SHADOW STUDY

4150 WESTMINSTER PLACE
CITY OF MISSISSAUGA

JANUARY 2024
WESTON FILE #8406-1

WESTON CONSULTING

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1.0 INTRODUCTION

This Shadow Study ('Study') has been prepared by Weston Consulting to illustrate the shadow impacts of a proposed residential addition at 4150 Westminster Place in the City of Mississauga. The addition will accommodate St. Luke's Seniors affordable housing.

The proposed development integrates an 8-storey mid-rise building with a single storey connection to the existing 3 storey residential apartment building. The proposed site plan is illustrated in Figure 1. A total of 70 residential units will be added on-site, replacing an existing portion of the apartment building and a surface parking lot.

The Study was prepared based on the City of Mississauga's Urban Design Terms of Reference ('ToR') Standards for Shadow Studies [February 2023] and aims to illustrate the impact of development in terms of sun and daylight access to the surrounding context. The analysis reviews shadowing impacts into key features including buildings, the public realm as well as public and private open space. A Shadow Study is required for applications for development over 10.7 (3 storeys) in height.

This Study has been prepared in accordance to the terms of reference and includes the following key technical information:

- **Latitude**: 43 degrees 35' 20" N
- **Longitude**: 79 degrees 38' 40" W
- **North**: As show in the diagrams. Astronomic [True North] determined using Google Map Data 2023.
- **Time Zone**: Eastern Standard (UTC-05:00) EST
- **Base Mapping**: City of Mississauga Open Data.
- **Architectural Model**: Provided by Kearns Mancini Architects.
- **Scale**: As shown in the diagrams.

Section 3 of the Study includes diagrams for the required test times as well as:

- All streets, lots, blocks, parks, schools, open spaces, and buildings to a distance adequate to show the shadow impacts during requested times; the shadow conditions from other abutting buildings; and,
- References a base plan plotted at a standard metric scale with a bar scale on each sheet.

Following the City's Terms of Reference, the Study has been conducted for the following dates: June 21st, September 21st and December 21st. March 21st was not considered in the Study given the similarities to the September 21st shadows. Associated impacts and results are assumed to be similar for both March and September. Table 1 outlines the Study test times and include 1.5 hours after sunrise to 1.5 hours before sunset.

Table 1. Proposed Development Building Statistics

June 21st	September 21st	December 21st
5:37 AM	7:05 AM	7:49 AM
7:07 AM	8:35 AM	9:19 AM
7:20 AM	9:12 AM	10:17 AM
8:20 AM	10:12 AM	11:17 AM
9:20 AM	11:12 AM	12:17 PM
10:20 AM	12:12 PM	1:17 PM
11:20 AM	1:12 PM	2:17 PM
12:20 PM	2:12 PM	3:15 PM
1:20 PM	3:12 PM	4:45 PM
2:20 PM	4:12 PM	-
3:20 PM	5:12 PM	-
4:20 PM	5:48 PM	-
5:20 PM	7:18 PM	-
6:20 PM	-	-
7:20 PM	-	-
7:33 PM	-	-
9:03 PM	-	-

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The Study was conducted using a geolocated 3D SketchUp model that tested shadow simulations at the required times. Surrounding building heights were based on the City of Mississauga's 3D Massing Model. The shadow study diagrams have been prepared by Nicole De Carvalho under the direction of Shane Morgan, Design Director.

The current development concept, as represented in the conceptual site plan drawings and development statistics prepared by Kearns Mancini Architects, dated August 3, 2023, enclosed with this submission, is preliminary in nature and is subject to change. As such, it is anticipated that the development concept as presented be considered conceptual and will be revised, as necessary, to account for new and/or evolving considerations related to the proposed residential addition.

