PRELIMINARY RESULTS

5259 DORCHESTER ROAD

NIAGARA FALLS, ON

PEDESTRIAN WIND STUDY
RWDI # 2505949
March 4, 2025

SUBMITTED TO

5259 Dorchester Road (Niagara) Ltd.
8485 Montrose Road
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EXECUTIVE SUMMARY

RWDI was retained to conduct a pedestrian wind assessment for the proposed 5259 Dorchester Road in Niagara Falls, ON (Image 1). The assessment was based on the wind-tunnel testing conducted for the proposed development site under the Existing and Proposed configurations of the site and surroundings (Image 2). The results were analysed using the regional wind climate records (Image 3) and evaluated against the RWDI Pedestrian Wind Criteria for pedestrian comfort (pertaining to common wind speeds conducive to different levels of human activity) and pedestrian safety (pertaining to infrequent but strong gusts that could affect a person's footing). The criteria description is appended to this report to assist with interpretation of the results. The predicted wind conditions are presented in Figures 1A through 3B, and Table 1, and are summarized as follows:

Existing configuration:

- Wind speeds at all areas assessed on and off the site are expected to meet the wind safety criterion.
- Most locations are predicted to be comfortable for pedestrian use in the summer and winter, with seasonally higher speeds in the winter.

Proposed configuration:

- Most locations at grade level are expected to meet the wind safety criterion, except for one location in the parking lot north of Building 6A and one at the southeast corner of Building 6B.
- Wind speeds at most locations are predicted to be suitable for the intended uses in various areas in the summer and winter.
- Relatively higher wind speeds than the rest of the site are expected in a few areas near building corners, between buildings, and in parking lots particularly in the west half of the site. This results in acceptable conditions in the summer, and conditions rated as "uncomfortable" In the winter.
- On the above-grade amenities, all assessed locations are expected to meet the wind safety criterion. Most locations are predicted to receive winds that would be suitable for passive use in the summer and winter. Lower speeds may be desirable in areas planned for seating/dining/lounging and similar relaxed uses in the summer.
- Lower wind speeds can be achieved in the windy areas on grade and the amenity areas using wind control measures such as landscaping and wind screens.

While referring to the Pedestrian Wind Criteria description that follows, we encourage the design team to review the results and assess them against the intended pedestrian usage at specific locations. If there are locations where improved conditions are desired, the RWDI team is prepared to discuss and suggest conceptual wind control strategies. Additional commentary regarding background on wind flow patterns, wind comfort levels, and any further recommendations for wind control will be presented within the final report. Prior to issuing the report, we suggest a teleconference to review and the results and discuss the need/type/location/feasibility of any wind control measures.

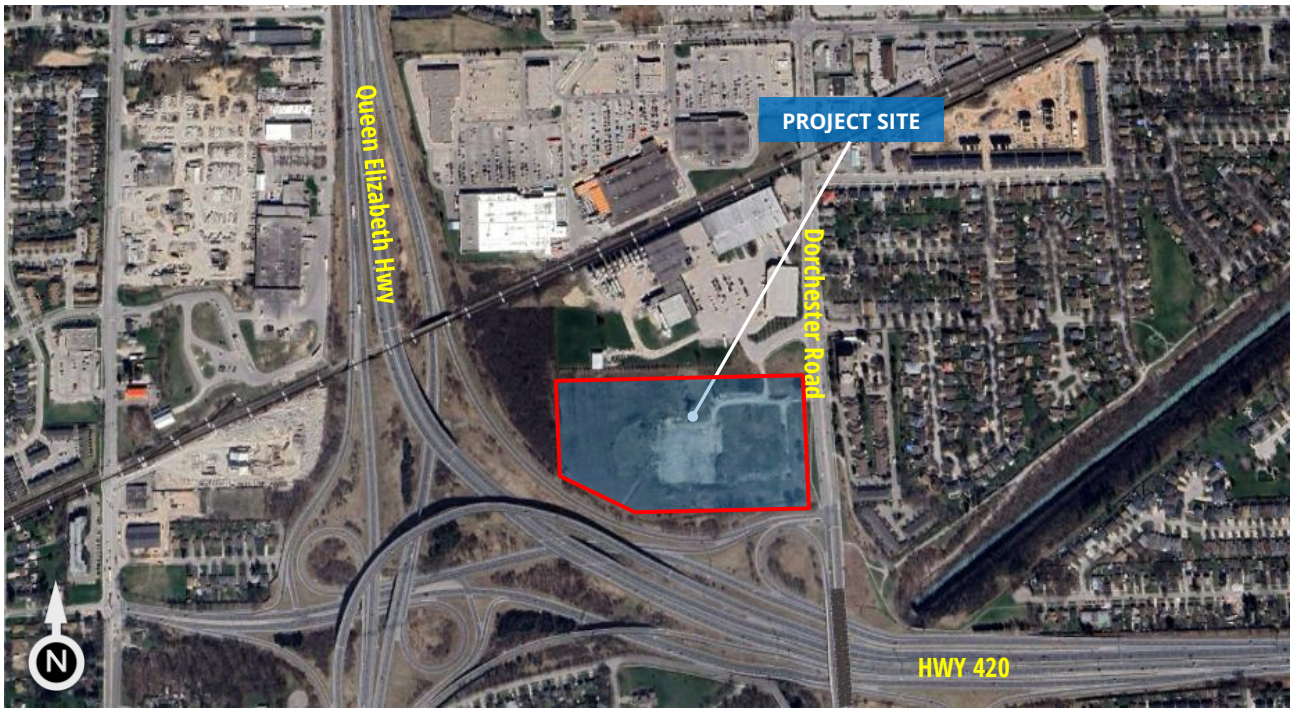
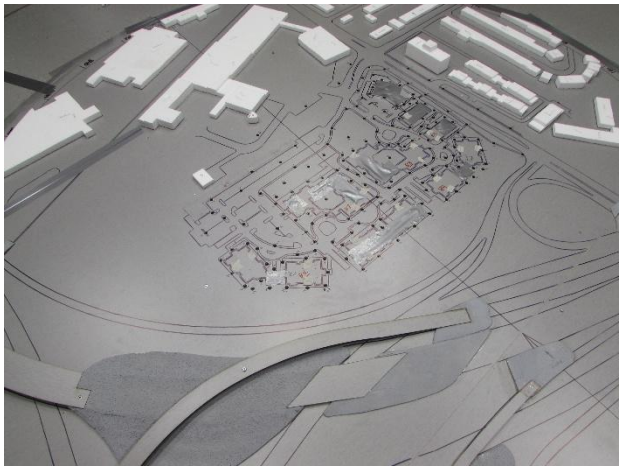


Image 1: Aerial View of Site and Surroundings (Photo Credit: Google™ Earth)



