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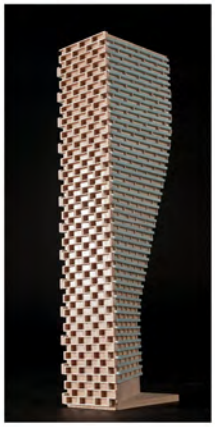
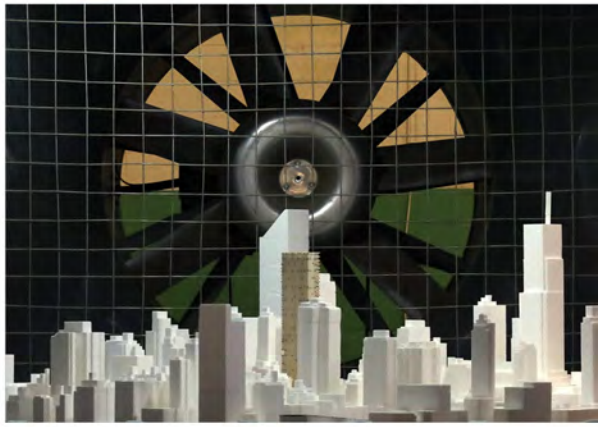
# SHADOW IMPACT STUDY

327 Richmond Road
Ottawa, Ontario

Report: 20-053-SHADOWS





May 1, 2020

PREPARED FOR

Richmond Churchill Limited Partnership
485 Bank Street, Suite 207
Ottawa, ON K2P 1Z2

PREPARED BY

Edward Urbanski, M.Eng., Junior Wind Scientist
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# EXECUTIVE SUMMARY

This report describes a shadow impact study to satisfy the requirements for a joint zoning by-law amendment and site plan control application submission for a proposed development located at 327 Richmond Road in Ottawa, Ontario (hereinafter referred to as "subject site"). Our work is based on sun shadow renderings generated from computer-aided design software, City of Ottawa shadow analysis criteria, architectural drawings provided by Hobin Architecture Inc. in March 2020, surrounding street layouts and existing and approved future building massing information obtained from the City of Ottawa, as well as recent site imagery.

The results of this analysis are presented in pictorial format in Appendix A (Figures A1 to A42). To focus on the impacts of the subject site, the net new shadows have been distinguished with red shading. The sensitive pedestrian areas surrounding the proposed development include Churchill Avenue North and Richmond Road.

The sidewalk areas surrounding the subject site on Churchill Avenue North and Richmond Road will receive no more than three consecutive hours of shadow coverage by the proposed development on March 21st and September 21st. According to the City of Ottawa criteria, these results are considered to be acceptable.

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Appendix A – Shadow Renderings

## 1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by Richmond Churchill Limited Partnership to undertake a shadow impact study to satisfy the requirements for a joint zoning by-law amendment and site plan control application submission for a proposed development located at 327 Richmond Road in Ottawa, Ontario (hereinafter referred to as "subject site"). Our work is based on sun shadow renderings generated from computer-aided design software, City of Ottawa shadow analysis criteria, architectural drawings provided by Hobin Architecture Inc. in March 2020, surrounding street layouts and existing and approved future building massing information obtained from the City of Ottawa, and recent site imagery.

## 2. TERMS OF REFERENCE

The subject site is located at 327 Richmond Road in Ottawa on a parcel of land bordered by Richmond Road to the south, Churchill Avenue North to the west, Winona Avenue to the east, and Whitby Avenue to the north.

*Rendering, Southwest Perspective (Courtesy of Hobin Architecture)*

The proposed development comprises a 9-storey (plus mechanical penthouse) building, with a 'C'-shaped planform at grade encircling a courtyard at the north end of the subject site. At grade, the entrance at the southwest corner is recessed, creating an overhang. A patio is located at the southwest corner. The ground floor comprises a mixed-use lobby, access to the underground parking from the northwest corner, a loading/move-in bay, a mailroom, and retail space. Levels 2 and above comprise residential units. At the second level, the building steps back from the west elevation, as well as from the south wall of the courtyard, revealing private terraces. The building steps back again from the south and east elevations at Level 4, and from the east side of the north elevation at Levels 5, 6, and 7. At Level 8 the building steps back from all sides. A common amenity terrace is located on Level 10.

The primary residential entrance is located at the southwest corner, while retail entrances are located along the east, south, and west elevations. Entrances are also located from within the courtyard. Patio/café space is planned within the courtyard and at the southeast corner of the building. A bus stop is located near the southwest corner of the building, on the east side of Churchill Avenue North.

# 3. OBJECTIVES

In accordance with the requirements of the City of Ottawa Terms of Reference for Shadow Analysis[1], the principal objective of this study is to simulate shadow patterns cast during specific dates and times to illustrate the influence of the subject site in terms of sun and daylight access to the subject lands and to the surrounding context, including surrounding buildings, the public realm, as well as public and private open spaces.

