4.3 Shadow Study

The following diagrams illustrate the outcomes of the shadow analysis. The OP does not provide specific direction on what time of year shadow impacts should be measured. We have therefore assessed the shadow impacts on September 21, June 21, and December 21, according to the City's Urban Design Terms of Reference Standards.

Areas that are currently shadowed by existing development are depicted in grey. Areas that are shadowed by approved development are depicted in blue. Areas where the Proposed Development casts net new shadows are depicted in purple. In comparison to the Approved 2019 Plan, areas that will no longer be in shadow as a result of the revised massing of the Proposed Development (i.e. sunlight gain) are depicted in yellow.

Overall, the Proposed Development will introduce marginal net new shadows on adjacent residential properties, open spaces, parks, outdoor amenity spaces, and the proposed school yard at certain times of the year. At the same time, the Proposed Development results in some improvement in sunlight conditions, primarily during the middle of the day, particularly within the Block U open spaces, because of the reorientation and sculpting of buildings.

On September 21, the Proposed Development creates negligible net new shadows on Park J2 from 9:12 am to 4:12pm. The Proposed Development creates no net new shadows on Park R between 11:12am to 2:12pm, but there is some new shadow in the morning and afternoon from 8:35am to 10:12am and 3:12pm to 5:48pm. The Proposed Development creates negligible net new shadows on the amenity spaces in Blocks P, K and Q, though it is worth noting that these amenity spaces were predominantly in shade as per the approved 2019 Proposal. While the proposed school yard is impacted by some net new shadow on September 21, this school yard remains mostly in sunlight. Throughout the day, the school yard achieves an overall sun access factor of 84%. J.C. Saddington Park is impacted by some incremental new shadow from 11:12pm until 5:48pm. The Proposed Development improves solar access on several open spaces including some portions of Park J2 at 8:35am to 9:12am, portions of the Block U public space between 8:35am and 4:12pm, and the Block Q amenity space between 1:12pm and 2:12pm. The Proposed Development does not create incremental new shadow on adjacent neighbourhoods on September 21, except for one property at 5:12pm.

On June 21, the net new shadows are limited. The proposed heights do not create any net new shadow on the school yard, Park R, or J.C. Saddington Park throughout the day. There is limited incremental net new shadows on a few residential properties on Pine Avenue between 7:07am and 7:20am. There is also some incremental net new shadow on Park J2 and the Block U privately-owned-public-space early in the morning, and late in the afternoon.

On December 21, incremental shadow impacts are created, which is typical during this time of year. Some new shadow is created on the neighbourhood north-west of Lakeshore Road West at 9:19 am. New shadow is created on the potential school yard, Park R and J.C. Saddington Park throughout the day between 9:19 am – 3:15 pm.

Response to Policies

Shadows and sunlight access are important design considerations for new development.

The Official Plan states that tall buildings will minimize undue physical and visual negative impact relating to shadow (9.5.3a) and minimize overshadowing and overlook on adjacent neighbours (9.2.2.3d).

The overall massing strategy focuses height in the centre of the Site, and maintains a similar degree of transition as the Approved Plan. Heights peak at 35-storeys (at P3), and transition to 29 and 28-storeys (at Q2 and Q1), and down to 15-storeys (at Q3). This massing strategy minimizes shadow impacts on Park R, the school yard, and the Old Port Credit Village Heritage Conservation District (PCVHCD). In addition, each of the buildings have been sculpted with terracing (i.e. stepbacks) that further minimizes shadow impacts adjacent to the Site. Notably, building U4 is designed with stepbacks at three-storeys and five-storeys, along with terracing throughout the floors that incrementally push height internal to the block.

The Proposed Development incorporates appropriate floor plates and separation distances, to minimize shadows and promote quick moving shadows (See Section 4.2 of this report for additional details). Specifically, buildings over 16 storeys have been designed with 800 m^2 floor plates (except for U2) and 30 metre separation distances (except for U2/U3), while mid-rise buildings have appropriately scaled floor plates, separation distances, and setbacks and step backs, that limit shadow impact.

The Proposed Development conforms with policy 9.5.3a and 9.2.2.3d. The overall massing strategy appropriately minimizes undue physical and visual negative impact relating to shadow, and appropriately minimizes overshadowing and overlook on adjacent neighbours.