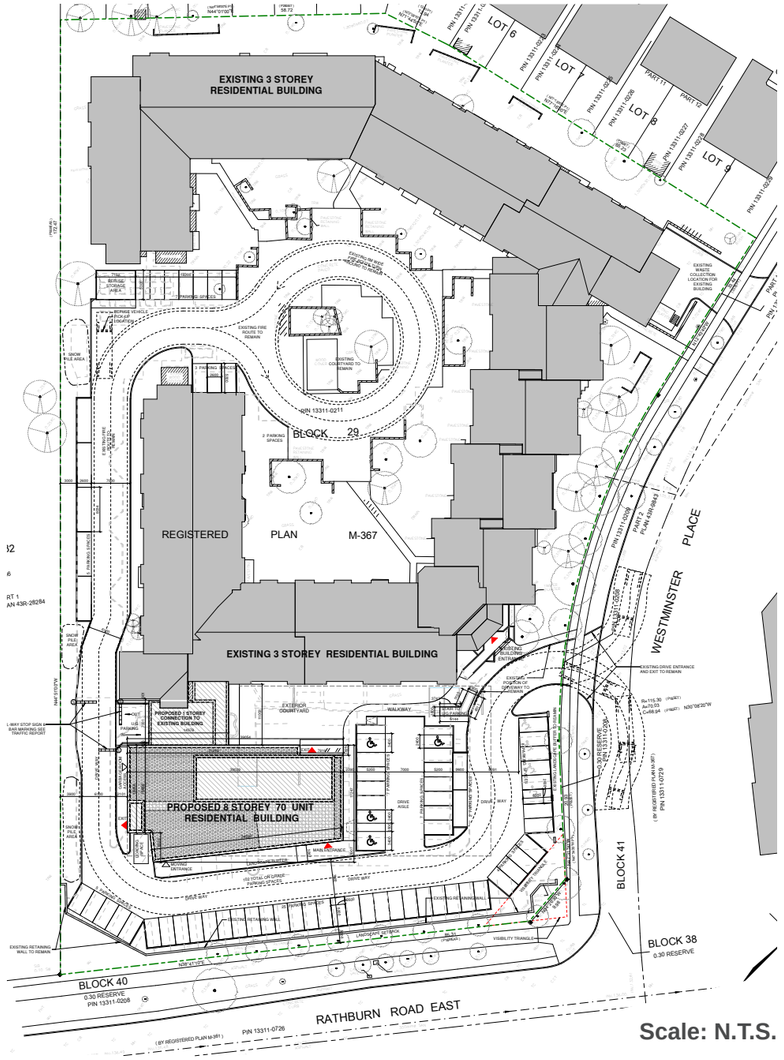

Figure 1: Site Plan Prepared by Kearns Mancini Architects [Dated August 3, 2023]

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2.0 SHADOW IMPACT ANALYSIS

2.1 Residential Private Outdoor Amenity Space
2.2 Communal Outdoor Amenity Areas
2.3 Public Realm
2.4 Turf & Flower Gardens in Public Parks
2.5 Building Faces

The following section assesses the shadow impacts of the proposed development on a number of areas within the surrounding context including:

- Residential Private Outdoor Amenity Space;
- Communal Outdoor Amenity Areas;
- Public Realm;
- Turf & Flower Gardens in Public Parks; and
- Building Faces to Allow for the Possibility of Using Solar Energy.

Each area of impact includes key applicable dates throughout the year and series of criteria which must be met to ensure shadowing impacts are minimal. The following section outlines the key findings for each area of impact, based on the City's Terms of Reference.

2.1 RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE

The shadow impacts from the proposed residential addition should not exceed one hour in duration on areas such as private rear yards, decks, patios, and the pools of surrounding residential dwellings. This criteria is satisfied if there is no shadow impact for more than two consecutive hourly test times within the space between the exterior wall of the dwelling that abuts the amenity space and the line of impact assessment. The applicable testing dates include June 21st and September 21st.

Results

- **June 21st**: Net new shadows begin to appear on the lot for 4100 Westminster Place at 6:20 PM and remain until 7:33 PM (1.5 hrs before sunset). At 7:20 PM, net new shadows appear on the rear yard of 1073 Wetherby Lane, at 7:33 PM (1.5 hrs before sunset) the shadow is still present and the sun then sets at 9:03 PM where there are no shadows present. At 7:33 PM shadows appear in the rear yards of some of the townhouses at 3665 Flamewood Drive, the sun sets 1.5 hours later at 9:03 PM. Other shadow impacts that arise are net new roof shadows and some small net new shadows on some front yards. The criteria should be deemed met.

