BOUSFIELDS INC.

Shadow Study



2072 Old Lakeshore Road

City of Burlington

Acamar Dwelling Corp.

December 2024

BOUSFIELDS INC.

Job Number
2330

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1 Introduction and Purpose

This Shadow Study has been prepared by Bousfields Inc., on behalf of Acamar Dwelling Corp., to analyze the incremental shadows cast by the development proposed on the lands known municipally as 2072 Old Lakeshore Road (hereafter referred to as the "Subject Site").

Bousfields Inc. has prepared this Shadow Study report in accordance with the City of Burlington Shadow Study Guidelines and Terms of Reference (June 2020). The purpose of the Shadow Study Guidelines (the "SSG") is to provide a best practices approach to Shadow Studies to promote high-quality development proposals that ensure adequate access to sunlight is maintained for the enjoyment of public and private spaces. The SSG states that the document should be used by the development community to inform development proposals within the City of Burlington and that the document is a tool for City Staff to be used in the review and evaluation of development applications

1.1 Site Latitude and Longitude

The latitude and longitude location of the Subject Site was defined by OpenStreetMap:

- Latitude: 43° 19′ 25.9176″
- Longitude: 79° 47′ 38.7924″

Astronomic north was determined by geolocating the 3D model in SketchUp Pro and using OpenStreetMap as context.

1.2 Time Zone

This Shadow Study has been prepared using the following time zone standards:

- Standard Time: Universal Time minus 5 hours (Winter Solstice - December 21st)
- Daylight Saving Time: Universal Time minus 4 hours (Vernal Equinox - March 21st; Summer Solstice - June 21st; and Autumnal Equinox - September 21st)

1.3 Software Used to Prepare Shadow Analysis

3-dimensional modelling was prepared in Sketchup Pro to simulate shadow conditions. Shadow Study diagrams and composite images were prepared using Adobe Photoshop. Sun Access Factor calculations are based on area measurements taken from the City of Burlington parcel data and were conducted using AutoCAD.

1.4 Identified Areas

As per Section 4.0 of the SSG, this Study identifies potential key areas surrounding the proposed development. It notes that the criteria cannot be applied universally due to unique site specific and surrounding built form and land use attributes. Five unique Shadow Impact Criteria have been developed to respond to desired uses, and, as such, each area will include unique evaluation criteria with different times, dates and standards as noted in the SSG. These include:

- Key Civic and Cultural Spaces
- Private Outdoor Amenity Spaces
- Parks and Open Space
- Places where Children Play
- Public Realm and Sidewalks

Figure 1 - Key Map, identifies areas that are shadowed by the proposed development (refer to pages 2 and 3).



Private Outdoor Amenity Areas

1. 360 Pearl Street
2. 2076-2099 Bates Common, 389-406 Almas Common & 384-401 Deltor Common
3. 2069-2079 Lakeshore Road (Under Construction)
4. 2096-2100 Lakeshore Road (Approved)

Parks and Open Space

1. 2096-2100 Lakeshore Road POPS (Approved)

Public Realm and Sidewalks

1. Lakeshore Road, Pearl Street & Old Lakeshore Road - Boulevards Opposite the Subject Site

2 Shadow Analysis

2.1 Key Civic and Cultural Spaces

Section 4.2 of the SSG states that proposed developments should not cast any net new shadows on Key Civic and Cultural Spaces between 10:00am and 4:00pm on March 21st and September 21.

Key Civic and Cultural Spaces include but are not limited to:

- Civic Square (426 Brant Street)
- Elgin Promenade Square (391 Brant Street)
- Spencer Smith Park (1340 and 1400 Lakeshore Road)

Assessment:

No key civic and cultural spaces were identified within the extent of the proposed development's shadow cover. As such, the proposed development will not cast net new shadows on any of these spaces, therefore satisfying the criteria for this guideline.

2.2 Private Outdoor Amenity Spaces

Section 4.3 of the SSG states that in order to maximize the usability of private outdoor amenity areas such as rear yards, decks, and (rooftop) patios, including common outdoor amenity areas, shadows from proposed developments should not exceed 2 hours in duration, between 9:00am and 6:00pm on March 21st.

Where existing shadows limit access to sun during the times above, net new shadows resulting from proposed buildings should allow a minimum amount of sunlight to reach nearby private residential outdoor amenity areas, including common outdoor amenity areas, between the hours of 9:00am and 6:00pm on the specified day. The criterion is met if the Sun Access Factor is at least 0.22 on each of the test dates.