# 4. METHODOLOGY

## 4.1 Background

Shadow impact studies are performed to determine the extent of shadows cast by a proposed development onto the existing surroundings, as well as those cast by the existing surrounding buildings on the proposed development. The procedure requires knowledge of the proposed site massing, as well as detailed knowledge of the existing adjacent lands and buildings. The approach used to conduct a shadow impact study is based on three-dimensional computer modelling and rendered images. Shadow patterns are determined for selected dates and times at a specific geographic location on the earth's surface, which is defined by the latitude and longitude of the site.

For the purposes of this study, shadow-sensitive areas may be defined as building facades, private and public outdoor amenity and open spaces, public parkland, sidewalks and other components of the public realm, as defined by the City of Ottawa. The consequences of shadows cast by new uses of existing land may be beneficial, including cooling effects during warm weather, or adverse, such as the loss of natural light. When shadow-sensitive areas are placed in shade by a proposed project for two or more consecutive hours, the shading may be considered to interfere with sun-dependant activities on that property.

[1] City of Ottawa Terms of Reference, Shadow Analysis
https://documents.ottawa.ca/sites/documents/files/documents/tor_shadow_analysis_en.pdf

### 4.2 Shadow Modelling

Computer simulations were undertaken to predict the shadow patterns surrounding the study site, as influenced by the introduction of the proposed development. All relevant architectural details that could affect shadow patterns were included. Shadow patterns were simulated for the future site configuration on four representative days during the year and for multiple times for each day. The geographic coordinates of the site {latitude and longitude, in degrees (°) / minutes (') / seconds (")}, which determine the maximum altitude that the sun reaches above the horizon, is taken to be 45° 23' 32.6" north and 75° 45' 13.4" west. The simulated dates and times are summarized in Appendix A, preceding the pictorial results for each of the four representative days noted in Section 5.

## 5. SHADOW ASSESSMENT

The results of this analysis are presented in pictorial format in Appendix A (Figures A1 to A42). To focus on the impacts of the subject site, the net new shadows have been distinguished with red shading. The sensitive pedestrian areas surrounding the proposed development include Churchill Avenue North and Richmond Road.

The sidewalk areas surrounding the subject site on Churchill Avenue North and Richmond Road will receive no more than three consecutive hours of shadow coverage by the proposed development on March 21st and September 21st.

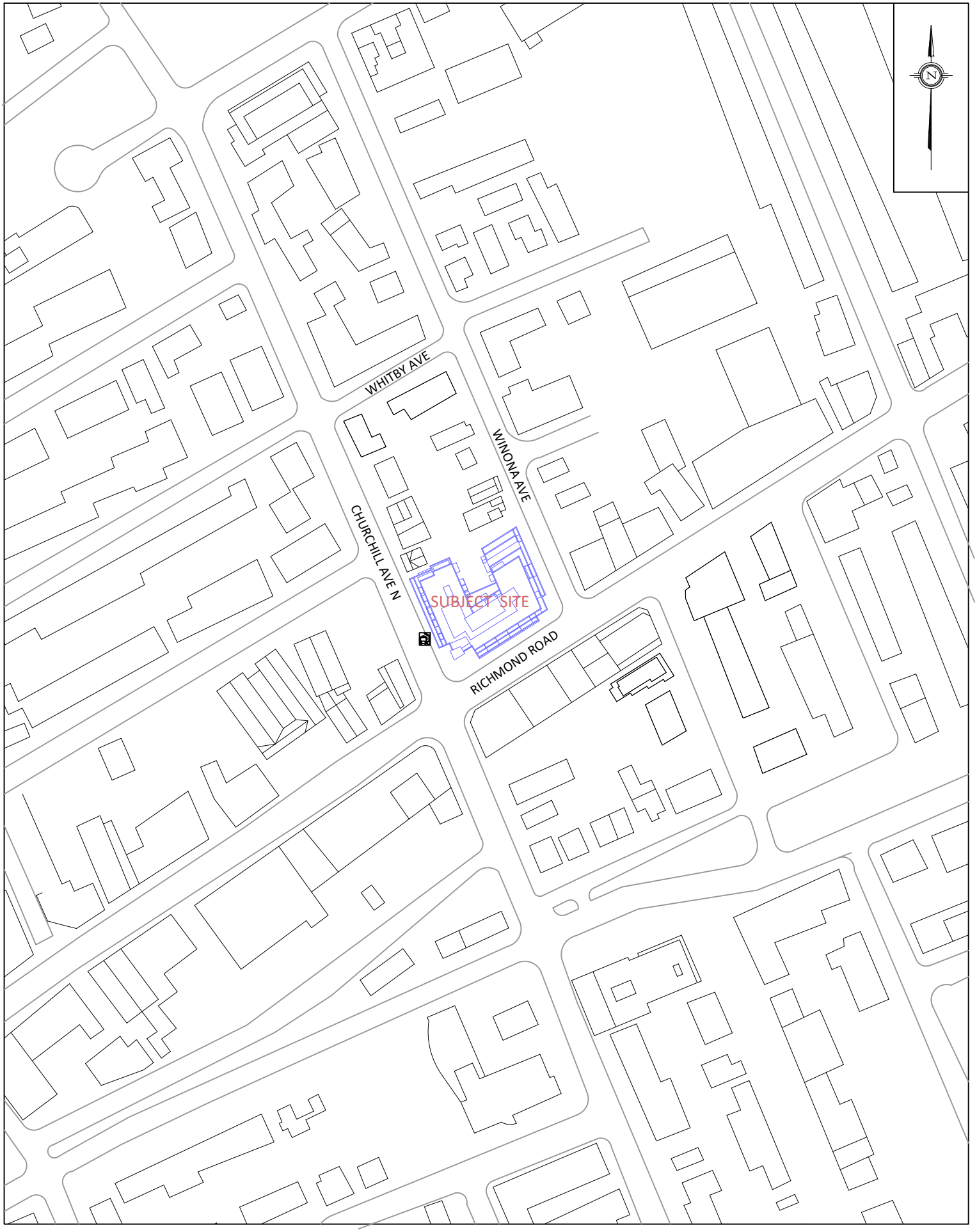
This concludes our shadow impact study and report. Please advise the undersigned of any questions or comments.

