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1 Introduction and Summary

This shadow study has been prepared by Bousfields Inc., on behalf of the Rangeview Landowners Group Inc. ("Rangeview LOG"), to demonstrate the hypothetical shadow impacts cast by conceptual buildings illustrated in the Rangeview Estates Development Master Plan ("Rangeview DMP"). The Rangeview DMP proposes a mix of building typologies throughout the neighbourhood. These typologies and associated heights proposed generally align with the policies and guidelines outlined in the Mississauga OP. These building typologies include: (1) Low-rise buildings up to 4-storeys; (2) Mid-rise buildings between 5- and 8-storeys; and (3) Tall Buildings between 9- and 15-storeys. The built form illustrated in this shadow study — and the corresponding DMP — is conceptual, with the exact designs and architectural details being determined at a subsequent development approvals process when each individual parcel plans to develop.

Bousfields Inc. has prepared this shadow study in accordance with the terms of reference associated with the preparation of a Development Master Plan. This shadow study is generally based on the requirements set out in Mississauga's Urban Design Terms of Reference — Standards for Shadow Studies February 2023 ("Shadow Study TOR").

1.1 Site Latitude and Longitude

The latitude and longitude for the Rangeview Estates Precinct was defined by SketchUp Pro:

Latitude: 43.574577 NLongitude: 79.559169 W

Astronomic north was also determined by geolocating the 3-dimensional model in SketchUp Pro.

1.2 Time Zone

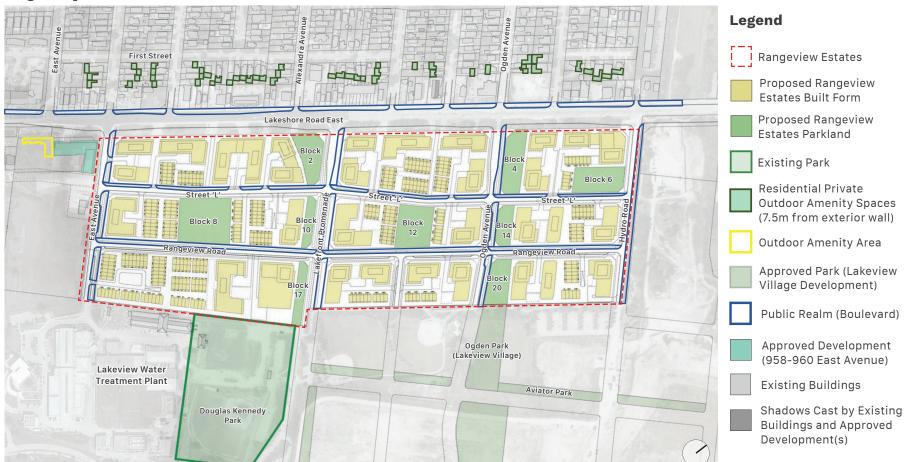
- Eastern Time Zone (ET)
- Standard Time: UTC 5 hours applies on December 21st
- Daylight Time: UTC 4 hours applies on June 21st and September 21st

1.3 Software Used to Prepare Shadow Analysis

SketchUp Pro was used for 3-dimensional modeling and exporting the shadow study images. The exported images were compiled and rendered in Adobe Photoshop.

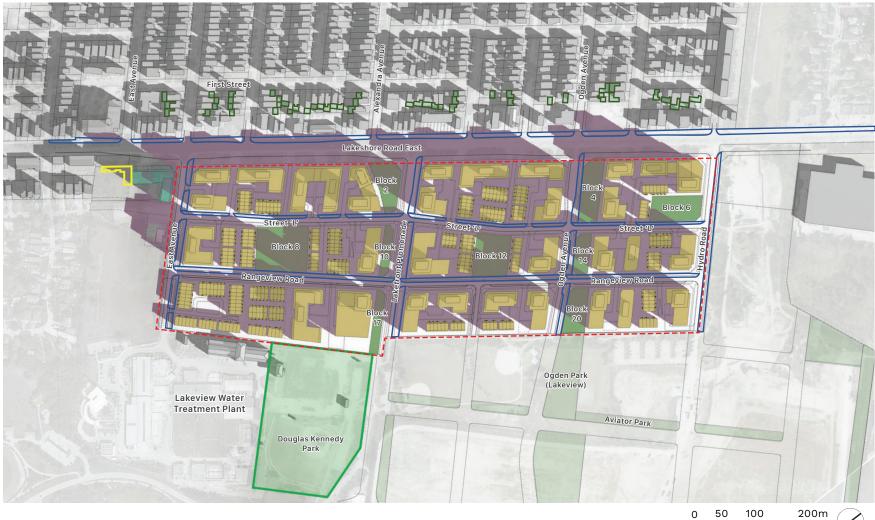
2 Shadow Analysis

Key Map



Parks and Open Spaces

- 1. Lakefront Greenway (Block 2, Block 10, Block 17)
- 2. Ogden Park (Block 4, Block 14, Block 20)
- 3. Rangeview Park (Block 8)
- 4. Central Square (Block 12)
- 5. Hydro Common (Block 6)
- 6. Ogden Park (Lakeview Village)



