

60 DUNDAS STREET EAST

MISSISSAUGA, ON

PEDESTRIAN WIND STUDY

RWDI # 2202763

March 3, 2022

SUBMITTED TO

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EXECUTIVE SUMMARY

RWDI was retained to conduct a pedestrian wind assessment for the proposed 60 Dundas Street East project in Mississauga, ON (Image 1). Based on our wind tunnel testing for the proposed project under the Existing, Proposed Phase I, Proposed Phases I & II, and Future configurations (Images 2A through 2D), and the local wind records (Image 3), the potential wind comfort and safety conditions are predicted as shown on site plans in Figures 1A through 3D, while the associated wind speeds are listed in Table 1. These results can be summarized as follows:

- The existing wind conditions on and around the project site are predicted to be generally comfortable for the intended use throughout the year. However, uncomfortable wind conditions are predicted to around the existing towers to the south of the site during the winter season.
- With the addition of the Proposed Phase I building to the project site, the overall predicted wind speeds are considered appropriate for the intended use in the summer, including the building main entrances, grade level outdoor amenity and sidewalks. The addition of the Proposed Phase II building to the project site is not expected to change the general grade level wind conditions, but higher wind speeds are anticipated at the Proposed Phase II outdoor amenity, and uncomfortable wind conditions predicted between the Phases I and II buildings.
- In the winter, wind speeds increase from those in the summer months due to seasonally stronger winds. Uncomfortable wind conditions are predicted at multiple locations on and around the Phase I building, including the north main entrance. The addition of Phase II building is expected to improve some of the uncomfortable wind conditions around the Proposed Phase I building, but higher wind speeds are measured at most of the building's entrances, and uncomfortable wind conditions are predicted on the north and south sides of the Phase II building.
- Wind speeds on the above-grade outdoor amenities are expected to be generally appropriate for the intended use in the summer, with the exception of the 3rd floor amenity terrace on the Phase 1 Building.
- The criterion used to assess the pedestrian wind safety is expected to be met at all locations for the Existing configuration. In the Proposed Phase I configuration, this criterion is expected to be exceeded at multiple locations around the building and on the 3rd floor amenity terrace. The addition of the Proposed Phase II building is expected to improve some of the predicted safety exceedances. Wind speeds that exceed the wind safety criterion are anticipated in the area between the Phases I and II buildings, to the south of the Phase II building, and on the 3rd floor terrace even with the future buildings in place.
- The addition of the future buildings is expected to slightly improve the wind conditions.
- Satisfactory wind speeds around the Phases I and II buildings, and in the 3rd floor amenity terrace of Phase I building can be achieved with various wind control measures. Additional wind tunnel testing is recommended to develop wind control solutions.



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1 INTRODUCTION

RWDI was retained to conduct a pedestrian wind assessment for the proposed 60 Dundas Street East project in Mississauga, ON. This report presents the project objectives, background and approach, and discusses of the results from RWDI's assessment and provides conceptual wind control measures, where necessary.

1.1 Project Description

The project (site shown in Image 1) is located on the south side of Dundas Street East, and to the east of Shepard Avenue. The proposed project is a mixed-use development, comprised of three towers: Tower A at 40 storeys (135.6 m), Tower B at 35 storeys (117.2 m) and Tower C at 32 storeys (108.1m). Towers B and C will be connected via a 4-storey podium, and Tower A will stand alone above a 2-storey podium with a mezzanine level.

1.2 Objectives

The objective of the study was to assess the effect of the proposed development on local conditions in pedestrian areas on and around the study site and provide recommendations for minimizing adverse effects, if needed. This quantitative assessment was based on wind speed measurements on a scale model of the project and its surroundings in one of RWDI's boundary-layer wind tunnels. These measurements were combined with the local wind records and compared to appropriate criteria for gauging wind comfort and safety in pedestrian areas. The assessment focused on critical pedestrian areas, including buildings entrances, public sidewalks around the site and grade and above-grade outdoor amenities.



Image 1: Aerial View of Site and Existing Surroundings (Photo Courtesy of Google™ Earth)

2 BACKGROUND AND APPROACH

2.1 Wind Tunnel Study Model

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

A - Existing:	Existing site with existing surroundings (Image 2A),
B - Proposed Phase I:	Proposed Phase I with existing surroundings (Image 2B),
B - Proposed Phases I & II:	Proposed Phases I & II with existing surroundings (Image 2C), and
D - Future:	Proposed Phases I & II with future surroundings (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 RWDI's wind tunnel. The wind tunnel model was instrumented with 116 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 pedestrian areas throughout the study site. Wind speeds were measured for 36 directions in a 10-degree increment. 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, and reviewed by the design team.

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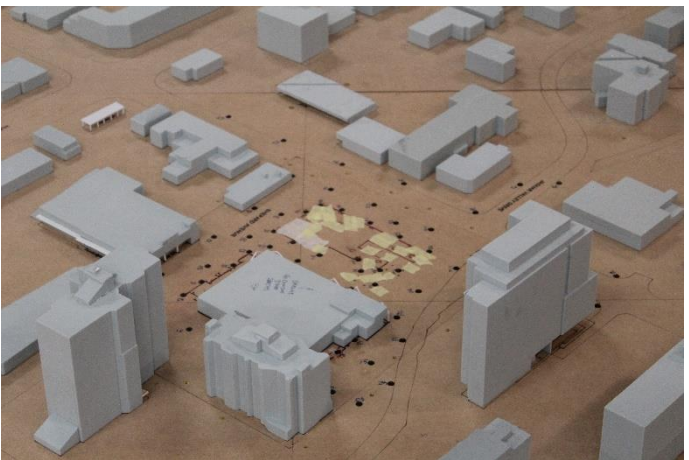


Image 2A: Wind Tunnel Study Model – Existing Configuration

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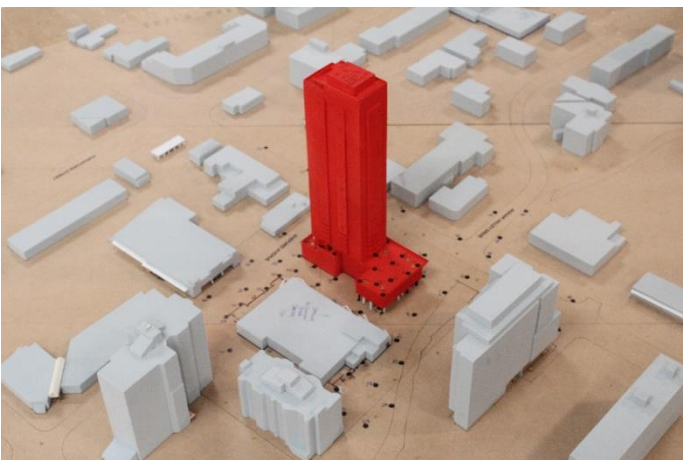
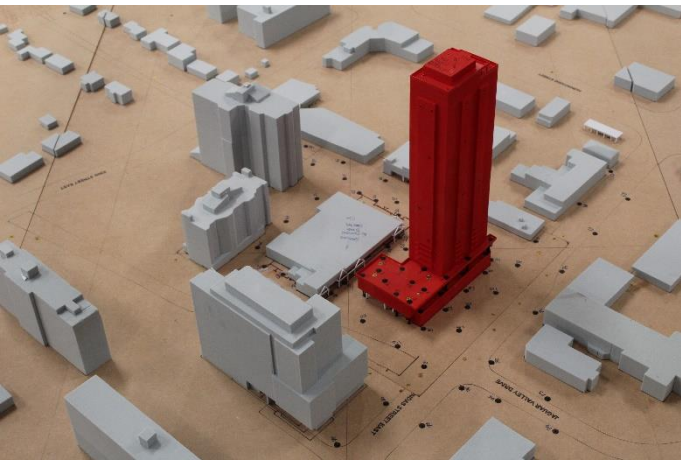
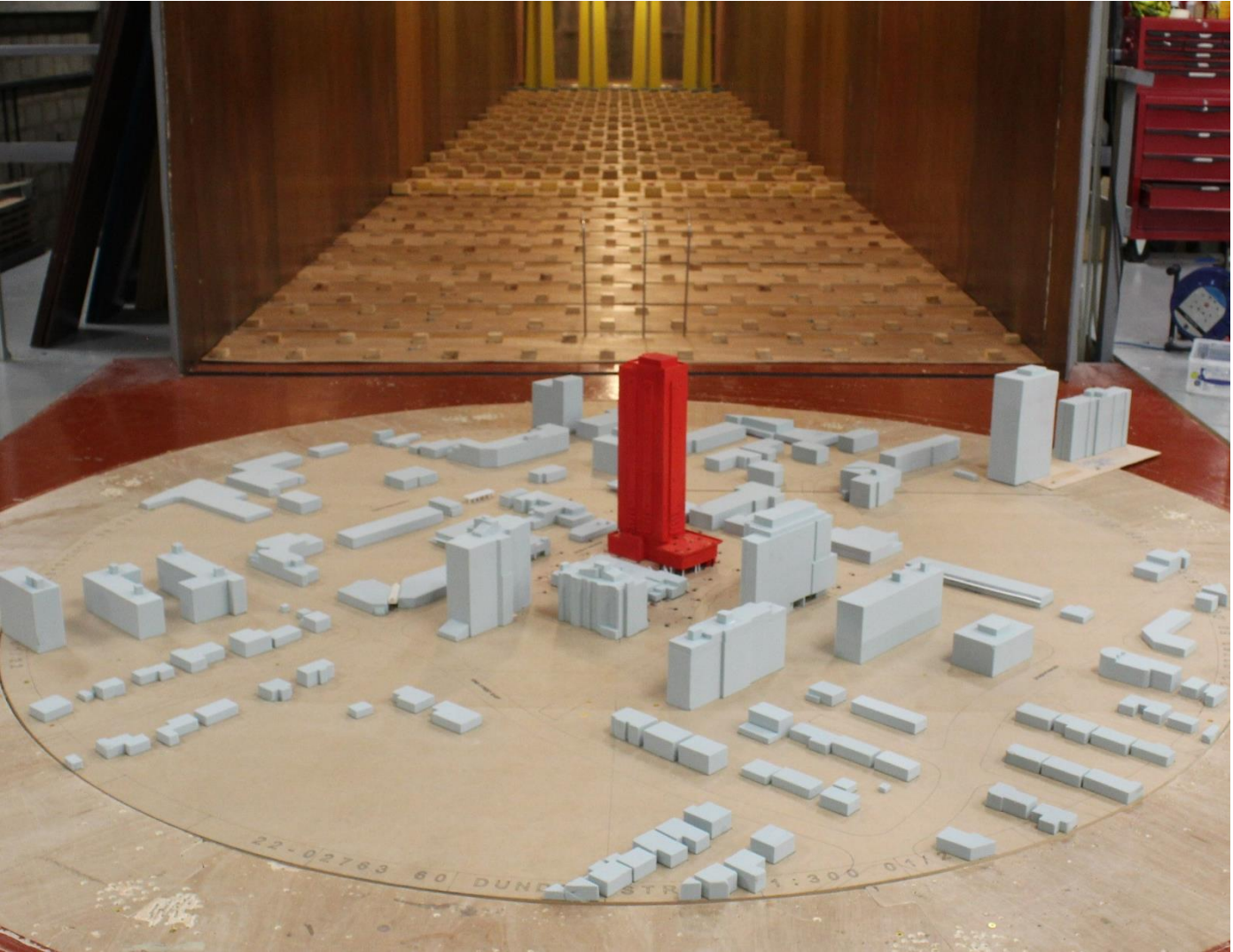


Image 2B: Wind Tunnel Study Model – Proposed Configuration (Phase I)

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Image 2C: Wind Tunnel Study Model – Proposed Configuration (Phases I & II)

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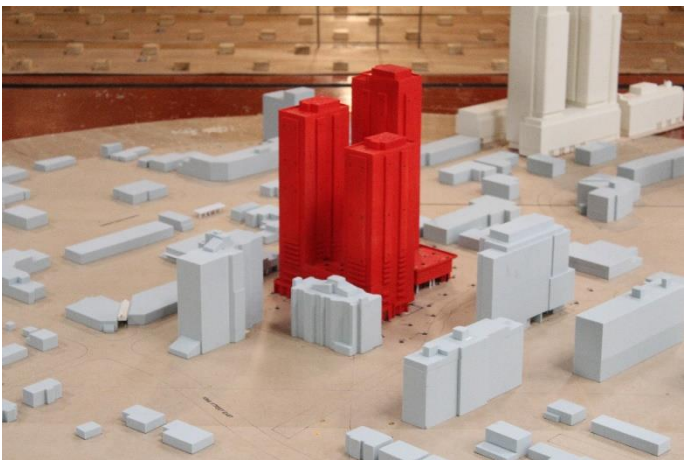
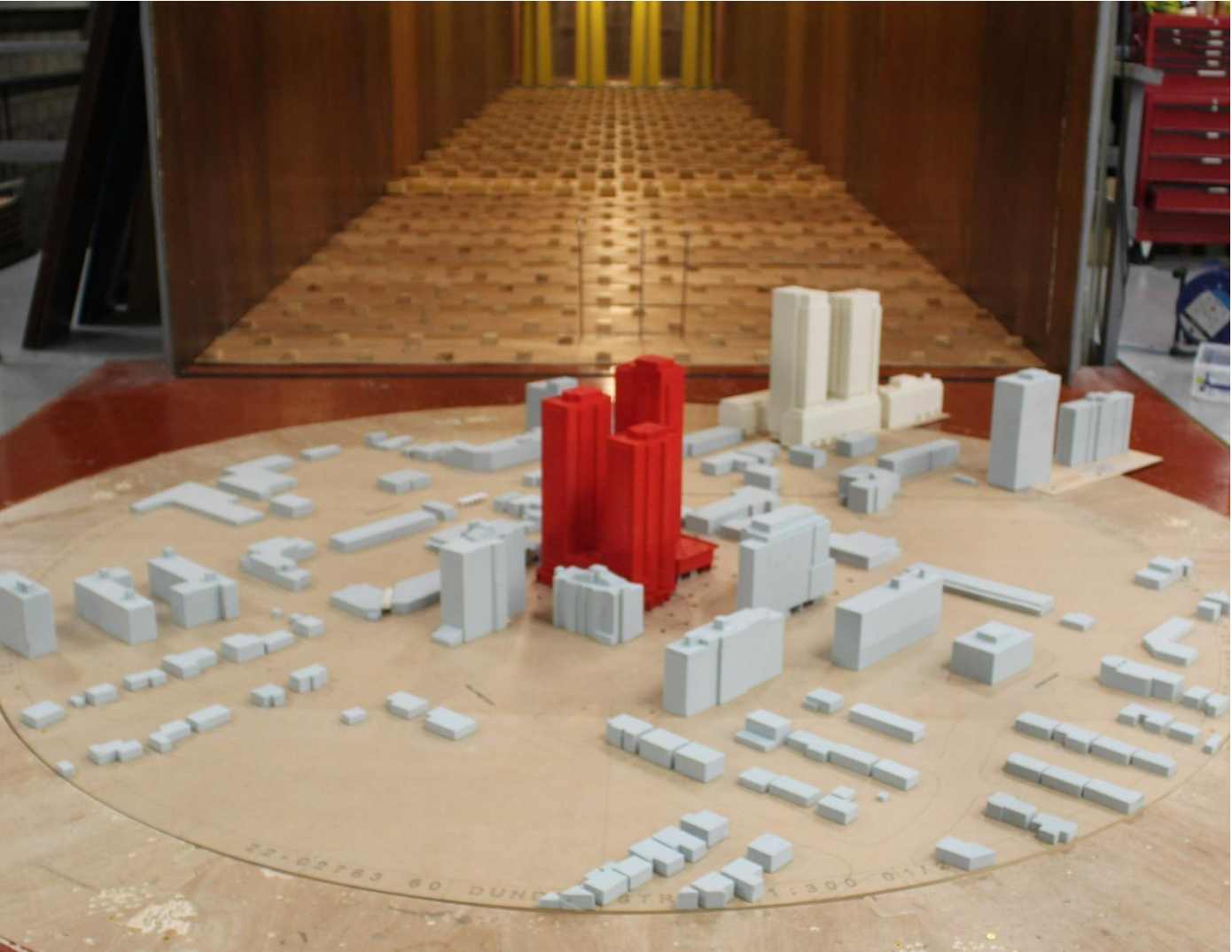