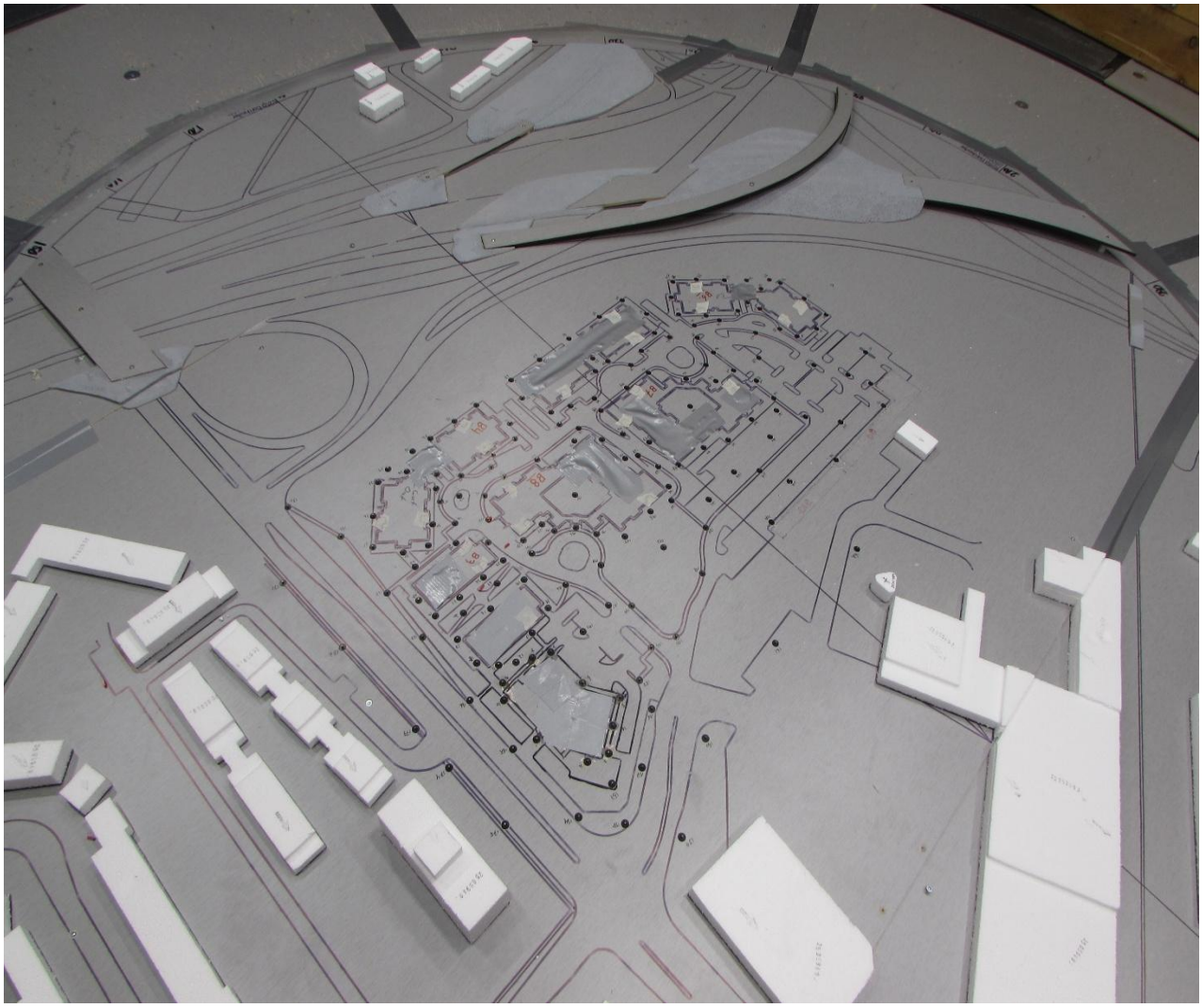


Image 2A: Wind Tunnel Study Model – Existing Configuration

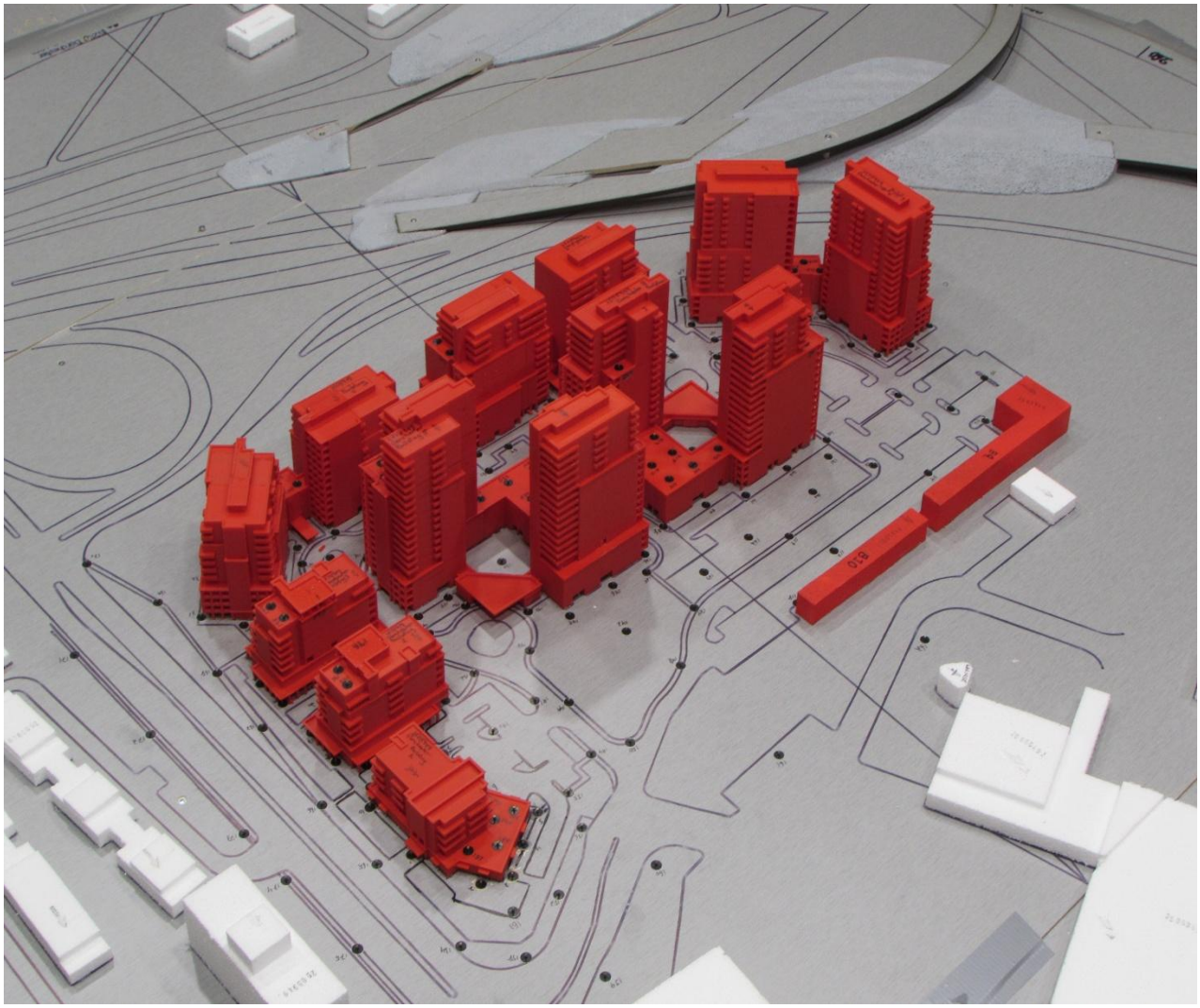
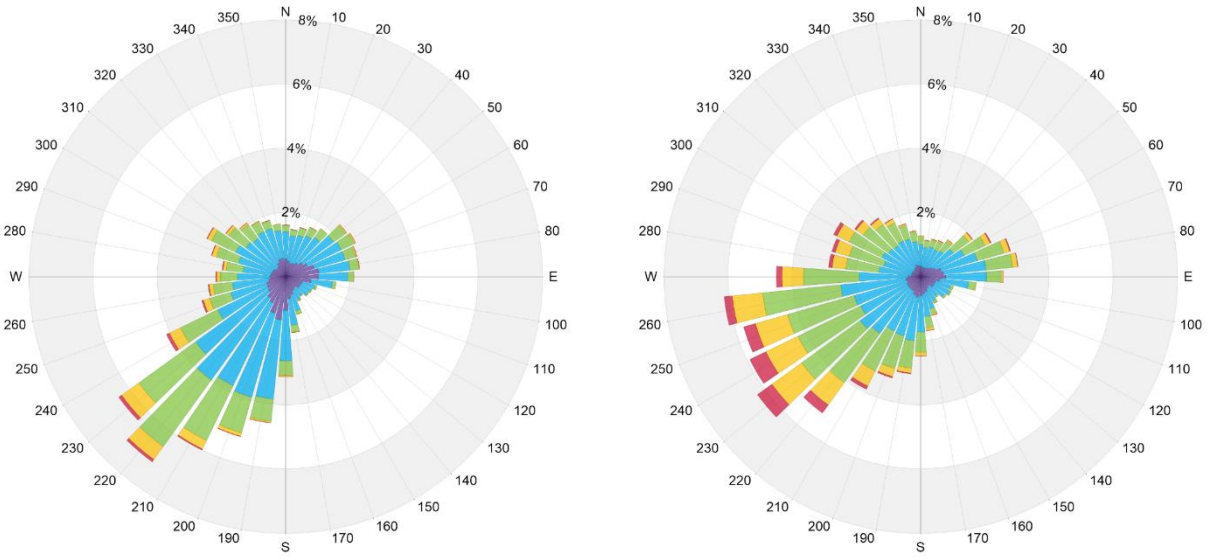