- **September 21st**: At 5:12 PM shadows begin to appear on 4101 Westminster Place. The presence of private outdoor amenity areas is to be confirmed, however, the shadows are also present 49 minutes later at 5:48 PM (1.5 hours before sunset). Other shadow impacts are a result of net new roof shadows or small front yard shadows that also begin at 5:12 PM. The criteria should thus be deemed met as there are no shadow impacts for more than 2 consecutive hours

For the relevant shadow impact diagrams, see Section 3.1 and 3.2.

2.2 COMMUNAL OUTDOOR AMENITY AREAS

Based on the ToR, the proposed development shadows should allow for full sun on communal outdoor amenity areas (children's play areas, school yards, tot lots, sandboxes, wading pools, etc. and other outdoor amenity areas that are part of an existing or proposed development, outdoor amenity areas used by seniors and outdoor amenity areas associated with commercial and employment areas) at least half of the time or 50% sun coverage on the applicable dates. The criterion is met if the sun access factor ('SAF') is at least 0.5 (50%) on each of the test dates from 1.5 hours before sunrise to 1.5 hours before sunset on June 21st, September 21st and December 21st.

Results

The areas identified as potentially contributing to this criterion were Shelby Park (minus the area used as a parking lot on part of the parcels making up the park) and Allison's Park (as it has a soccer field, baseball diamond, and playground). Other areas that appear to have shadows like the school yard adjacent to Shelby Park are only impacted at sunrise and the shadows are gone by 1.5 hours after sunrise. The development across the street at 4100 Westminster Place does not appear to have an outdoor common amenity area. No proposed developments have been identified in the area surrounding the subject site.

- Shelby Park:
  - SAF of 0.99 in June
  - SAF of 0.99 in September
- Allison's Park:
  - SAF of 0.99 in June
  - No Impact in September
  - No impact in December
- Communal Outdoor Amenity Area [Courtyard]:
  - SAF of 0.77 in June
  - SAF of 0.60 in September
  - SAF of 0.29 in December

Based on the SAF for the identified features impacted by shadows, the criterion is met as the sun access factors are over 50% for the impacted features on Shelby Park and Allison's Park. The Communal Outdoor Amenity Area [Courtyard] will meet the criteria during June and September but will fall slightly under for December. The new amenity area will be included on the roof of the proposed building, and will have no encumbrance for shadows. For the relevant shadow impact diagrams, see Section 3.0.

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2.3 PUBLIC REALM

The public realm considers sidewalks, open spaces, parks, and plazas during shoulder seasons (i.e. spring and fall). Criteria for public realm shadow impacts has been further divided into three categories: Low and Medium Density Residential Streets; Mixed Use, Commercial, Employment and High-Density Residential Streets; and, Public Open Spaces, Parks and Plazas. Specific criteria for each is outlined below:

Low and Medium Density Residential Streets

- Allow full sun on opposite boulevard including the full width of the sidewalk for at least 4 hours between 9:12 AM and 11:12 AM and between 3:12 PM and 5:12 PM. Criterion is met if there is no incremental shade from the proposed development at 9:12 AM, 10:12 AM, 11:12 AM, 3:12 PM, 4:12 PM, and 5:12 PM.

Mixed Use, Commercial, Employment, and High-Density Residential Streets

- Allow for full sun on the opposite boulevard including the full width of the sidewalk for a total of at least 5 hours that must include the 2-hour period between 12:12 PM and 2:12 PM and an additional 2-hour period from either 9:12 AM to 11:12 AM or from 3:12 PM to 5:12 PM. Criterion is met if there is no incremental shade from the proposed development at 12:12 PM, 1:12 PM, and 2:12 PM and three consecutive times at either 9:12 AM, 10:12 AM, and 11:12 AM or 3:12 PM, 4:12 PM, and 5:12 PM.

Public Open Spaces, Parks And Plazas

- Allow for a SAF of at least 50% on September 21st.

