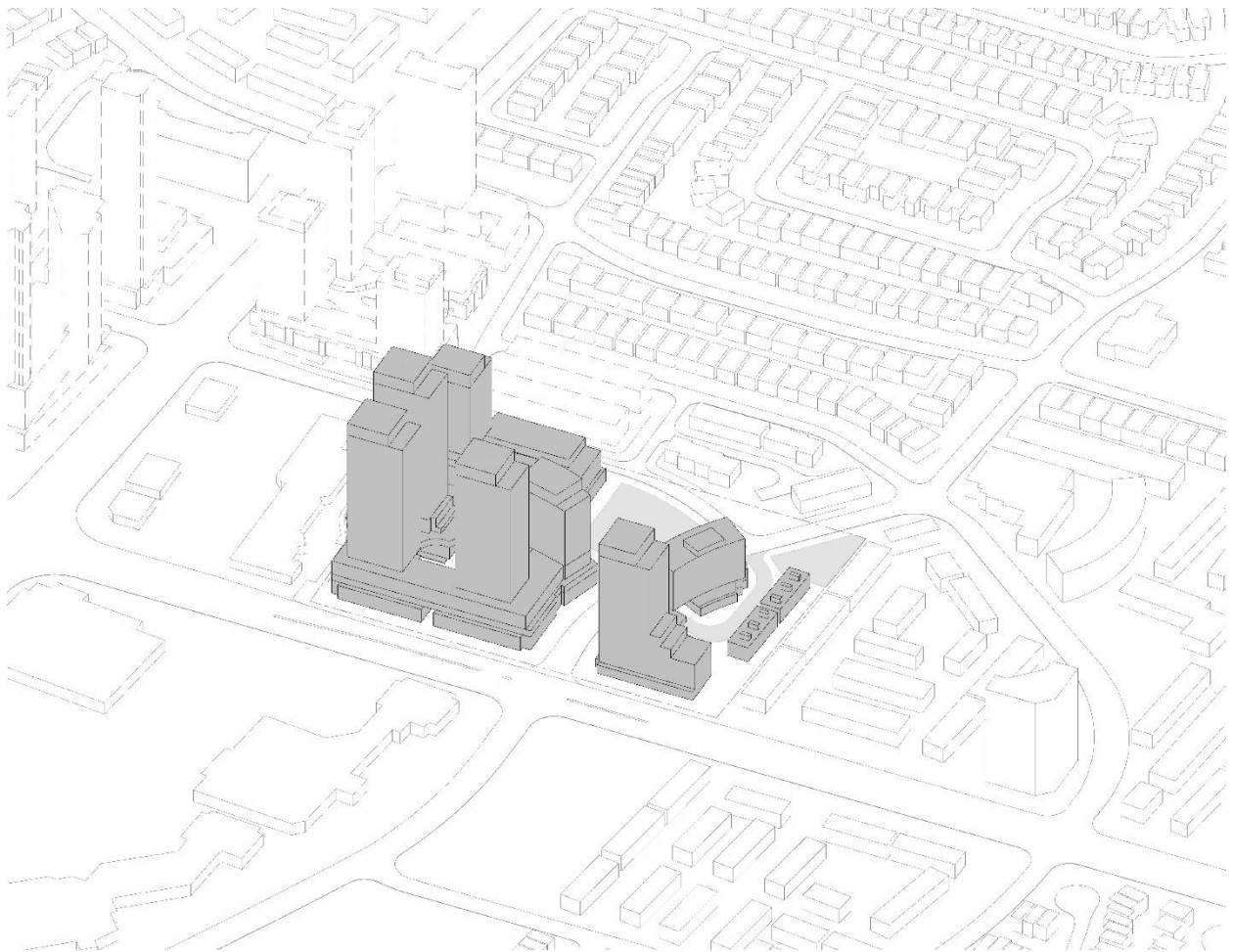


# SUN / SHADOW STUDY



## 91 EGLINTON AVE E MASTER PLAN CITY OF MISSISSAUGA

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TORONTO, ON M5V 3G6  
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**DIALOG**<sup>®</sup>

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	SOLAR NOON - 2 hr._ 11:12 (LOCAL TIME)	4/ RZ-21
	SOLAR NOON - 1 hr._ 12:12 (LOCAL TIME)	5/ RZ-21
	SOLAR NOON _ 13:12 (LOCAL TIME)	6/ RZ-21
	SOLAR NOON + 1 hr._ 14:12 (LOCAL TIME)	7/ RZ-21
	SOLAR NOON + 2 hr._ 15:12 (LOCAL TIME)	8/ RZ-21
	SOLAR NOON + 3 hr._ 16:12 (LOCAL TIME)	9/ RZ-21
	SOLAR NOON + 4 hr._ 17:12 (LOCAL TIME)	10/ RZ-21
	SUNSET-1.5 hr._ 17:48 (LOCAL TIME)	11/ RZ-21
JUNE 21	SUNRISE+1.5 hr._ 07:07 AM (LOCAL TIME)	1/ RZ-22
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	SOLAR NOON - 4 hr._ 09:20 (LOCAL TIME)	4/ RZ-22
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	SOLAR NOON + 3 hr._ 16:20 (LOCAL TIME)	11/ RZ-22
	SOLAR NOON + 4 hr._ 17:20 (LOCAL TIME)	12/ RZ-22
	SOLAR NOON + 5 hr._ 18:20 (LOCAL TIME)	13/ RZ-22
	SOLAR NOON + 6 hr._ 19:20 (LOCAL TIME)	14/ RZ-22
	SUNSET-1.5 hr._ 19:33 (LOCAL TIME)	15/ RZ-22
DECEMBER 21	SUNRISE+1.5 hr._ 09:19 AM (LOCAL TIME)	1/ RZ-23
	SOLAR NOON - 2 hr._ 10:17 (LOCAL TIME)	2/ RZ-23
	SOLAR NOON - 1 hr._ 11:17 (LOCAL TIME)	3/ RZ-23
	SOLAR NOON _ 12:17 (LOCAL TIME)	4/ RZ-23
	SOLAR NOON + 1 hr._ 13:17 (LOCAL TIME)	5/ RZ-23
	SOLAR NOON + 2 hr._ 14:17 (LOCAL TIME)	6/ RZ-23
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## Shadow Study Analysis