Image 2B: Wind Tunnel Study Model – Proposed Configuration



Wind Speed (km/h)	Probability (%) Summer	Winter
Calm	10.4	5.9
1-10	23.4	16.1
11-20	42.6	36.3
21-30	19.7	28.9
31-40	3.3	9.8
>40	0.6	3.0

Image 3: Directional Distribution of Winds Approaching Niagara Falls International Airport between 1991 and 2021

Pedestrian Wind Criteria for Niagara Region

Based on pedestrian level wind study terms of reference guide for Niagara Region (dated July 2022), the public realm, streetscapes and public/private outdoor open spaces related to the existing and proposed buildings are to be comfortable for their intended use. The table below describes the minimum criteria for specific locations. The criteria deal with comfort and safety of pedestrians:

Comfort: Commonly experienced wind speeds have been categorized into ranges based on the activity level of a person that the winds would be conducive to. Lower wind speeds are desirable for passive activities and active pedestrians would be tolerant of higher wind speeds.

Safety: It is important to assess wind conditions in the pedestrian realm from a safety perspective as strong wind gusts can deter safe pedestrian use of outdoor spaces. Wind speeds associated with wind gusts are infrequent but deserve special attention due to their potential impact on pedestrian safety.

Comfort Category	GEM Speed (km/h)	Minimum Occurrence (% of Time)	Description	Area of Application
Sitting	≤ 10	80	Light breezes desired for outdoor seating areas where one can read a paper without having it blown away.	Park benches, restaurant and café seating, balconies, amenity terraces, children's areas, etc. intended for relaxed, and usually seated activities.
Standing	≤ 15	80	Gentle breezes suitable for passive pedestrian activities where a breeze may be tolerated	Main entrances, bus-stops, dog areas, and other outdoor areas where seated activities are not expected.
Walking	≤ 20	80	Relatively high speeds that can be tolerated during intentional walking, running and other active movements.	Sidewalks, parking lots, alleyways, and areas where pedestrian activity is primarily for walking.
Uncomfortable	> 20	20	Strong winds, considered a nuisance for most activities.	Not acceptable in areas with pedestrian access.

NOTES:
1) Gust Equivalent Mean (GEM) speed = maximum of either mean speed or gust speed/1.85. The gust speed can be measured directly from wind tunnel or estimated as mean speed + (3 x RMS speed).
2) Comfort calculations are to be based on wind events recorded between 6:00 and 23:00 daily.

Safety Criterion	Gust Speed (km/h)	Minimum Occurrence Annual	Description	Area of Application
Exceeded	> 90	0.1% (9 hours in a year)	Excessive gust speeds that can adversely affect a pedestrian's balance and footing. Wind mitigation is typically required.	Not acceptable in any area of interest.

NOTES:
3) Safety calculations are to be based on wind events recorded for 24 hours a day

Statement of Limitations

This report was prepared by Rowan Williams Davies & Irwin Inc. ("RWDI") for 5259 Dorchester Road (Niagara) Ltd. ("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. Because the contents of this report may not reflect the final design of the Project or subsequent changes made after the date of this report, RWDI recommends that it be retained by Client during the final stages of the project to verify that the results and recommendations provided in this report have been correctly interpreted in the final design of the Project.

The conclusions and recommendations contained in this report have also been made for the specific purpose(s) set out herein. Should the Client or any other third party utilize 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.

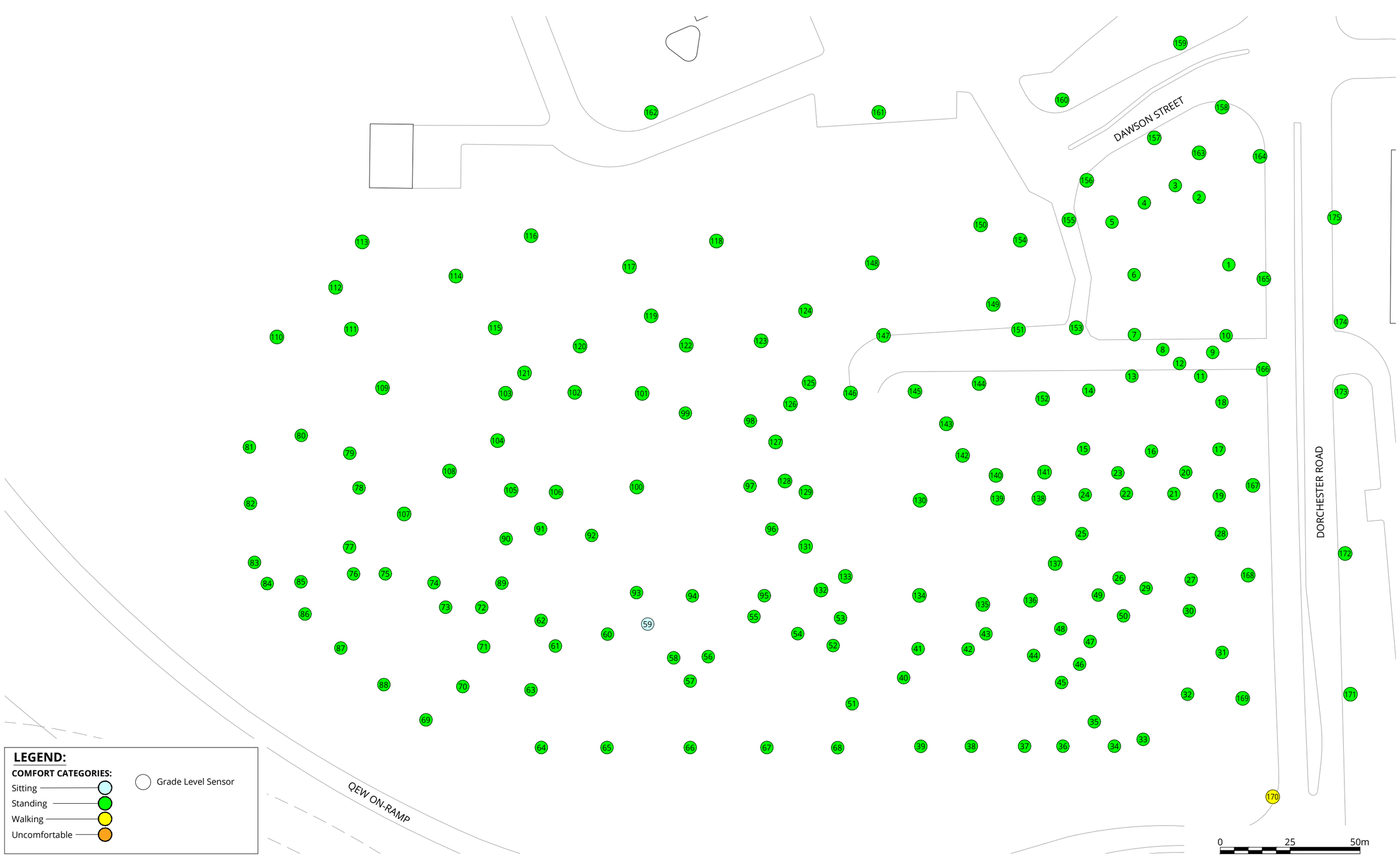
The findings and recommendations set out in this report are based on the following information disclosed to RWDI. Drawings and information listed below were received from Upper Canada Planning & Engineering Ltd and used to construct the scale model of the proposed 5259 Dorchester Road **("Project Data**")

File Name	File Type	Date Received (dd/mm/yyyy)
20136-SITE PLAN_PRELIM -2.2	PDF	24/02/2025
ACAD-20136-SITE PLAN_PRELIM -2.2-Model	DWG	24/02/2025

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 upon 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.