Assessment:

For the purposes of this Study, private outdoor amenity spaces are deemed to be areas which are intended for recreational purposes. These may include private rear yards and common amenity spaces associated with developments. These do not include open spaces that are not intended for recreational purposes, such as landscape strips and buffer areas, or driveways, servicing and parking areas.

The proposed development will result in net new shadows on private amenity spaces associated with three properties:

- 360 Pearl Street
- 2076-2099 Bates Common, 389-406 Almas Common & 384-401 Deltor Common
- 2069-2079 Lakeshore Road (Under Construction)
- 2096-2100 Lakeshore Road (Approved)

<u>360 Pearl Street</u>

- With respect to 360 Pearl Street, the proposed development casts new net shadows on the 2nd storey private rooftop amenity at 9:00am on March 21st. All other shadow impacts associated with this private outdoor amenity space are from existing, under construction or approved buildings. Including new net shadow and existing shadow cover, the Sun Access Factor is 0.50. As such net new shadows cast by the proposed development will not exceed 2 hours in duration and will result in a Sun Access Factor greater than 0.22, satisfying the SSG criteria.

<u>2076-2099 Bates Common, 389-406 Almas Common & 384-401 Deltor Common</u>

- With respect to 2076-2099 Bates Common, 389-406 Almas Common and 384-401 Deltor Common, the proposed development casts new net shadows on the private rooftop amenity spaces associated with these townhouse buildings at 11:00am on March 21st. All other shadow impacts associated with these properties are from existing, under construction or approved buildings. Including new net shadows and existing shadow cover, the Sun Access Factor is 0.46. As such net new shadows cast by the proposed development will not exceed 2 hours in duration and will result in a Sun Access Factor greater than 0.22, satisfying the SSG criteria.

2069-2079 Lakeshore Road (Under Construction)

- With respect to the under construction building at 2069-2079 Lakeshore Road, the proposed development casts new net shadows on the 5th storey rooftop outdoor amenity space at 11:00am, 12:00pm and 1:00pm on March 21st, thereby exceeding 2 hours in duration of net new shadow coverage. All other shadow impacts on this space are from existing or under construction buildings. Including new net shadows and existing shadow cover, the Sun Access Factor is 0.32, satisfying the SSG criteria of a minimum 0.22 Sun Access Factor.

2096-2100 Lakeshore Road (Approved)

- With respect to the approved development at 2096-2100 Lakeshore Road, the proposed development casts new net shadows on the 7th storey private outdoor amenity at 5:00 pm on March 21st. All other shadow impacts on this space are from existing, approved or under construction buildings. Including new net shadows and existing shadow cover, the Sun Access Factor is 0.83, exceeding the 0.22 Sun Access Factor outlined in the SSG criteria. The proposed development does not cast new net shadows on this private outdoor amenity space in excess of 2 hours of duration, satisfying the SSG criteria.

Calculations have been carried out for private outdoor areas affected by shadows cast by the proposed development only, as summarized in **Table 1**.

Table 1 - Private Amenity Areas Sun Access Factor: March 21st *

Test Time	Private Outdoor Amenity Areas			
March 21st	**1** 360 Pearl Street Total Area: 568 sm	**2** 2076-2099 Bates Common, 389-406 Almas Common & 384-401 Deltor Common Total Area: 1266 sm	**3** 2069-2079 Lakeshore Road Total Area: 346 sm	**4** 2096-2100 Lakeshore Road Total Area: 512 sm
	Areas in Sunshine (sm)			
9:00am	91	110	346	490
10:00am	244	300	346	496
11:00am	406	564	239	503
12:00pm	398	379	20	487
1:00pm	513	264	41	441
2:00pm	413	701	89	425
3:00pm	388	1171	38	512
4:00pm	126	1054	2	512
5:00pm	0	788	38	131
6:00pm	0	502	0	97
Average Area in Sunshine	**281.71**	**586.82**	**109.58**	**422.29**
Sun Access Factor	**0.50**	**0.46**	**0.32**	**0.83**

*Refer to Appendix A for detailed Sun Access Factor calculations.

2.3 Parks and Open Spaces

Section 4.4 of the SSG provides that shadows cast by all existing buildings and proposed developments onto lands designated or used for Parks and Open Spaces must allow for either: a) full sunlight 50 per cent of the time; or b) 50 per cent sun coverage at all times during the specified periods. These times include:

- March 21st (9:00am to 6:00pm);
- September 21st (9:00am to 6:00pm); and,
- December 21st (11:00am to 3:00pm).

