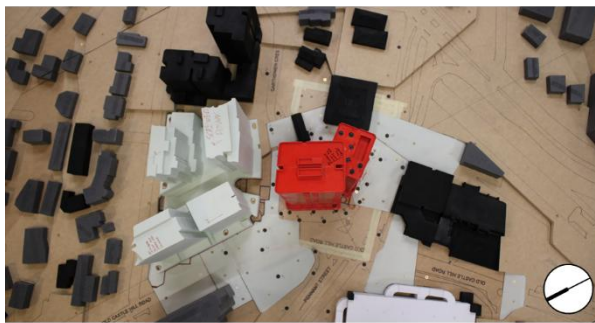


Image 2C: Wind Tunnel Study Model – Proposed Future Configuration with Approved Surrounding Buildings

2.2 Meteorological Data

The inland location of the site is expected to reduce exposure to prevailing sea breezes that is a characteristic prominent in coastal areas around Sydney. Consequently, meteorological data from Bankstown Airport, rather than Sydney International Airport, was selected to better represent local conditions.

Wind statistics recorded at Bankstown Airport were analysed for the period between 1995 and 2020 (inclusive) and used for the study. Relevant corrections have been applied to the met data to account for the siting of the anemometer at Bankstown Airport. Data beyond 2020 was excluded due to a significant reduction in wind speeds, likely caused by new constructions near the anemometer site. Image 3 graphically depicts the annual directional distributions of wind frequencies and speeds recorded at the station. Winds are generally more uniformly distributed around the compass with prevailing winds originating from the northeast, southeast, and west to northwest directions. Comparison of wind speed measurements from Bankstown Airport and Sydney International Airport shows that the overall wind climate is typically mild inland with strong winds greater than 30km/hr (at an anemometer height of 10 m) observed for approximately 6.0% of the time during the year.

Time-history of the wind for the period above 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.

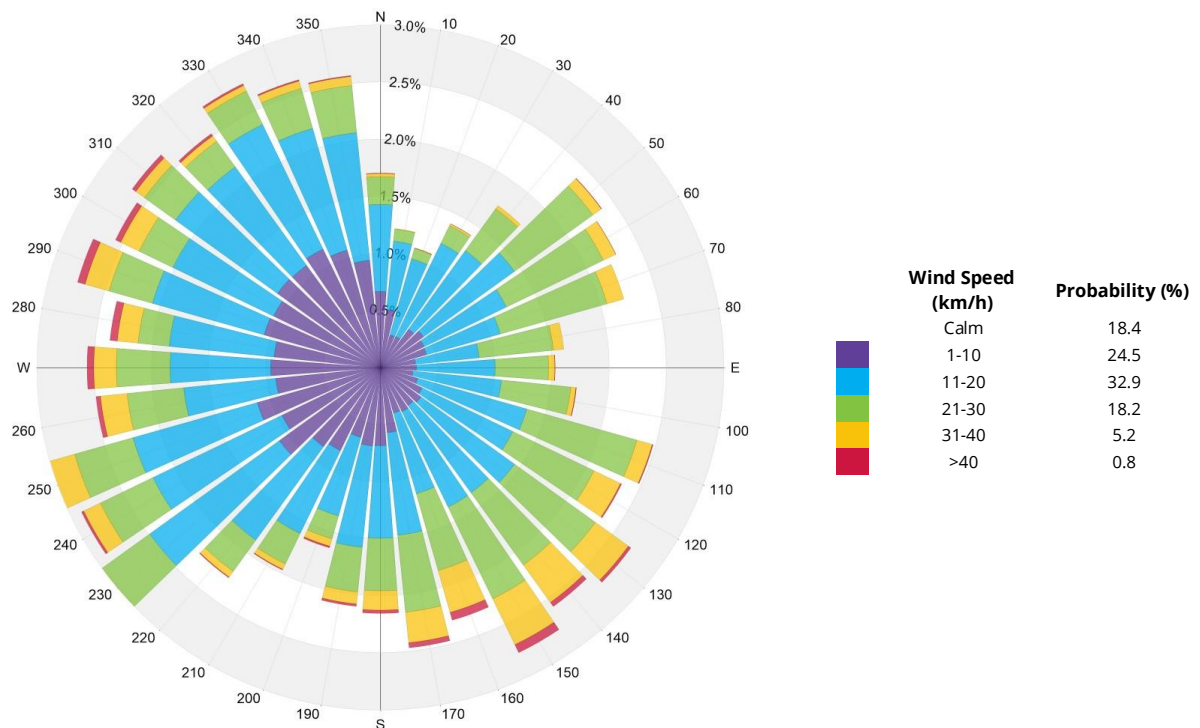


Image 3: Directional Distribution of Winds Approaching Bankstown Airport (1995 to 2020)

2.3 Pedestrian Wind Criteria

2.3.1 Wind Safety

Pedestrian safety is associated with excessive gusts that can adversely affect a pedestrian’s balance and footing. The criterion to assess pedestrian safety is based on the guidelines of the Australasian Wind Engineering Society (2024). The guidelines dictate that if **the maximum average 3-second gust speeds of more than 83 km/h (23 m/s) occur for more than 9 hours (0.1% of the time) on an annual basis**, the wind conditions are considered severe. Wind control measures, in the form of an architectural response, are typically required at locations where wind speeds exceed the wind safety criterion.

2.3.2 Wind Comfort

The RWDI pedestrian wind comfort criteria, which have been developed through research and consulting practice since 1974, have been utilised for the current assessment. These criteria, shown in the Table below, have gained widespread acceptance among municipal authorities, building designers, and city planners globally. Pedestrian wind comfort is assessed using Gust Equivalent Mean (GEM) wind speeds which quantifies the combined impact of mean and gust speeds on pedestrian comfort making it a reliable predictor for assessing wind conditions in built-up environments. The wind comfort levels are categorised based on intended pedestrian use and are expressed in terms of their suitability for various levels of human activity. Wind control measures are typically required at locations where the occurrence frequencies of wind speeds exceed the threshold values for the specific pedestrian activity intended for the space.

Table: Pedestrian Wind Comfort Criteria

Comfort Category	GEM Speed (km/h)	Description
Sitting	≤ 10	Calm or light breezes are 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, private balconies / terraces, 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)
- (2) Gust Speed = Mean Speed + 3*RMS Speed
- (3) Wind conditions are 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.

It should be noted that factors such as regional wind climate, thermal conditions, age, health, and clothing can also influence an individual's perception of the wind climate. Therefore, a comparison of wind speeds between the various configurations provides an objective assessment of local pedestrian wind conditions and the impact of the building massing.