Assessment of Shadows against Urban Design Terms of Reference Standards for Shadow Studies

The following is an assessment of the Proposed Development against the City's Urban Design Terms of Reference Standards for Shadow Studies, recognizing that these are guidelines for the Proposed Development to have regard for, rather than conform to.

Criteria 3.1 Ensure adequate sunlight on residential private outdoor amenity spaces.

This criterion is met if there is shadow impact for no more than two consecutive hourly test times within the space between the exterior wall of the dwelling that abuts the amenity space and the line of impact assessment on June 21 and September 21.

Block P

On June 21 and September 21 the Proposed Development maintains similar shadow impact as the Approved 2019 Plan. The Proposed Development creates some negligible net new shadows, as well as some sunlight gain. Overall the amenity space remains mostly in sun between 10:20am to 1:20pm (on June 21) and between 10:20am to 12:20pm (on September 21), similar to the Approved 2019 Plan.

The revised building heights in Block P maintain similar shadow impact as the Approved Plan on the amenity areas of buildings P3, Q1, and P2. All net new shadows on adjacent amenity spaces are limited to less than two consecutive hours of impact. The proposed height increases do not materially exacerbate the shadows over what has already been approved.

Blocks Q and U

On June 21 building Q1 casts marginal net new shadows on the Block Q amenity area at 11:20 am and moves off the area by 1:20pm. Building Q2 casts net new shadow on the amenity area at 2:20pm with most of the new shadow clearing the amenity area by 5:20 pm. Building Q3 casts a partial net new shadow on the amenity area in Block Q at 7:33pm.

On September 21, buildings U2 and Q1 create some incremental net new shadow on the amenity area in Block Q at 8:35am with U2 shadow clearing the area by 11:12pm and Q1 net new shadow clearing the area by 1:12pm. Q2 creates some incremental net new shadows from 3:12pm to 5:12 pm.

While there are some new shadow impacts to the amenity areas of Blocks P and Q, the 2019 Approved Plan already had shadow impact on these amenity areas. The proposed height increases do not materially exacerbate the shadows over what has already been approved.

Blocks P and Q are surrounded by The Brightwater Boulevard Park (Block J2), Block R Public Park, Block J1 Public Park and the Waterfront Park (Block S) providing ample opportunity for sun access throughout the day. The design on Block P and Block Q amenity areas will continue to be refined to optimize their design in later stages of the development.

The revised building heights in Blocks Q and U maintain similar shadow impact on the amenity area of buildings Q1, Q2 and Q3 as is found in the Approved Plan. The proposed height increases do not materially exacerbate the shadows over what has already been approved.

Criteria 3.2 Ensure adequate sunlight on communal outdoor amenity areas including children's play areas, school yards, tot lots and park features such as sandboxes, wading pools etc., and outdoor amenity areas used by seniors and those associated with commercial and employment areas during spring, summer, fall and winter.

This criterion, is met if the sun access factor is at least 50% or 0.5 on June 21, September 21, and December 21. This criterion applies to public amenity areas and common outdoor amenity areas that are part of a proposed or existing development.

The Proposed Development largely meets Criterion 3.2. The massing of the Proposed Development achieves a sun access factor greater than 50% for the majority of the year - it is 84% on June 21 and 86% on September 21. In December, shadows are the longest and duration of daylight is the shortest. Despite this criterion not being fully met, the school yard largely meets the intent of this guideline, by achieving a sun access factor of 38%.

	School and School Yard
	2024 Proposal
June 21	0.84
September 21	0.86
December 21	0.38

Criteria 3.3 relates to the public realm, which includes sidewalks, open spaces, parks and plazas are maximized during the shoulder season (spring and fall).

Criteria 3.3 is separated into two parts, with a review of (a) the specific hours of sunlight on sidewalks and boulevards; and (b) the sun access factor for open spaces, parks and plazas.

3.3(a) Sidewalks/Boulevards

This criteria is met when Mixed Use, Commercial, Employment and High-Density Residential Streets are designed to allow full sunlight on the opposite boulevard including the full width of the sidewalk on September 21 as a total of at least 5 hours that must include the 2-hour period between:

12:12 p.m. and 2:12 p.m.,
and an additional 2 hour period from either 9:12 a.m. to 11:12 a.m. or from 3:12 p.m. to 5:12 p.m.

This criterion is met if there is no incremental shade from the proposed development at:

12:12 p.m., 1:12 p.m. and 2:12 p.m.
and three consecutive times either:
9:12 a.m., 10:12 a.m. and 11:12 a.m. or 3:12 p.m., 4:12 p.m. and 5:12 p.m.