The purpose of this criterion is to ensure adequate access to sunlight at all times of the year. December 21st is included to encourage the use of lands designated or used for Parks and Open Spaces during the winter season. The criterion is met if the Sun Access Factor is at least 0.50 on each of the three test dates.

Assessment:

No offical plan designated Parks or Open Spaces were identified within the extent of the proposed development's shadow cover. However, for the purposes of this Study, the privately-owned public space (POPS) associated with approved development at 2096-2100 Lakeshore Road will be evaluated based on the criteria outlined in section 4.4 of the SSG as the proposed development will result in net new shadows on this future POPS.

2096-2100 Lakeshore Road POPS (Approved)

• With respect to the future privately owned public space (POPS) associated with the approved development at 2096-2100 Lakeshore Road, the proposed development casts new net shadows on the POPS at 3:00pm, 4:00pm and 5:00 pm on March 21st; 2:00pm, 3:00pm, 4:00pm and 5:00pm on September 21st; and at 2:00pm on December 21st. All other shadow impacts on this space come from existing, under construction or approved buildings, including approved 2096-2100 Lakeshore Road building itself. The Sun Access Factor is 0.66 for March 21st, 0.67 for September 21st and 0.88 for December 21st, therefore exceeding the minimum SAF of 0.5 for all three test dates required to satisfy the SSG criteria.

Calculations have been carried out for the for the boulevard area, as summarized in **Table 2**.

Table 2 - Parks and Open Spaces Sun Access Factor: March 21st, September 21st & December 21st *

Test Time	2096-2100 Lakeshore Road POPS (Approved) Total Area: 1024 sm		
	March 21st	September 21st	December 21st
	Areas in Sunshine (sm)		
9:00am	327	359	-
10:00am	494	592	-
11:00am	867	951	1024
12:00pm	1024	1024	1024
1:00pm	1024	1024	1024
2:00pm	1024	1024	848
3:00pm	678	582	393
4:00pm	525	527	-
5:00pm	293	286	-
6:00pm	0	0	-
Average Area in Sunshine	**676.99**	**683.05**	**900.93**
Sun Access Factor	**0.66**	**0.67**	**0.88**

*Refer to Appendix A for detailed Sun Access Factor calculations.

2.4 Places Where Children Play

Section 4.5 of the SSG states that, shadows cast by all existing buildings and proposed developments onto places where children play including but not limited to school yards, playgrounds, and park features such as wading pools or other outdoor shadow-sensitive activity areas as identified by the City of Burlington, must allow for either a) full sunlight 50 per cent of the time; or b) 50 per cent sun coverage at all times during the specified periods. These time periods include:

- March 21st (9:00am to 6:00pm);
- September 21st (9:00am to 6:00pm); and,
- December 21st (11:00am to 3:00pm) - applies to school yards and playground areas only.

Assessment:

No school yards, playgrounds, and park features such as wading pools have been identified within the extent of the proposed development's shadow cover. As such the proposed development will not cast net new shadows on any of these spaces, therefore satisfying the criteria for this guideline.

2.5 Public Realm and Sidewalks

Section 4.6 of the SSG provides that shadows cast by all existing buildings and proposed developments onto the full extents of the boulevard and sidewalk on the opposite side of the adjacent right-of-way, must allow for either a) full sunlight 50 per cent of the time; or b) 50 per cent sun coverage at all times between 9:00am and 6:00pm on March 21st. The criterion is met if the Sun Access Factor is at least 0.50 for the specified date.

Assessment:

As specified in the SSG, the boulevard area that is considered in this Study includes the area between the curb and the front property line or building face, defined by projected perpendicular lines from the subject site's property lines. Given the proposed developments corner site location, boulevard zones for Lakeshore Road, Old Lakeshore Road and Pearl Street are considered in the Sun Access Factor calculation.

The boulevard areas do not currently have access to full sunlight 50% of the time during the March 21st period or achieve 50% sunlight at all test times due to shadowing from existing buildings

Including new net shadows and existing shadow cover, the Sun Access Factor is 0.38.

From an urban design perspective, it must be noted that the proposed development implements mitigation measures to maximize sun access on boulevards and sidewalks opposite the Subject Site as well as the surrounding public realm in general. The proposed development incorporates a slender tower, situated at the west end of the Subject Site. The sidewalks opposite the Pearl Street and Old Lakeshore Road frontages have no net new shadows cast from the proposed development. For the sidewalk opposite the Lakeshore Road frontage, the proposed tower-base development offers a more favourable shadow condition than the as-of-right condition outlined in Part III, Policy 5.5.7.2(b) of the in-force Official Plan. Similarly, when compared to previous March 2024 concept, the proposed development implements a reduced podium height which has a more favourable shadow condition on the Lakeshore Road public realm. Furthermore, existing towers in the surrounding context contribute to the shadowing of the Lakeshore Road public realm across the street from the Subject Site.