3 RESULTS AND DISCUSSION

The predicted wind conditions are shown on site plans in Figures 1A through 4C 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 wind ameliorations or vegetation/landscaping to establish a baseline understanding of the wind conditions around the site, as per guidelines.

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.

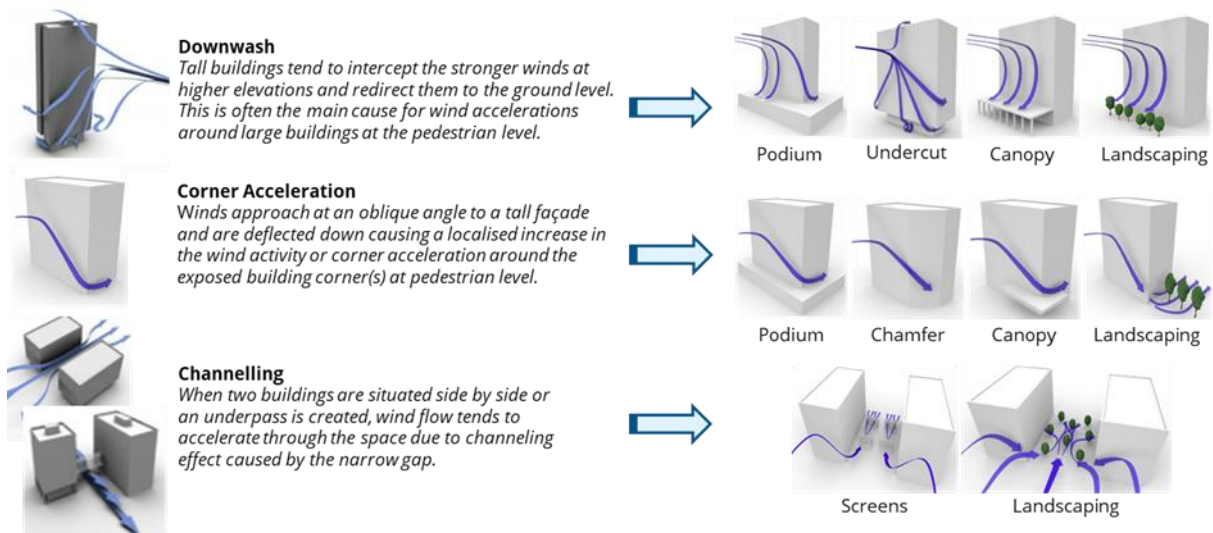


Image 4: General Wind Flows around Buildings and Examples of Wind Control Measures

3.2 Pedestrian Wind Safety

3.2.1 Existing Configuration

The wind speeds were observed to be within the acceptable threshold for pedestrian safety at all the locations for the existing configuration of site.

3.2.2 Proposed Configuration

Wind safety conditions within and around the Proposed Development site are shown in Figures 3B and 4B. Wind speeds exceeding the safety limits were observed at the following locations:

- One ground level area located near the north of the Proposed Development along Garthowen Cres (Sensor 40) - caused by westerly winds downwashing and impacting the street.
- At the upper-level northwest corner balconies (Sensor 74 located at Level 39) - caused by westerly winds wrapping around the corner.
- At the Level 30 communal outdoor terrace (Sensors 67 and 68) caused by the downwash and corner acceleration due to southwest and southeast sector winds.

3.2.3 Future Configuration

Wind safety conditions within and around the Proposed Development site within the context of existing and potential future surroundings are shown in Figures 3C and 4C. The following key observations can be made for the cumulative impact of all buildings:

- Wind safety exceedance at Sensor 40 observed for the proposed configuration of the site is expected to be resolved with the inclusion of future surrounding buildings.
- Wind safety exceedances at northwest corner balcony (Sensor 74) caused by westerly winds wrapping around the corner is expected to persist.
- Winds exceeding the safety limit were also observed at the Level 30 communal outdoor terrace with a minor shift in strong winds now impacting Sensor 65 towards the eastern end of the terrace instead of Sensor 68. These are potentially caused by direct winds and downwash of southeast winds. Exceedance at Sensor 67 is likely to persist which is caused by the downwash and corner acceleration due to southeast winds.

3.3 Pedestrian Wind Comfort

3.3.1 Existing Configuration

For the existing configuration, the overall site wind conditions are generally calm and suitable for sitting and standing use (Figure 1A).

3.3.2 Proposed Configuration

The inclusion of the Proposed Development leads to a shift in wind conditions on the ground level. Wind comfort conditions on ground and upper levels of the development are shown in Figures 1B and 2B. Key wind effects are summarised below:

- **Ground:** Wind conditions were typically observed to be suitable for the intended use of the various areas on the ground level including the primary entrance located at the corner of Old Castle Hill Road

and McMullen Avenue. Wind comfort levels along the various surrounding streets are expected to range from standing to strolling use, aligning with the target comfort threshold.

- **Level 1 Communal Area:** The communal outdoor space on Level 1 is sheltered from the prevailing winds due to the massing of the Proposed Development and the neighbouring building along Gawthorne Crescent. Hence, impacts are small with conditions noted to be suitable for sitting to standing use within the communal area. Slightly windier conditions, suitable for strolling use, can occur along the lane connecting the space with McMullen Avenue.
- **Level 30 Communal Area:** Wind conditions within the communal outdoor terrace and pool area on Level 30 are expected to range from standing use to strolling use near the pool deck. Strolling use wind conditions (Sensors 65, 66, 68, 70 and 71) are considered to be one category windier than suitable for communal spaces.
- **Private Balconies:** Wind comfort levels within all private balconies are expected to be comfortable for their intended use. Wind comfort levels generally range from sitting to standing use within these spaces with the south-east corner balcony on Level 5 likely to reach strolling comfort levels (Sensor 51).

3.3.3 Future Configuration

Wind comfort conditions on ground and upper levels of the development with the inclusion of future buildings are shown in Figures 1C and 2C. Key wind effects are summarised below:

- **Ground:** Wind conditions on the ground level are expected to improve with the inclusion of the future buildings along Garthowen Crescent with most areas expected to be comfortable for sitting to standing use around the site. Strolling comfort levels are expected along Garthowen Crescent due to channelling of westerly and southeasterly winds along the street.
- **Level 1 Communal Area:** The wind conditions on communal outdoor space on Level 1 are also likely to improve with the inclusion of future building with most areas now comfortable for sitting to standing use. Winds along the lane connecting the space with McMullen Avenue were also noted to improve.
- **Level 30 Communal Area:** Wind conditions within the communal outdoor terrace and pool area on Level 30 would become slightly windier due to an increase in northeast sector winds and are expected to range from standing use to walking use near the pool deck. Strolling use wind conditions (Sensors 65, 68, 70 and 71) and walking use condition (Sensor 66) are considered to be one to two categories windier than suitable for communal spaces.
- **Private Balconies:** Wind comfort levels within all private balconies are expected to be remain comfortable for their intended use with the inclusion of future buildings.