### 1 Introduction

The proposed development includes 6 high-rise towers 19-37 storeys, multi-storey podiums, private amenity areas and proposed public park at 91 Eglinton Ave E and 5055 Hurontario Street. The location of proposed development; Latitude and Longitude are approximately **79.6500°W, 43.6097°N** at the southeast corner of the project as presented on the City of Mississauga Interactive Online mapping service last access at <http://www6.mississauga.ca/missmaps/maps.aspx>

Astronomic North was determined from the survey completed by KRCMAR SURVEYORS LTD; referenced in the Survey / Site Plan RZ-01. The Base Plan was drawn in Autodesk Revit using a composite of source plans including the City of Mississauga Interactive Online Mapping Service, and Google Earth images. Time Zone: Eastern , Standard time: UT-5 hours, Daylight Time UT-4 hours.

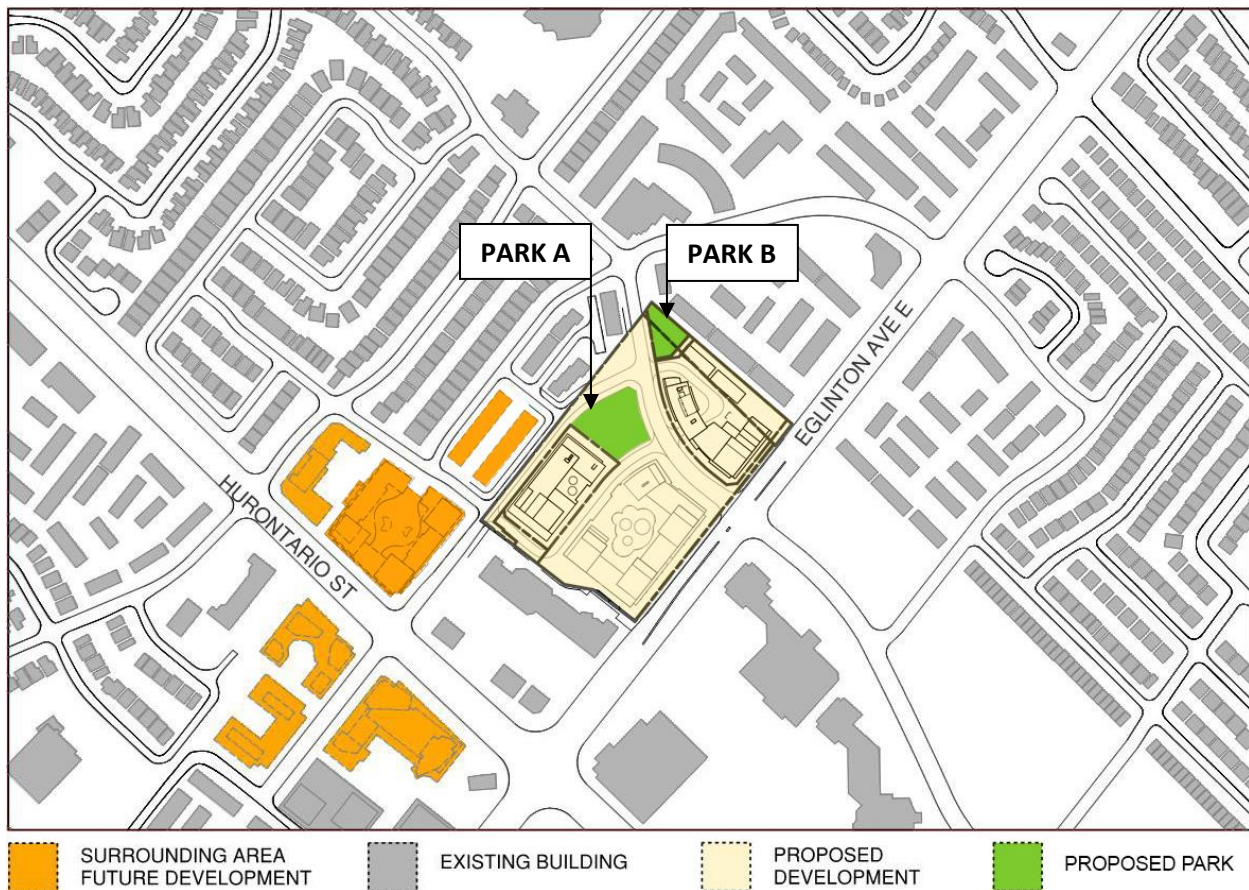


Figure 1- **Shadow Study Area Analysis** which is 4.0 times the building height to the north, east and west, and 1.5 times the building height to the south; existing shadows have been produced by existing buildings, and surrounding area future development in light grey, while the new shadow produced by proposed development in dark grey.

Shadow studies have been illustrated in sheets RZ-21 to RZ-23. This report is supplementary analysis to the shadow studies. The following report illustrate the sun impact on the proposed development, proposed parks, and communal outdoor amenity areas.

Dates and times are based on Tables 2,3, and 4 of “STANDARD FOR SHADOW STUDIES” dated June 2014 by City of Mississauga, Planning and Building Departments.

## 2 Criteria

Analysis of adequate sunlight on the following:

### 2.1 Public Parks – Park A


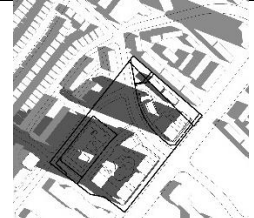
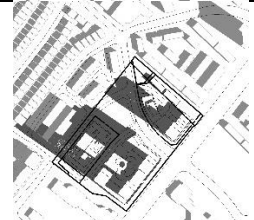
The intent of this section is to calculate the sun access factor on proposed public parks – Park A.