Image 2D: Wind Tunnel Study Model – Future Configuration

2.2 Meteorological Data

Wind statistics recorded at Toronto Pearson International Airport between 1990 and 2020, inclusive, were analyzed for the Summer (May through October) and Winter (November through April) seasons. Image 3 graphically depicts the directional distributions of wind frequencies and speeds for these two seasons. Winds from the southwest, west and northwest directions are predominant during both summer and winter. During the winter season, the prevailing winds from the east direction are also frequent, as indicated by the wind roses. The southeast winds are frequent in the summer, but typically of low wind speeds. Strong winds of a mean speed greater than 30 km/h measured at the airport (at an anemometer height of 10 m) occur for 4.8% and 11.4% of the time during the summer and winter seasons, respectively.

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

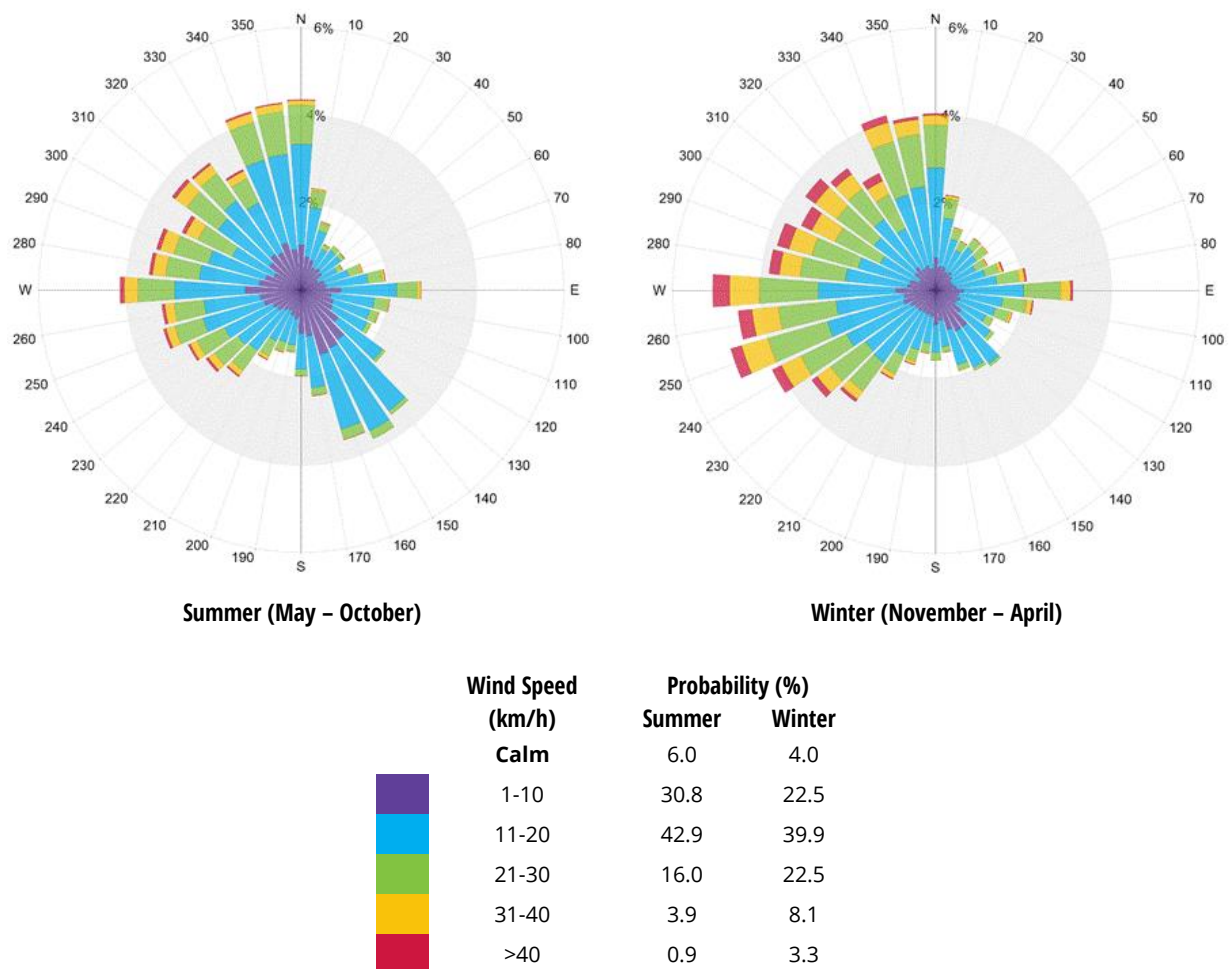


Image 3: Directional Distribution of Winds Approaching Toronto Pearson International Airport between 1990 and 2020

2.3 Mississauga Pedestrian Wind Criteria

The Mississauga pedestrian wind criteria, developed in June 2014, are specified in the Urban Design Terms of Reference, "Pedestrian Wind Comfort and Safety Studies". The following defines the criterion in detail.

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	≤ 15	Gentle breezes suitable for main building entrances and bus stops
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 most 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) GEM speeds listed above are based on a seasonal exceedance of 20% of the time between 6:00 and 23:00.

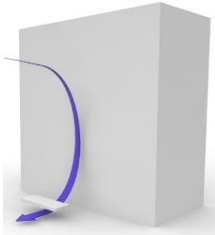
Safety Criterion	Gust Speed (km/h)	Description
Exceeded	> 90	Excessive gust speeds that can adversely affect a pedestrian's balance and footing. Wind mitigation is typically required.

Notes:

- (1) Based on an annual exceedance of 9 hours or 0.1% of the time for 24 hours a day.

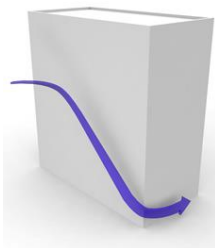
2.4 Generalized Wind Flows

In our discussion of wind conditions, reference may be made to the following generalized wind flows (Image 4):



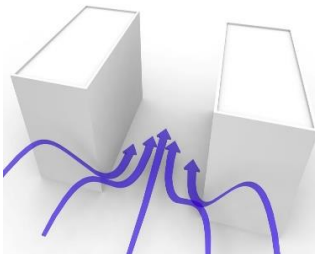
DOWNWASHING

Tall buildings tend to intercept the stronger winds at higher elevations and redirect them to the ground level. This is often the main cause for wind accelerations around large buildings at the pedestrian level.



CORNER ACCELERATION

When winds approach at an oblique angle to a tall façade and are deflected down, a localized increase in the wind activity or corner acceleration can be expected around the exposed building corners at pedestrian level.



CHANNELLING EFFECT

When two buildings are situated side by side, wind flow tends to accelerate through the space between the buildings due to channeling effect caused by the narrow gap.

Image 4: Generalized Wind Flows

If these building/wind combinations occur for prevailing winds, there is a greater potential for increased wind activity. Design details such as setting back a tall tower from the edges of a podium, deep canopies close to ground level, wind screens, tall trees with dense landscaping, etc. (Image 5) can help reduce wind speeds. 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.

Podium/tower setback, canopy, landscaping and wind screens (left to right)

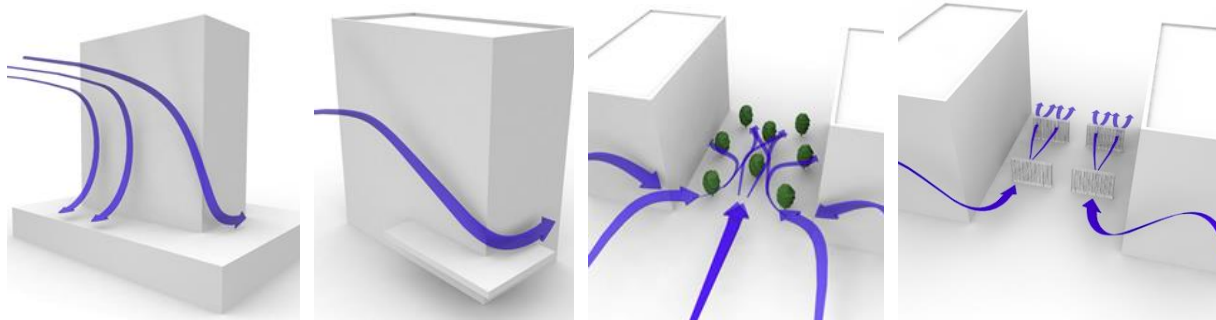


Image 5: Common Wind Control Measures

3 RESULTS AND DISCUSSION

The predicted wind conditions are shown on a site plan in Figures 1A through 3D 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.

In general, wind speeds suitable for sitting or standing are considered desirable for building entrances where pedestrians are apt to linger. These low wind speeds are also preferred in areas such as outdoor amenity spaces and terraces where passive patron activities are anticipated during the summer. For sidewalks and walkways, where pedestrians are active and less likely to remain in one place for prolonged periods of time, higher wind speeds comfortable for walking are appropriate. The following is a detailed 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 on and around the existing site are comfortable for standing or sitting at most locations in the summer (Figure 1A). Higher wind speeds comfortable for walking occur to the east and south sides of the existing building, and along the sidewalk to the south of Dundas Street East. These conditions are appropriate for the intended pedestrian usage.

During the winter season, wind conditions remain appropriate for standing at most locations; however, due to seasonally stronger winds, more areas with conditions comfortable for walking are predicted (Figure 2A). Uncomfortable wind conditions are also predicted at localized areas around the existing tall buildings to the south of the project site.

The pedestrian wind safety criterion is met at all areas assessed in the Existing configuration (Figure 3A).

3.2 Proposed Configurations

3.2.1 Grade Level (Locations 1 through 81)

The addition of the Proposed buildings to the project site is generally predicted to cause higher wind speeds, compared to the Existing configuration, which is primarily due to the height of the proposed towers and the low surroundings in the predominant wind directions. Downwashing of the prevailing winds off the tall buildings’ façades will redirect them to the ground level. These redirected winds can be relatively strong and turbulent, especially around exposed building corners and in areas between buildings where winds accelerate due to the channelling effect (see Image 4).

With the Proposed Phase I building in place, wind speeds on and around the site are predicted to be comfortable for walking or better in the summer (Figure 1B). The addition of Phase II building to the project site is not expected to change the general grade level wind conditions on and around the Proposed Phase I building, but higher wind speeds conducive for walking are predicted at the Proposed Phase II grade level outdoor amenity (Locations 37, 41 and 43 in Figure 1C), with uncomfortable conditions between the Phases I and II buildings (Locations 26 and 33).

In the winter, the seasonally stronger winds are expected to cause increased wind speeds and uncomfortable wind conditions throughout the site, including the north entrance of Phase I building (Location 16 in Figure 2B), where wind conditions are predicted to be comfortable for walking. While the addition of the Proposed Phase II building to the site is expected to reduce wind speeds at some of the uncomfortable locations identified in the Proposed Phase I configuration, higher wind speeds and uncomfortable wind conditions are predicted on more areas to the north and south sides of the Phase II building (Figure 2C), including the south entrance of Phase I building (Location 1), and the north and east entrances of Phase II-Tower B (Locations 25 and 28 in Figure 2C).

Wind speeds at most locations assessed in the Proposed Configuration of Phase I building meet the pedestrian wind safety criterion, except for Locations 8, 10, 18, 20, 21, 24 and 26 around the Phase I building (Figure 3B). The addition of the Phase II building is expected to mitigate most of the safety exceedances predicted in the Proposed Phase I Configuration (Figure 3C), but more safety exceedances are predicted between Towers B and C (Locations 30 and 33), and to the south and southwest corner of the Phase II building (Locations 51 and 53).

To mitigate the wind impact of the proposed project, wide canopies along the exposed façades and wrapped around the corners can help deflect downwashing winds and moderate the wind impact of the tall buildings. Additionally, extensive use of wind screens and evergreen/marcescent landscaping elements near the building corners, between the buildings and throughout the south side park is recommended to diffuse the energy of accelerating winds. To create a sheltered doorway area, it is recommended to recess all the entrances behind their respective façades. Alternatively, screens/landscaping should be placed on both sides of the entrances. Examples of the proposed wind control solutions are shown in Image 6. Additional wind tunnel testing is recommended will be conducted to evaluate the efficacy of the suggested wind mitigation measures.

3.2.2 Above-Grade Levels (Locations 82 through 116)

It is generally desirable for wind conditions on terraces intended for passive activities to be comfortable for sitting or standing more than 80% of the time in the summer. During the winter, it is anticipated that these areas would not be used frequently, and increased wind activity may be considered appropriate.

Wind conditions comfortable for sitting or standing are predicted in all above-grade terraces for both Proposed configurations during the summer (Figures 1B and 1C), except for the large terrace on the 3rd floor of Phase I building, where higher wind speeds suitable for walking and uncomfortable wind conditions are predicted. Positively, the addition of Phase II building is predicted to improve the wind condition on the terrace, but wind speeds on the terrace are still considered higher than desired for passive use. Higher wind activity is expected in the above-grade amenity terraces during the winter season, but this may not be a concern due to reduced usage of these outdoor spaces on cold days.

Wind speeds that meet the safety criterion are predicated at all locations on the above-grade terraces (Figure 3B and 3C), but this criterion will be exceeded at several locations on the 3rd floor large amenity of Phase I building. The addition of Phase II building to the project site is expected to improve some of the safety exceedances predicted in the Proposed Phase I configuration.