Sincerely,

***Gradient Wind Engineering Inc.***


Edward Urbanski, M.Eng.
Junior Wind Scientist

Justin Ferraro, P.Eng.
Principal

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| | | | |
|---|---|---|---|
| PROJECT | 327 RICHMOND ROAD, OTTAWA<br>SHADOW IMPACT STUDY | | DESCRIPTION |
| SCALE | 1:2500 | DRAWING NO. | 20-053-SHADOWS-1 |
| DATE | MAY 1, 2020 | DRAWN BY | E.U. |

FIGURE 1:
SITE PLAN AND SURROUNDING CONTEXT










# APPENDIX A

## SHADOW RENDERINGS

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## TABLE A1: SHADOW RENDERING DATES AND TIMES

| TIME (EDT) | MARCH 21 (Figure / Page #) |
|---|---|
| **08:15** | A1 / A3 |
| **09:15** | A2 / A3 |
| **10:15** | A3 / A4 |
| **11:15** | A4 / A4 |
| **12:15** | A5 / A5 |
| **13:15** | A6 / A5 |
| **14:15** | A7 / A6 |
| **15:15** | A8 / A6 |
| **16:15** | A9 / A7 |
| **17:15** | A10 / A7 |
| **18:15** | A11 / A8 |


**FIGURE A1: MARCH 21, 08:15**


**FIGURE A2: MARCH 21, 09:15**


**FIGURE A3: MARCH 21, 10:15**


**FIGURE A4: MARCH 21, 11:15**


**FIGURE A5: MARCH 21, 12:15**


**FIGURE A6: MARCH 21, 13:15**


**FIGURE A7: MARCH 21, 14:15**


**FIGURE A8: MARCH 21, 15:15**


**FIGURE A9: MARCH 21, 16:15**


**FIGURE A10: MARCH 21, 17:15**


**FIGURE A11: MARCH 21, 18:15**

## TABLE A2: SHADOW RENDERING DATES AND TIMES

| TIME (EDT) | JUNE 21 (Figure / Page #) |
|---|---|
| **08:15** | A12 / A10 |
| **09:15** | A13 / A10 |
| **10:15** | A14 / A11 |
| **11:15** | A15 / A11 |
| **12:15** | A16 / A12 |
| **13:15** | A17 / A12 |
| **14:15** | A18 / A13 |
| **15:15** | A19 / A13 |
| **16:15** | A20 / A14 |
| **17:15** | A21 / A14 |
| **18:15** | A22 / A15 |
| **19:15** | A23 / A15 |
| **20:15** | A24 / A16 |


**FIGURE A12: JUNE 21, 08:15**


**FIGURE A13: JUNE 21, 09:15**


**FIGURE A14: JUNE 21, 10:15**


**FIGURE A15: JUNE 21, 11:15**


**FIGURE A16: JUNE 21, 12:15**


**FIGURE A17: JUNE 21, 13:15**


**FIGURE A18: JUNE 21, 14:15**


**FIGURE A19: JUNE 21, 15:15**


**FIGURE A20: JUNE 21, 16:15**


**FIGURE A21: JUNE 21, 17:15**


**FIGURE A22: JUNE 21, 18:15**


**FIGURE A23: JUNE 21, 19:15**


**FIGURE A24: JUNE 21, 20:15**

## TABLE A3: SHADOW RENDERING DATES AND TIMES

| TIME (EDT) | SEPTEMBER 21 (Figure / Page #) |
|---|---|
| **08:15** | A25 / A18 |
| **09:15** | A26 / A19 |
| **10:15** | A27 / A19 |
| **11:15** | A28 / A19 |
| **12:15** | A29 / A20 |
| **13:15** | A30 / A20 |
| **14:15** | A31 / A21 |
| **15:15** | A32 / A21 |
| **16:15** | A33 / A22 |
| **17:15** | A34 / A22 |
| **18:15** | A35 / A23 |