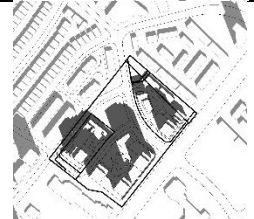

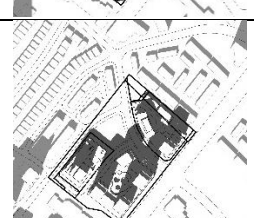
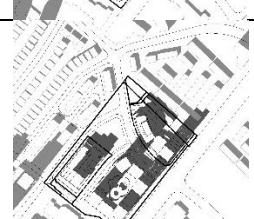

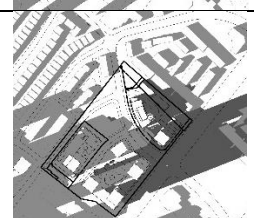
#### 2.1.1 Calculating Sun Access Factor on Park A – September / March 21

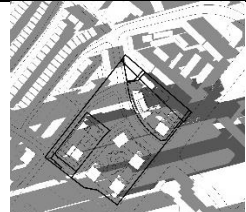
##### 2.1.1.1 Park A Sun Access Factor on September/ March 21

Overall sun access factor has been calculated in consideration of shadow of proposed development and the shadow of surrounding future developments. (As shown below)

Table 1; September/ March 21; Park A sun access factor illustrated.

		As * Overall (m2)	At ** (m2)	As (ave) / AT Overall
	SUNRISE+1.5 H_ 08:35 AM (LOCAL TIME)	106	3,287	
	SOLAR NOON - 4 hr._ 09:12 (LOCAL TIME)	991	3,287	
	SOLAR NOON - 3 hr._ 10:12 (LOCAL TIME)	1,863	3,287	

	SOLAR NOON - 2 hr._ 11:12 (LOCAL TIME)	1,356	3,287
	SOLAR NOON - 1 hr._ 12:12 (LOCAL TIME)	1,353	3,287
	SOLAR NOON _ 13:12 (LOCAL TIME)	2,138	3,287
	SOLAR NOON + 1 hr._ 14:12 (LOCAL TIME)	2,029	3,287
	SOLAR NOON + 2 hr._ 15:12 (LOCAL TIME)	2,017	3,287
	SOLAR NOON + 3 hr._ 16:12 (LOCAL TIME)	1,660	3,287
	SOLAR NOON + 4 hr._ 17:12 (LOCAL TIME)	1,179	3,287

	SUNSET-1.5 hr._ 17:48 (LOCAL TIME)			
		691	3,287	
As(ave)***		<b>1,398</b>	<b>3,287</b>	<b>0.43</b>

- \* As Measure the area in sunshine (AS) for each of the test times from 1.5 hours after sunrise to 1.5 hours before sunset both inclusive
- \*\*At Measure the total Area (AT) of the space or feature
- As(ave)\*\*\* Find the average of the AS values [As (ave)]
- \*\*\*\* Refer to RZ-21 for Future development indicated w/ dash lines

Table 2; **September/ March 21**; Park A sun access factor ratio

September/ March 21	At * (m2)	As Existing buildings & Proposed development	As/ At Existing building & Proposed development
SUNRISE+1.5 H_ 08:35 AM (LOCAL TIME)	3,287	106	
SOLAR NOON - 4 hr._ 09:12 (LOCAL TIME)	3,287	991	
SOLAR NOON - 3 hr._ 10:12 (LOCAL TIME)	3,287	1,863	
SOLAR NOON - 2 hr._ 11:12 (LOCAL TIME)	3,287	1,356	
SOLAR NOON - 1 hr._ 12:12 (LOCAL TIME)	3,287	1,353	
SOLAR NOON _ 13:12 (LOCAL TIME)	3,287	2,138	
SOLAR NOON + 1 hr._ 14:12 (LOCAL TIME)	3,287	2,029	
SOLAR NOON + 2 hr._ 15:12 (LOCAL TIME)	3,287	2,017	
SOLAR NOON + 3 hr._ 16:12 (LOCAL TIME)	3,287	1,660	
SOLAR NOON + 4 hr._ 17:12 (LOCAL TIME)	3,287	1,179	
SUNSET-1.5 hr._ 17:48 (LOCAL TIME)	3,287	691	
Sun Access Factor and <b>As(ave)***</b>	<b>3,287</b>	<b>1,398</b>	<b>0.43</b>

2.1.1.2 Conclusion of Park A Sun Access Factor on *September/ March 21*.


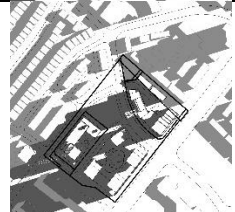



- a) Sun Access Factor on Park A on September / March 21
  - including** the Proposed Development
  - including** the Surrounding area Future development is 0.43

2.1.2 Calculating Sun Access Factor on Park A - June 21

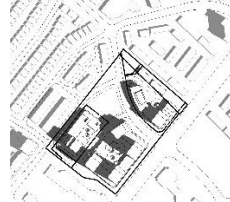


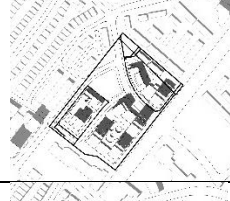
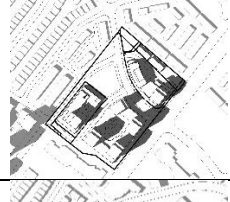
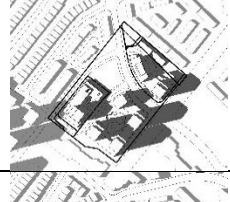
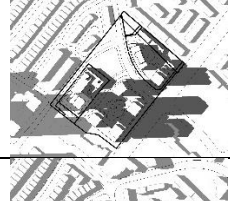

‘Public Open Space, Park and Plaza’ (on page 16), under ‘Standard for Shadow Studies’ (dated June 2014, *City of Mississauga, Planning and Building Departments*), does not require extensive shadow analysis of public park on June 21 or December 21. However, it is carefully considered in respect to ‘Item 3.1’ of this report – to closely examine shadow impact on park throughout the duration of the whole year.