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

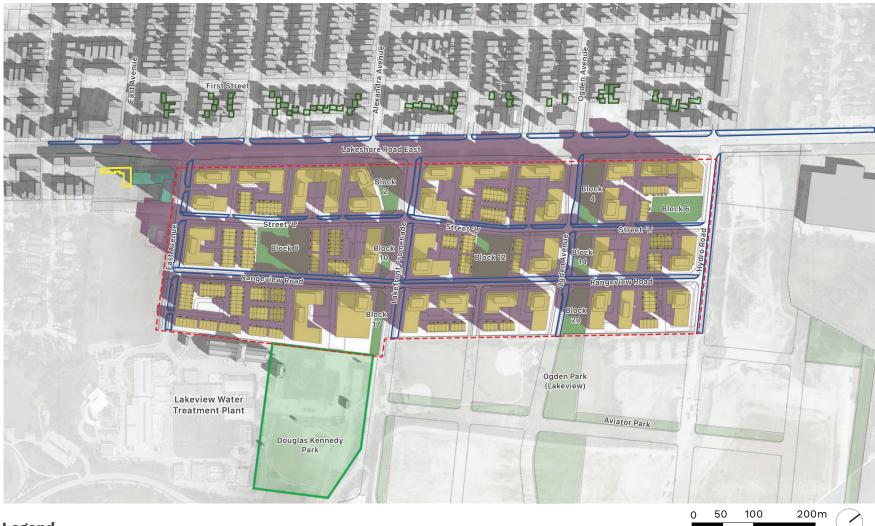
Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings



Legend

Rangeview Estates

Proposed Rangeview Estates **Built Form**

Shadows Cast by Proposed Rangeview Estates Built Form Proposed Rangeview Estates Parkland

Existing Park

Residential Private **Outdoor Amenity Spaces** (7.5m from exterior wall)

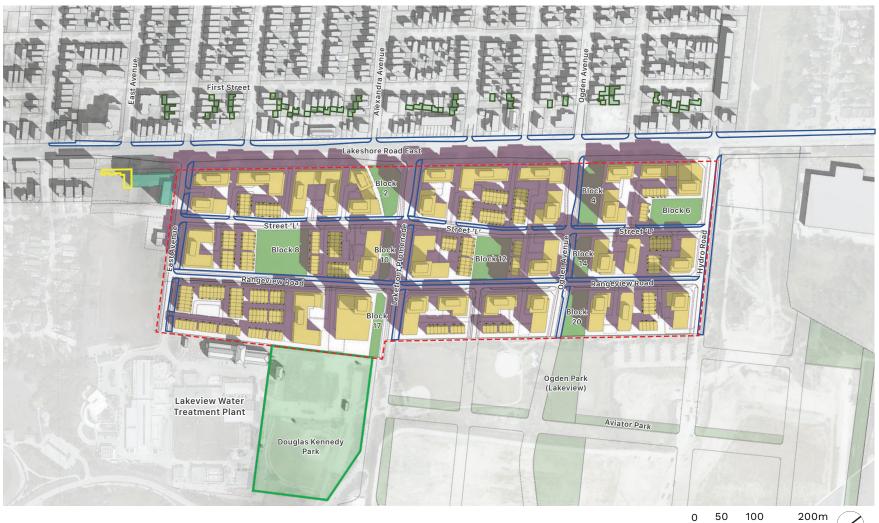
Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)







Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Annual David

Approved Development (958-960 East Avenue)

Existing Buildings



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed
Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings



Legend



Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed
Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

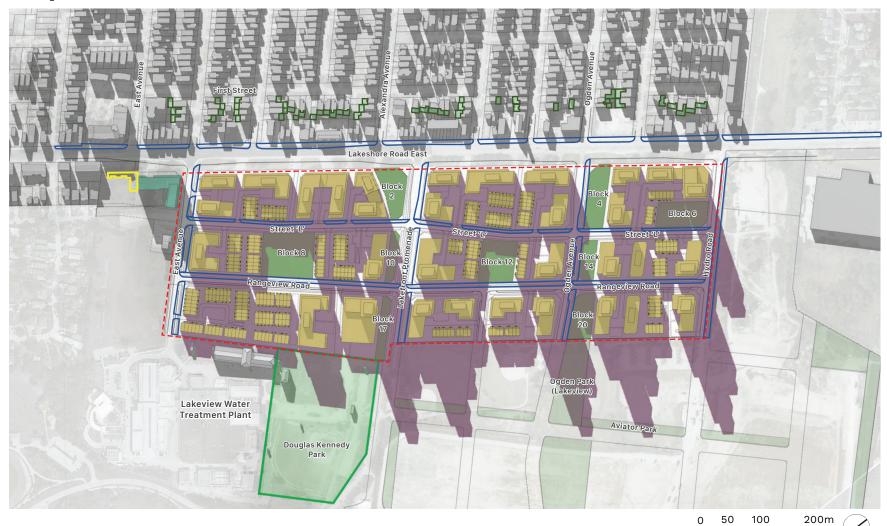
Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings

7:33pm - June 21st



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed
Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings

8:35am - September 21st



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed
Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development

Existing Buildings

Shadows Cast by Existing
Buildings and Approved
Development(s)

(958-960 East Avenue)



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed
Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed
Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

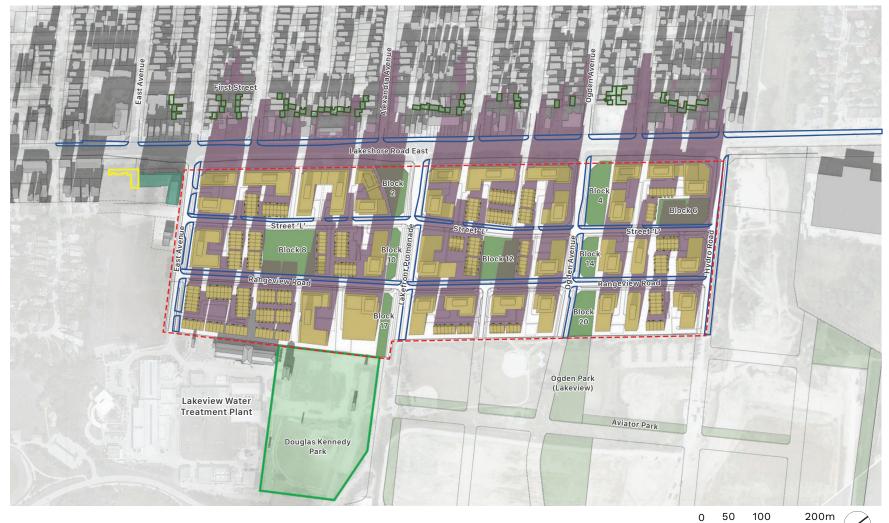
Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings

9:19am - December 21st



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed
Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings

10:17am - December 21st



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings

11:17am - December 21st



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings

12:17pm - December 21st



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings

1:17pm - December 21st



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed
Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings

2:17pm - December 21st



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Annanad Davala

Approved Development (958-960 East Avenue)

Existing Buildings

3:15pm - December 21st



Legend

Rangeview Estates

Proposed Rangeview Estates
Built Form

Shadows Cast by Proposed Rangeview Estates Built Form

Proposed Rangeview Estates
Parkland

Existing Park

Residential Private
Outdoor Amenity Spaces
(7.5m from exterior wall)

Outdoor Amenity Area

Approved Park (Lakeview Village Development)

Public Realm (Boulevard)

Approved Development (958-960 East Avenue)

Existing Buildings

3 Assessment of Shadow Impacts

Residential Private Outdoor Amenity Spaces

Residential private outdoor amenity is defined as the space between a 7.5-metre offset taken from the rear wall ("Line of Impact Assessment") to the exterior building wall of the dwelling. This study demonstrates that the conceptual buildings proposed within the Rangeview DMP area do not cast new shadows on immediate residential private outdoor amenity areas — specially, the properties north of Lakeshore Road East — during the prescribed times on June 21. For September 21, residential private outdoor amenity areas north of Lakeshore Road East will experience minor shadow impacts from 8:35 AM to 9:12 AM.

Communal Outdoor Amenity Areas

Communal outdoor amenity areas (that are part of a proposed development) within the vicinity of the Rangeview DMP area are located at 958 to 960 East Avenue — an approved development application at the intersection of East Avenue and Lakeshore Road East. This study demonstrated that the conceptual buildings proposed within Rangeview DMP area do not cast new shadows on the outdoor amenity areas planned for the 958 to 960 East Avenue development during the required dates and times defined in the Shadow Study TOR.

Although this study demonstrated shadow impacts on potential outdoor amenity areas defined in the Rangeview DMP, these locations were conceptual and were only identified to illustrate the general principle that these spaces should be centrally located within each development parcel — as appropriate — and maintain high visibility

from the adjacent public realm. When each parcel plans to develop, the strategic placement of outdoor amenity areas to minimize shadow impacts will be considered.