The wind speeds in the second-floor mezzanine of Phase I building are found to be comfortable for standing at multiple locations even after the addition of the Phase II building, which is slightly higher than desired for the prolonged use of a pool deck. To improve wind conditions on the 2nd floor mezzanine and the 3rd floor amenity area of Phase I building, it is recommended to add minimum 2 m tall screen wall around the perimeters. Additional landscaping/hardscaping elements can be used around designated seating areas to further reduce wind speeds and create sheltered zones. These elements may take the form of porous or impermeable screens, partitions, landscaping, and trellises. Examples of wind control measures are shown in Image 7.

3.3 Future Configuration

The addition of the future surrounding buildings is expected to slightly reduce wind speeds at grade and above-grade levels, relative to the conditions predicted in the Proposed Configurations (Figures 1D and 2D). Also, the future buildings are not expected to improve the safety exceedances predicted at the grade level, but they are expected to slightly improve the safety exceedance predicted on the 3rd floor amenity level (Location 102 in Figures 3C and 3D).

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Image 6: Examples of Wind Control Options Applicable for Grade Level

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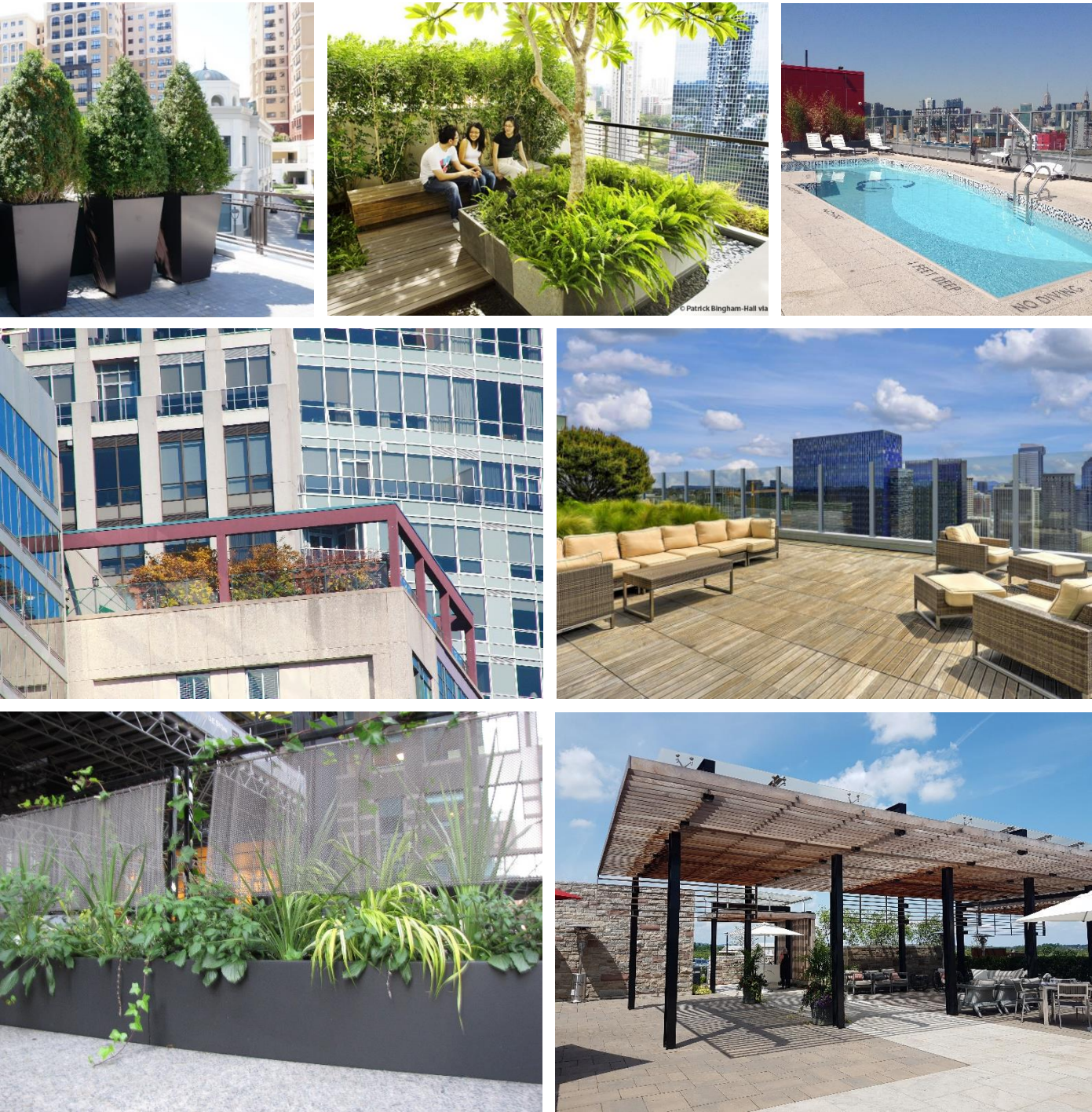


Image 7: Examples of Wind Control Options Applicable to the above-grade Amenities

3.4 Impact of Updated Building Design

Following the wind-tunnel test, RWDI received updated design drawings on February 28, 2022. The design changes include slightly recessing the bases of the towers over the podiums as indicated by the red arrows in Image 8, as well as slightly recessing the balconies of the towers. These design alterations are not expected to alter the predicted wind conditions at grade and above-grade levels since the overall massing of the towers and podiums is unchanged.

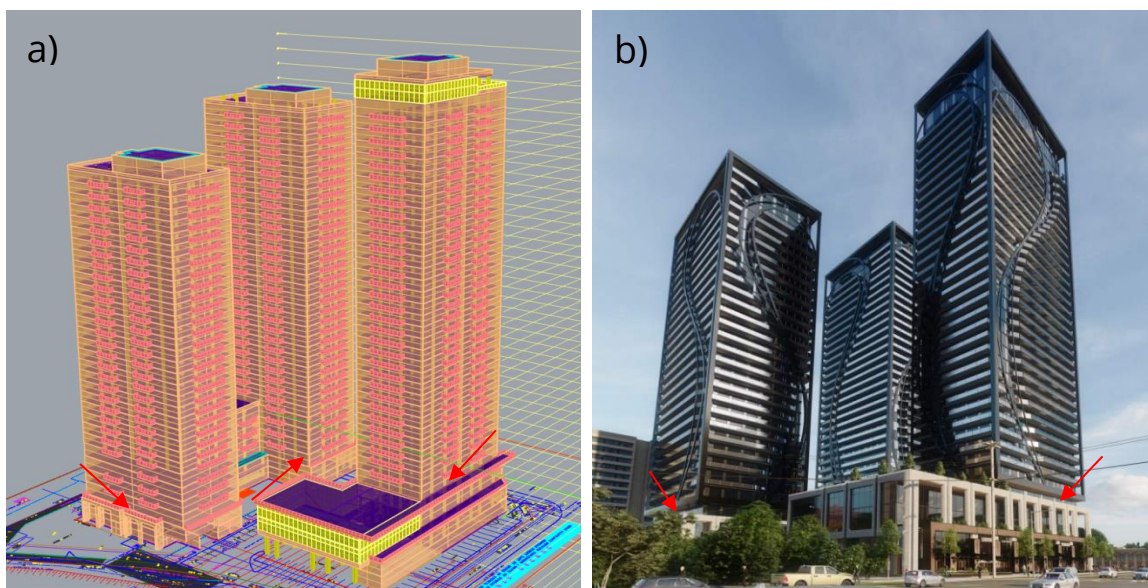


Image 8: a) Towers Initial Design (Received in January 14, 2022); b) Towers Updated Design (Received in February 28, 2022)

4 APPLICABILITY OF RESULTS

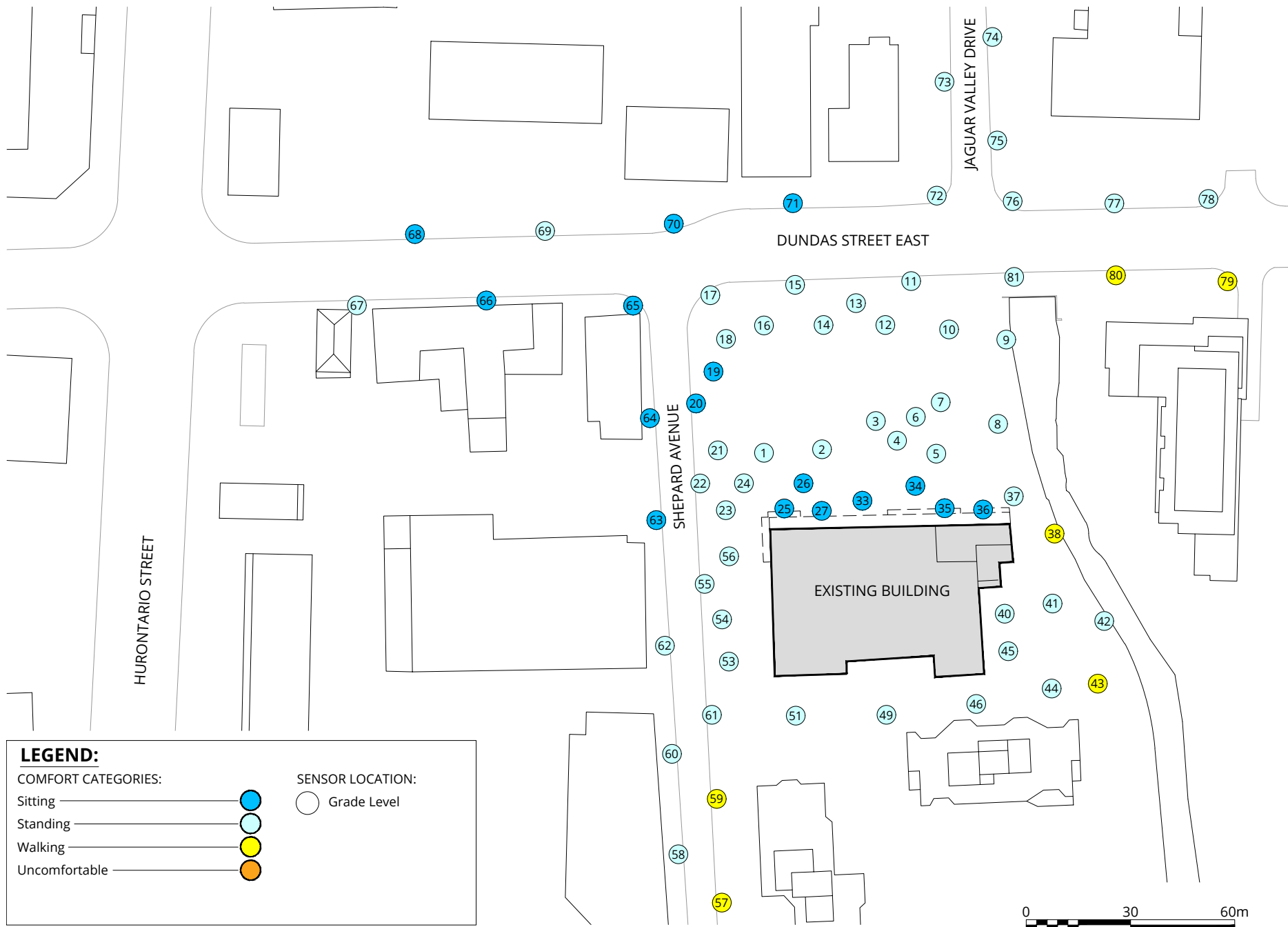
The wind conditions presented in this report pertain to the model of the 60 Dundas Street East project constructed using the drawings and information listed below. Should there be any design changes that deviate from this list of drawings, the wind condition predictions presented may change. Therefore, 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)
121022 - 60 Dundas - SD - BUILDING - NO CC	Revit	14/01/2022
121022 - 60 Dundas - SD - SITE & UNDERGROUND	Revit	14/01/2022
121022 - 60 Dundas - SD - 20220128	PDF	28/01/2022

5 REFERENCES

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FIGURES



Pedestrian Wind Comfort Conditions

Existing Configuration

Summer (May to October, 6:00 to 23:00)

60 Dundas Street East - Mississauga, ON

Project North True North



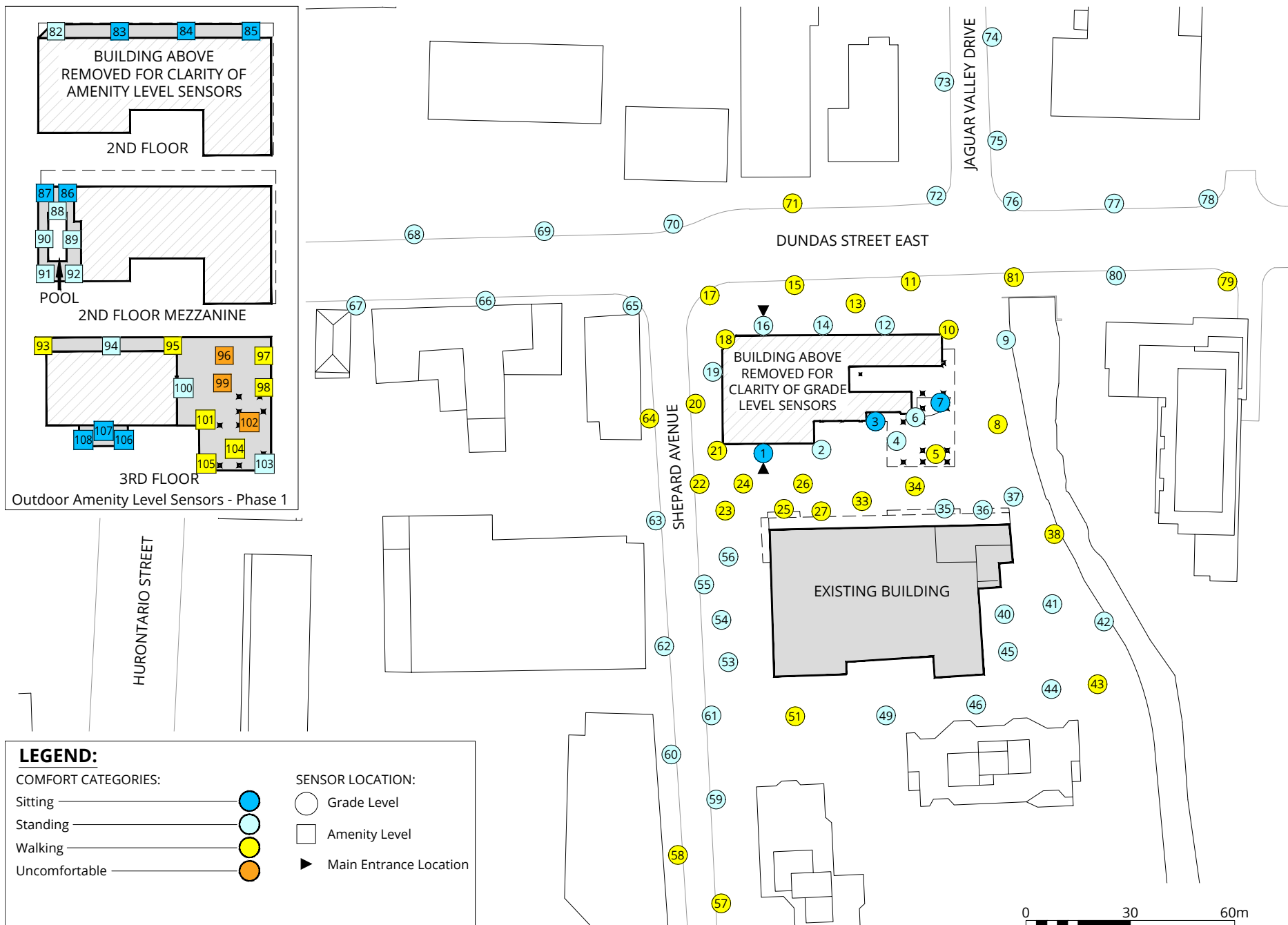
Drawn by: ALJM Figure: 1A

Approx. Scale: 1:1500

Date Revised: Feb. 23, 2022



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Pedestrian Wind Comfort Conditions