While the proposed development does not satisfy the 0.5 Sun Access Factor outlined in the SSG criteria for this guideline it is our opinion that, when considering the Subject Site's location, shape and orientation, as well as the impacts of existing shadow cover, the proposed development adequately minimizes the shadow impacts on the surrounding public realm.

Calculations have been carried out for the for the boulevard area, as summarized in **Table 3.**

Table 3- Public Realm and Sidewalks Sun Access Factor: March 21st *

Test Time	Public Realm and Sidewalks
March 21st	Opposite Boulevards Total Area: 656 sm
	Areas in Sunshine (sm)
9:00am	301
10:00am	295
11:00am	276
12:00pm	224
1:00pm	221
2:00pm	322
3:00pm	562
4:00pm	180
5:00pm	17
6:00pm	0
Average Area in Sunshine	**249.67**
Sun Access Factor	**0.38**

*Refer to Appendix A for detailed Sun Access Factor calculations.

2.6 Conclusion

Based on the findings of this Study, it is our opinion that the shadowing from the proposed development is adequately limited and acceptable based on the applicable Official Plan policies.

The proposed development meets all the applicable shadow impact criteria for key civic and cultural spaces, private outdoor amenity spaces, parks and open spaces, and places where children play.

It is our opinion that the shadow impact is appropriate given the site's location within the Burlington Downtown Mixed Use Centre. From a built form and urban design perspective, the proposed development is designed as a slender point tower with a lower scaled podium. The proposal conforms with the built form and massing policies of the in-force Official Plan and is generally in keeping with the relevant urban design guidelines.

Based on our foregoing analysis, it is our opinion that there is no unacceptable sun-shadowing for extended periods and the net shadowing of the proposed development is at an acceptable level.

3 Shadow Drawings

The following shadow drawings were prepared for each of the dates and times listed in Section 6.1 of the SSG as set out below:

Spring and Fall Equinoxes:

- March 21st, hourly increments between 9:00 – 6:00pm; and,
- September 21st, hourly increments between 9:00am – 6:00pm.

Winter and Summer Solstices:

- December 21st, hourly increments between 11:00am – 3:00pm; and,
- June 21st, hourly increments between 8:00am –7:00pm.

In accordance with Section 6.2 of the SSG, the following features are illustrated within the drawings:

- Development site boundaries (red dashed lines);
- Footprint and mass of the building proposed (thick black solid lines);
- Footprint and mass of existing buildings (thin black solid lines);
- Any Parks, Natural Heritage Systems, Major Parks or Open Space designated lands, Key Civic and Cultural Spaces, or Places where Children Play (thick green dashed lines);
- Public Realm and Sidewalks (thin black solid lines);
- Private Outdoor Amenity Space (thick pink dashed lines);
- Shadows cast by existing buildings on all surfaces (black/grey);
- Net New Shadows cast by the proposed building on ground surfaces (blue); and
- Net New Shadows cast by the proposed building on roof surfaces (purple).