FIGURES



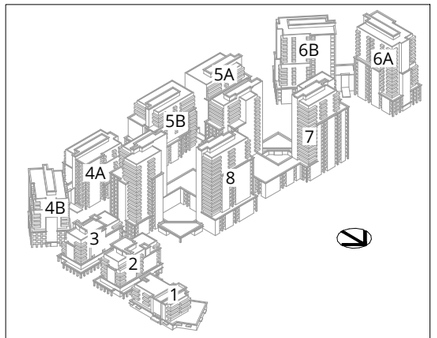
Pedestrian Wind Comfort Conditions
Existing Configuration
Summer (May to October, 6:00 to 23:00)

5259 Dorchester Road - Niagara Falls, ON

True North

Project #2505949

Drawn by: NRA	Figure: 1A
Approx. Scale:	1:1250
Date Revised:	Mar. 3, 2025



Isometric View of Buildings

STORAGE AND MAINTENANCE

STORAGE

BUILDING 1

BUILDING 2

BUILDING 3

BUILDING 4A

BUILDING 4B

BUILDING 5A

BUILDING 5B

BUILDING 6A

BUILDING 6B

BUILDING 7

BUILDING 8

DAWSON STREET

DORCHESTER ROAD

QEW ON-RAMP

LEGEND:

COMFORT CATEGORIES:

- Sitting
- Standing
- Walking
- Uncomfortable

- Grade Level Sensor
- Building Above Removed for Clarity
- Main Entrance Location

0 25 50m

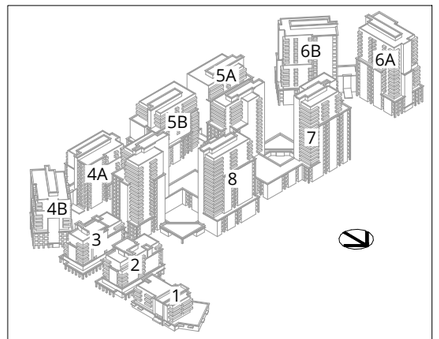
Pedestrian Wind Comfort Conditions
Proposed Configuration
Summer (May to October, 6:00 to 23:00)

5259 Dorchester Road - Niagara Falls, ON

True North

Project #2505949

Drawn by: NRA	Figure: 1B-1
Approx. Scale:	1:1250
Date Revised:	Mar. 3, 2025



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LEGEND:

COMFORT CATEGORIES:

- Sitting
- Standing
- Walking
- Uncomfortable

- Terrace Level Sensor
- Roof Level Sensor
- Building Above Removed for Clarity

0 25 50m

Pedestrian Wind Comfort Conditions
Proposed Configuration
Summer (May to October, 6:00 to 23:00)

5259 Dorchester Road - Niagara Falls, ON

True North

Project #2505949

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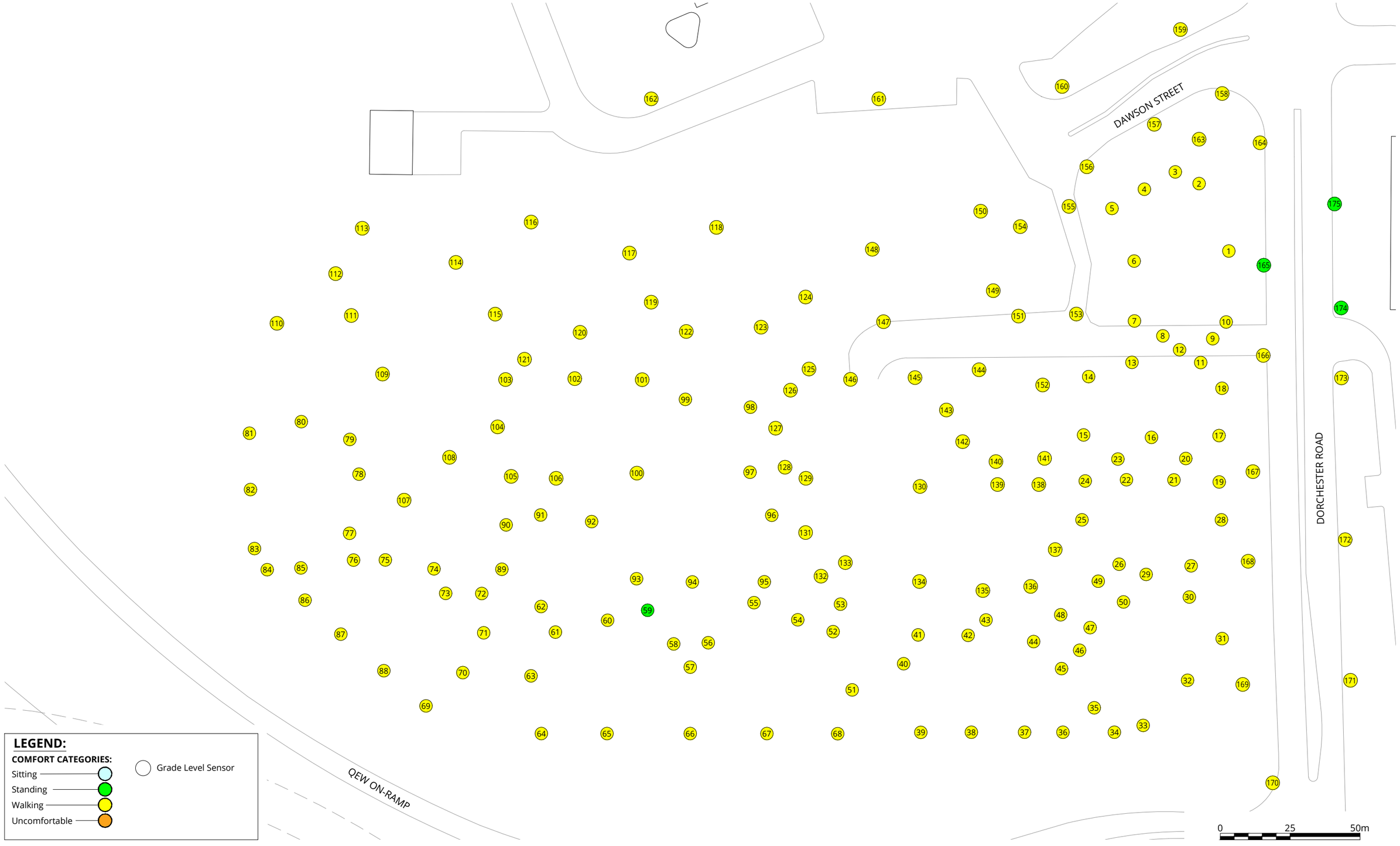