Public Realm

The Shadow Study TOR defines public realm as including sidewalks, open spaces, parks and plazas. With respect to the criteria involving full sunlight on the opposite boulevard (including the full width of the sidewalk), the Rangeview DMP demonstrates that the opposite boulevard of Lakeshore Road East will not experience any shadow impacts between 12:12 PM and 2:12 PM, and from 3:12 PM to 5:12 PM on September 21st.

Due to the orientation of this geographic area of Mississauga, the opposite boulevard of the proposed Street 'L' and Rangeview Road will experience segmented shadow impacts between 9:12 AM to 11:12 AM and 3:12 PM to 5:12 PM. During the period of 12:12 PM and 2:12 PM, Street 'L' will not experience any shadow impacts, while Rangeview Road experiences minimal shadow impacts at the joining intersections from 12:12 PM to 1:12 PM.

Similarly, the opposite boulevards of East Avenue, Lakefront Promenade, the proposed Ogden Avenue and Hydro Road will experience segmented shadow impacts between 9:12 AM to 11:12 AM and 3:12 PM to 5:12 PM. During the period of 12:12 PM and 2:12 PM, East Avenue will not experience any shadow impacts, while Lakefront Promenade experiences minimal shadow impacts at 2:12 PM. The proposed Ogden Avenue and Hydro Road experiences minor, segmented shadow impacts from 1:12 PM to 2:12 PM.

Sun Access Factor (September 21st)

As shown in Figure ##, the design of the proposed parks within the Rangeview DMP area provides a sun access factor greater than 50% for all park blocks — except Block 10. Although Block 10 experiences a sun access factor of 38% — due to its width (15 metres) and location on the south side of Lakefront Promenade — the potential use for this block, primarily as a multi-use pedestrian pathway and not an active programmable space, deems the limited sun access factor appropriate for its context and intended use.

Test Time Parks and Open Spaces Area											
September 21st	Dougles Kennedy Park	Block 2	Block 4	Block 6	Block 8	Block 10	Block 12	Block 14	Block 17	Block 20	Ogden Park (Lakeview)
		(Lakefront Greenway)	(Ogden Park)	(Hydro Common Park)	(Rangeview Park)	(Lakefront Greenway)	(Central Square)	(Odgen Park)	(Lakefront Greenway)	(Lakefront Greenway)	
	38,921m ²	2,850m ²	3,324m²	3,372m ²	6,174m ²	1,226m²	3852m²	1,616m²	1,546m²	2,556m ²	6515
8:35am	38,067	372	207	1,118	2,877	336	1,104	0	1546	1,672	6515
9:12am	38,250	2,399	249	1,247	4,968	806	2,550	205	1,546	2,045	6515
10:12am	38,586	2,761	2,834	2,469	5,991	1,226	3,677	1,595	1,546	2,556	6515
11:12am	38,710	2,459	3,324	3,338	6,174	1,226	3,852	1,616	1,546	2,556	6515
12:12pm	38,688	2,050	3,324	3,372	6,174	662	3,852	1,616	1,485	2,556	6515
1:12pm	38,589	1,729	3,324	3,308	6,041	445	3,736	1,616	1,112	2,556	6515
2:12pm	38,549	1,531	3,005	3,194	5,889	218	3,507	1,454	824	2,369	6515
3:12pm	38,486	1,599	2,553	3,081	5,724	108	3,265	1,121	651	1,857	6515
4:12pm	38,188	1,383	2,433	2,728	5,461	96	2,910	1,143	434	1,272	6501
5:12pm	37,382	1,264	1,943	1951	4,411	0	1,731	601	332	583	5991
5:48pm	32,720	1,465	1,402	824	2,609	0	470	192	200	391	5130
Average Area in Sunshine	37,838	1,728	2,236	2,421	5,120	466	2,787	1,014	1,020	1,855	6340
Sun Access Factor	0.97	0.60	0.67	0.72	0.83	0.38	0.72	0.63	0.66	0.73	0.97

4 Conclusion

The shadows cast by the conceptual Rangeview DMP buildings on residential private outdoor amenity spaces, communal outdoor amenity areas and the public realm — within the Rangeview Estates boundary and immediate surroundings — are generally limited and appropriate. The shadows cast are typical of an intensified, urban environment that envisions a mix of building typologies such as: low-rise buildings up to 4-storeys; mid-rise buildings between 5- and 8-storeys; and tall buildings between 9- and 15-storeys. Specifically, the proposed parks — except Block 10 of the Lakefront Greenway — demonstrate a sun access factor greater than 50%. Although the criteria prescribed in the Shadow Study TOR are generally met, it is important to note that the demonstrated massing forms are conceptual, and are subject to change at a later development approvals process when each individual parcel plans to develop.