Results

- The site is located at the intersection of Westminster Place and Rathburn Road East which has a mixture of low-density residential, medium-density residential, high-rise residential, retail, and other uses. There is no incremental shade on the opposite boulevard from the proposed development at 12:12 PM or 1:12 PM. There is some shade that appears on the opposite sidewalk, across Westminster Place from 4:12 PM. Additionally, there is no shade on any adjacent or opposite boulevard from the proposed development between the hours of 9:12 AM and 11:12 AM.

- The only park, public open space, or plaza found to be impacted on September 21st was Shelby Park which as noted in the previous step has an SAF of 0.99 in September.

- There is a lack of incremental shade between the hours of 9:12 AM and 11:12 AM and 12:12 PM and 2:12 PM, and the SAF for Shelby Park is 0.99 (99%).

- As a result, the criterion should be deemed to be met.

For the relevant shadow impact diagrams, see Section 3.2.

2.4 TURF & FLOWER GARDENS IN PUBLIC PARKS

The proposed shadows should ensure adequate sunlight during growing season between March and October by allowing at minimum 6 hours of direct sunlight. Criterion is met if full sun is provided on any 7 test times between 1.5 hours after sunrise to 1.5 hours before sunset during September 21st.

Results

- The only impacted park on September 21st is Shelby Park. It does not appear as though any turf or flower gardens are present. Shadows from the proposed site do not impact Shelby Park from 9:12 AM to 5:48 PM.

- Thus, the criterion should be deemed to be met.

For the relevant shadow impact diagrams, see Section 3.2.

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2.5 BUILDING FACES

Based on the Terms of Reference, the shadow impacts should not exceed one hour in duration on the roofs, front, rear, and exterior site walls of adjacent low rise residential buildings including townhouses, detached and semi-detached dwellings to allow for the possibility of sun harvesting. The criterion is met if there is no shadow impact for more than 2 consecutive hourly test times in the no impact zones of adjacent low rise residential buildings. The applicable date for testing is September 21st.

Results

- Beginning at 5:12 PM and continuing until sunset at 7:18 PM, there are shadow impacts on the rear, side, and some front yards of 2-3 of the townhouse blocks at 4101 Westminster Place. At 5:48 PM, the shadow impacts on the roofs of the townhouses grows and there are some additional net new shadow impacts on the roofs of other single detached homes along Wetherby Lane and Tomken Road. Though the shadow impacts on the townhomes at 4101 Westminster Place are technically longer than 2 consecutive hours, the impact of the 6 additional minutes is minor on the overall sun exposure of the site for the purposes of harvesting solar energy. It is noteworthy that the solar energy available to harvest after 5:00 PM at the fall test date is not significant.

- Otherwise, the criteria should be deemed to be met as there is no shadow impact for more than 2 consecutive hours within the hourly test times.

For the relevant shadow impact diagrams, see Section 3.2.

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3.0 SHADOW DIAGRAMS

3.1 Appendix 1, June 21
3.2 Appendix 2, September 21
3.3 Appendix 3, December 21

3.1 APPENDIX 1, JUNE 21

5:37AM

7:07AM

Figure 2: June 21 Shadow Diagrams Prepared by Weston Consulting

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7:20AM

8:20AM

Property Boundary
Proposed Building
Existing Shadow
Net New Shadows on Ground
Net New Shadows on Roofs