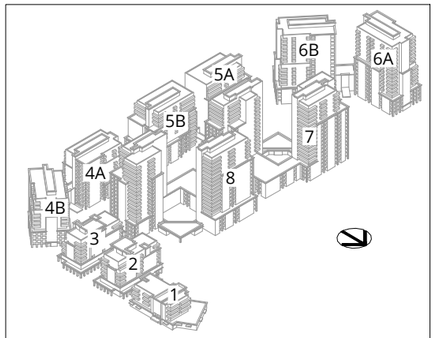
Pedestrian Wind Comfort Conditions
Existing Configuration
Winter (November to April, 6:00 to 23:00)

5259 Dorchester Road - Niagara Falls, ON

True North

Project #2505949

Drawn by: NRA	Figure: 2A
Approx. Scale:	1:1250
Date Revised:	Mar. 3, 2025



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DORCHESTER ROAD

QEW ON-RAMP

LEGEND:

COMFORT CATEGORIES:

- Sitting
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0 25 50m

Pedestrian Wind Comfort Conditions

Proposed Configuration

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

5259 Dorchester Road - Niagara Falls, ON

True North

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Drawn by: NRA	Figure: 2B-1
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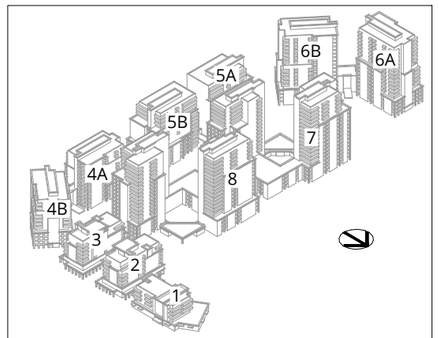

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BUILDING 8

LEGEND:

COMFORT CATEGORIES:

- Sitting
- Standing
- Walking
- Uncomfortable

- Terrace Level Sensor
- Roof Level Sensor
- Building Above Removed for Clarity

0 25 50m

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

5259 Dorchester Road - Niagara Falls, ON

True North

Project #2505949

Drawn by: NRA	Figure: 2B-2
Approx. Scale:	1:1250
Date Revised:	Mar. 3, 2025

DAWSON STREET

DORCHESTER ROAD

QEW ON-RAMP

LEGEND:

SAFETY CATEGORIES:

Acceptable

Exceeded

Grade Level Sensor

0 25 50m

Pedestrian Wind Safety Conditions

Existing Configuration

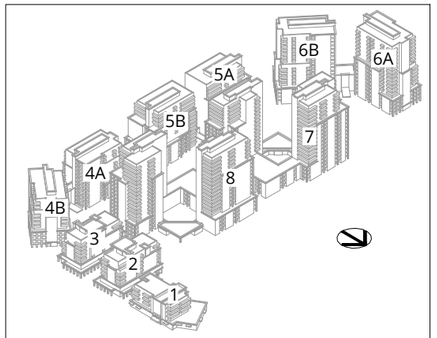
Annual (January to December, 0:00 to 23:00)

5259 Dorchester Road - Niagara Falls, ON

True North

Project #2505949

Drawn by: NRA	Figure: 3A
Approx. Scale:	1:1250
Date Revised:	Mar. 3, 2025



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BUILDING 6A

BUILDING 6B

BUILDING 7

BUILDING 8

DAWSON STREET

DORCHESTER ROAD

QEW ON-RAMP

LEGEND:

SAFETY CATEGORIES:

Acceptable

Exceeded

Grade Level Sensor

Building Above Removed for Clarity

Main Entrance Location

0 25 50m

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

5259 Dorchester Road - Niagara Falls, ON

True North

Project #2505949

Drawn by: NRA	Figure: 3B-1
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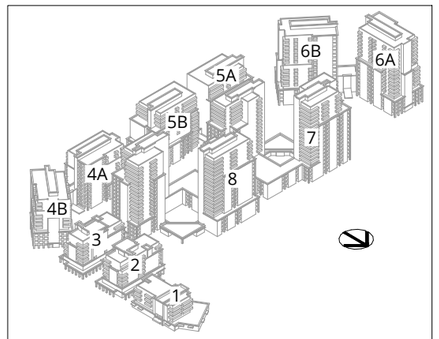

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BUILDING 5A

BUILDING 5B

BUILDING 6A

BUILDING 6B

BUILDING 7

BUILDING 8

LEGEND:

SAFETY CATEGORIES:

Acceptable

Exceeded

Terrace Level Sensor

Roof Level Sensor

Building Above Removed for Clarity

0 25 50m

Pedestrian Wind Safety Conditions

Proposed Configuration

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

5259 Dorchester Road - Niagara Falls, ON

True North

Project #2505949

Drawn by: NRA	Figure: 3B-2	
Approx. Scale:	1:1250	
Date Revised:	Mar. 3, 2025	

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	14	Standing	16	Walking	55	Pass
	Proposed	9	Sitting	11	Standing	53	Pass
2	Existing	14	Standing	17	Walking	58	Pass
	Proposed	6	Sitting	8	Sitting	37	Pass
3	Existing	14	Standing	17	Walking	58	Pass
	Proposed	9	Sitting	13	Standing	54	Pass
4	Existing	14	Standing	18	Walking	60	Pass
	Proposed	8	Sitting	11	Standing	44	Pass
5	Existing	14	Standing	18	Walking	61	Pass
	Proposed	9	Sitting	11	Standing	46	Pass
6	Existing	14	Standing	18	Walking	60	Pass
	Proposed	7	Sitting	8	Sitting	31	Pass
7	Existing	14	Standing	18	Walking	60	Pass
	Proposed	9	Sitting	12	Standing	45	Pass
8	Existing	14	Standing	18	Walking	59	Pass
	Proposed	11	Standing	15	Standing	61	Pass
9	Existing	14	Standing	17	Walking	56	Pass
	Proposed	9	Sitting	12	Standing	54	Pass
10	Existing	13	Standing	16	Walking	55	Pass
	Proposed	7	Sitting	9	Sitting	43	Pass
11	Existing	14	Standing	17	Walking	58	Pass
	Proposed	7	Sitting	10	Sitting	39	Pass
12	Existing	14	Standing	18	Walking	59	Pass
	Proposed	12	Standing	17	Walking	66	Pass
13	Existing	14	Standing	17	Walking	57	Pass
	Proposed	6	Sitting	8	Sitting	34	Pass
14	Existing	15	Standing	18	Walking	60	Pass
	Proposed	9	Sitting	10	Sitting	40	Pass
15	Existing	14	Standing	18	Walking	59	Pass
	Proposed	11	Standing	14	Standing	59	Pass
16	Existing	14	Standing	17	Walking	58	Pass
	Proposed	6	Sitting	8	Sitting	32	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
17	Existing	13	Standing	17	Walking	57	Pass
	Proposed	7	Sitting	9	Sitting	39	Pass
18	Existing	13	Standing	17	Walking	57	Pass
	Proposed	6	Sitting	8	Sitting	36	Pass
19	Existing	13	Standing	16	Walking	53	Pass
	Proposed	6	Sitting	7	Sitting	36	Pass
20	Existing	14	Standing	18	Walking	60	Pass
	Proposed	11	Standing	14	Standing	68	Pass
21	Existing	14	Standing	17	Walking	58	Pass
	Proposed	6	Sitting	8	Sitting	36	Pass
22	Existing	14	Standing	18	Walking	57	Pass
	Proposed	8	Sitting	10	Sitting	50	Pass
23	Existing	14	Standing	18	Walking	60	Pass
	Proposed	12	Standing	15	Standing	64	Pass
24	Existing	14	Standing	18	Walking	58	Pass
	Proposed	9	Sitting	11	Standing	45	Pass
25	Existing	15	Standing	18	Walking	61	Pass
	Proposed	14	Standing	15	Standing	60	Pass
26	Existing	15	Standing	19	Walking	57	Pass
	Proposed	14	Standing	17	Walking	53	Pass
27	Existing	14	Standing	18	Walking	59	Pass
	Proposed	13	Standing	16	Walking	59	Pass
28	Existing	14	Standing	17	Walking	58	Pass
	Proposed	5	Sitting	6	Sitting	36	Pass
29	Existing	14	Standing	18	Walking	59	Pass
	Proposed	14	Standing	17	Walking	62	Pass
30	Existing	15	Standing	18	Walking	62	Pass
	Proposed	7	Sitting	8	Sitting	32	Pass
31	Existing	14	Standing	17	Walking	57	Pass
	Proposed	11	Standing	13	Standing	58	Pass
32	Existing	15	Standing	19	Walking	60	Pass
	Proposed	9	Sitting	10	Sitting	41	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
33	Existing	15	Standing	19	Walking	62	Pass
	Proposed	15	Standing	18	Walking	70	Pass
34	Existing	15	Standing	19	Walking	63	Pass
	Proposed	15	Standing	18	Walking	66	Pass
35	Existing	15	Standing	19	Walking	60	Pass
	Proposed	8	Sitting	9	Sitting	38	Pass
36	Existing	15	Standing	19	Walking	63	Pass
	Proposed	12	Standing	15	Standing	61	Pass
37	Existing	15	Standing	19	Walking	61	Pass
	Proposed	14	Standing	17	Walking	74	Pass
38	Existing	15	Standing	19	Walking	61	Pass
	Proposed	11	Standing	15	Standing	69	Pass
39	Existing	15	Standing	19	Walking	62	Pass
	Proposed	13	Standing	15	Standing	68	Pass
40	Existing	15	Standing	19	Walking	60	Pass
	Proposed	17	Walking	21	Uncomfortable	87	Pass
41	Existing	15	Standing	19	Walking	60	Pass
	Proposed	10	Sitting	12	Standing	49	Pass
42	Existing	13	Standing	17	Walking	56	Pass
	Proposed	10	Sitting	12	Standing	51	Pass
43	Existing	14	Standing	18	Walking	59	Pass
	Proposed	12	Standing	15	Standing	55	Pass
44	Existing	15	Standing	18	Walking	60	Pass
	Proposed	11	Standing	13	Standing	54	Pass
45	Existing	15	Standing	19	Walking	61	Pass
	Proposed	8	Sitting	9	Sitting	35	Pass
46	Existing	15	Standing	18	Walking	60	Pass
	Proposed	9	Sitting	10	Sitting	40	Pass
47	Existing	15	Standing	18	Walking	60	Pass
	Proposed	10	Sitting	11	Standing	42	Pass
48	Existing	15	Standing	19	Walking	61	Pass
	Proposed	13	Standing	15	Standing	65	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
49	Existing	15	Standing	19	Walking	61	Pass
	Proposed	14	Standing	16	Walking	63	Pass
50	Existing	15	Standing	18	Walking	59	Pass
	Proposed	10	Sitting	12	Standing	47	Pass
51	Existing	15	Standing	18	Walking	59	Pass
	Proposed	9	Sitting	10	Sitting	43	Pass
52	Existing	14	Standing	18	Walking	57	Pass
	Proposed	11	Standing	13	Standing	60	Pass
53	Existing	15	Standing	18	Walking	59	Pass
	Proposed	12	Standing	15	Standing	58	Pass
54	Existing	14	Standing	18	Walking	58	Pass
	Proposed	10	Sitting	12	Standing	57	Pass
55	Existing	14	Standing	18	Walking	59	Pass
	Proposed	10	Sitting	12	Standing	53	Pass
56	Existing	14	Standing	17	Walking	56	Pass
	Proposed	9	Sitting	11	Standing	51	Pass
57	Existing	14	Standing	17	Walking	55	Pass
	Proposed	7	Sitting	8	Sitting	37	Pass
58	Existing	14	Standing	17	Walking	56	Pass
	Proposed	9	Sitting	12	Standing	63	Pass
59	Existing	8	Sitting	11	Standing	39	Pass
	Proposed	10	Sitting	13	Standing	53	Pass
60	Existing	13	Standing	17	Walking	56	Pass
	Proposed	10	Sitting	13	Standing	61	Pass
61	Existing	13	Standing	17	Walking	55	Pass
	Proposed	10	Sitting	13	Standing	50	Pass
62	Existing	13	Standing	17	Walking	56	Pass
	Proposed	17	Walking	21	Uncomfortable	85	Pass
63	Existing	13	Standing	16	Walking	55	Pass
	Proposed	14	Standing	19	Walking	84	Pass
64	Existing	13	Standing	17	Walking	54	Pass
	Proposed	12	Standing	16	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
65	Existing	13	Standing	17	Walking	55	Pass
	Proposed	8	Sitting	10	Sitting	44	Pass
66	Existing	14	Standing	18	Walking	57	Pass
	Proposed	10	Sitting	13	Standing	55	Pass
67	Existing	15	Standing	18	Walking	58	Pass
	Proposed	11	Standing	14	Standing	61	Pass
68	Existing	15	Standing	18	Walking	59	Pass
	Proposed	14	Standing	17	Walking	74	Pass
69	Existing	13	Standing	17	Walking	56	Pass
	Proposed	15	Standing	22	Uncomfortable	95	Exceeded
70	Existing	13	Standing	16	Walking	55	Pass
	Proposed	11	Standing	12	Standing	60	Pass
71	Existing	13	Standing	17	Walking	57	Pass
	Proposed	18	Walking	20	Walking	79	Pass
72	Existing	13	Standing	17	Walking	55	Pass
	Proposed	12	Standing	14	Standing	53	Pass
73	Existing	13	Standing	16	Walking	55	Pass
	Proposed	9	Sitting	12	Standing	47	Pass
74	Existing	13	Standing	17	Walking	57	Pass
	Proposed	10	Sitting	12	Standing	48	Pass
75	Existing	13	Standing	16	Walking	56	Pass
	Proposed	9	Sitting	11	Standing	42	Pass
76	Existing	13	Standing	17	Walking	57	Pass
	Proposed	7	Sitting	8	Sitting	30	Pass
77	Existing	13	Standing	18	Walking	59	Pass
	Proposed	8	Sitting	10	Sitting	46	Pass
78	Existing	14	Standing	18	Walking	61	Pass
	Proposed	10	Sitting	12	Standing	46	Pass
79	Existing	14	Standing	18	Walking	61	Pass
	Proposed	11	Standing	13	Standing	60	Pass
80	Existing	14	Standing	18	Walking	61	Pass
	Proposed	10	Sitting	12	Standing	55	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
81	Existing	14	Standing	17	Walking	60	Pass
	Proposed	17	Walking	22	Uncomfortable	83	Pass
82	Existing	14	Standing	18	Walking	61	Pass
	Proposed	11	Standing	13	Standing	51	Pass
83	Existing	13	Standing	18	Walking	60	Pass
	Proposed	14	Standing	17	Walking	67	Pass
84	Existing	13	Standing	17	Walking	59	Pass
	Proposed	16	Walking	19	Walking	75	Pass
85	Existing	13	Standing	17	Walking	56	Pass
	Proposed	8	Sitting	11	Standing	60	Pass
86	Existing	13	Standing	16	Walking	55	Pass
	Proposed	13	Standing	16	Walking	63	Pass
87	Existing	13	Standing	17	Walking	59	Pass
	Proposed	12	Standing	16	Walking	63	Pass
88	Existing	13	Standing	16	Walking	56	Pass
	Proposed	9	Sitting	12	Standing	54	Pass
89	Existing	14	Standing	17	Walking	59	Pass
	Proposed	19	Walking	23	Uncomfortable	88	Pass
90	Existing	13	Standing	17	Walking	59	Pass
	Proposed	18	Walking	23	Uncomfortable	83	Pass
91	Existing	13	Standing	17	Walking	57	Pass
	Proposed	14	Standing	18	Walking	70	Pass
92	Existing	14	Standing	18	Walking	60	Pass
	Proposed	6	Sitting	8	Sitting	34	Pass
93	Existing	14	Standing	17	Walking	57	Pass