Proposed Configuration (Phase I)
Summer (May to October, 6:00 to 23:00)

60 Dundas Street East - Mississauga, ON

Project North True North



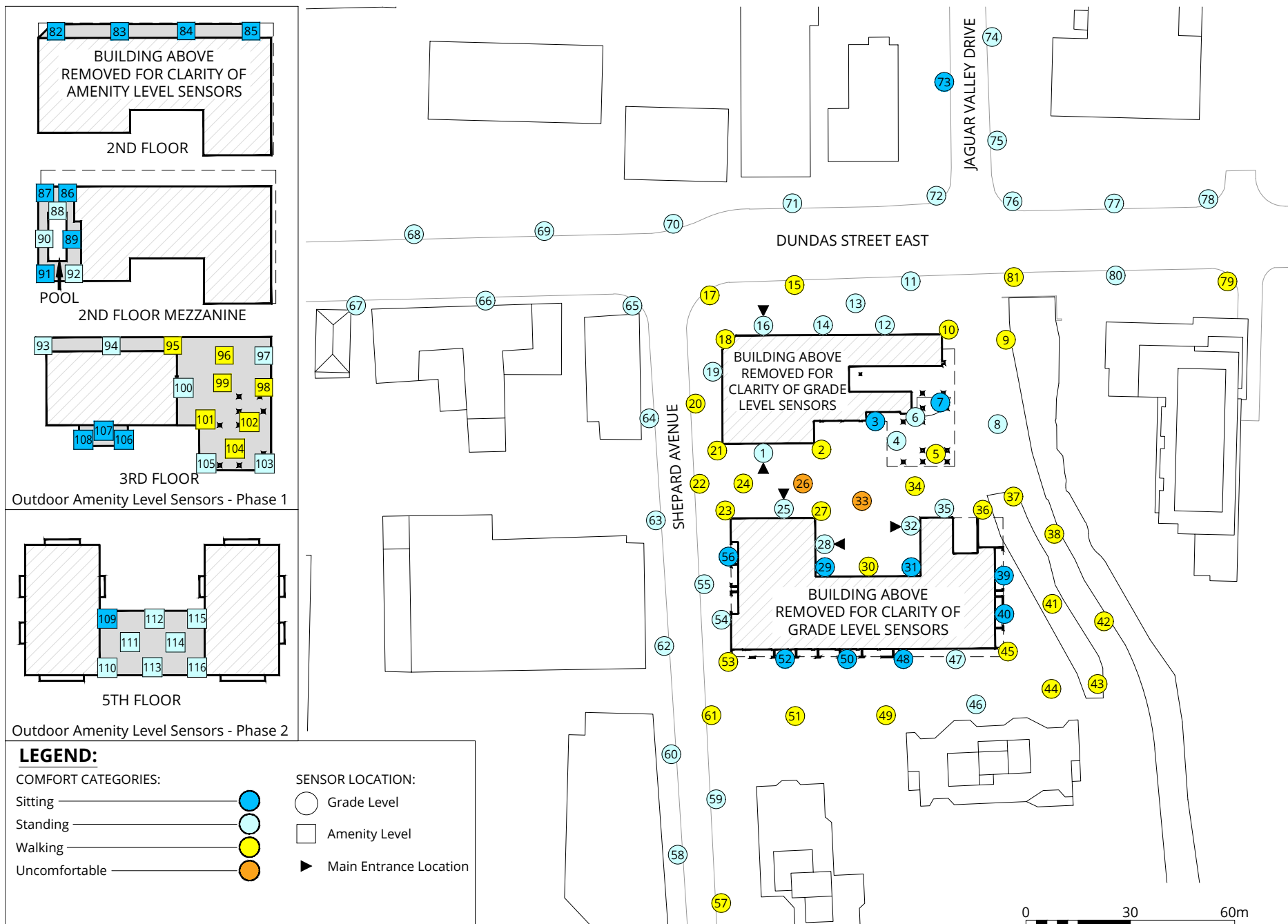
Drawn by: ALJM Figure: 1B

Approx. Scale: 1:1500

Date Revised: Feb. 23, 2022

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Pedestrian Wind Comfort Conditions

Proposed Configuration (Phases I & II)
Summer (May to October, 6:00 to 23:00)

60 Dundas Street East - Mississauga, ON

Project North True North



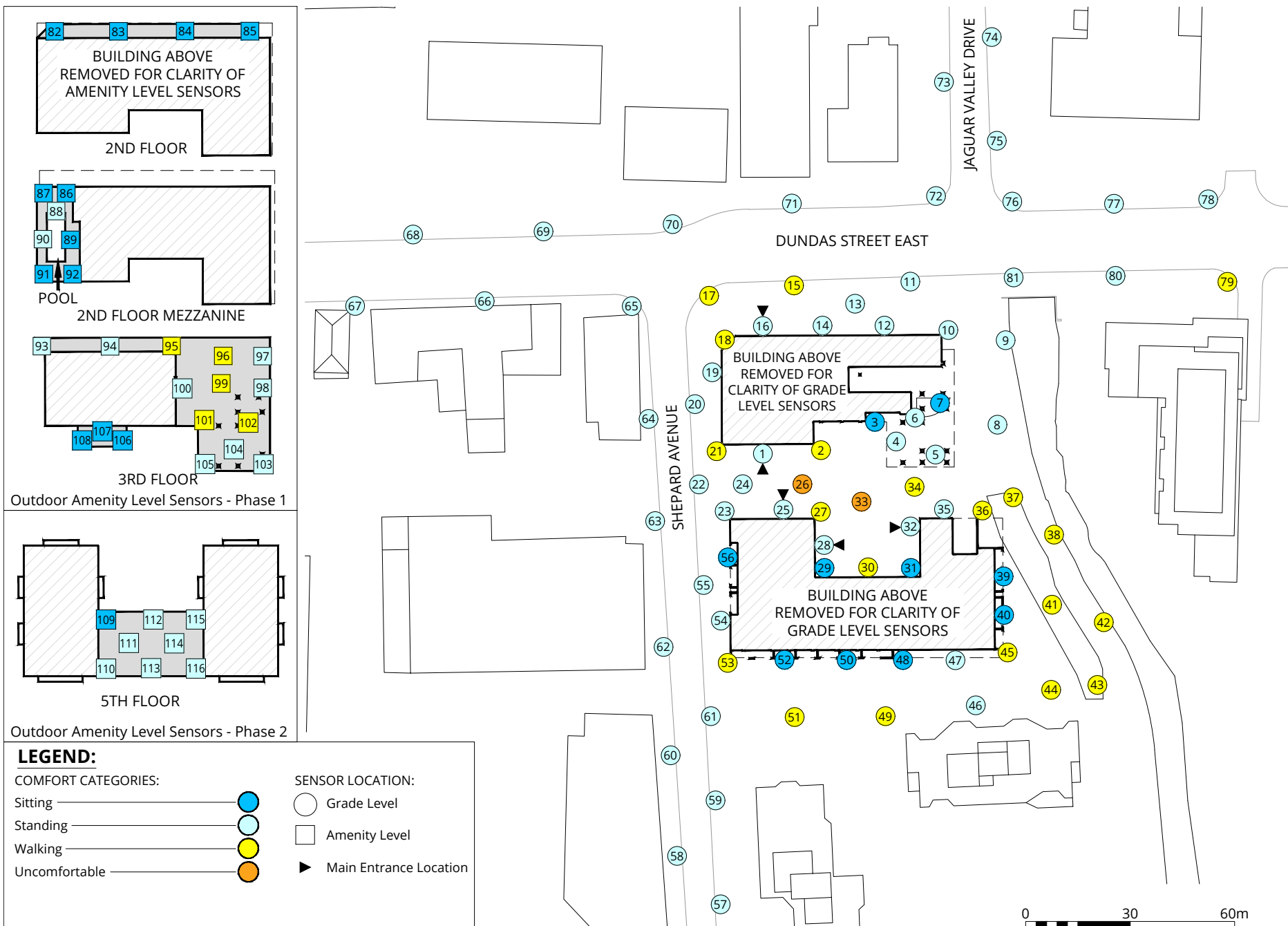
Drawn by: ALJM Figure: 1C

Approx. Scale: 1:1500

Date Revised: Feb. 23, 2022



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Pedestrian Wind Comfort Conditions

Future Configuration

Summer (May to October, 6:00 to 23:00)

60 Dundas Street East - Mississauga, ON

Project North True North



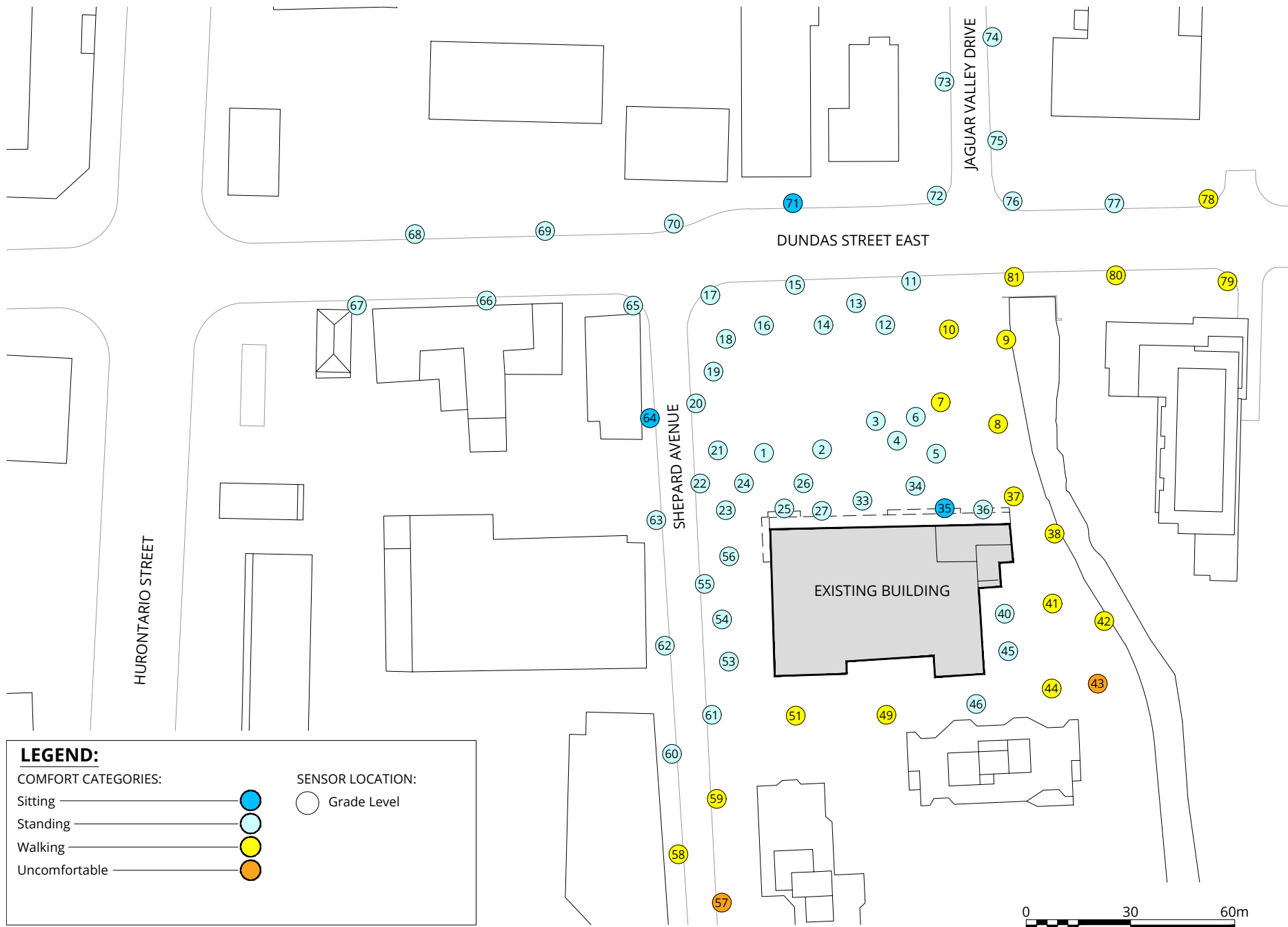
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Approx. Scale: 1:1500

Date Revised: Feb. 23, 2022



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Pedestrian Wind Comfort Conditions

Existing Configuration

Winter (November to April, 6:00 to 23:00)