Note that the wind tunnel tests were undertaken without any landscaping to obtain a baseline understanding of pedestrian wind conditions. It is expected that the overall wind conditions will generally be relatively calmer with the inclusion of the existing and proposed landscaping within and around the site.

3.4 Wind Mitigation Measures

Based on the findings of the wind tunnel study, the architectural design (from drawings received 17 December 2025) has incorporated the following in-principle wind mitigation strategies to improve the overall wind environment:

- **Ground:** The extent of the awning along Old Castle Hill Road that wraps around to Garthowen Crescent has been extended to at least 3 m to mitigate the downwash due to westerly winds.
- **Level 30 Communal Terrace:** The height of perimeter screening has been increased to at least 1.5 m above FFL and furthermore, the awning has been maintained to be at least 3 m to increase wind capture and reduce impacts of downwash. Wind comfort levels would be further improved through the inclusion of dense landscaping features, and localised screening around proposed outdoor seating areas integrated into the landscape design.
- **Northwest Corner Balconies (Levels 30 and above):** A full-height impermeable screen has been included along the shorter aspect to mitigate corner wind acceleration effects. Extending the screen further can further improve conditions for the balcony if desired.

4 STATEMENT OF LIMITATIONS

Limitations

This report entitled '16-20 Old Castle Hill Road: SSDA Pedestrian Wind Study' was prepared by RWDI Australia Pty Ltd ("RWDI") for Urban Property Group ("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 from the client and used to construct the scale model of the development ("**Project Data**")

File Name	File Type	Date Received
20240027-AB-SK002-R24	STL	22 August 2025
20240027-AB-SK001-R24-E-Architectural Model	DWG	12 November 2025

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



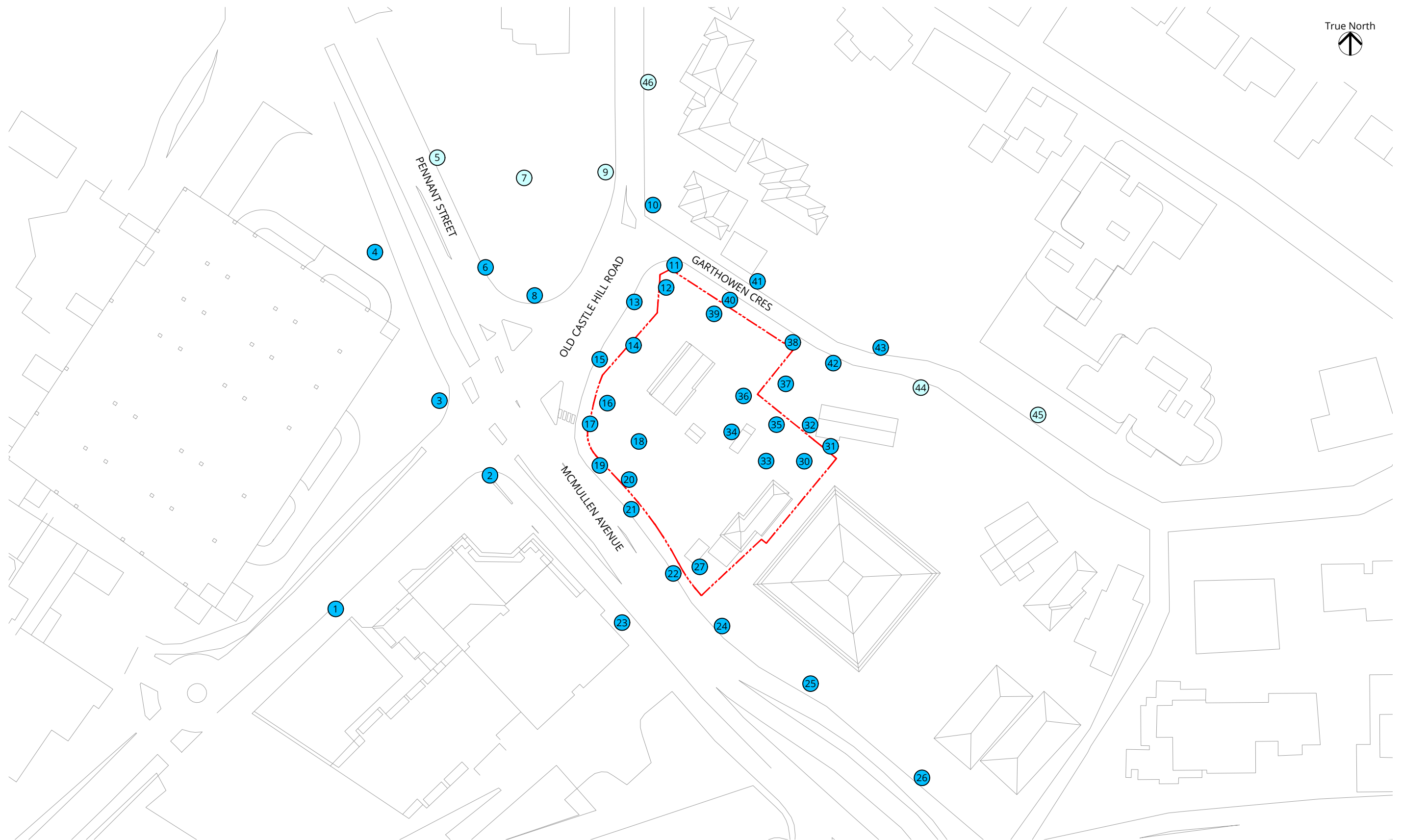
upon the Client and/or any other third party reviewing the recommendations and conclusions in this report to contact RWDI in the event of any change in the Project Data and Project Specific Conditions in order to determine whether any such change(s) may impact the assumptions upon which the recommendations and conclusions were made.

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A decorative graphic on the left side of the page, featuring a blue curved shape at the top left and a larger grey curved shape below it, separated by a white border.