	Proposed	10	Sitting	12	Standing	52	Pass
94	Existing	14	Standing	17	Walking	56	Pass
	Proposed	7	Sitting	9	Sitting	36	Pass
95	Existing	14	Standing	18	Walking	57	Pass
	Proposed	11	Standing	13	Standing	52	Pass
96	Existing	13	Standing	16	Walking	53	Pass
	Proposed	12	Standing	14	Standing	53	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
97	Existing	14	Standing	18	Walking	58	Pass
	Proposed	8	Sitting	9	Sitting	50	Pass
98	Existing	14	Standing	18	Walking	58	Pass
	Proposed	13	Standing	15	Standing	63	Pass
99	Existing	14	Standing	18	Walking	59	Pass
	Proposed	9	Sitting	10	Sitting	44	Pass
100	Existing	14	Standing	18	Walking	59	Pass
	Proposed	11	Standing	12	Standing	52	Pass
101	Existing	14	Standing	18	Walking	60	Pass
	Proposed	11	Standing	14	Standing	69	Pass
102	Existing	14	Standing	18	Walking	59	Pass
	Proposed	9	Sitting	12	Standing	57	Pass
103	Existing	14	Standing	18	Walking	63	Pass
	Proposed	12	Standing	15	Standing	58	Pass
104	Existing	14	Standing	18	Walking	61	Pass
	Proposed	13	Standing	15	Standing	57	Pass
105	Existing	14	Standing	18	Walking	60	Pass
	Proposed	15	Standing	20	Walking	73	Pass
106	Existing	13	Standing	17	Walking	58	Pass
	Proposed	9	Sitting	11	Standing	51	Pass
107	Existing	14	Standing	18	Walking	60	Pass
	Proposed	13	Standing	16	Walking	64	Pass
108	Existing	14	Standing	18	Walking	61	Pass
	Proposed	16	Walking	19	Walking	69	Pass
109	Existing	14	Standing	18	Walking	59	Pass
	Proposed	14	Standing	18	Walking	72	Pass
110	Existing	14	Standing	18	Walking	60	Pass
	Proposed	16	Walking	21	Uncomfortable	77	Pass
111	Existing	14	Standing	18	Walking	61	Pass
	Proposed	15	Standing	21	Uncomfortable	91	Exceeded
112	Existing	14	Standing	18	Walking	60	Pass
	Proposed	16	Walking	20	Walking	83	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
113	Existing	14	Standing	17	Walking	58	Pass
	Proposed	11	Standing	14	Standing	67	Pass
114	Existing	14	Standing	18	Walking	62	Pass
	Proposed	13	Standing	17	Walking	71	Pass
115	Existing	14	Standing	18	Walking	62	Pass
	Proposed	14	Standing	18	Walking	70	Pass
116	Existing	14	Standing	18	Walking	59	Pass
	Proposed	12	Standing	15	Standing	68	Pass
117	Existing	15	Standing	18	Walking	63	Pass
	Proposed	13	Standing	17	Walking	63	Pass
118	Existing	14	Standing	18	Walking	61	Pass
	Proposed	12	Standing	16	Walking	65	Pass
119	Existing	15	Standing	19	Walking	62	Pass
	Proposed	13	Standing	17	Walking	66	Pass
120	Existing	14	Standing	18	Walking	61	Pass
	Proposed	12	Standing	16	Walking	65	Pass
121	Existing	14	Standing	18	Walking	60	Pass
	Proposed	11	Standing	15	Standing	64	Pass
122	Existing	14	Standing	18	Walking	61	Pass
	Proposed	12	Standing	16	Walking	64	Pass
123	Existing	15	Standing	19	Walking	62	Pass
	Proposed	12	Standing	15	Standing	61	Pass
124	Existing	15	Standing	18	Walking	61	Pass
	Proposed	12	Standing	15	Standing	59	Pass
125	Existing	14	Standing	18	Walking	61	Pass
	Proposed	10	Sitting	13	Standing	60	Pass
126	Existing	14	Standing	18	Walking	58	Pass
	Proposed	10	Sitting	11	Standing	55	Pass
127	Existing	14	Standing	18	Walking	59	Pass
	Proposed	13	Standing	15	Standing	61	Pass
128	Existing	14	Standing	18	Walking	59	Pass
	Proposed	12	Standing	14	Standing	67	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
129	Existing	14	Standing	18	Walking	57	Pass
	Proposed	8	Sitting	9	Sitting	40	Pass
130	Existing	14	Standing	18	Walking	59	Pass
	Proposed	13	Standing	15	Standing	58	Pass
131	Existing	14	Standing	18	Walking	57	Pass
	Proposed	9	Sitting	11	Standing	55	Pass
132	Existing	14	Standing	18	Walking	58	Pass
	Proposed	13	Standing	16	Walking	60	Pass
133	Existing	14	Standing	18	Walking	58	Pass
	Proposed	13	Standing	15	Standing	70	Pass
134	Existing	15	Standing	18	Walking	59	Pass
	Proposed	11	Standing	13	Standing	50	Pass
135	Existing	15	Standing	18	Walking	60	Pass
	Proposed	13	Standing	15	Standing	58	Pass
136	Existing	14	Standing	18	Walking	58	Pass
	Proposed	13	Standing	15	Standing	59	Pass
137	Existing	14	Standing	18	Walking	58	Pass
	Proposed	13	Standing	15	Standing	60	Pass
138	Existing	13	Standing	16	Walking	52	Pass
	Proposed	9	Sitting	11	Standing	43	Pass
139	Existing	14	Standing	18	Walking	58	Pass
	Proposed	6	Sitting	8	Sitting	49	Pass
140	Existing	14	Standing	17	Walking	57	Pass
	Proposed	9	Sitting	11	Standing	41	Pass
141	Existing	14	Standing	18	Walking	58	Pass
	Proposed	12	Standing	14	Standing	56	Pass
142	Existing	14	Standing	18	Walking	58	Pass
	Proposed	6	Sitting	7	Sitting	26	Pass
143	Existing	14	Standing	18	Walking	60	Pass
	Proposed	8	Sitting	9	Sitting	41	Pass
144	Existing	15	Standing	18	Walking	59	Pass
	Proposed	10	Sitting	13	Standing	60	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
145	Existing	15	Standing	18	Walking	60	Pass
	Proposed	10	Sitting	13	Standing	65	Pass
146	Existing	14	Standing	18	Walking	57	Pass
	Proposed	9	Sitting	11	Standing	57	Pass
147	Existing	15	Standing	18	Walking	61	Pass
	Proposed	11	Standing	14	Standing	59	Pass
148	Existing	15	Standing	18	Walking	62	Pass
	Proposed	10	Sitting	13	Standing	51	Pass
149	Existing	15	Standing	18	Walking	61	Pass
	Proposed	10	Sitting	13	Standing	51	Pass
150	Existing	15	Standing	18	Walking	62	Pass
	Proposed	10	Sitting	12	Standing	45	Pass
151	Existing	15	Standing	18	Walking	60	Pass
	Proposed	10	Sitting	13	Standing	51	Pass
152	Existing	15	Standing	18	Walking	59	Pass
	Proposed	10	Sitting	12	Standing	45	Pass
153	Existing	15	Standing	18	Walking	61	Pass
	Proposed	10	Sitting	12	Standing	46	Pass
154	Existing	15	Standing	19	Walking	62	Pass
	Proposed	9	Sitting	12	Standing	44	Pass
155	Existing	15	Standing	18	Walking	62	Pass
	Proposed	9	Sitting	11	Standing	41	Pass
156	Existing	14	Standing	18	Walking	59	Pass
	Proposed	9	Sitting	12	Standing	45	Pass
157	Existing	15	Standing	18	Walking	60	Pass
	Proposed	11	Standing	15	Standing	54	Pass
158	Existing	14	Standing	18	Walking	60	Pass
	Proposed	11	Standing	15	Standing	57	Pass
159	Existing	13	Standing	17	Walking	59	Pass
	Proposed	11	Standing	16	Walking	60	Pass
160	Existing	15	Standing	18	Walking	62	Pass
	Proposed	11	Standing	15	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
161	Existing	15	Standing	18	Walking	63	Pass
	Proposed	11	Standing	15	Standing	62	Pass
162	Existing	14	Standing	18	Walking	59	Pass
	Proposed	12	Standing	17	Walking	69	Pass
163	Existing	14	Standing	17	Walking	58	Pass
	Proposed	11	Standing	15	Standing	54	Pass
164	Existing	14	Standing	17	Walking	57	Pass
	Proposed	11	Standing	14	Standing	51	Pass
165	Existing	13	Standing	15	Standing	52	Pass
	Proposed	10	Sitting	13	Standing	48	Pass
166	Existing	13	Standing	16	Walking	54	Pass
	Proposed	10	Sitting	12	Standing	49	Pass
167	Existing	14	Standing	17	Walking	58	Pass
	Proposed	9	Sitting	11	Standing	51	Pass
168	Existing	14	Standing	18	Walking	58	Pass
	Proposed	11	Standing	12	Standing	56	Pass
169	Existing	15	Standing	19	Walking	63	Pass
	Proposed	15	Standing	17	Walking	70	Pass
170	Existing	16	Walking	20	Walking	64	Pass
	Proposed	16	Walking	20	Walking	69	Pass
171	Existing	15	Standing	18	Walking	59	Pass
	Proposed	15	Standing	17	Walking	71	Pass
172	Existing	14	Standing	16	Walking	55	Pass
	Proposed	12	Standing	13	Standing	52	Pass
173	Existing	13	Standing	16	Walking	53	Pass
	Proposed	12	Standing	16	Walking	60	Pass
174	Existing	12	Standing	14	Standing	51	Pass
	Proposed	13	Standing	16	Walking	62	Pass
175	Existing	12	Standing	13	Standing	51	Pass
	Proposed	11	Standing	13	Standing	50	Pass
176	Existing	-	-	-	-	-	-
	Proposed	9	Sitting	12	Standing	52	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
177	Existing	-	-	-	-	-	-
	Proposed	10	Sitting	15	Standing	60	Pass
178	Existing	-	-	-	-	-	-
	Proposed	9	Sitting	12	Standing	49	Pass
179	Existing	-	-	-	-	-	-
	Proposed	10	Sitting	14	Standing	58	Pass
180	Existing	-	-	-	-	-	-
	Proposed	9	Sitting	12	Standing	47	Pass
181	Existing	-	-	-	-	-	-
	Proposed	7	Sitting	8	Sitting	34	Pass
182	Existing	-	-	-	-	-	-
	Proposed	8	Sitting	11	Standing	45	Pass
183	Existing	-	-	-	-	-	-
	Proposed	8	Sitting	9	Sitting	40	Pass
184	Existing	-	-	-	-	-	-
	Proposed	9	Sitting	11	Standing	43	Pass
185	Existing	-	-	-	-	-	-
	Proposed	9	Sitting	12	Standing	44	Pass
186	Existing	-	-	-	-	-	-
	Proposed	8	Sitting	10	Sitting	43	Pass
187	Existing	-	-	-	-	-	-
	Proposed	9	Sitting	12	Standing	48	Pass
188	Existing	-	-	-	-	-	-
	Proposed	8	Sitting	10	Sitting	42	Pass
189	Existing	-	-	-	-	-	-
	Proposed	10	Sitting	13	Standing	53	Pass
190	Existing	-	-	-	-	-	-
	Proposed	12	Standing	13	Standing	69	Pass
191	Existing	-	-	-	-	-	-
	Proposed	12	Standing	12	Standing	61	Pass
192	Existing	-	-	-	-	-	-
	Proposed	7	Sitting	7	Sitting	32	Pass