March 21st - 9:00am



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

March 21st - 10:00am



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

March 21st - 11:00am



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

March 21st - 12:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

March 21st - 1:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

March 21st - 2:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

March 21st - 3:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

March 21st - 4:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

March 21st - 5:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

March 21st - 6:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

June 21st - 8:00am



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

June 21st - 9:00am



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

June 21st - 10:00am



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

June 21st - 11:00am



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

June 21st - 12:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

June 21st - 1:00pm



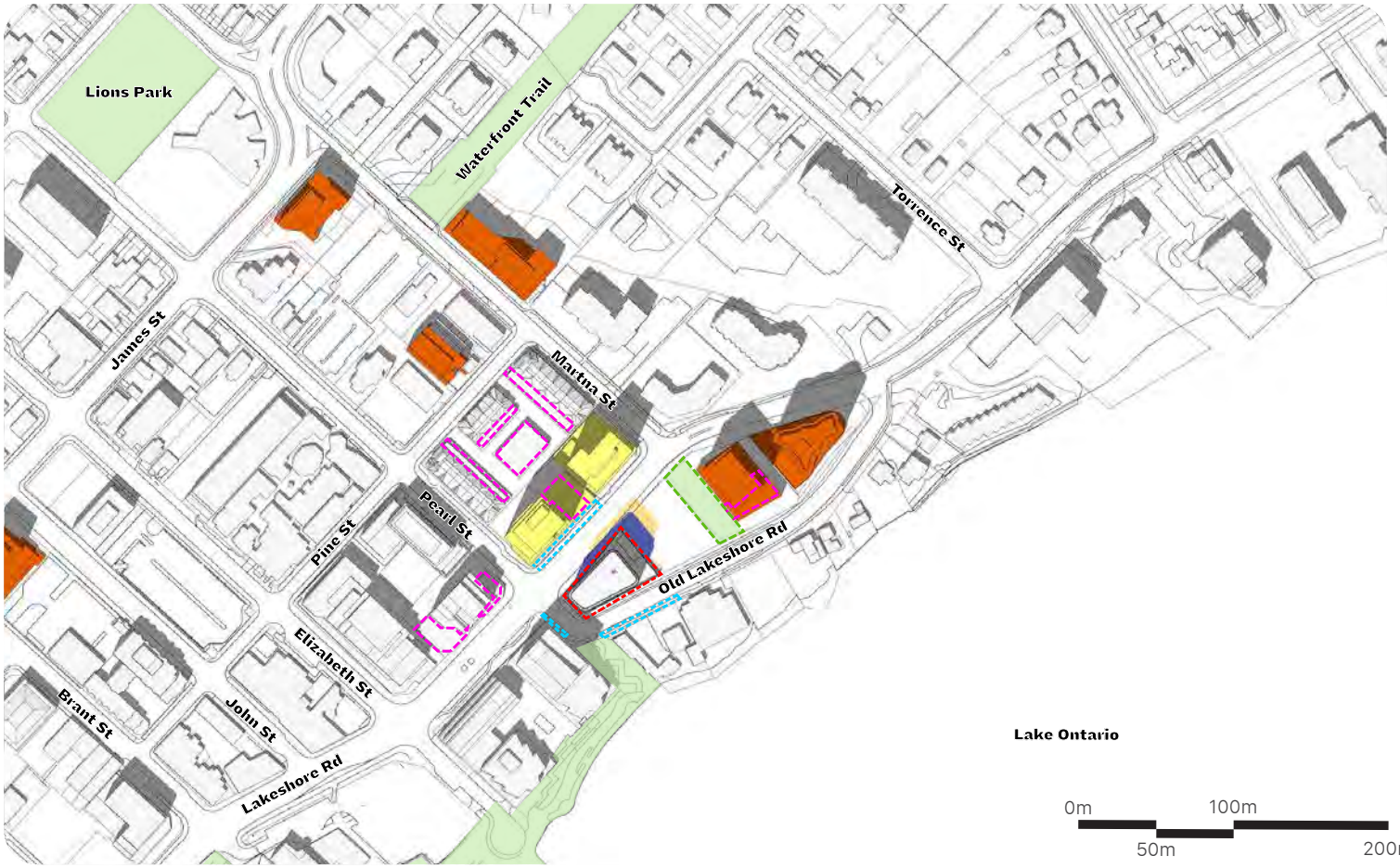
Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