FIGURES



COMFORT CATEGORIES:

- Sitting —————
- Standing —————
- Strolling —————
- Walking —————
- Uncomfortable —————

Pedestrian Wind Comfort Conditions - Ground Floor

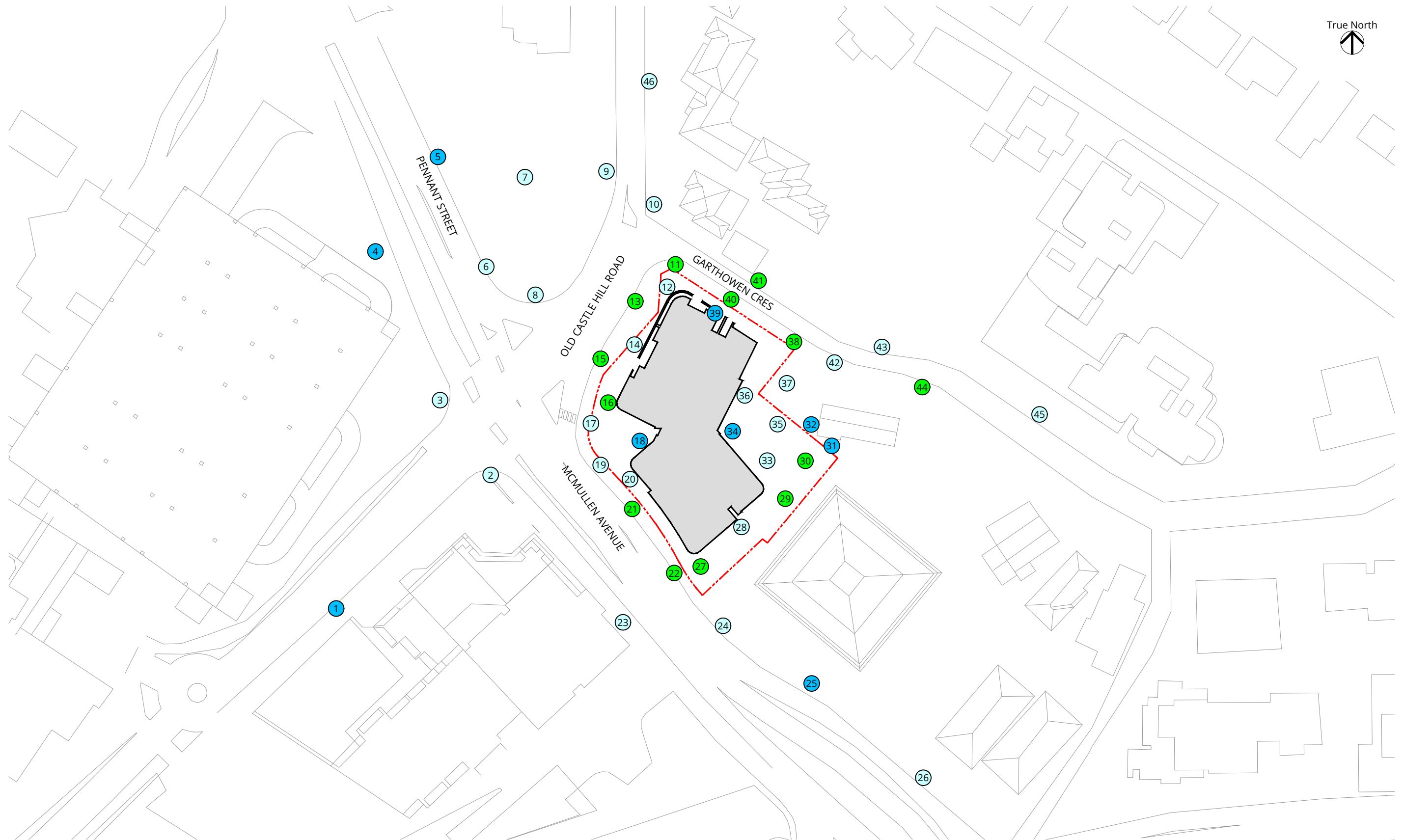
Configuration 1: Existing Site with Existing Surrounding Buildings

Annual

2409879 16-20 Old Castle Hill Road - Castle Hill, NSW



Figure: 1A



COMFORT CATEGORIES:

- Sitting —————
- Standing —————
- Strolling —————
- Walking —————
- Uncomfortable —————

Pedestrian Wind Comfort Conditions - Ground Floor

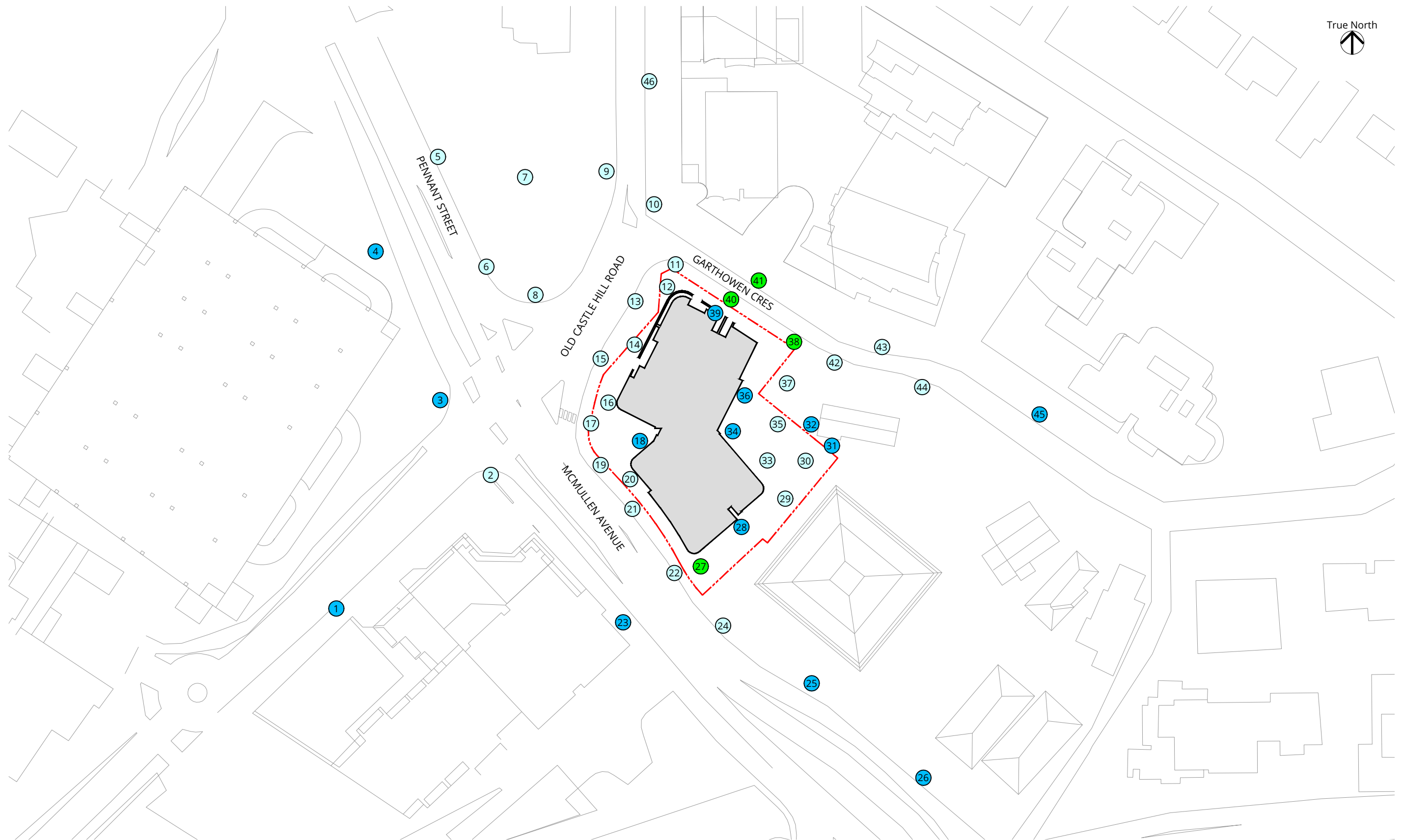
Configuration 2: Proposed Development with Existing Surrounding Buildings