2.1.2.1 Park A Sun Access Factor on June 21

Table 4; June 21; Park A sun access factor illustrated

June 21		As * Overall (m2)	At ** (m2)	As (ave) / AT Overall
	SUNRISE+1.5 hr._ 07:07 AM (LOCAL TIME)	316	3,287	
	SOLAR NOON - 6 hr._ 07:20 (LOCAL TIME)	250	3,287	
	SOLAR NOON - 5 hr._ 08:20 (LOCAL TIME)	414	3,287	
	SOLAR NOON - 4 hr._ 09:20 (LOCAL TIME)	1,473	3,287	
	SOLAR NOON - 3 hr._ 10:20 (LOCAL TIME)	2,859	3,287	



	SOLAR NOON - 2 hr._ 11:20 (LOCAL TIME)	3,030	3,287
	SOLAR NOON - 1 hr._ 12:20 (LOCAL TIME)	3,054	3,287
	SOLAR NOON _ 13:20 (LOCAL TIME)	3,287	3,287
	SOLAR NOON + 1 hr._ 14:20 (LOCAL TIME)	3,287	3,287
	SOLAR NOON + 2 hr._ 15:20 (LOCAL TIME)	3,172	3,287
	SOLAR NOON + 3 hr._ 16:20 (LOCAL TIME)	3,049	3,287
	SOLAR NOON + 4 hr._ 17:20 (LOCAL TIME)	2,961	3,287
	SOLAR NOON + 5 hr._ 18:20 (LOCAL TIME)	2,963	3,287

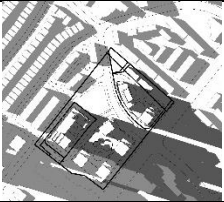

	SOLAR NOON + 6 hr._ 19:20 (LOCAL TIME)	3,094	3,287	
	SUNSET-1.5 hr._ 19:33 (LOCAL TIME)	3,065	3,287	
	Sun Access Factor and <b>As(ave)***</b>	<b>2,418</b>	<b>3,287</b>	<b>0.74</b>

Table 5; June 21; Park A sun access factor ratio

June 21		At ** (m2)	As Existing building & Proposed development	As/ At Existing building & Proposed development
21-Jun	SUNRISE+ 1.5 hr._ 07:07 AM (LOCAL TIME)	3,287	316	
	SOLAR NOON - 6 hr._ 07:20 (LOCAL TIME)	3,287	250	
	SOLAR NOON - 5 hr._ 08:20 (LOCAL TIME)	3,287	414	
	SOLAR NOON - 4 hr._ 09:20 (LOCAL TIME)	3,287	1,473	
	SOLAR NOON - 3 hr._ 10:20 (LOCAL TIME)	3,287	2,859	
	SOLAR NOON - 2 hr._ 11:20 (LOCAL TIME)	3,287	3,030	
	SOLAR NOON - 1 hr._ 12:20 (LOCAL TIME)	3,287	3,054	
	SOLAR NOON _ 13:20 (LOCAL TIME)	3,287	3,287	
	SOLAR NOON + 1 hr._ 14:20 (LOCAL TIME)	3,287	3,287	
	SOLAR NOON + 2 hr._ 15:20 (LOCAL TIME)	3,287	3,172	
	SOLAR NOON + 3 hr._ 16:20 (LOCAL TIME)	3,287	3,049	
	SOLAR NOON + 4 hr._ 17:20 (LOCAL TIME)	3,287	2,961	
	SOLAR NOON + 5 hr._ 18:20 (LOCAL TIME)	3,287	2,963	
	SOLAR NOON + 6 hr._ 19:20 (LOCAL TIME)	3,287	3,094	






	SUNSET-1.5 hr._ 19:33 (LOCAL TIME)	3,287	3,065	
	Sun Access Factor and <b>As(ave)</b> ***	<b>3,287</b>	<b>2,418</b>	<b>0.74</b>

2.1.3 Calculating Sun Access Factor on Park A - December 21

2.1.3.1 Park A Sun Access Factor on December 21

Table 6; December 21; Park A sun access factor illustrated

December 21

		<b>As *</b> Overall (m2)	<b>At **</b> (m2)	<b>As (ave) / AT</b> Overall
	SUNRISE+1.5 hr._ 09:19 AM (LOCAL TIME)	1,150	3,287	
	SOLAR NOON - 2 hr._ 10:17 (LOCAL TIME)	370	3,287	
	SOLAR NOON - 1 hr._ 11:17 (LOCAL TIME)	0	3,287	
	SOLAR NOON _ 12:17 (LOCAL TIME)	599	3,287	
	SOLAR NOON + 1 hr._ 13:17 (LOCAL TIME)	8	3,287	


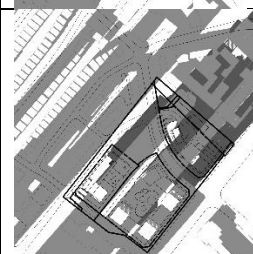
	SOLAR NOON + 2 hr_ 14:17 (LOCAL TIME)	173	3,287	
	SUNSET-1.5 hr_ 15:15 (LOCAL TIME)	88	3,287	
	Sun Access Factor and <b>As(ave)***</b>	<b>341</b>	<b>3,287</b>	<b>0.10</b>