June 21st - 2:00pm



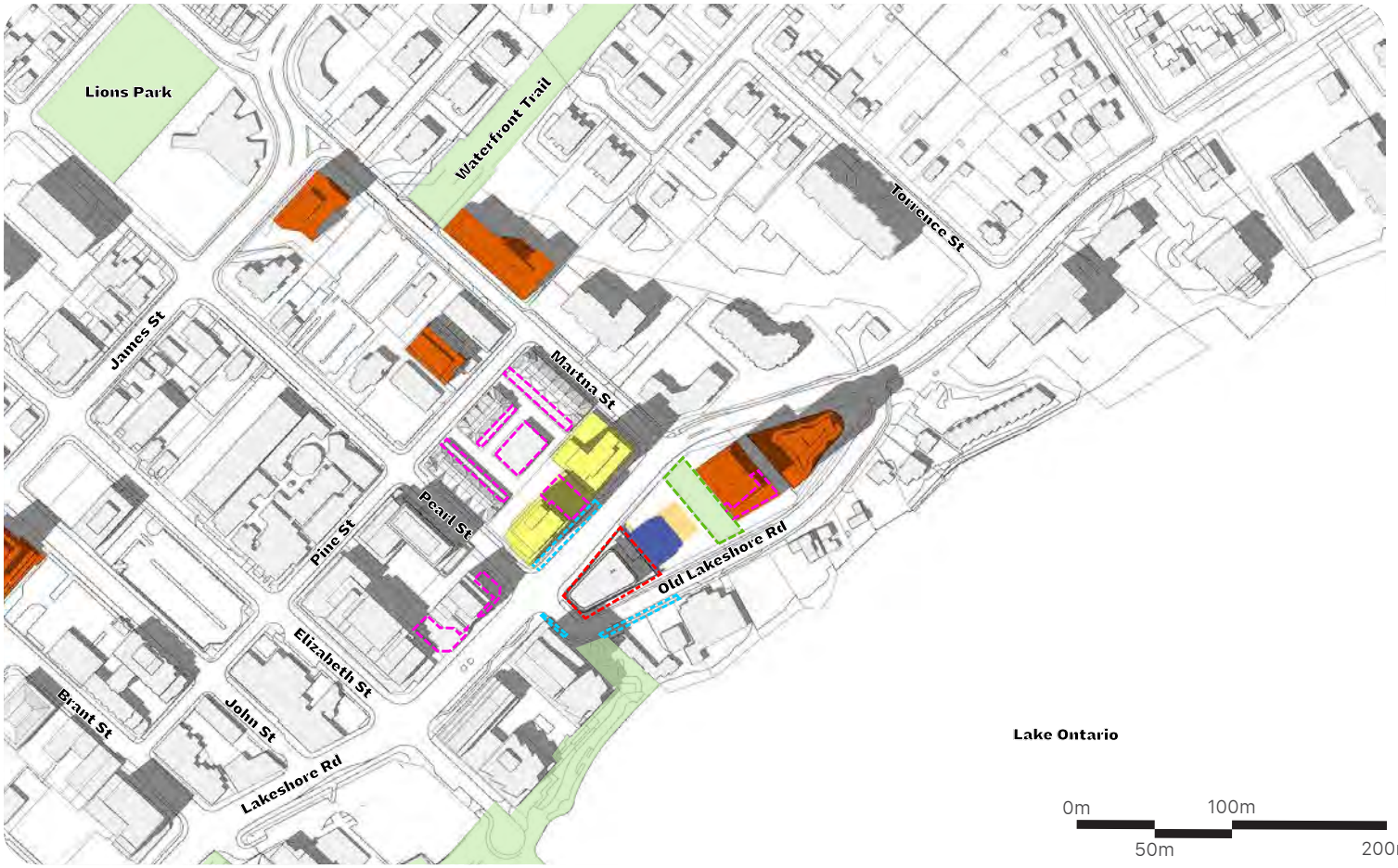
Legend

- Subject Site
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- Existing Buildings
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Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

June 21st - 3:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
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- Under Construction
- Net New Shadows Cast on Roof Surfaces
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Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

June 21st - 4:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

June 21st - 5:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

June 21st - 6:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

June 21st - 7:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

September 21st - 9:00am



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

September 21st - 10:00am



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

September 21st - 11:00am



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

September 21st - 12:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

September 21st - 1:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

September 21st - 2:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

September 21st - 3:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

September 21st - 4:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

September 21st - 5:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

September 21st - 6:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

December 21st - 11:00am



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

December 21st - 12:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

December 21st - 1:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

December 21st - 2:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

December 21st - 3:00pm



Legend

- Subject Site
- Proposed Development
- Existing Buildings
- Parks and Open Space
- Approved Developments
- Under Construction
- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows No Longer Proposed Resulting from Proposed Changes
- Shadows Cast by Existing and Approved Buildings on All Surfaces

Identified Areas

- Private Outdoor Amenity Areas
- Public Realm and Sidewalks - Opposite Boulevard
- Parks & Open Spaces

Appendix A

Sun Access Factor Calculations

Private Outdoor Amenity Spaces

360 Pearl Street
Total Outdoor Amenity Area (A_T) = 568 sm

360 Pearl Street				
Test Time	Areas in Sunshine ($A_{S(test)}$)	Sun Access Factor Per Hour ($A_{S(test)}$) / (A_T)	Sunshine Per Interval ($A_{S(test1+test2)}$)	Interval Average ($A_{S(interval)}$)
March 21st 9:00am	91	0.16	336	168
March 21st 10:00am	245	0.43	651	325
March 21st 11:00am	406	0.72	804	402
March 21st 12:00pm	398	0.70	911	456
March 21st 1:00pm	513	0.90	926	463
March 21st 2:00pm	413	0.73	801	401
March 21st 3:00pm	388	0.68	514	257
March 21st 4:00pm	126	0.22	126	63
March 21st 5:00pm	0	0.00	0	0
March 21st 6:00pm	0	0.00	-	-
			Sum of ($A_{S(interval)}$)	**2535.44**
			Average Area in Sunshine ($A_{S(average)}$)=[sum of ($A_{S(interval)}$)] / [# of intervals]	**281.72**
			Sun Access Factor ($A_{S(average)}$) / A_T	**0.50**