Annual

2409879 16-20 Old Castle Hill Road - Castle Hill, NSW

Figure: 1B





COMFORT CATEGORIES:

- Sitting —————
- Standing —————
- Strolling —————
- Walking —————
- Uncomfortable —————

Pedestrian Wind Comfort Conditions - Ground Floor

Configuration 3: Proposed Development with Cumulative Surrounding Buildings

Annual

2409879 16-20 Old Castle Hill Road - Castle Hill, NSW



Figure: 1C



COMFORT CATEGORIES:

- Sitting —————
- Standing —————
- Strolling —————
- Walking —————
- Uncomfortable —————

Pedestrian Wind Comfort Conditions - Ground Floor

Configuration 2: Proposed Development with Existing Surrounding Buildings

Annual

2409879 16-20 Old Castle Hill Road - Castle Hill, NSW



Figure: 2B



COMFORT CATEGORIES:

- Sitting —————
- Standing —————
- Strolling —————
- Walking —————
- Uncomfortable —————

Pedestrian Wind Comfort Conditions - Ground Floor

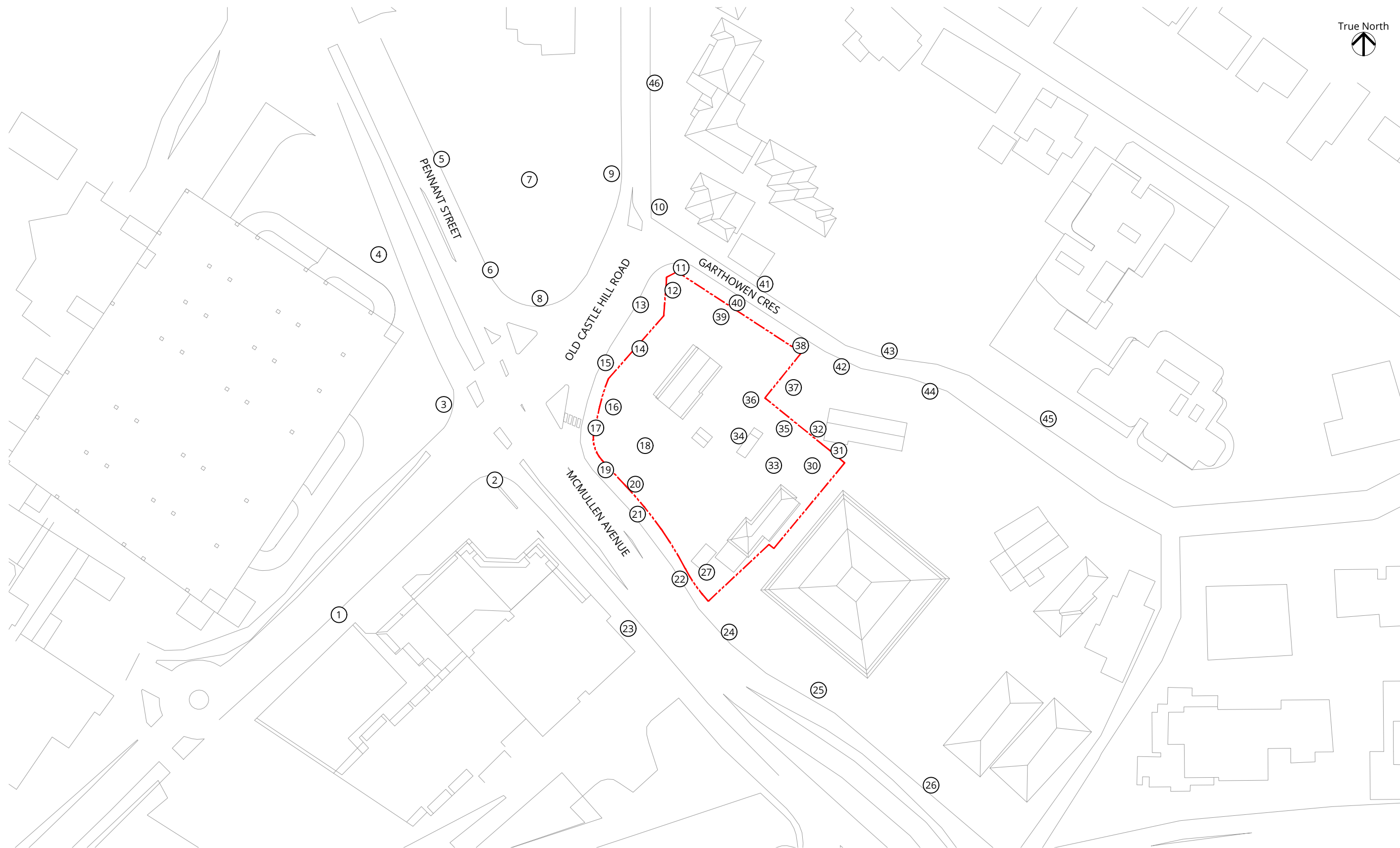
Configuration 3: Proposed Development with Cumulative Surrounding Buildings