Table 7; **December 21**; Park A Sun access factor ratio

	<b>At **</b> (m2)	<b>As</b> Existing building & Proposed development	<b>As/ At</b> Existing building & Proposed development
SUNRISE+1.5 hr_ 09:19 AM (LOCAL TIME)	3,287	1,150	
SOLAR NOON - 2 hr_ 10:17 (LOCAL TIME)	3,287	370	
SOLAR NOON - 1 hr_ 11:17 (LOCAL TIME)	3,287	0	
SOLAR NOON _ 12:17 (LOCAL TIME)	3,287	599	
SOLAR NOON + 1 hr_ 13:17 (LOCAL TIME)	3,287	8	
SOLAR NOON + 2 hr_ 14:17 (LOCAL TIME)	3,287	173	
SUNSET-1.5 hr_ 15:15 (LOCAL TIME)	3,287	88	
Sun Access Factor and <b>As(ave)***</b>	<b>3,287</b>	<b>341</b>	<b>0.10</b>

## 2.2 Public Parks – Park B

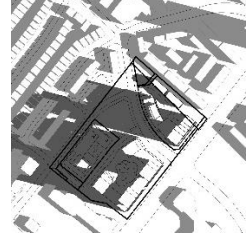
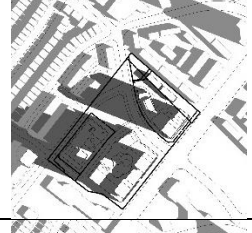
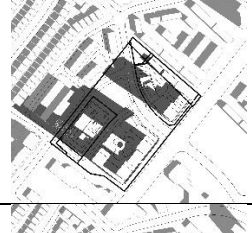
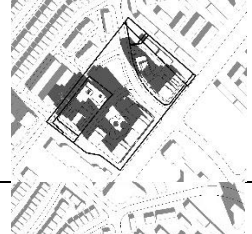


The Intent of this section is to calculate the sun access factor on proposed public parks. – Park B.


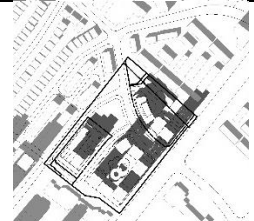

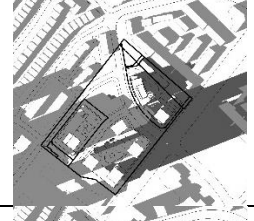
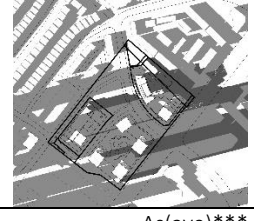
### 2.2.1 Calculating Sun Access Factor on Park B – September / March 21

2.2.1.1 Park B Sun Access Factor on September/ March 21

Overall sun access factor has been calculated based on the proposed development shadow and surrounding future developments shadows.

Table 1; September/ March 21; Park B Sun access factor illustrated.

		As * Overall (m2)	At ** (m2)	As (ave) / AT Overall
	SUNRISE+1.5 H_08:35 AM (LOCAL TIME)	428	1,297	
	SOLAR NOON - 4 hr_09:12 (LOCAL TIME)	948	1,297	
	SOLAR NOON - 3 hr_10:12 (LOCAL TIME)	1,129	1,297	
	SOLAR NOON - 2 hr_11:12 (LOCAL TIME)	1,075	1,297	
	SOLAR NOON - 1 hr_12:12 (LOCAL TIME)	975	1,297	
	SOLAR NOON _13:12 (LOCAL TIME)	1,176	1,297	

	SOLAR NOON + 1 hr._ 14:12 (LOCAL TIME)	1,297	1,297
	SOLAR NOON + 2 hr._ 15:12 (LOCAL TIME)	1,297	1,297
	SOLAR NOON + 3 hr._ 16:12 (LOCAL TIME)	1,297	1,297
	SOLAR NOON + 4 hr._ 17:12 (LOCAL TIME)	1,297	1,297
	SUNSET-1.5 hr._ 17:48 (LOCAL TIME)	1,211	1,297
As(ave)***		<b>1,103</b>	<b>1,297</b>

- \* As Measure the area in sunshine (AS) for each of the test times from 1.5 hours after sunrise to 1.5 hours before sunset both inclusive
- \*\*At Measure the total Area (AT) of the space or feature
- As(ave)\*\*\* Find the average of the AS values (As (ave) )
- \*\*\*\* Refer to RZ-21 for Future development indicated w/ dash lines

Table 2; **September/ March 21**; Park B Sun access factor ratio

September/ March 21	At * (m2)	As Existing buildings & Proposed development	As/ At Existing building & Proposed development
SUNRISE+1.5 H_ 08:35 AM (LOCAL TIME)	1,297	428	
SOLAR NOON - 4 hr._ 09:12 (LOCAL TIME)	1,297	948	

SOLAR NOON - 3 hr_ 10:12 (LOCAL TIME)	1,297	1,129	
SOLAR NOON - 2 hr_ 11:12 (LOCAL TIME)	1,297	1,075	
SOLAR NOON - 1 hr_ 12:12 (LOCAL TIME)	1,297	975	
SOLAR NOON _ 13:12 (LOCAL TIME)	1,297	1,176	
SOLAR NOON + 1 hr_ 14:12 (LOCAL TIME)	1,297	1,297	
SOLAR NOON + 2 hr_ 15:12 (LOCAL TIME)	1,297	1,297	
SOLAR NOON + 3 hr_ 16:12 (LOCAL TIME)	1,297	1,297	
SOLAR NOON + 4 hr_ 17:12 (LOCAL TIME)	1,297	1,297	
SUNSET-1.5 hr_ 17:48 (LOCAL TIME)	1,297	1,211	
Sun Access Factor and <b>As(ave)</b> ***	<b>1,297</b>	<b>1,103</b>	<b>0.85</b>