**FIGURE A25: SEPTEMBER 21, 08:15**


**FIGURE A26: SEPTEMBER 21, 09:15**


**FIGURE A27: SEPTEMBER 21, 10:15**

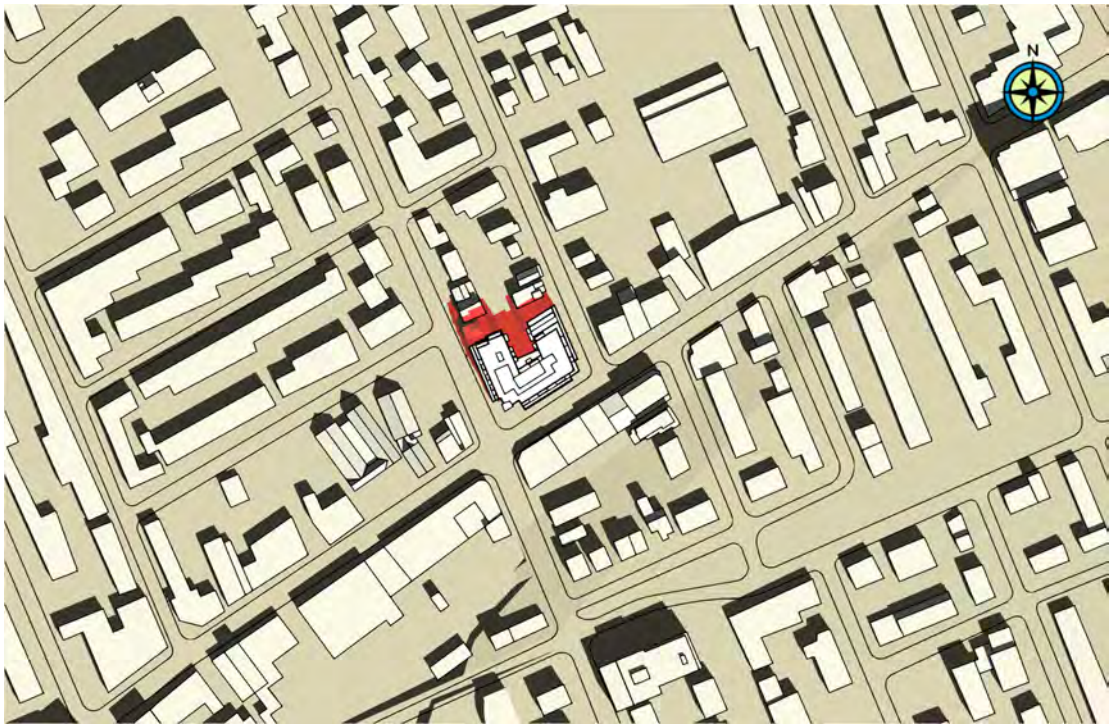


**FIGURE A28: SEPTEMBER 21, 11:15**


**FIGURE A29: SEPTEMBER 21, 12:15**


**FIGURE A30: SEPTEMBER 21, 13:15**


**FIGURE A31: SEPTEMBER 21, 14:15**


**FIGURE A32: SEPTEMBER 21, 15:15**


**FIGURE A33: SEPTEMBER 21, 16:15**


**FIGURE A34: SEPTEMBER 21, 17:15**


**FIGURE A35: SEPTEMBER 21, 18:15**

## TABLE A4: SHADOW RENDERING DATES AND TIMES

| TIME (EDT) | DECEMBER 21 (Figure / Page #) |
|---|---|
| **09:15** | A36 / A25 |
| **10:15** | A37 / A25 |
| **11:15** | A38 / A26 |
| **12:15** | A39 / A26 |
| **13:15** | A40 / A27 |
| **14:15** | A41 / A27 |
| **15:15** | A42 / A28 |


**FIGURE A36: DECEMBER 21, 09:15**


**FIGURE A37: DECEMBER 21, 10:15**


**FIGURE A38: DECEMBER 21, 11:15**


**FIGURE A39: DECEMBER 21, 12:15**


**FIGURE A40: DECEMBER 21, 13:15**


**FIGURE A41: DECEMBER 21, 14:15**


**FIGURE A42: DECEMBER 21, 15:15**