N

0m 200m 400m

Figure 3: June 21 Shadow Diagrams Prepared by Weston Consulting

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9:20AM

10:20AM

Property Boundary

Proposed Building

Existing Shadow

Net New Shadows on Ground

Net New Shadows on Roofs

N

0m 200m 400m

Figure 4: June 21 Shadow Diagrams Prepared by Weston Consulting

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11:20AM

12:20PM

Property Boundary

Proposed Building

Existing Shadow

Net New Shadows on Ground

Net New Shadows on Roofs

N

0m 200m 400m

Figure 5: June 21 Shadow Diagrams Prepared by Weston Consulting

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1:20PM

2:20PM

Property Boundary

Proposed Building

Existing Shadow

Net New Shadows on Ground

Net New Shadows on Roofs

N

0m 200m 400m

Figure 6: June 21 Shadow Diagrams Prepared by Weston Consulting

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3:20PM

4:20PM

Property Boundary

Proposed Building

Existing Shadow

Net New Shadows on Ground

Net New Shadows on Roofs

N

0m 200m 400m

Figure 7: June 21 Shadow Diagrams Prepared by Weston Consulting

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5:20PM

6:20PM

Property Boundary

Proposed Building

Existing Shadow

Net New Shadows on Ground

Net New Shadows on Roofs

N

0m 200m 400m

Figure 8: June 21 Shadow Diagrams Prepared by Weston Consulting

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7:20PM

7:33PM

Property Boundary

Proposed Building

Existing Shadow

Net New Shadows on Ground

Net New Shadows on Roofs

N

0m 200m 400m

Figure 9: June 21 Shadow Diagrams Prepared by Weston Consulting

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9:03PM

Figure 10: June 21 Shadow Diagrams Prepared by Weston Consulting

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Date	Time	Feature Name	Feature Total Area (sqm)	Shadow Area (sqm)	Area in sunshine (sqm)
21-Jun	7:07	Allison's Park	34686.046	0	34686.046
21-Jun	7:20	Allison's Park	34686.046	0	34686.046
21-Jun	8:20	Allison's Park	34686.046	0	34686.046
21-Jun	9:20	Allison's Park	34686.046	0	34686.046
21-Jun	10:20	Allison's Park	34686.046	0	34686.046
21-Jun	11:20	Allison's Park	34686.046	0	34686.046
21-Jun	12:20	Allison's Park	34686.046	0	34686.046
21-Jun	13:20	Allison's Park	34686.046	0	34686.046
21-Jun	14:20	Allison's Park	34686.046	0	34686.046
21-Jun	15:20	Allison's Park	34686.046	0	34686.046
21-Jun	16:20	Allison's Park	34686.046	0	34686.046
21-Jun	17:20	Allison's Park	34686.046	0	34686.046
21-Jun	18:20	Allison's Park	34686.046	0	34686.046
21-Jun	19:20	Allison's Park	34686.046	742.603	33943.443
21-Jun	19:33	Allison's Park	34686.046	1193.412	33492.634
				Average	34556.97833
				Sun Access Factor	0.996

Figure 11: Solar Access Factor Calculations [Allison's Park] - June 21st

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Date	Time	Feature Name	Feature Total Area (sqm)	Shadow Area (sqm)	Area in sunshine (sqm)
21-Jun	7:07	Shelby Park	25118.007	1305.889	23812.118
21-Jun	7:20	Shelby Park	25118.007	1058.221	24059.786
21-Jun	8:20	Shelby Park	25118.007	315.325	24802.682
21-Jun	9:20	Shelby Park	25118.007	0	25118.007
21-Jun	10:20	Shelby Park	25118.007	0	25118.007
21-Jun	11:20	Shelby Park	25118.007	0	25118.007
21-Jun	12:20	Shelby Park	25118.007	0	25118.007
21-Jun	13:20	Shelby Park	25118.007	0	25118.007
21-Jun	14:20	Shelby Park	25118.007	0	25118.007
21-Jun	15:20	Shelby Park	25118.007	0	25118.007
21-Jun	16:20	Shelby Park	25118.007	0	25118.007
21-Jun	17:20	Shelby Park	25118.007	0	25118.007
21-Jun	18:20	Shelby Park	25118.007	0	25118.007
21-Jun	19:20	Shelby Park	25118.007	0	25118.007
21-Jun	19:33	Shelby Park	25118.007	0	25118.007
				Average	24939.378
				Sun Access Factor	0.993