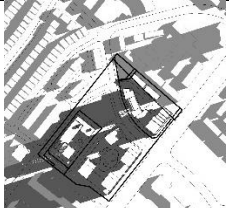

2.2.1.2 Conclusion of Shadow Study on Park B - September/ March 21.

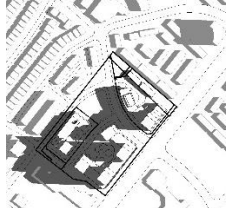





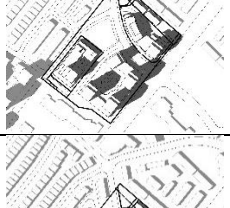
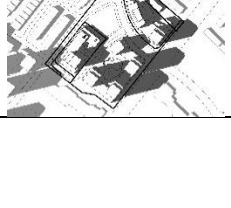
- b) Sun Access Factor on Park B on September / March 21 including the Proposed Development including the Surrounding area Future development is 0.85

2.2.2 Calculating Sun Access Factor on Park B - June 21

2.2.2.1 Park B Sun Access Factor on June 21

Table 4; June 21; Park B Sun access factor illustrated

June 21		As *	At **	As (ave) / AT Overall
		Overall (m2)	(m2)	
	SUNRISE+1.5 hr_ 07:07 AM (LOCAL TIME)	0	1,297	
	SOLAR NOON - 6 hr_ 07:20 (LOCAL TIME)	21.3	1,297	
	SOLAR NOON - 5 hr_ 08:20 (LOCAL TIME)	820	1,297	

	SOLAR NOON - 4 hr._ 09:20 (LOCAL TIME)			
			1,214	1,297
	SOLAR NOON - 3 hr._ 10:20 (LOCAL TIME)			
			1,253	1,297
	SOLAR NOON - 2 hr._ 11:20 (LOCAL TIME)			
			1,281	1,297
	SOLAR NOON - 1 hr._ 12:20 (LOCAL TIME)			
			1,297	1,297
	SOLAR NOON _ 13:20 (LOCAL TIME)			
			1,297	1,297
	SOLAR NOON + 1 hr._ 14:20 (LOCAL TIME)			
			1,297	1,297
	SOLAR NOON + 2 hr._ 15:20 (LOCAL TIME)			
			1,297	1,297
	SOLAR NOON + 3 hr._ 16:20 (LOCAL TIME)			
			1,297	1,297



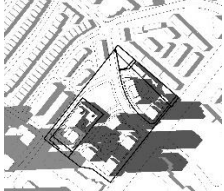

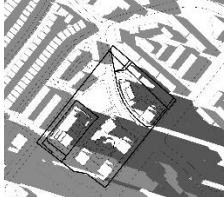

	SOLAR NOON + 4 hr._ 17:20 (LOCAL TIME)	1,297	1,297	
	SOLAR NOON + 5 hr._ 18:20 (LOCAL TIME)	1,297	1,297	
	SOLAR NOON + 6 hr._ 19:20 (LOCAL TIME)	1,297	1,297	
	SUNSET-1.5 hr._ 19:33 (LOCAL TIME)	1,169	1,297	
	Sun Access Factor and <b>As(ave)***</b>	<b>1,076</b>	<b>1,297</b>	<b>0.83</b>

Table 5; June 21; Park B sun access factor ratio

		<b>At **</b> (m2)	<b>As</b> Existing building & Proposed development	<b>As/ At</b> Existing building & Proposed development
21-Jun	SUNRISE+1.5 hr._ 07:07 AM (LOCAL TIME)	1,297	0	
	SOLAR NOON - 6 hr._ 07:20 (LOCAL TIME)	1,297	21	
	SOLAR NOON - 5 hr._ 08:20 (LOCAL TIME)	1,297	820	
	SOLAR NOON - 4 hr._ 09:20 (LOCAL TIME)	1,297	1,214	
	SOLAR NOON - 3 hr._ 10:20 (LOCAL TIME)	1,297	1,253	
	SOLAR NOON - 2 hr._ 11:20 (LOCAL TIME)	1,297	1,281	
	SOLAR NOON - 1 hr._ 12:20 (LOCAL TIME)	1,297	1,297	
	SOLAR NOON _ 13:20 (LOCAL TIME)	1,297	1,297	

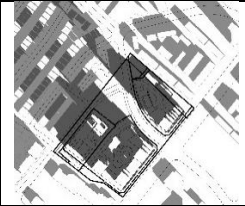


	SOLAR NOON + 1 hr_ 14:20 (LOCAL TIME)	1,297	1,297	
	SOLAR NOON + 2 hr_ 15:20 (LOCAL TIME)	1,297	1,297	
	SOLAR NOON + 3 hr_ 16:20 (LOCAL TIME)	1,297	1,297	
	SOLAR NOON + 4 hr_ 17:20 (LOCAL TIME)	1,297	1,297	
	SOLAR NOON + 5 hr_ 18:20 (LOCAL TIME)	1,297	1,297	
	SOLAR NOON + 6 hr_ 19:20 (LOCAL TIME)	1,297	1,297	
	SUNSET-1.5 hr_ 19:33 (LOCAL TIME)	1,297	1,169	
	Sun Access Factor and <b>As(ave)</b> ***	<b>1,297</b>	<b>1,076</b>	<b>0.83</b>

2.2.3 Calculating Sun Access Factor on Park B - December 21

2.2.3.1 Park B Sun Access Factor on December 21

Table 6; December 21; Park B Sun access factor illustrated

December 21

		As * Overall (m2)	At ** (m2)	As (ave) / AT Overall
	SUNRISE+1.5 hr_ 09:19 AM (LOCAL TIME)	52	1,297	
	SOLAR NOON - 2 hr_ 10:17 (LOCAL TIME)	0	1,297	
	SOLAR NOON - 1 hr_ 11:17 (LOCAL TIME)	53	1,297	