60 Dundas Street East - Mississauga, ON

Project North True North



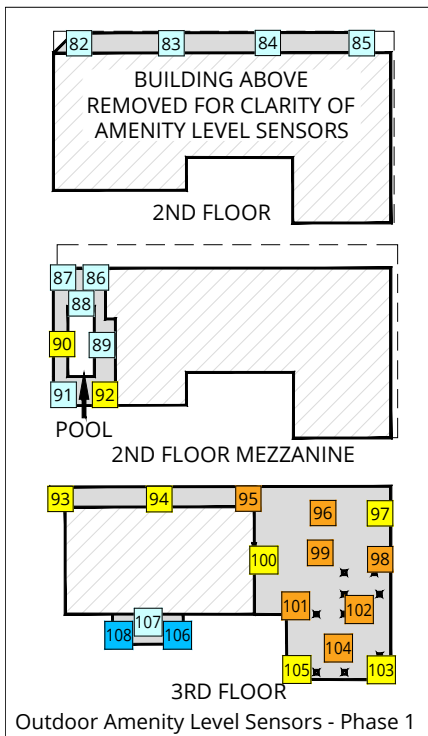
Drawn by: ALJM Figure: 2A

Approx. Scale: 1:1500

Date Revised: Feb. 23, 2022



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HURONTARIO STREET

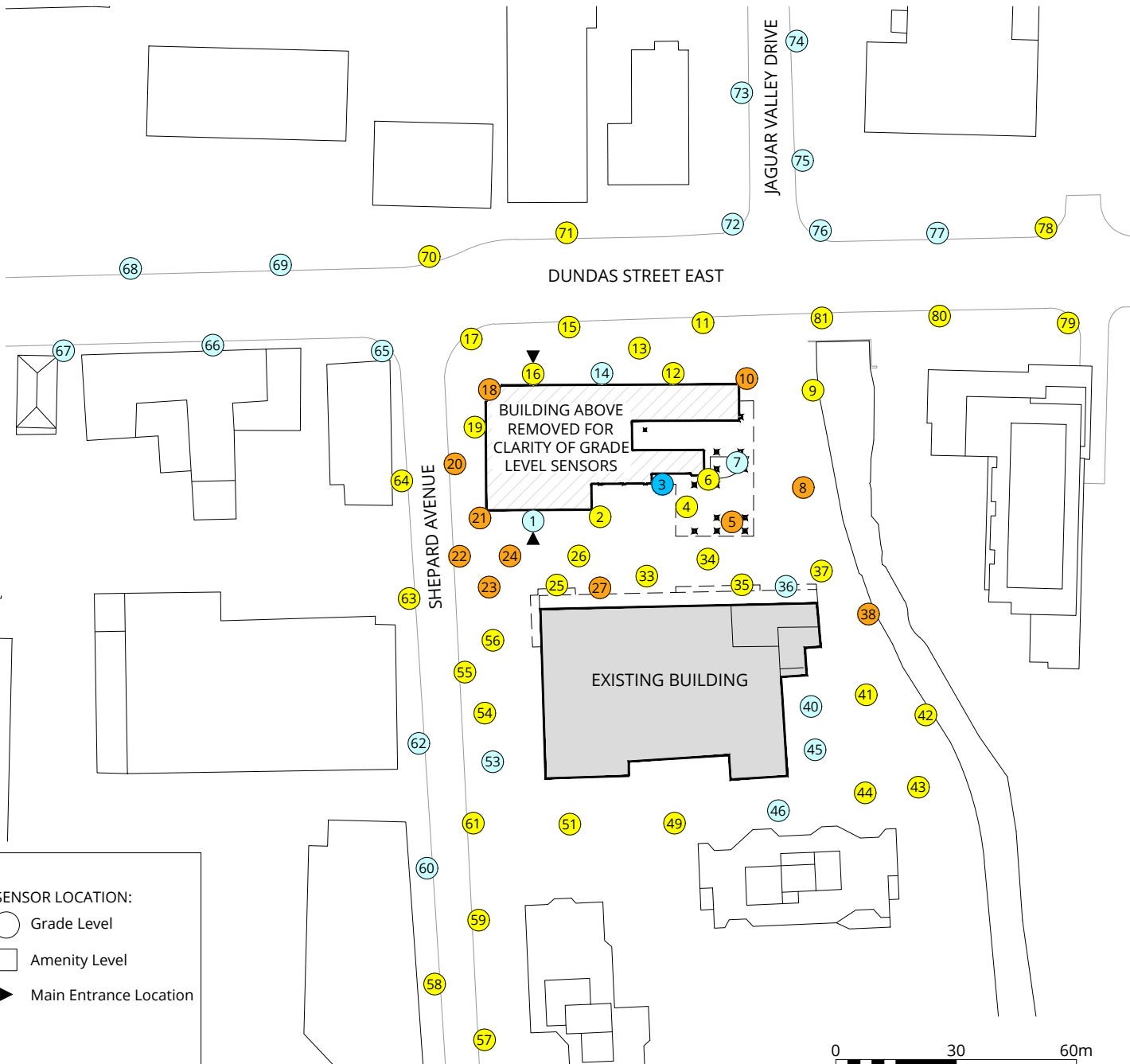
LEGEND:

COMFORT CATEGORIES:

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

SENSOR LOCATION:

- Grade Level
- Amenity Level
- Main Entrance Location



Pedestrian Wind Comfort Conditions

Proposed Configuration (Phase 1)

Winter (November to April, 6:00 to 23:00)

60 Dundas Street East - Mississauga, ON

Project North True North



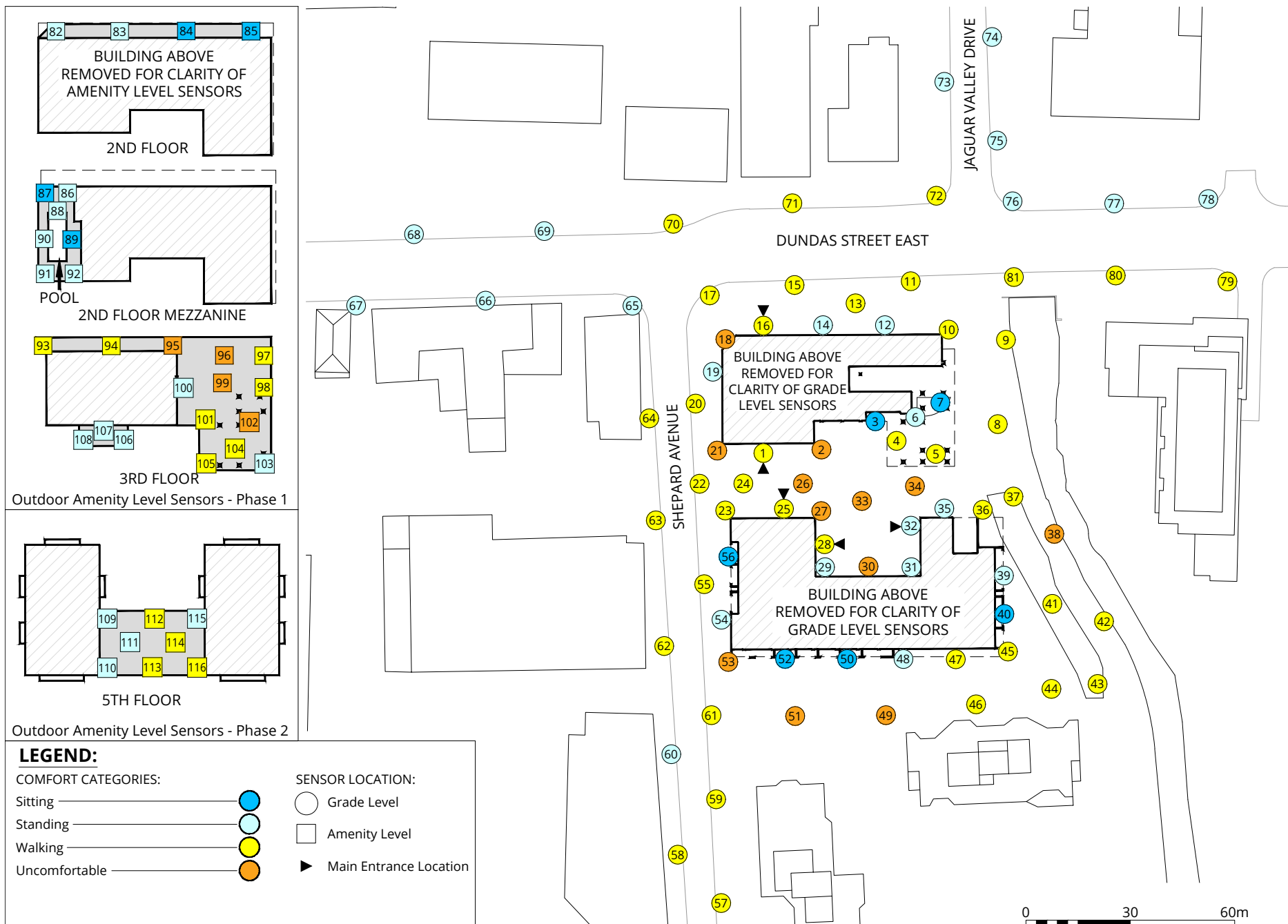
Drawn by: ALJM Figure: 2B

Approx. Scale: 1:1500

Date Revised: Feb. 23, 2022

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Pedestrian Wind Comfort Conditions Proposed Configuration (Phases I & II) Winter (November to April, 6:00 to 23:00)

60 Dundas Street East - Mississauga, ON

Project North True North



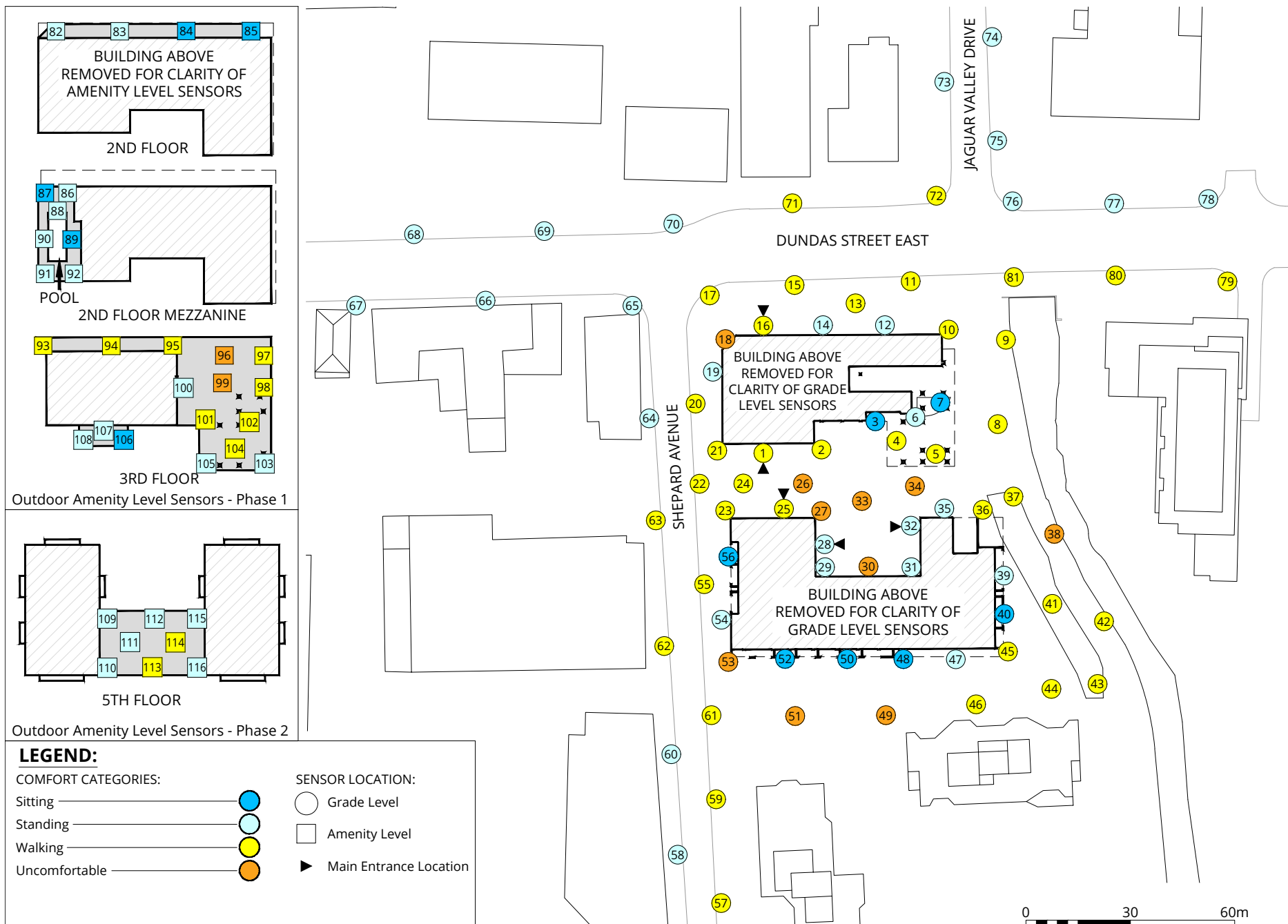
Drawn by: ALJM Figure: 2C

Approx. Scale: 1:1500

Date Revised: Feb. 23, 2022



Project #2202763



Pedestrian Wind Comfort Conditions

Future Configuration

Winter (November to April, 6:00 to 23:00)

60 Dundas Street East - Mississauga, ON

Project North True North



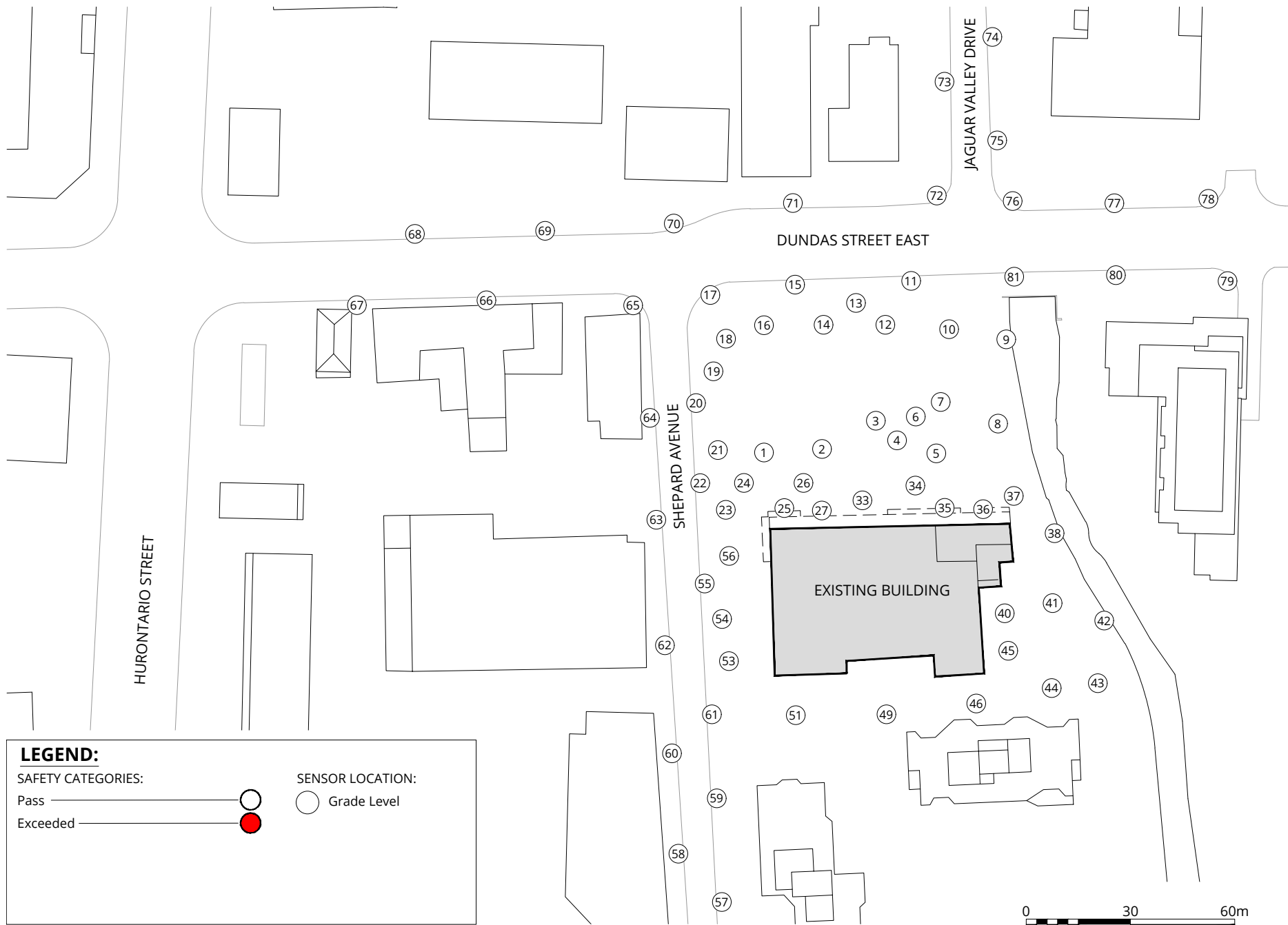
Drawn by: ALJM Figure: 2D

Approx. Scale: 1:1500

Date Revised: Feb. 23, 2022



Project #2202763



Pedestrian Wind Safety Conditions

Existing Configuration

Annual (January to December, 0:00 to 23:00)