Figure 12: Solar Access Factor Calculations [Shelby Park] - June 21st

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Date	Time	Feature Name	Feature Total Area (sqm)	Shadow Area (sqm)	Area in sunshine (sqm)
21-Jun	5:37	Subject Land Communal Outdoor Amenity Area	274.558	274.558	0
21-Jun	7:07	Subject Land Communal Outdoor Amenity Area	274.558	274.558	0
21-Jun	7:20	Subject Land Communal Outdoor Amenity Area	274.558	23.058	251.5
21-Jun	8:20	Subject Land Communal Outdoor Amenity Area	274.558	21.296	253.262
21-Jun	9:20	Subject Land Communal Outdoor Amenity Area	274.558	20.514	254.044
21-Jun	10:20	Subject Land Communal Outdoor Amenity Area	274.558	14.804	259.754
21-Jun	11:20	Subject Land Communal Outdoor Amenity Area	274.558	10.735	263.823
21-Jun	12:20	Subject Land Communal Outdoor Amenity Area	274.558	6.968	267.59
21-Jun	13:20	Subject Land Communal Outdoor Amenity Area	274.558	0	274.558
21-Jun	14:20	Subject Land Communal Outdoor Amenity Area	274.558	13.026	261.532
21-Jun	15:20	Subject Land Communal Outdoor Amenity Area	274.558	19.229	255.329
21-Jun	16:20	Subject Land Communal Outdoor Amenity Area	274.558	23.276	251.282
21-Jun	17:20	Subject Land Communal Outdoor Amenity Area	274.558	28.04	246.518
21-Jun	18:20	Subject Land Communal Outdoor Amenity Area	274.558	29.225	245.333
21-Jun	19:20	Subject Land Communal Outdoor Amenity Area	274.558	23.596	250.962
21-Jun	19:33	Subject Land Communal Outdoor Amenity Area	274.558	25.114	249.444
21-Jun	21:03	Subject Land Communal Outdoor Amenity Area	274.558	274.558	0
				Average	210.8782941
				Sun Access Factor	0.77

Figure 13: Solar Access Factor Calculations [Subject Land Communal Outdoor Amenity Area] - June 21st

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3.2 APPENDIX 2, SEPTEMBER 21

7:05AM

8:35AM

Figure 14: September 21 Shadow Diagrams Prepared by Weston Consulting

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9:12AM

10:12AM

Property Boundary

Proposed Building

Existing Shadow

Net New Shadows on Ground

Net New Shadows on Roofs

N

0m 200m 400m

Figure 15: September 21 Shadow Diagrams Prepared by Weston Consulting

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11:12AM

12:12PM

Property Boundary

Proposed Building

Existing Shadow

Net New Shadows on Ground

Net New Shadows on Roofs

N

0m 200m 400m

Figure 16: September 21 Shadow Diagrams Prepared by Weston Consulting

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1:12PM

2:12PM

Property Boundary

Proposed Building

Existing Shadow

Net New Shadows on Ground

Net New Shadows on Roofs

N

0m 200m 400m

Figure 17: September 21 Shadow Diagrams Prepared by Weston Consulting

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3:12PM

4:12PM

Figure 18: September 21 Shadow Diagrams Prepared by Weston Consulting

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5:12PM

5:48PM

Property Boundary
Proposed Building
Existing Shadow
Net New Shadows on Ground
Net New Shadows on Roofs

N

0m 200m 400m

Figure 19: September 21 Shadow Diagrams Prepared by Weston Consulting

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7:18PM

Property Boundary

Proposed Building

Existing Shadow

Net New Shadows on Ground

Net New Shadows on Roofs

N

0m 200m 400m

Figure 20: September 21 Shadow Diagrams Prepared by Weston Consulting

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Date	Time	Feature Name	Feature Total Area (sqm)	Shadow Area (sqm)	Area in sunshine (sqm)
21-Sep	8:35	Shelby Park	25118.007	175.651	24942.356
21-Sep	9:12	Shelby Park	25118.007	0	25118.007
21-Sep	10:12	Shelby Park	25118.007	0	25118.007
21-Sep	11:12	Shelby Park	25118.007	0	25118.007
21-Sep	12:12	Shelby Park	25118.007	0	25118.007
21-Sep	13:12	Shelby Park	25118.007	0	25118.007
21-Sep	14:12	Shelby Park	25118.007	0	25118.007
21-Sep	15:12	Shelby Park	25118.007	0	25118.007
21-Sep	16:12	Shelby Park	25118.007	0	25118.007
21-Sep	17:12	Shelby Park	25118.007	0	25118.007
21-Sep	17:48	Shelby Park	25118.007	0	25118.007
				Average	25102.03873
				Sun Access Factor	0.999