Table 1: Pedestrian Wind Comfort and Safety Conditions

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
193	Existing	-	-	-	-	-	-
	Proposed	10	Sitting	10	Sitting	65	Pass
194	Existing	-	-	-	-	-	-
	Proposed	16	Walking	19	Walking	81	Pass
195	Existing	-	-	-	-	-	-
	Proposed	11	Standing	14	Standing	68	Pass
196	Existing	-	-	-	-	-	-
	Proposed	13	Standing	15	Standing	67	Pass
197	Existing	-	-	-	-	-	-
	Proposed	15	Standing	19	Walking	65	Pass
198	Existing	-	-	-	-	-	-
	Proposed	11	Standing	14	Standing	54	Pass
199	Existing	-	-	-	-	-	-
	Proposed	12	Standing	17	Walking	76	Pass
200	Existing	-	-	-	-	-	-
	Proposed	11	Standing	15	Standing	60	Pass
201	Existing	-	-	-	-	-	-
	Proposed	12	Standing	16	Walking	64	Pass
202	Existing	-	-	-	-	-	-
	Proposed	11	Standing	12	Standing	52	Pass
203	Existing	-	-	-	-	-	-
	Proposed	11	Standing	13	Standing	58	Pass
204	Existing	-	-	-	-	-	-
	Proposed	11	Standing	13	Standing	57	Pass
205	Existing	-	-	-	-	-	-
	Proposed	11	Standing	12	Standing	58	Pass
206	Existing	-	-	-	-	-	-
	Proposed	10	Sitting	12	Standing	51	Pass
207	Existing	-	-	-	-	-	-
	Proposed	11	Standing	13	Standing	56	Pass
208	Existing	-	-	-	-	-	-
	Proposed	10	Sitting	12	Standing	63	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
209	Existing	-	-	-	-	-	-
	Proposed	7	Sitting	9	Sitting	38	Pass
210	Existing	-	-	-	-	-	-
	Proposed	9	Sitting	10	Sitting	43	Pass
211	Existing	-	-	-	-	-	-
	Proposed	10	Sitting	11	Standing	46	Pass
212	Existing	-	-	-	-	-	-
	Proposed	12	Standing	14	Standing	53	Pass
213	Existing	-	-	-	-	-	-
	Proposed	12	Standing	14	Standing	54	Pass
214	Existing	-	-	-	-	-	-
	Proposed	13	Standing	15	Standing	61	Pass
215	Existing	-	-	-	-	-	-
	Proposed	13	Standing	15	Standing	58	Pass
216	Existing	-	-	-	-	-	-
	Proposed	12	Standing	14	Standing	55	Pass
217	Existing	-	-	-	-	-	-
	Proposed	9	Sitting	11	Standing	41	Pass
218	Existing	-	-	-	-	-	-
	Proposed	10	Sitting	10	Sitting	51	Pass
219	Existing	-	-	-	-	-	-
	Proposed	15	Standing	15	Standing	73	Pass

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

Configurations	
Existing	Existing site and surroundings
Proposed	Project with existing surroundings

Comfort Speed (km/h)	
(20% Seasonal Exceedance)	
≤ 10	Sitting
11 - 15	Standing
16 - 20	Walking
> 20	Uncomfortable

Safety Speed (km/h)	
(0.1% Annual Exceedance)	
≤ 90	Pass
> 90	Exceeded