60 Dundas Street East - Mississauga, ON

Project North True North



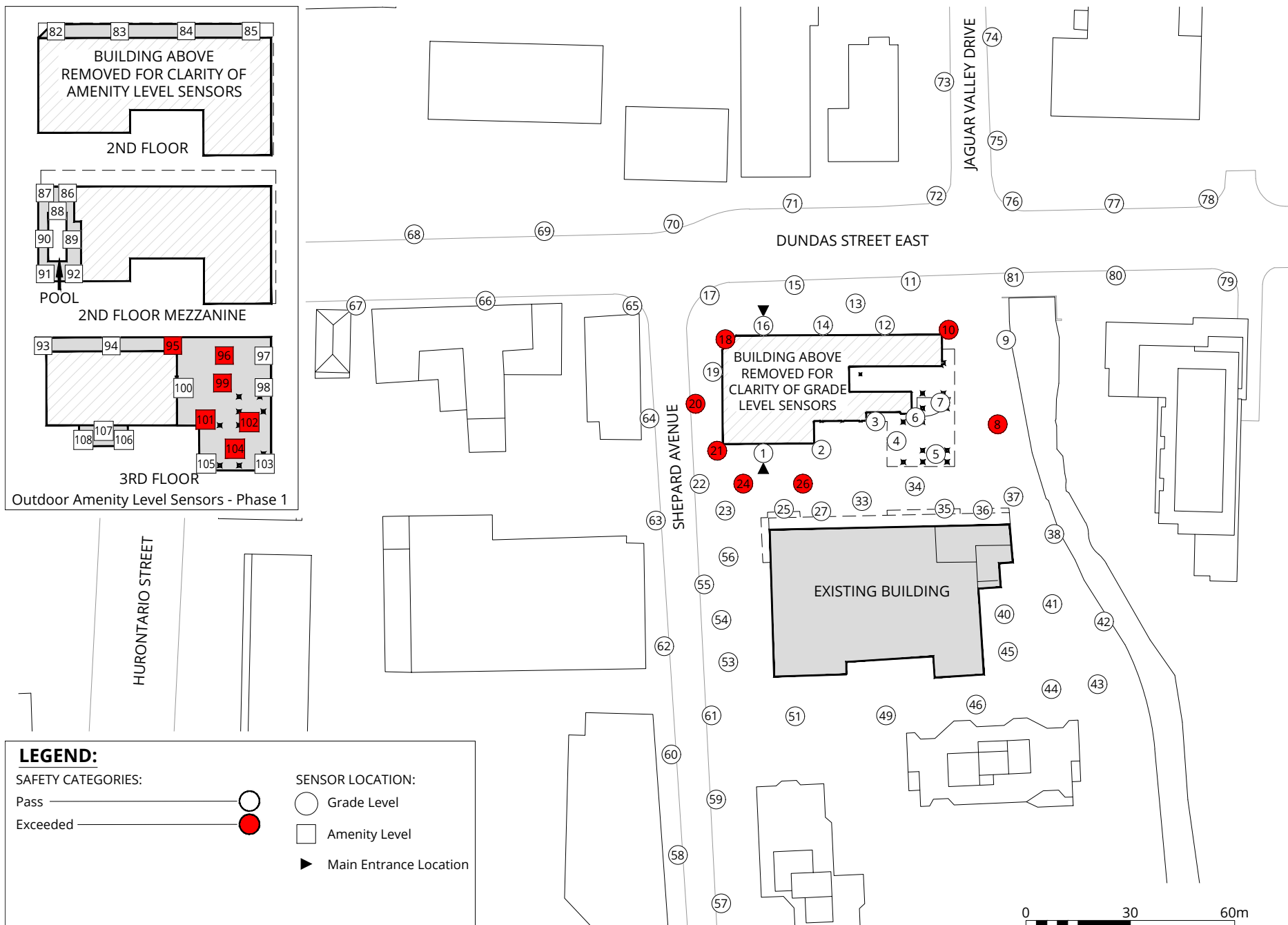
Drawn by: ALJM Figure: 3A

Approx. Scale: 1:1500

Date Revised: Feb. 23, 2022



Project #2202763



Pedestrian Wind Safety Conditions Proposed Configuration (Phase I) Annual (January to December, 0:00 to 23:00)

60 Dundas Street East - Mississauga, ON

Project North True North



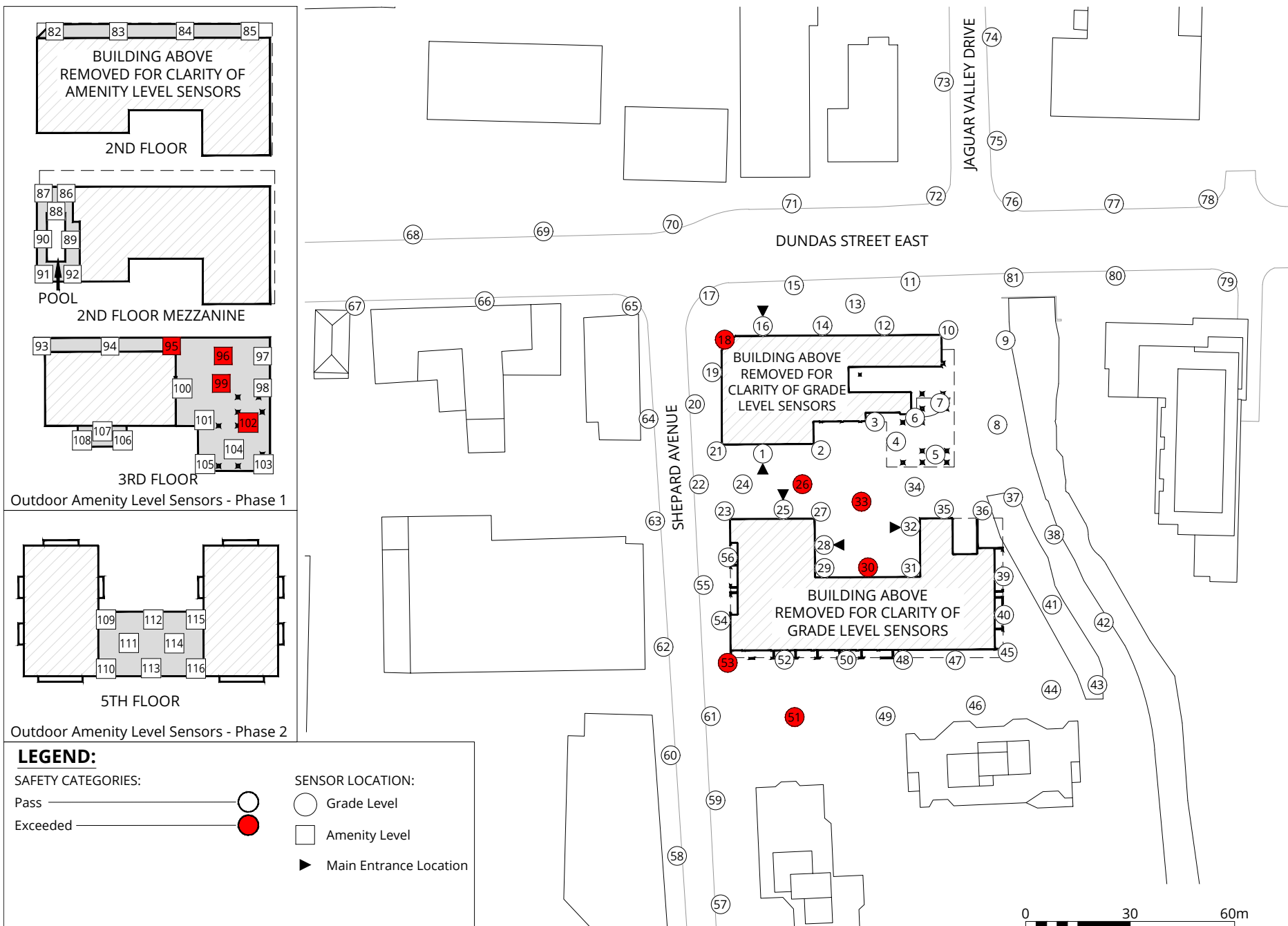
Drawn by: ALJM Figure: 3B

Approx. Scale: 1:1500

Date Revised: Feb. 23, 2022



Project #2202763



Pedestrian Wind Safety Conditions

Proposed Configuration (Phases I & II)
Annual (January to December, 0:00 to 23:00)

60 Dundas Street East - Mississauga, ON

Project North True North



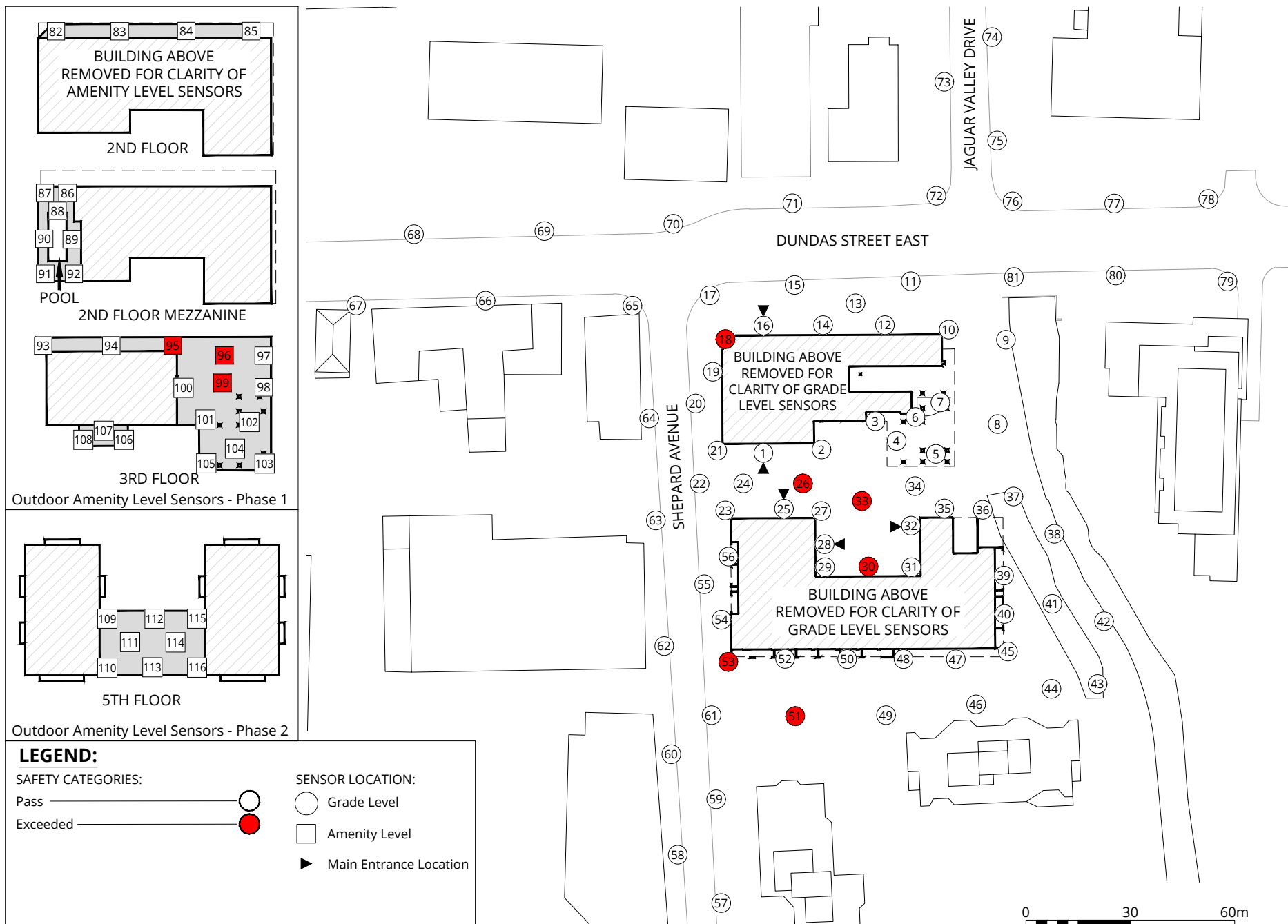
Drawn by: ALJM Figure: 3C

Approx. Scale: 1:1500

Date Revised: Feb. 23, 2022



Project #2202763



Pedestrian Wind Comfort Conditions

Future Configuration

Annual (January to December, 0:00 to 23:00)