Annual

2409879 16-20 Old Castle Hill Road - Castle Hill, NSW



Figure: 2C



SAFETY CATEGORIES:

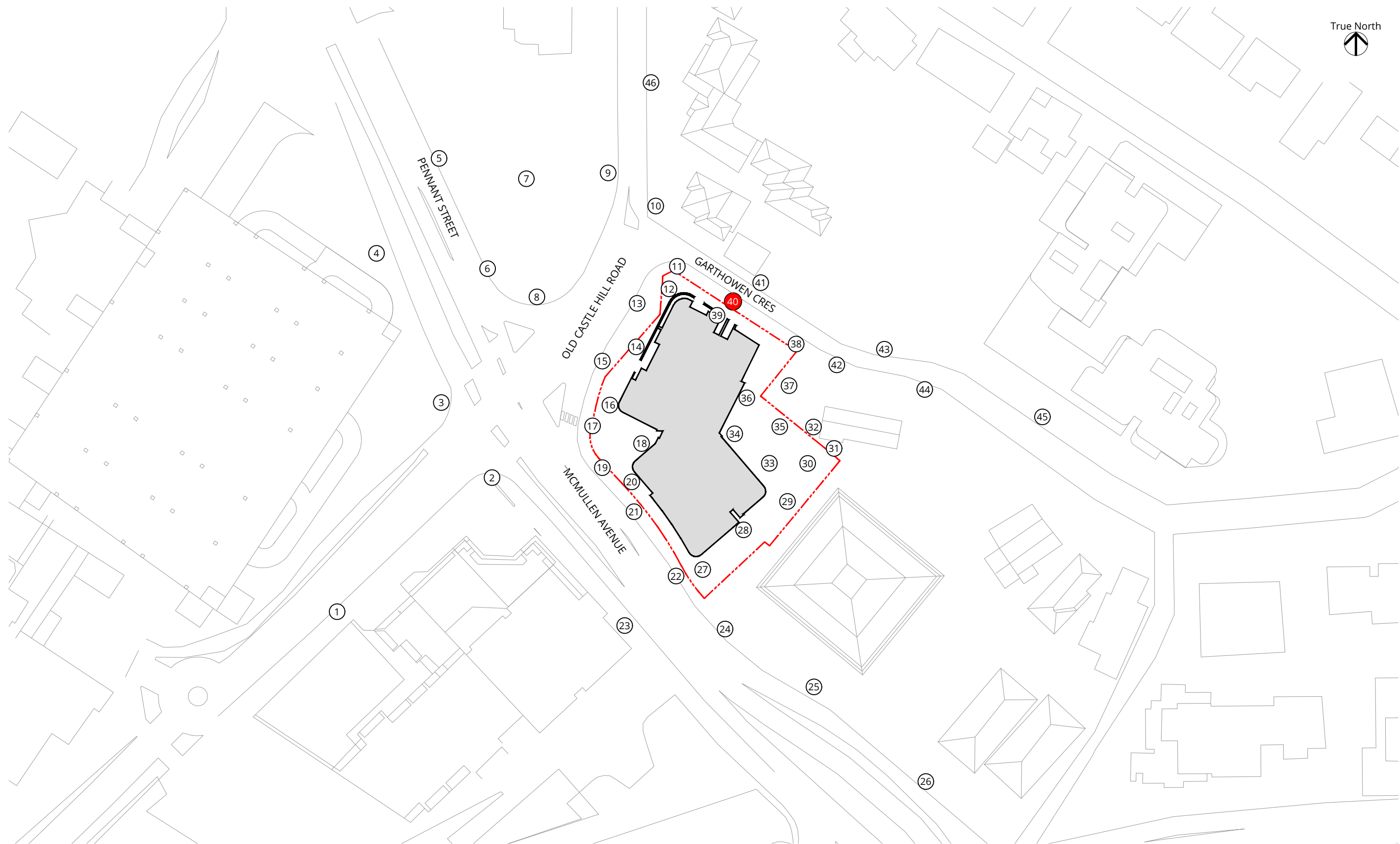
- Pass ————
- Exceeded ————

Pedestrian Wind Safety Conditions - Ground Floor

Configuration 1: Existing Site with Existing Surrounding Buildings
Annual



True North



SAFETY CATEGORIES:

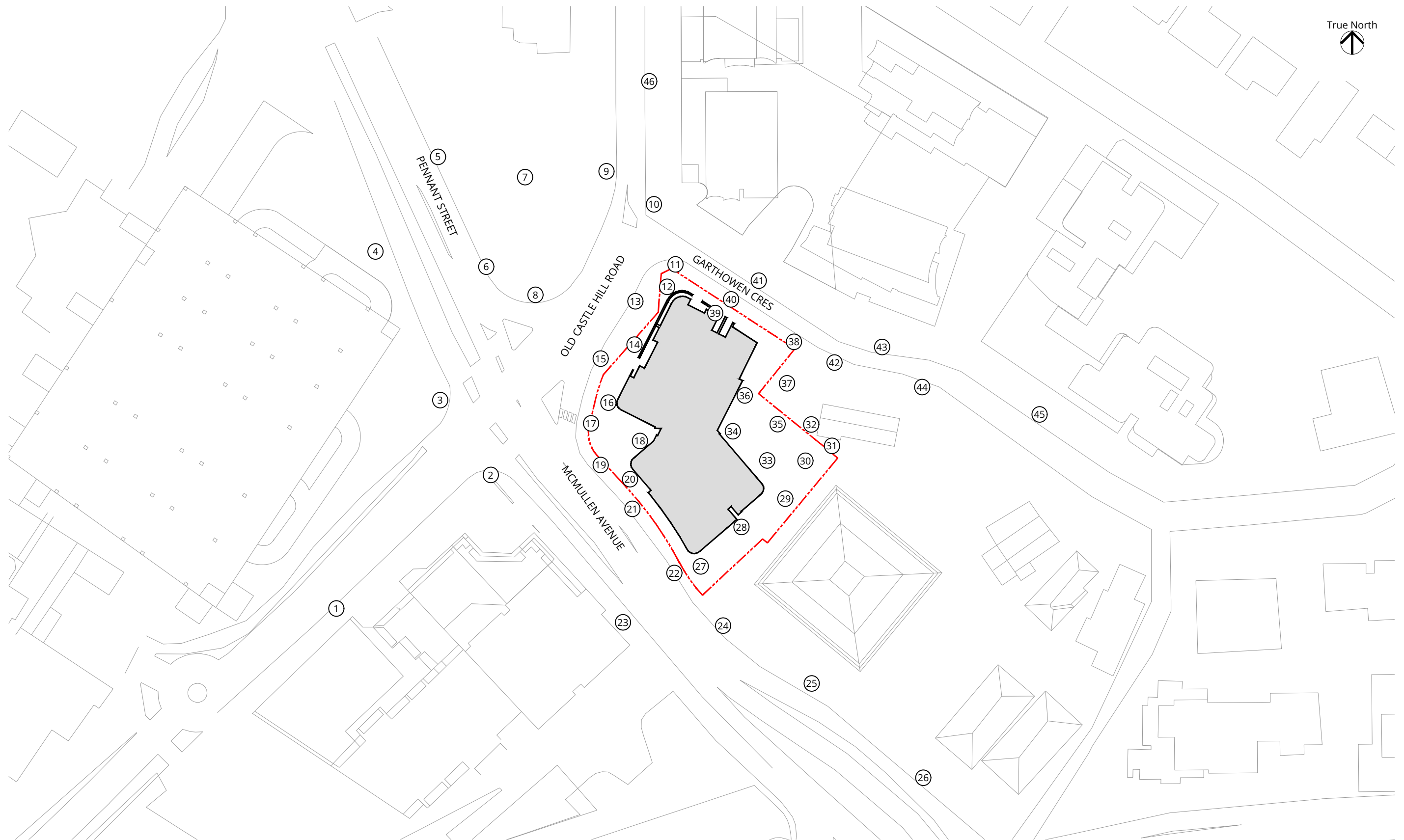
- Pass
- Exceeded

Pedestrian Wind Safety Conditions - Ground Floor



Configuration 2: Proposed Development with Existing Surrounding Buildings

Annual





SAFETY CATEGORIES:

- Pass ———— 
- Exceeded ———— 

Pedestrian Wind Safety Conditions - Ground Floor

Configuration 3: Proposed Development with Cumulative Surrounding Buildings

Annual





SAFETY CATEGORIES:

- Pass ————
- Exceeded ————

Pedestrian Wind Safety Conditions - Elevated Levels

Configuration 2: Proposed Development with Existing Surrounding Buildings

Annual





SAFETY CATEGORIES:

- Pass ————
- Exceeded ————

Pedestrian Wind Safety Conditions - Elevated Levels

Configuration 3: Proposed Development with Cumulative Surrounding Buildings

Annual



The page features a decorative background. In the top-left corner, there is a blue right-angled triangle. A large, light-grey circle overlaps the bottom and right sides of the page, partially covering the blue triangle. The word 'TABLES' is centered within the grey circle in a blue, sans-serif font.