Figure 21: Solar Access Factor Calculations [Shelby Park] - September 21st

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Date	Time	Feature Name	Feature Total Area (sqm)	Shadow Area (sqm)	Area in sunshine (sqm)
21-Sep	7:05	Subject Land Communal Outdoor Amenity Area	274.558	253.522	21.036
21-Sep	8:35	Subject Land Communal Outdoor Amenity Area	274.558	41.983	232.575
21-Sep	9:12	Subject Land Communal Outdoor Amenity Area	274.558	34.585	239.973
21-Sep	10:12	Subject Land Communal Outdoor Amenity Area	274.558	25.147	249.411
21-Sep	11:12	Subject Land Communal Outdoor Amenity Area	274.558	33.448	241.11
21-Sep	12:12	Subject Land Communal Outdoor Amenity Area	274.558	38.229	236.329
21-Sep	13:12	Subject Land Communal Outdoor Amenity Area	274.558	39.89	234.668
21-Sep	14:12	Subject Land Communal Outdoor Amenity Area	274.558	39.969	234.589
21-Sep	15:12	Subject Land Communal Outdoor Amenity Area	274.558	51.31	223.248
21-Sep	16:12	Subject Land Communal Outdoor Amenity Area	274.558	55.55	219.008
21-Sep	17:12	Subject Land Communal Outdoor Amenity Area	274.558	274.558	0
21-Sep	17:48	Subject Land Communal Outdoor Amenity Area	274.558	274.558	0
21-Sep	19:18	Subject Land Communal Outdoor Amenity Area	274.558	274.558	0
				Average	163.9959231
				Sun Access Factor	0.60

Figure 22: Solar Access Factor Calculations [Subject Land Communal Outdoor Amenity Area] - September 21st

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3.3 APPENDIX 3, DECEMBER 21

7:49AM

9:19AM

Property Boundary
Proposed Building
Existing Shadow
Net New Shadows on Ground
Net New Shadows on Roofs

N

0m 200m 400m

Figure 23: December 21 Shadow Diagrams Prepared by Weston Consulting

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10:17AM

11:17AM

Property Boundary
Proposed Building
Existing Shadow
Net New Shadows on Ground
Net New Shadows on Roofs

N

0m 200m 400m

Figure 24: December 21 Shadow Diagrams Prepared by Weston Consulting

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12:17PM

1:17PM

Property Boundary

Proposed Building

Existing Shadow

Net New Shadows on Ground

Net New Shadows on Roofs

N

0m 200m 400m

Figure 25: December 21 Shadow Diagrams Prepared by Weston Consulting

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2:17PM

3:15PM

Property Boundary

Proposed Building

Existing Shadow

Net New Shadows on Ground

Net New Shadows on Roofs

N

0m 200m 400m

Figure 26: December 21 Shadow Diagrams Prepared by Weston Consulting

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4:45PM

Figure 27: December 21 Shadow Diagrams Prepared by Weston Consulting

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Date	Time	Feature Name	Feature Total Area (sqm)	Shadow Area (sqm)	Area in sunshine (sqm)
21-Dec	7:49	Subject Land Communal Outdoor Amenity Area	274.558	274.558	0
21-Dec	9:19	Subject Land Communal Outdoor Amenity Area	274.558	274.558	0
21-Dec	10:17	Subject Land Communal Outdoor Amenity Area	274.558	274.558	0
21-Dec	11:17	Subject Land Communal Outdoor Amenity Area	274.558	107.464	167.094
21-Dec	12:17	Subject Land Communal Outdoor Amenity Area	274.558	120.601	153.957
21-Dec	13:17	Subject Land Communal Outdoor Amenity Area	274.558	129.636	144.922
21-Dec	14:17	Subject Land Communal Outdoor Amenity Area	274.558	175.704	98.854
21-Dec	15:15	Subject Land Communal Outdoor Amenity Area	274.558	127.201	147.357
21-Dec	16:45	Subject Land Communal Outdoor Amenity Area	274.558	274.558	0
				Average	79.13155556
				Sun Access Factor	0.29

Figure 28: Solar Access Factor Calculations [Subject Land Communal Outdoor Amenity Area] - December 21st

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