Private Outdoor Amenity Spaces

2076-2099 Bates Common, 389-406 Almas Common & 384-401 Deltor Common
Total Outdoor Amenity Area (A_T) = 1265 sm

2076-2099 Bates Common, 389-406 Almas Common & 384-401 Deltor Common				
Test Time	Areas in Sunshine ($A_{S(test)}$)	Sun Access Factor Per Hour ($A_{S(test)}$) / (A_T)	Sunshine Per Interval ($A_{S(test1+test2)}$)	Interval Average ($A_{S(interval)}$)
March 21st 9:00am	110	0.09	410	205
March 21st 10:00am	300	0.24	864	432
March 21st 11:00am	564	0.45	943	471
March 21st 12:00pm	379	0.30	643	321
March 21st 1:00pm	264	0.21	965	482
March 21st 2:00pm	701	0.55	1872	936
March 21st 3:00pm	1171	0.92	2225	1112
March 21st 4:00pm	1054	0.83	1842	921
March 21st 5:00pm	788	0.62	803	401
March 21st 6:00pm	15	0.01	-	-
			Sum of ($A_{S(interval)}$)	**5281.40**
			Average Area in Sunshine ($A_{S(average)}$)=[sum of ($A_{S(interval)}$)] / [# of intervals]	**586.78**
			Sun Access Factor ($A_{S(average)}$) / A_T	**0.46**

Private Outdoor Amenity Spaces

2069-2079 Lakeshore Road
Total Outdoor Amenity Area (A_T) = 346 sm

2069-2079 Lakeshore Road				
Test Time	Areas in Sunshine ($A_{S(test)}$)	Sun Access Factor Per Hour ($A_{S(test)}$) / (A_T)	Sunshine Per Interval ($A_{S(test1 +test2)}$)	Interval Average ($A_{S(interval)}$)
March 21st 9:00am	346	1.00	692	346
March 21st 10:00am	346	1.00	585	292
March 21st 11:00am	239	0.69	260	130
March 21st 12:00pm	21	0.06	62	31
March 21st 1:00pm	41	0.12	130	65
March 21st 2:00pm	89	0.26	127	63
March 21st 3:00pm	38	0.11	40	20
March 21st 4:00pm	2	0.01	40	20
March 21st 5:00pm	38	0.11	38	19
March 21st 6:00pm	0	0.00	-	-
			Sum of ($A_{S(interval)}$)	**986.21**
			Average Area in Sunshine ($A_{S(average)}$)=[sum of ($A_{S(interval)}$)] / [# of intervals]	**109.58**
			Sun Access Factor ($A_{S(average)}$) / A_T	**0.32**

Private Outdoor Amenity Spaces

2096-2100 Lakeshore Road
Total Outdoor Amenity Area (A_T) = = 512 sm

2096-2100 Lakeshore Road				
Test Time	Areas in Sunshine ($A_{S(test)}$)	Sun Access Factor Per Hour ($A_{S(test)}$) / (A_T)	Sunshine Per Interval ($A_{S(test1+test2)}$)	Interval Average ($A_{S(interval)}$)
March 21st 9:00am	490	0.96	986	493
March 21st 10:00am	496	0.97	999	499
March 21st 11:00am	503	0.98	990	495
March 21st 12:00pm	487	0.95	928	464
March 21st 1:00pm	441	0.86	866	433
March 21st 2:00pm	425	0.83	937	468
March 21st 3:00pm	512	1.00	1024	512
March 21st 4:00pm	512	1.00	643	321
March 21st 5:00pm	131	0.26	228	114
March 21st 6:00pm	97	0.19	-	-
			Sum of ($A_{S(interval)}$)	**3800.65**
			Average Area in Sunshine ($A_{S(average)}$)=[sum of ($A_{S(interval)}$)] / [# of intervals]	**422.29**
			Sun Access Factor ($A_{S(average)}$) / A_T	**0.82**

Parks and Open Spaces

2096-2100 Lakeshore Road Private Owned Public Space (POPS) - March 21st
Total Outdoor Amenity Area (A_T) = = 1024 sm