TABLES

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort		Wind Safety	
		Annual		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating
1	C1	8	Sitting	38	Pass
	C2	8	Sitting	36	Pass
	C3	8	Sitting	39	Pass
2	C1	9	Sitting	37	Pass
	C2	13	Standing	56	Pass
	C3	12	Standing	58	Pass
3	C1	8	Sitting	36	Pass
	C2	11	Standing	50	Pass
	C3	10	Sitting	50	Pass
4	C1	8	Sitting	36	Pass
	C2	7	Sitting	33	Pass
	C3	8	Sitting	36	Pass
5	C1	11	Standing	47	Pass
	C2	10	Sitting	42	Pass
	C3	11	Standing	47	Pass
6	C1	10	Sitting	43	Pass
	C2	12	Standing	48	Pass
	C3	11	Standing	46	Pass
7	C1	12	Standing	52	Pass
	C2	13	Standing	53	Pass
	C3	12	Standing	53	Pass
8	C1	9	Sitting	42	Pass
	C2	14	Standing	58	Pass
	C3	12	Standing	58	Pass
9	C1	11	Standing	51	Pass
	C2	13	Standing	59	Pass
	C3	14	Standing	57	Pass
10	C1	10	Sitting	44	Pass
	C2	13	Standing	64	Pass
	C3	14	Standing	58	Pass
11	C1	9	Sitting	37	Pass
	C2	16	Strolling	65	Pass
	C3	14	Standing	61	Pass
12	C1	9	Sitting	36	Pass
	C2	12	Standing	58	Pass
	C3	11	Standing	59	Pass
13	C1	9	Sitting	38	Pass
	C2	16	Strolling	60	Pass
	C3	12	Standing	55	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort		Wind Safety	
		Annual		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating
14	C1	8	Sitting	35	Pass
	C2	12	Standing	49	Pass
	C3	11	Standing	48	Pass
15	C1	9	Sitting	41	Pass
	C2	15	Strolling	61	Pass
	C3	13	Standing	56	Pass
16	C1	8	Sitting	34	Pass
	C2	15	Strolling	67	Pass
	C3	13	Standing	63	Pass
17	C1	8	Sitting	37	Pass
	C2	14	Standing	56	Pass
	C3	13	Standing	55	Pass
18	C1	8	Sitting	33	Pass
	C2	9	Sitting	47	Pass
	C3	8	Sitting	46	Pass
19	C1	8	Sitting	34	Pass
	C2	14	Standing	58	Pass
	C3	12	Standing	58	Pass
20	C1	8	Sitting	33	Pass
	C2	13	Standing	63	Pass
	C3	13	Standing	62	Pass
21	C1	8	Sitting	36	Pass
	C2	15	Strolling	65	Pass
	C3	14	Standing	66	Pass
22	C1	9	Sitting	40	Pass
	C2	16	Strolling	67	Pass
	C3	14	Standing	68	Pass
23	C1	8	Sitting	35	Pass
	C2	11	Standing	51	Pass
	C3	10	Sitting	52	Pass
24	C1	9	Sitting	45	Pass
	C2	14	Standing	70	Pass
	C3	13	Standing	70	Pass
25	C1	7	Sitting	33	Pass
	C2	8	Sitting	45	Pass
	C3	7	Sitting	46	Pass
26	C1	10	Sitting	47	Pass
	C2	11	Standing	57	Pass
	C3	9	Sitting	58	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort		Wind Safety	
		Annual		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating
27	C1	6	Sitting	25	Pass
	C2	17	Strolling	71	Pass
	C3	15	Strolling	71	Pass
28	C1	-	N/A	-	N/A
	C2	11	Standing	59	Pass
	C3	9	Sitting	51	Pass
29	C1	-	N/A	-	N/A
	C2	15	Strolling	74	Pass
	C3	14	Standing	74	Pass
30	C1	9	Sitting	39	Pass
	C2	15	Strolling	67	Pass
	C3	14	Standing	64	Pass
31	C1	8	Sitting	32	Pass
	C2	10	Sitting	52	Pass
	C3	9	Sitting	47	Pass
32	C1	7	Sitting	32	Pass
	C2	10	Sitting	48	Pass
	C3	10	Sitting	53	Pass
33	C1	8	Sitting	37	Pass
	C2	12	Standing	58	Pass
	C3	12	Standing	59	Pass
34	C1	8	Sitting	33	Pass
	C2	10	Sitting	58	Pass
	C3	10	Sitting	55	Pass
35	C1	8	Sitting	34	Pass
	C2	14	Standing	62	Pass
	C3	14	Standing	63	Pass
36	C1	8	Sitting	35	Pass
	C2	11	Standing	55	Pass
	C3	10	Sitting	51	Pass
37	C1	8	Sitting	36	Pass
	C2	11	Standing	65	Pass
	C3	12	Standing	67	Pass
38	C1	9	Sitting	38	Pass
	C2	15	Strolling	82	Pass
	C3	16	Strolling	79	Pass
39	C1	8	Sitting	33	Pass
	C2	9	Sitting	51	Pass
	C3	10	Sitting	55	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort		Wind Safety	
		Annual		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating
40	C1	8	Sitting	37	Pass
	C2	15	Strolling	91	Exceeded
	C3	17	Strolling	81	Pass
41	C1	9	Sitting	39	Pass
	C2	16	Strolling	79	Pass
	C3	17	Strolling	73	Pass
42	C1	9	Sitting	42	Pass
	C2	14	Standing	62	Pass
	C3	14	Standing	64	Pass
43	C1	10	Sitting	47	Pass
	C2	13	Standing	61	Pass
	C3	13	Standing	63	Pass
44	C1	13	Standing	62	Pass
	C2	15	Strolling	66	Pass
	C3	12	Standing	64	Pass
45	C1	11	Standing	49	Pass
	C2	11	Standing	55	Pass
	C3	10	Sitting	48	Pass
46	C1	12	Standing	52	Pass
	C2	13	Standing	56	Pass
	C3	13	Standing	58	Pass
47	C1	-	N/A	-	N/A
	C2	13	Standing	66	Pass
	C3	12	Standing	68	Pass
48	C1	-	N/A	-	N/A
	C2	11	Standing	62	Pass
	C3	11	Standing	67	Pass
49	C1	-	N/A	-	N/A
	C2	9	Sitting	49	Pass
	C3	9	Sitting	55	Pass
50	C1	-	N/A	-	N/A
	C2	9	Sitting	50	Pass
	C3	8	Sitting	50	Pass
51	C1	-	N/A	-	N/A
	C2	15	Strolling	69	Pass
	C3	14	Standing	68	Pass
52	C1	-	N/A	-	N/A
	C2	13	Standing	57	Pass
	C3	13	Standing	56	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort		Wind Safety	
		Annual		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating
53	C1	-	N/A	-	N/A
	C2	11	Standing	53	Pass
	C3	11	Standing	52	Pass
54	C1	-	N/A	-	N/A
	C2	10	Sitting	45	Pass
	C3	9	Sitting	44	Pass
55	C1	-	N/A	-	N/A
	C2	10	Sitting	61	Pass
	C3	10	Sitting	59	Pass
56	C1	-	N/A	-	N/A
	C2	8	Sitting	41	Pass
	C3	7	Sitting	43	Pass
57	C1	-	N/A	-	N/A
	C2	9	Sitting	48	Pass
	C3	8	Sitting	43	Pass
58	C1	-	N/A	-	N/A
	C2	9	Sitting	48	Pass
	C3	8	Sitting	46	Pass
59	C1	-	N/A	-	N/A
	C2	9	Sitting	44	Pass
	C3	11	Standing	54	Pass
60	C1	-	N/A	-	N/A
	C2	8	Sitting	47	Pass
	C3	9	Sitting	50	Pass
61	C1	-	N/A	-	N/A
	C2	9	Sitting	58	Pass
	C3	9	Sitting	56	Pass
62	C1	-	N/A	-	N/A
	C2	7	Sitting	40	Pass
	C3	7	Sitting	40	Pass
63	C1	-	N/A	-	N/A
	C2	8	Sitting	57	Pass
	C3	8	Sitting	48	Pass
64	C1	-	N/A	-	N/A
	C2	7	Sitting	46	Pass
	C3	7	Sitting	51	Pass
65	C1	-	N/A	-	N/A
	C2	17	Strolling	82	Pass
	C3	17	Strolling	84	Exceeded

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort		Wind Safety	
		Annual		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating
66	C1	-	N/A	-	N/A
	C2	17	Strolling	80	Pass
	C3	18	Walking	80	Pass
67	C1	-	N/A	-	N/A
	C2	14	Standing	87	Exceeded
	C3	14	Standing	88	Exceeded
68	C1	-	N/A	-	N/A
	C2	16	Strolling	83	Exceeded
	C3	16	Strolling	79	Pass
69	C1	-	N/A	-	N/A
	C2	13	Standing	69	Pass
	C3	13	Standing	68	Pass
70	C1	-	N/A	-	N/A
	C2	16	Strolling	80	Pass
	C3	15	Strolling	81	Pass
71	C1	-	N/A	-	N/A
	C2	15	Strolling	74	Pass
	C3	15	Strolling	72	Pass
72	C1	-	N/A	-	N/A
	C2	11	Standing	63	Pass
	C3	12	Standing	65	Pass
73	C1	-	N/A	-	N/A
	C2	8	Sitting	47	Pass
	C3	8	Sitting	47	Pass
74	C1	-	N/A	-	N/A
	C2	10	Sitting	86	Exceeded
	C3	10	Sitting	89	Exceeded
75	C1	-	N/A	-	N/A
	C2	11	Standing	67	Pass
	C3	11	Standing	70	Pass
76	C1	-	N/A	-	N/A
	C2	6	Sitting	34	Pass
	C3	6	Sitting	31	Pass

Season	Months	Comfort Speed (km/h)		Safety Speed (km/h)
Annual	January - December	(20% Seasonal Exceedance)		(0.1% Annual Exceedance)
Configurations		≤ 10	Sitting	≤ 83 Pass
C1	Existing site and surroundings	11 - 14	Standing	> 83 Exceeded
C2	Project with existing surroundings	15 - 17	Strolling	
C3	Project with future surroundings	18 - 20	Walking	
		> 20	Uncomfortable	