	SOLAR NOON _ 12:17 (LOCAL TIME)	0	1,297	
	SOLAR NOON + 1 hr_ 13:17 (LOCAL TIME)	0	1,297	
	SOLAR NOON + 2 hr_ 14:17 (LOCAL TIME)	34	1,297	
	SUNSET-1.5 hr_ 15:15 (LOCAL TIME)	670	1,297	
	Sun Access Factor and <b>As(ave)***</b>	<b>116</b>	<b>1,297</b>	

Table 7; June 21; Park B sun access factor ratio

	<b>At **</b> (m2)	<b>As</b>	<b>As/ At</b> Existing building & Proposed development
SUNRISE+1.5 hr_ 09:19 AM (LOCAL TIME)	1,297	52	
SOLAR NOON - 2 hr_ 10:17 (LOCAL TIME)	1,297	0	
SOLAR NOON - 1 hr_ 11:17 (LOCAL TIME)	1,297	53	
SOLAR NOON _ 12:17 (LOCAL TIME)	1,297	0	
SOLAR NOON + 1 hr_ 13:17 (LOCAL TIME)	1,297	0	
SOLAR NOON + 2 hr_ 14:17 (LOCAL TIME)	1,297	34	
SUNSET-1.5 hr_ 15:15 (LOCAL TIME)	1,297	670	
Sun Access Factor and <b>As(ave)***</b>	<b>1,297</b>	<b>341</b>	<b>0.09</b>

### 2.3 Communal Outdoor Amenity Areas

Communal outdoor amenity areas include Children’s Play area, Tot lots and Park Features, such as sandboxes, wading pools, etc. The communal outdoor amenity area includes area used by seniors.

The intent of this section is to illustrate the location of proposed Communal outdoor Amenity Areas (Figure 2) and separate sun access factor calculations for these areas (Section 2.3.1 to 2.3.3) .

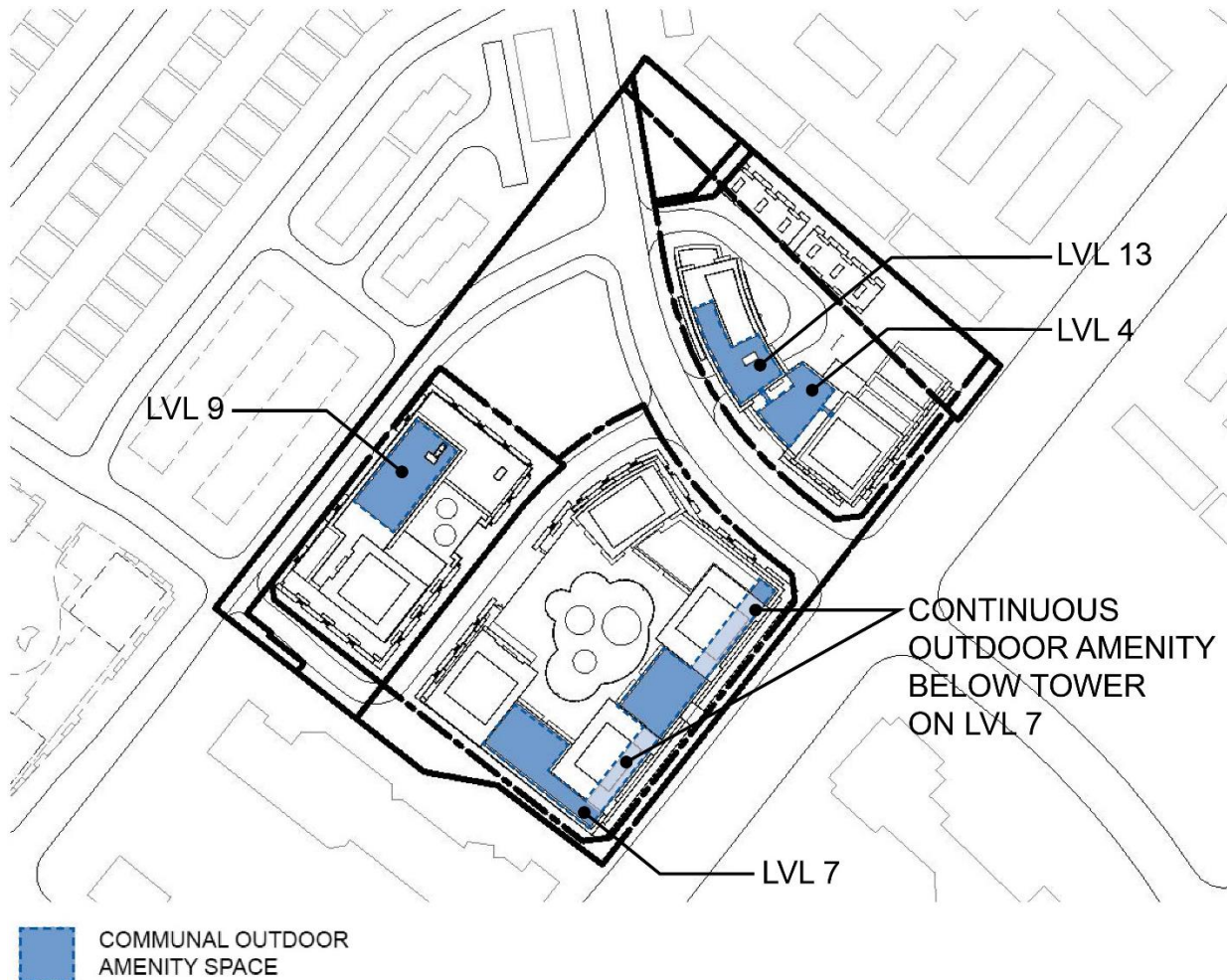


Figure 2- **Communal Outdoor Amenity Areas** are as indicated in blue color and are placed on levels as indicated with corresponding tags.