2096-2100 Lakeshore Road				
Test Time	Areas in Sunshine ($A_{S(test)}$)	Sun Access Factor Per Hour ($A_{S(test)}$) / (A_T)	Sunshine Per Interval ($A_{S(test1+test2)}$)	Interval Average ($A_{S(interval)}$)
March 21st 9:00am	327	0.32	821	410
March 21st 10:00am	494	0.48	1361	680
March 21st 11:00am	867	0.85	1891	945
March 21st 12:00pm	1024	1.00	2048	1024
March 21st 1:00pm	1024	1.00	2048	1024
March 21st 2:00pm	1024	1.00	1702	851
March 21st 3:00pm	678	0.66	1203	601
March 21st 4:00pm	525	0.51	818	409
March 21st 5:00pm	293	0.29	293	146
March 21st 6:00pm	0	0.00	-	-
			Sum of ($A_{S(interval)}$)	**6092.96**
			Average Area in Sunshine ($A_{S(average)}$)=[sum of ($A_{S(interval)}$)] / [# of intervals]	**676.99**
			Sun Access Factor ($A_{S(average)}$) / A_T	**0.6** 6

Parks and Open Spaces

2096-2100 Lakeshore Road Private Owned Public Space (POPS) - September 21st
Total Outdoor Amenity Area (A_T) = = 1024 sm

2096-2100 Lakeshore Road				
Test Time	Areas in Sunshine ($A_{S(test)}$)	Sun Access Factor Per Hour ($A_{S(test)}$) / (A_T)	Sunshine Per Interval ($A_{S(test1+test2)}$)	Interval Average ($A_{S(interval)}$)
September 21st 9:00am	359	0.35	951	475
September 21st 10:00am	592	0.58	1543	772
September 21st 11:00am	951	0.93	1975	988
September 21st 12:00pm	1024	1.00	2048	1024
September 21st 1:00pm	1024	1.00	2048	1024
September 21st 2:00pm	1024	1.00	1606	803
September 21st 3:00pm	582	0.57	1109	554
September 21st 4:00pm	527	0.51	786	393
September 21st 5:00pm	259	0.25	259	129
September 21st 6:00pm	0	0.00	-	-
			Sum of ($A_{S(interval)}$)	**6162.41**
			Average Area in Sunshine ($A_{S(average)}$)=[sum of ($A_{S(interval)}$)] / [# of intervals]	**684.71**
			Sun Access Factor ($A_{S(average)}$) / A_T	**0.67**

Parks and Open Spaces

2096-2100 Lakeshore Road Private Owned Public Space (POPS) - December 21st
Total Outdoor Amenity Area (A_T) = = 1024 sm

2096-2100 Lakeshore Road				
Test Time	Areas in Sunshine ($A_{S(test)}$)	Sun Access Factor Per Hour ($A_{S(test)}$) / (A_T)	Sunshine Per Interval ($A_{S(test1 +test2)}$)	Interval Average ($A_{S(interval)}$)
December 21st 11:00am	1024	1.00	2048	1024
December 21st 12:00pm	1024	1.00	2048	1024
December 21st 1:00pm	1024	1.00	1872	936
December 21st 2:00pm	848	0.83	1241	620
December 21st 3:00pm	393	0.38	-	-
			Sum of ($A_{S(interval)}$)	**3603.73**
			Average Area in Sunshine ($A_{S(average)}$)=[sum of ($A_{S(interval)}$)] / [# of intervals]	**900.93**
			Sun Access Factor ($A_{S(average)}$) / A_T	**0.88**

Public Realm and Sidewalks

Opposite Boulevard
Total Boulevard Area (A_T) = 656 sm

Opposite Boulevard				
Test Time	Areas in Sunshine ($A_{S(test)}$)	Sun Access Factor Per Hour ($A_{S(test)}$) / (A_T)	Sunshine Per Interval ($A_{S(test1+test2)}$)	Interval Average ($A_{S(interval)}$)
March 21st 9:00am	301	0.46	596	298
March 21st 10:00am	295	0.45	572	286
March 21st 11:00am	276	0.42	500	250
March 21st 12:00pm	224	0.34	446	223
March 21st 1:00pm	221	0.34	542	271
March 21st 2:00pm	322	0.49	884	442
March 21st 3:00pm	562	0.86	742	371
March 21st 4:00pm	180	0.27	198	99
March 21st 5:00pm	17	0.03	18	9
March 21st 6:00pm	0	0.00	-	-
			Sum of ($A_{S(interval)}$)	**2,247.07**
			Average Area in Sunshine ($A_{S(average)}$)=[sum of ($A_{S(interval)}$)] / [# of intervals]	**249.68**
			Sun Access Factor ($A_{S(average)}$) / A_T	**0.38**



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