60 Dundas Street East - Mississauga, ON

Project North True North



Drawn by: ALJM Figure: 3D

Approx. Scale: 1:1500

Date Revised: Feb. 23, 2022



Project #2202763

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	12	Standing	50	Pass
	Proposed Phase I	10	Sitting	12	Standing	55	Pass
	Proposed Phases I & II	15	Standing	18	Walking	72	Pass
	Future	14	Standing	17	Walking	71	Pass
2	Existing	11	Standing	13	Standing	51	Pass
	Proposed Phase I	13	Standing	16	Walking	81	Pass
	Proposed Phases I & II	18	Walking	21	Uncomfortable	87	Pass
	Future	17	Walking	20	Walking	84	Pass
3	Existing	12	Standing	14	Standing	57	Pass
	Proposed Phase I	8	Sitting	9	Sitting	49	Pass
	Proposed Phases I & II	9	Sitting	10	Sitting	41	Pass
	Future	8	Sitting	10	Sitting	42	Pass
4	Existing	11	Standing	13	Standing	59	Pass
	Proposed Phase I	14	Standing	16	Walking	62	Pass
	Proposed Phases I & II	15	Standing	18	Walking	70	Pass
	Future	15	Standing	17	Walking	69	Pass
5	Existing	11	Standing	14	Standing	63	Pass
	Proposed Phase I	19	Walking	21	Uncomfortable	81	Pass
	Proposed Phases I & II	16	Walking	18	Walking	74	Pass
	Future	15	Standing	18	Walking	72	Pass
6	Existing	12	Standing	14	Standing	64	Pass
	Proposed Phase I	15	Standing	16	Walking	68	Pass
	Proposed Phases I & II	13	Standing	15	Standing	64	Pass
	Future	13	Standing	15	Standing	64	Pass
7	Existing	13	Standing	16	Walking	71	Pass
	Proposed Phase I	10	Sitting	11	Standing	48	Pass
	Proposed Phases I & II	8	Sitting	10	Sitting	51	Pass
	Future	8	Sitting	10	Sitting	50	Pass
8	Existing	14	Standing	17	Walking	76	Pass
	Proposed Phase I	18	Walking	22	Uncomfortable	92	Exceeded
	Proposed Phases I & II	15	Standing	17	Walking	72	Pass
	Future	14	Standing	17	Walking	70	Pass
9	Existing	15	Standing	17	Walking	72	Pass
	Proposed Phase I	15	Standing	18	Walking	75	Pass
	Proposed Phases I & II	16	Walking	19	Walking	74	Pass
	Future	14	Standing	17	Walking	70	Pass
10	Existing	14	Standing	17	Walking	69	Pass
	Proposed Phase I	17	Walking	21	Uncomfortable	92	Exceeded
	Proposed Phases I & II	16	Walking	20	Walking	79	Pass
	Future	15	Standing	18	Walking	76	Pass
11	Existing	12	Standing	15	Standing	58	Pass
	Proposed Phase I	17	Walking	20	Walking	85	Pass
	Proposed Phases I & II	15	Standing	19	Walking	80	Pass
	Future	14	Standing	18	Walking	79	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	14	Standing	57	Pass
	Proposed Phase I	13	Standing	16	Walking	69	Pass
	Proposed Phases I & II	12	Standing	15	Standing	67	Pass
	Future	12	Standing	15	Standing	68	Pass
13	Existing	12	Standing	14	Standing	57	Pass
	Proposed Phase I	16	Walking	19	Walking	84	Pass
	Proposed Phases I & II	15	Standing	18	Walking	85	Pass
	Future	14	Standing	18	Walking	87	Pass
14	Existing	11	Standing	13	Standing	56	Pass
	Proposed Phase I	13	Standing	15	Standing	69	Pass
	Proposed Phases I & II	12	Standing	15	Standing	74	Pass
	Future	12	Standing	15	Standing	76	Pass
15	Existing	11	Standing	13	Standing	56	Pass
	Proposed Phase I	17	Walking	20	Walking	87	Pass
	Proposed Phases I & II	16	Walking	20	Walking	84	Pass
	Future	16	Walking	19	Walking	84	Pass
16	Existing	11	Standing	13	Standing	55	Pass
	Proposed Phase I	14	Standing	17	Walking	74	Pass
	Proposed Phases I & II	14	Standing	17	Walking	80	Pass
	Future	14	Standing	17	Walking	81	Pass
17	Existing	11	Standing	13	Standing	58	Pass
	Proposed Phase I	18	Walking	20	Walking	78	Pass
	Proposed Phases I & II	17	Walking	20	Walking	76	Pass
	Future	16	Walking	19	Walking	73	Pass
18	Existing	11	Standing	12	Standing	56	Pass
	Proposed Phase I	20	Walking	23	Uncomfortable	100	Exceeded
	Proposed Phases I & II	19	Walking	23	Uncomfortable	96	Exceeded
	Future	18	Walking	22	Uncomfortable	93	Exceeded
19	Existing	10	Sitting	12	Standing	52	Pass
	Proposed Phase I	15	Standing	18	Walking	89	Pass
	Proposed Phases I & II	13	Standing	15	Standing	85	Pass
	Future	12	Standing	14	Standing	81	Pass
20	Existing	10	Sitting	11	Standing	47	Pass
	Proposed Phase I	18	Walking	21	Uncomfortable	92	Exceeded
	Proposed Phases I & II	16	Walking	18	Walking	82	Pass
	Future	15	Standing	17	Walking	78	Pass
21	Existing	11	Standing	12	Standing	50	Pass
	Proposed Phase I	20	Walking	25	Uncomfortable	100	Exceeded
	Proposed Phases I & II	17	Walking	21	Uncomfortable	86	Pass
	Future	16	Walking	19	Walking	78	Pass
22	Existing	11	Standing	13	Standing	50	Pass
	Proposed Phase I	19	Walking	23	Uncomfortable	88	Pass
	Proposed Phases I & II	16	Walking	19	Walking	79	Pass
	Future	15	Standing	18	Walking	75	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
23	Existing	12	Standing	13	Standing	51	Pass
	Proposed Phase I	17	Walking	21	Uncomfortable	88	Pass
	Proposed Phases I & II	16	Walking	18	Walking	75	Pass
	Future	15	Standing	18	Walking	75	Pass
24	Existing	11	Standing	13	Standing	50	Pass
	Proposed Phase I	17	Walking	22	Uncomfortable	91	Exceeded
	Proposed Phases I & II	17	Walking	20	Walking	78	Pass
	Future	15	Standing	19	Walking	74	Pass
25	Existing	9	Sitting	11	Standing	51	Pass
	Proposed Phase I	16	Walking	19	Walking	74	Pass
	Proposed Phases I & II	15	Standing	19	Walking	81	Pass
	Future	14	Standing	17	Walking	72	Pass
26	Existing	10	Sitting	11	Standing	49	Pass
	Proposed Phase I	16	Walking	20	Walking	101	Exceeded
	Proposed Phases I & II	22	Uncomfortable	27	Uncomfortable	98	Exceeded
	Future	21	Uncomfortable	25	Uncomfortable	94	Exceeded
27	Existing	9	Sitting	11	Standing	53	Pass
	Proposed Phase I	17	Walking	21	Uncomfortable	85	Pass
	Proposed Phases I & II	19	Walking	22	Uncomfortable	90	Pass
	Future	18	Walking	21	Uncomfortable	85	Pass
28	Existing	-	-	-	-	-	-
	Proposed Phase I	-	-	-	-	-	-
	Proposed Phases I & II	13	Standing	16	Walking	72	Pass
	Future	12	Standing	15	Standing	70	Pass
29	Existing	-	-	-	-	-	-
	Proposed Phase I	-	-	-	-	-	-
	Proposed Phases I & II	10	Sitting	11	Standing	47	Pass
	Future	9	Sitting	11	Standing	46	Pass
30	Existing	-	-	-	-	-	-
	Proposed Phase I	-	-	-	-	-	-
	Proposed Phases I & II	18	Walking	22	Uncomfortable	99	Exceeded
	Future	17	Walking	21	Uncomfortable	98	Exceeded
31	Existing	-	-	-	-	-	-
	Proposed Phase I	-	-	-	-	-	-
	Proposed Phases I & II	10	Sitting	11	Standing	47	Pass
	Future	9	Sitting	11	Standing	46	Pass
32	Existing	-	-	-	-	-	-
	Proposed Phase I	-	-	-	-	-	-
	Proposed Phases I & II	12	Standing	15	Standing	60	Pass
	Future	12	Standing	14	Standing	58	Pass
33	Existing	9	Sitting	11	Standing	49	Pass
	Proposed Phase I	17	Walking	20	Walking	88	Pass
	Proposed Phases I & II	22	Uncomfortable	27	Uncomfortable	99	Exceeded
	Future	21	Uncomfortable	25	Uncomfortable	97	Exceeded