2.3.1 Calculating Sun Access Factor of Communal Outdoor Amenity on **September/ March 21**

Table 2; **September/ March 21**; Communal outdoor amenity sun access factor ratio

September/ March 21	<b>At *</b> (m2)	<b>As</b> Existing buildings & Proposed development	<b>As/ At</b> Existing building & Proposed development
SUNRISE+1.5 H_ 08:35 AM (LOCAL TIME)	3,694	1,457	
SOLAR NOON - 4 hr_ 09:12 (LOCAL TIME)	3,694	1,389	
SOLAR NOON - 3 hr_ 10:12 (LOCAL TIME)	3,694	1,991	
SOLAR NOON - 2 hr_ 11:12 (LOCAL TIME)	3,694	2,243	
SOLAR NOON - 1 hr_ 12:12 (LOCAL TIME)	3,694	2,176	
SOLAR NOON _ 13:12 (LOCAL TIME)	3,694	2,251	
SOLAR NOON + 1 hr_ 14:12 (LOCAL TIME)	3,694	2,196	
SOLAR NOON + 2 hr_ 15:12 (LOCAL TIME)	3,694	2,369	
SOLAR NOON + 3 hr_ 16:12 (LOCAL TIME)	3,694	2,175	
SOLAR NOON + 4 hr_ 17:12 (LOCAL TIME)	3,694	1,376	
SUNSET-1.5 hr_ 17:48 (LOCAL TIME)	3,694	851	
Sun Access Factor and <b>As(ave)</b> ***	<b>3,694</b>	<b>1,861</b>	<b>0.50</b>

2.3.2 Calculating Sun Access Factor of Communal Outdoor Amenity on **June 21**.

Table 5; **June 21**; Communal outdoor amenity sun access factor ratio

June 21	<b>At **</b> (m2)	<b>As</b> Existing building & Proposed development	<b>As/ At</b> Existing building & Proposed development
21-Jun	SUNRISE+1.5 hr_ 07:07 AM (LOCAL TIME)	3,694	2,141
	SOLAR NOON - 6 hr_ 07:20 (LOCAL TIME)	3,694	2,178
	SOLAR NOON - 5 hr_ 08:20 (LOCAL TIME)	3,694	2,284
	SOLAR NOON - 4 hr_ 09:20 (LOCAL TIME)	3,694	2,252
	SOLAR NOON - 3 hr_ 10:20 (LOCAL TIME)	3,694	2,194
	SOLAR NOON - 2 hr_ 11:20 (LOCAL TIME)	3,694	2,350
	SOLAR NOON - 1 hr_ 12:20 (LOCAL TIME)	3,694	2,348
	SOLAR NOON _ 13:20 (LOCAL TIME)	3,694	2,624

	SOLAR NOON + 1 hr_ 14:20 (LOCAL TIME)	3,694	2,432	
	SOLAR NOON + 2 hr_ 15:20 (LOCAL TIME)	3,694	2,537	
	SOLAR NOON + 3 hr_ 16:20 (LOCAL TIME)	3,694	2,299	
	SOLAR NOON + 4 hr_ 17:20 (LOCAL TIME)	3,694	2,005	
	SOLAR NOON + 5 hr_ 18:20 (LOCAL TIME)	3,694	1,774	
	SOLAR NOON + 6 hr_ 19:20 (LOCAL TIME)	3,694	1,344	
	SUNSET-1.5 hr_ 19:33 (LOCAL TIME)	3,694	1,177	
	Sun Access Factor and <b>As(ave)</b> ***	<b>3,694</b>	<b>2,129</b>	<b>0.58</b>

2.3.3 Calculating Sun Access Factor of Communal Outdoor Amenity on December 21.

Table 7; **December 21**; Communal outdoor amenity sun access factor ratio

	<b>At **</b> (m2)	<b>As</b> Existing building & Proposed development	<b>As/ At</b> Existing building & Proposed development
SUNRISE+1.5 hr_ 09:19 AM (LOCAL TIME)	3,694	1,988	
SOLAR NOON - 2 hr_ 10:17 (LOCAL TIME)	3,694	1,827	
SOLAR NOON - 1 hr_ 11:17 (LOCAL TIME)	3,694	2,168	
SOLAR NOON _ 12:17 (LOCAL TIME)	3,694	2,384	
SOLAR NOON + 1 hr_ 13:17 (LOCAL TIME)	3,694	2,113	
SOLAR NOON + 2 hr_ 14:17 (LOCAL TIME)	3,694	1,399	
SUNSET-1.5 hr_ 15:15 (LOCAL TIME)	3,694	1,332	
Sun Access Factor and <b>As(ave)</b> ***	<b>3,694</b>	<b>1,887</b>	<b>0.51</b>

### 3 Conclusion

#### 3.1 Public Parks

Sun Access factors for the Park A & Park B are as below:

Sun Access Factor	Proposed Development + Surrounding area development (Park A)	Proposed Development + Surrounding area development (Park B)	City required Sun Access factor for Public Park
September/ March 21	<b>0.43</b>	<b>0.85</b>	0.50
June 21	<b>0.74</b>	<b>0.83</b>	Not Applicable for Public park
December 21	<b>0.10</b>	<b>0.09</b>	

The sun access factor of the proposed subject land creates a factor of 51% in conjunction with surrounding area developments.

In conclusion, the sun access factor created from the subject land development given the parameters in conjunction with future surrounding development, is within acceptable range in our opinion. We have no control of the shadows created from the surrounding area developments which contributes to a significant reduction of the overall sun shadow factor.

#### 3.2 Communal Outdoor Amenity Areas

Sun Access factors for the communal outdoor amenity spaces are as below:

Sun Access Factor	Amenity Space (long term Overall)	City req'd Sun Access factor
September/ March 21	<b>0.50</b>	0.50
June 21	<b>0.58</b>	0.50 for communal outdoor Amenity Areas
December 21	<b>0.51</b>	

The criteria has been carefully reviewed through a visual inspection, on set times; except in few areas in north and east community which the overall shadow impact is more than two consecutive hourly test times; the proposed development are meeting the requirement. Other future developments are affecting the overall shadow impact.

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