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
34	Existing	10	Sitting	11	Standing	50	Pass
	Proposed Phase I	16	Walking	19	Walking	71	Pass
	Proposed Phases I & II	18	Walking	21	Uncomfortable	82	Pass
	Future	18	Walking	21	Uncomfortable	78	Pass
35	Existing	9	Sitting	10	Sitting	43	Pass
	Proposed Phase I	14	Standing	17	Walking	76	Pass
	Proposed Phases I & II	13	Standing	15	Standing	65	Pass
	Future	12	Standing	14	Standing	64	Pass
36	Existing	9	Sitting	11	Standing	52	Pass
	Proposed Phase I	11	Standing	13	Standing	59	Pass
	Proposed Phases I & II	17	Walking	20	Walking	83	Pass
	Future	16	Walking	19	Walking	80	Pass
37	Existing	14	Standing	16	Walking	78	Pass
	Proposed Phase I	14	Standing	17	Walking	68	Pass
	Proposed Phases I & II	16	Walking	19	Walking	76	Pass
	Future	16	Walking	19	Walking	73	Pass
38	Existing	16	Walking	19	Walking	81	Pass
	Proposed Phase I	17	Walking	21	Uncomfortable	84	Pass
	Proposed Phases I & II	18	Walking	23	Uncomfortable	84	Pass
	Future	18	Walking	22	Uncomfortable	82	Pass
39	Existing	-	-	-	-	-	-
	Proposed Phase I	-	-	-	-	-	-
	Proposed Phases I & II	10	Sitting	12	Standing	51	Pass
	Future	10	Sitting	12	Standing	51	Pass
40	Existing	11	Standing	13	Standing	55	Pass
	Proposed Phase I	11	Standing	13	Standing	53	Pass
	Proposed Phases I & II	6	Sitting	8	Sitting	36	Pass
	Future	6	Sitting	7	Sitting	35	Pass
41	Existing	13	Standing	16	Walking	73	Pass
	Proposed Phase I	14	Standing	17	Walking	72	Pass
	Proposed Phases I & II	17	Walking	20	Walking	81	Pass
	Future	16	Walking	19	Walking	79	Pass
42	Existing	15	Standing	18	Walking	80	Pass
	Proposed Phase I	15	Standing	19	Walking	79	Pass
	Proposed Phases I & II	17	Walking	20	Walking	84	Pass
	Future	16	Walking	19	Walking	82	Pass
43	Existing	18	Walking	21	Uncomfortable	80	Pass
	Proposed Phase I	16	Walking	20	Walking	79	Pass
	Proposed Phases I & II	17	Walking	20	Walking	79	Pass
	Future	17	Walking	19	Walking	77	Pass
44	Existing	14	Standing	17	Walking	71	Pass
	Proposed Phase I	14	Standing	17	Walking	71	Pass
	Proposed Phases I & II	16	Walking	18	Walking	73	Pass
	Future	16	Walking	18	Walking	73	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
45	Existing	12	Standing	15	Standing	67	Pass
	Proposed Phase I	11	Standing	14	Standing	65	Pass
	Proposed Phases I & II	17	Walking	20	Walking	76	Pass
	Future	17	Walking	19	Walking	73	Pass
46	Existing	12	Standing	15	Standing	59	Pass
	Proposed Phase I	12	Standing	15	Standing	62	Pass
	Proposed Phases I & II	14	Standing	17	Walking	67	Pass
	Future	14	Standing	17	Walking	65	Pass
47	Existing	-	-	-	-	-	-
	Proposed Phase I	-	-	-	-	-	-
	Proposed Phases I & II	14	Standing	16	Walking	67	Pass
	Future	13	Standing	15	Standing	63	Pass
48	Existing	-	-	-	-	-	-
	Proposed Phase I	-	-	-	-	-	-
	Proposed Phases I & II	9	Sitting	11	Standing	48	Pass
	Future	9	Sitting	10	Sitting	47	Pass
49	Existing	15	Standing	17	Walking	68	Pass
	Proposed Phase I	15	Standing	18	Walking	74	Pass
	Proposed Phases I & II	19	Walking	22	Uncomfortable	86	Pass
	Future	18	Walking	22	Uncomfortable	85	Pass
50	Existing	-	-	-	-	-	-
	Proposed Phase I	-	-	-	-	-	-
	Proposed Phases I & II	7	Sitting	9	Sitting	37	Pass
	Future	7	Sitting	8	Sitting	37	Pass
51	Existing	15	Standing	18	Walking	75	Pass
	Proposed Phase I	16	Walking	20	Walking	78	Pass
	Proposed Phases I & II	19	Walking	23	Uncomfortable	94	Exceeded
	Future	18	Walking	23	Uncomfortable	94	Exceeded
52	Existing	-	-	-	-	-	-
	Proposed Phase I	-	-	-	-	-	-
	Proposed Phases I & II	8	Sitting	10	Sitting	66	Pass
	Future	8	Sitting	10	Sitting	66	Pass
53	Existing	11	Standing	13	Standing	58	Pass
	Proposed Phase I	13	Standing	15	Standing	59	Pass
	Proposed Phases I & II	20	Walking	26	Uncomfortable	104	Exceeded
	Future	19	Walking	24	Uncomfortable	104	Exceeded
54	Existing	11	Standing	12	Standing	49	Pass
	Proposed Phase I	13	Standing	16	Walking	67	Pass
	Proposed Phases I & II	12	Standing	15	Standing	67	Pass
	Future	11	Standing	14	Standing	58	Pass
55	Existing	11	Standing	12	Standing	52	Pass
	Proposed Phase I	14	Standing	17	Walking	79	Pass
	Proposed Phases I & II	14	Standing	17	Walking	75	Pass
	Future	13	Standing	16	Walking	71	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
56	Existing	11	Standing	12	Standing	49	Pass
	Proposed Phase I	14	Standing	17	Walking	78	Pass
	Proposed Phases I & II	6	Sitting	8	Sitting	35	Pass
	Future	6	Sitting	8	Sitting	35	Pass
57	Existing	18	Walking	22	Uncomfortable	84	Pass
	Proposed Phase I	16	Walking	19	Walking	83	Pass
	Proposed Phases I & II	16	Walking	20	Walking	88	Pass
	Future	15	Standing	18	Walking	85	Pass
58	Existing	15	Standing	18	Walking	79	Pass
	Proposed Phase I	16	Walking	19	Walking	85	Pass
	Proposed Phases I & II	13	Standing	16	Walking	77	Pass
	Future	12	Standing	15	Standing	76	Pass
59	Existing	16	Walking	18	Walking	72	Pass
	Proposed Phase I	15	Standing	18	Walking	74	Pass
	Proposed Phases I & II	14	Standing	17	Walking	68	Pass
	Future	14	Standing	16	Walking	65	Pass
60	Existing	12	Standing	14	Standing	66	Pass
	Proposed Phase I	12	Standing	14	Standing	64	Pass
	Proposed Phases I & II	12	Standing	15	Standing	62	Pass
	Future	12	Standing	14	Standing	60	Pass
61	Existing	13	Standing	15	Standing	71	Pass
	Proposed Phase I	14	Standing	17	Walking	71	Pass
	Proposed Phases I & II	16	Walking	20	Walking	80	Pass
	Future	15	Standing	18	Walking	79	Pass
62	Existing	11	Standing	12	Standing	48	Pass
	Proposed Phase I	11	Standing	12	Standing	53	Pass
	Proposed Phases I & II	14	Standing	17	Walking	65	Pass
	Future	13	Standing	16	Walking	64	Pass
63	Existing	10	Sitting	12	Standing	54	Pass
	Proposed Phase I	14	Standing	17	Walking	68	Pass
	Proposed Phases I & II	14	Standing	16	Walking	67	Pass
	Future	14	Standing	16	Walking	66	Pass
64	Existing	9	Sitting	10	Sitting	44	Pass
	Proposed Phase I	17	Walking	19	Walking	77	Pass
	Proposed Phases I & II	14	Standing	16	Walking	74	Pass
	Future	13	Standing	15	Standing	72	Pass
65	Existing	10	Sitting	12	Standing	55	Pass
	Proposed Phase I	13	Standing	15	Standing	67	Pass
	Proposed Phases I & II	12	Standing	15	Standing	68	Pass
	Future	12	Standing	14	Standing	64	Pass
66	Existing	10	Sitting	13	Standing	55	Pass
	Proposed Phase I	11	Standing	13	Standing	54	Pass
	Proposed Phases I & II	11	Standing	13	Standing	57	Pass
	Future	11	Standing	13	Standing	58	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
67	Existing	12	Standing	14	Standing	57	Pass
	Proposed Phase I	12	Standing	14	Standing	56	Pass
	Proposed Phases I & II	12	Standing	14	Standing	56	Pass
	Future	12	Standing	14	Standing	55	Pass
68	Existing	10	Sitting	13	Standing	56	Pass
	Proposed Phase I	11	Standing	13	Standing	57	Pass
	Proposed Phases I & II	11	Standing	13	Standing	56	Pass
	Future	11	Standing	13	Standing	56	Pass
69	Existing	11	Standing	13	Standing	57	Pass
	Proposed Phase I	11	Standing	14	Standing	63	Pass
	Proposed Phases I & II	11	Standing	13	Standing	55	Pass
	Future	11	Standing	13	Standing	55	Pass
70	Existing	10	Sitting	12	Standing	57	Pass
	Proposed Phase I	14	Standing	17	Walking	75	Pass
	Proposed Phases I & II	14	Standing	16	Walking	71	Pass
	Future	13	Standing	15	Standing	68	Pass
71	Existing	9	Sitting	10	Sitting	45	Pass
	Proposed Phase I	16	Walking	17	Walking	84	Pass
	Proposed Phases I & II	15	Standing	18	Walking	78	Pass
	Future	14	Standing	17	Walking	75	Pass
72	Existing	12	Standing	14	Standing	55	Pass
	Proposed Phase I	13	Standing	15	Standing	65	Pass
	Proposed Phases I & II	14	Standing	17	Walking	73	Pass
	Future	13	Standing	16	Walking	72	Pass
73	Existing	12	Standing	13	Standing	56	Pass
	Proposed Phase I	11	Standing	13	Standing	61	Pass
	Proposed Phases I & II	10	Sitting	12	Standing	68	Pass
	Future	11	Standing	13	Standing	68	Pass
74	Existing	12	Standing	14	Standing	56	Pass
	Proposed Phase I	12	Standing	13	Standing	57	Pass
	Proposed Phases I & II	11	Standing	13	Standing	63	Pass
	Future	12	Standing	14	Standing	64	Pass
75	Existing	12	Standing	14	Standing	59	Pass
	Proposed Phase I	12	Standing	14	Standing	59	Pass
	Proposed Phases I & II	11	Standing	14	Standing	66	Pass
	Future	11	Standing	14	Standing	66	Pass
76	Existing	13	Standing	15	Standing	57	Pass
	Proposed Phase I	13	Standing	14	Standing	61	Pass
	Proposed Phases I & II	12	Standing	15	Standing	69	Pass
	Future	12	Standing	15	Standing	70	Pass
77	Existing	13	Standing	15	Standing	63	Pass
	Proposed Phase I	13	Standing	14	Standing	64	Pass
	Proposed Phases I & II	12	Standing	14	Standing	65	Pass
	Future	11	Standing	14	Standing	66	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
78	Existing	13	Standing	16	Walking	73	Pass
	Proposed Phase I	13	Standing	16	Walking	70	Pass
	Proposed Phases I & II	12	Standing	15	Standing	69	Pass
	Future	12	Standing	15	Standing	69	Pass
79	Existing	16	Walking	20	Walking	84	Pass
	Proposed Phase I	16	Walking	20	Walking	82	Pass
	Proposed Phases I & II	16	Walking	20	Walking	83	Pass
	Future	16	Walking	19	Walking	82	Pass
80	Existing	16	Walking	19	Walking	78	Pass
	Proposed Phase I	15	Standing	17	Walking	70	Pass
	Proposed Phases I & II	15	Standing	18	Walking	72	Pass
	Future	14	Standing	18	Walking	73	Pass
81	Existing	15	Standing	17	Walking	71	Pass
	Proposed Phase I	16	Walking	19	Walking	76	Pass
	Proposed Phases I & II	16	Walking	19	Walking	80	Pass
	Future	15	Standing	18	Walking	79	Pass
82	Existing	-	-	-	-	-	-
	Proposed Phase I	11	Standing	13	Standing	55	Pass
	Proposed Phases I & II	10	Sitting	12	Standing	54	Pass
	Future	9	Sitting	12	Standing	53	Pass
83	Existing	-	-	-	-	-	-
	Proposed Phase I	10	Sitting	12	Standing	47	Pass
	Proposed Phases I & II	9	Sitting	11	Standing	45	Pass
	Future	9	Sitting	11	Standing	44	Pass
84	Existing	-	-	-	-	-	-
	Proposed Phase I	10	Sitting	11	Standing	48	Pass
	Proposed Phases I & II	9	Sitting	10	Sitting	44	Pass
	Future	9	Sitting	10	Sitting	41	Pass
85	Existing	-	-	-	-	-	-
	Proposed Phase I	9	Sitting	11	Standing	58	Pass
	Proposed Phases I & II	8	Sitting	10	Sitting	50	Pass
	Future	8	Sitting	9	Sitting	45	Pass
86	Existing	-	-	-	-	-	-
	Proposed Phase I	10	Sitting	11	Standing	54	Pass
	Proposed Phases I & II	10	Sitting	11	Standing	59	Pass
	Future	10	Sitting	12	Standing	60	Pass
87	Existing	-	-	-	-	-	-
	Proposed Phase I	9	Sitting	11	Standing	46	Pass
	Proposed Phases I & II	9	Sitting	10	Sitting	41	Pass
	Future	9	Sitting	10	Sitting	41	Pass
88	Existing	-	-	-	-	-	-
	Proposed Phase I	13	Standing	15	Standing	70	Pass
	Proposed Phases I & II	11	Standing	13	Standing	68	Pass
	Future	11	Standing	13	Standing	66	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
89	Existing	-	-	-	-	-	-
	Proposed Phase I	11	Standing	11	Standing	52	Pass
	Proposed Phases I & II	9	Sitting	10	Sitting	48	Pass
	Future	8	Sitting	9	Sitting	48	Pass
90	Existing	-	-	-	-	-	-
	Proposed Phase I	14	Standing	16	Walking	74	Pass
	Proposed Phases I & II	11	Standing	13	Standing	55	Pass
	Future	11	Standing	12	Standing	53	Pass
91	Existing	-	-	-	-	-	-
	Proposed Phase I	12	Standing	15	Standing	66	Pass
	Proposed Phases I & II	10	Sitting	14	Standing	67	Pass
	Future	10	Sitting	13	Standing	67	Pass
92	Existing	-	-	-	-	-	-
	Proposed Phase I	14	Standing	17	Walking	81	Pass
	Proposed Phases I & II	11	Standing	14	Standing	73	Pass
	Future	10	Sitting	13	Standing	72	Pass
93	Existing	-	-	-	-	-	-
	Proposed Phase I	16	Walking	18	Walking	70	Pass
	Proposed Phases I & II	15	Standing	18	Walking	70	Pass
	Future	15	Standing	17	Walking	68	Pass
94	Existing	-	-	-	-	-	-
	Proposed Phase I	15	Standing	19	Walking	72	Pass
	Proposed Phases I & II	15	Standing	18	Walking	71	Pass
	Future	14	Standing	16	Walking	70	Pass
95	Existing	-	-	-	-	-	-
	Proposed Phase I	19	Walking	23	Uncomfortable	101	Exceeded
	Proposed Phases I & II	17	Walking	21	Uncomfortable	93	Exceeded
	Future	16	Walking	20	Walking	94	Exceeded
96	Existing	-	-	-	-	-	-
	Proposed Phase I	21	Uncomfortable	25	Uncomfortable	106	Exceeded
	Proposed Phases I & II	18	Walking	22	Uncomfortable	96	Exceeded
	Future	17	Walking	21	Uncomfortable	94	Exceeded
97	Existing	-	-	-	-	-	-
	Proposed Phase I	17	Walking	20	Walking	84	Pass
	Proposed Phases I & II	14	Standing	17	Walking	71	Pass
	Future	14	Standing	16	Walking	69	Pass
98	Existing	-	-	-	-	-	-
	Proposed Phase I	19	Walking	23	Uncomfortable	90	Pass
	Proposed Phases I & II	16	Walking	19	Walking	82	Pass
	Future	15	Standing	18	Walking	81	Pass
99	Existing	-	-	-	-	-	-
	Proposed Phase I	22	Uncomfortable	28	Uncomfortable	119	Exceeded
	Proposed Phases I & II	19	Walking	23	Uncomfortable	112	Exceeded
	Future	17	Walking	21	Uncomfortable	100	Exceeded

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
100	Existing	-	-	-	-	-	-
	Proposed Phase I	14	Standing	16	Walking	72	Pass
	Proposed Phases I & II	13	Standing	15	Standing	66	Pass
	Future	13	Standing	15	Standing	63	Pass
101	Existing	-	-	-	-	-	-
	Proposed Phase I	19	Walking	22	Uncomfortable	93	Exceeded
	Proposed Phases I & II	17	Walking	20	Walking	86	Pass
	Future	17	Walking	19	Walking	77	Pass
102	Existing	-	-	-	-	-	-
	Proposed Phase I	21	Uncomfortable	26	Uncomfortable	110	Exceeded
	Proposed Phases I & II	17	Walking	21	Uncomfortable	95	Exceeded
	Future	16	Walking	19	Walking	84	Pass
103	Existing	-	-	-	-	-	-
	Proposed Phase I	15	Standing	18	Walking	73	Pass
	Proposed Phases I & II	12	Standing	15	Standing	65	Pass
	Future	12	Standing	14	Standing	62	Pass
104	Existing	-	-	-	-	-	-
	Proposed Phase I	20	Walking	23	Uncomfortable	99	Exceeded
	Proposed Phases I & II	16	Walking	19	Walking	84	Pass
	Future	15	Standing	17	Walking	69	Pass
105	Existing	-	-	-	-	-	-
	Proposed Phase I	16	Walking	18	Walking	77	Pass
	Proposed Phases I & II	14	Standing	16	Walking	65	Pass
	Future	13	Standing	15	Standing	58	Pass
106	Existing	-	-	-	-	-	-
	Proposed Phase I	8	Sitting	10	Sitting	39	Pass
	Proposed Phases I & II	9	Sitting	11	Standing	49	Pass
	Future	9	Sitting	10	Sitting	48	Pass
107	Existing	-	-	-	-	-	-
	Proposed Phase I	9	Sitting	11	Standing	64	Pass
	Proposed Phases I & II	10	Sitting	12	Standing	61	Pass
	Future	10	Sitting	12	Standing	60	Pass
108	Existing	-	-	-	-	-	-
	Proposed Phase I	9	Sitting	10	Sitting	65	Pass
	Proposed Phases I & II	10	Sitting	11	Standing	56	Pass
	Future	10	Sitting	11	Standing	56	Pass
109	Existing	-	-	-	-	-	-
	Proposed Phase I	-	-	-	-	-	-
	Proposed Phases I & II	10	Sitting	11	Standing	53	Pass
	Future	10	Sitting	11	Standing	53	Pass
110	Existing	-	-	-	-	-	-
	Proposed Phase I	-	-	-	-	-	-
	Proposed Phases I & II	12	Standing	14	Standing	59	Pass
	Future	12	Standing	13	Standing	57	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
111	Existing	-	-	-	-	-	-
	Proposed Phase I	-	-	-	-	-	-
	Proposed Phases I & II	14	Standing	15	Standing	62	Pass
	Future	13	Standing	15	Standing	60	Pass
112	Existing	-	-	-	-	-	-
	Proposed Phase I	-	-	-	-	-	-
	Proposed Phases I & II	14	Standing	16	Walking	78	Pass
	Future	13	Standing	15	Standing	78	Pass
113	Existing	-	-	-	-	-	-
	Proposed Phase I	-	-	-	-	-	-
	Proposed Phases I & II	15	Standing	18	Walking	74	Pass
	Future	14	Standing	17	Walking	71	Pass
114	Existing	-	-	-	-	-	-
	Proposed Phase I	-	-	-	-	-	-
	Proposed Phases I & II	15	Standing	18	Walking	85	Pass
	Future	14	Standing	17	Walking	85	Pass
115	Existing	-	-	-	-	-	-
	Proposed Phase I	-	-	-	-	-	-
	Proposed Phases I & II	13	Standing	15	Standing	69	Pass
	Future	12	Standing	15	Standing	67	Pass
116	Existing	-	-	-	-	-	-
	Proposed Phase I	-	-	-	-	-	-
	Proposed Phases I & II	13	Standing	16	Walking	69	Pass
	Future	13	Standing	15	Standing	68	Pass
Season	Months	Hours		Comfort Speed (km/h)		Safety Speed (km/h)	
Summer	May - October	6:00 - 23:00 for comfort		(20% Seasonal Exceedance)		(0.1% Annual Exceedance)	
Winter	November - April	6:00 - 23:00 for comfort		≤ 10	Sitting	≤ 90 Pass	
Annual	January - December	0:00 - 23:00 for safety		11 - 15	Standing	> 90 Exceeded	
Configurations				16 - 20	Walking		
Existing	Existing site and surroundings			> 20	Uncomfortable		
Proposed Phase I	Phase I with existing surroundings						
Proposed Phases I & II	Phases I & II with existing surroundings						
Future	Phases I & II with future surroundings						