The Brightwater Boulevard

The Proposed Development has regard for the criterion for The Brightwater Boulevard, though it is not strictly followed. However, the resulting shadow is appropriate as the proposed height increase does not materially exacerbate the shadows over what has already been approved. The Proposed Development introduces negligible net new shadow impact compared to the 2019 Approved Plan on the opposite boulevard along The Brightwater Boulevard from Block P during the hours of 10:12 am to 3:12 pm. Incremental shadows are also cast by building Q2. Building U1 does not create net new shadow.

The proposed orientation of floor plates is designed to open views to the lake and increase tower separation distances on Block P. Buildings are generally square in shape and the tower floor plates are slender, resulting in a slim shadow which moves quickly along the street. The proposed building design creates net new sun gain on The Brightwater Boulevard Park (J2) and minor incremental impact on the street.

Overall the massing strategy has been designed to mitigate net new shadows and therefore has regard for this criterion.

Shoreside Drive

The Proposed Development has regard for the criterion for Shoreside Drive, though it is not strictly followed. However, the resulting shadow is appropriate as the proposed height increase does not materially exacerbate the shadows over what has already been approved.

The proposed buildings on Block P cast incremental shadows on Shoreside Drive from 2:12 pm to 5:48 pm. The proposed buildings on Block Q cast incremental shadows on Shoreside Drive at 2:12 pm to 5:48 pm. Total shadows cast from Block U are comparable to the 2019 Approved Plan, and move off Shoreside Drive by 1:12 pm.

The Proposed Development shifts the U2 tower south, resulting in sun gain to the northern portion of Shoreside Drive. Additionally, the reduced podium height of building U2 increases sun gain on the west side of Shoreside Drive.

Overall, the incremental shadows have been mitigated to reduce impact on the public realm (and in some instances increase sunlight within the public realm), and therefore has regard for this criterion.

Missinnihe Way

The Q2 proposed building on Block Q, casts incremental net new shadow on Missinnihe Way between 8:35 am and 10:12 am.

The criterion is met for Missinnihe Way.

Pierview Way

The Proposed Development has regard for the criterion for Pierview Way, though it is not strictly followed. However, the resulting shadow is appropriate as the proposed buildings and height increases are designed to mitigate the impact.

Building Q3 and Building U4 cast shadows on Pierview Way during the hours of 10:12 am to 5:12 pm and 8:35 am – 9:12 am respectfully.

Q3 is located on the north-west corner of Block Q. The building height and design is carefully considered to reduce impact on the adjacent neighbourhood. The tower is square in shape as recommended in the Port Credit Built Form Guide to reduce shadow impact. The tower has a slender floor plate resulting in a slim shadow which moves quickly along the street. The building is designed with a stepback at 2-storeys to push the tower further south into the Site to reduce further shadow impact. Building U4 casts a shadow on Pierview Way for less than 1-hour, between 8:35 am and 9:12 am. To achieve this, the building is the lowest height in the block at 9-storeys and includes stepbacks at 2 and 5-storeys to reduce shadow impact on the street and adjacent park.

Overall, the incremental shadows have been mitigated to reduce impact on the public

realm. The criterion in this section comes from a guideline and there are no Official Plan policies that require it specifically.

Mississauga Road

Buildings Q3 casts a shadow on Mississauga Road between 5:12 pm to 5:48 pm.

The criterion is met for Mississauga Road.

3.3(b) Public Open Spaces, Parks and Plazas

Criteria 3C Developments should be designed to provide a sun access factor of at least 50% on public open spaces, parks and plazas on September 21.

This criterion is achieved when a sun access factor of at least 50% on public open spaces, parks and plazas on September 21.

Criterion 3.3c is met. As described in the chart below, all parks exceed a sun access factor of at least 50% on public open spaces, parks and plazas.

Criteria 3.5 Ensure adequate sunlight on building faces to allow for the possibility of using solar energy.

This criterion is met if the shadow impacts on September 21 are no more than two consecutive hourly test times in the "No Impact Zone" i.e. the space between the front, rear and exterior side walls of the adjacent low-rise residential buildings and the respective lines of impact assessment.

Criterion 3.5 is met. The Proposed Development does not cast net new shadows for more than two consecutive hours.

Parcel R (Parkview Drive Park)	
2024 Proposal	
September 21	0.76
	Pass

Parcel J2 (Brightwater Boulevard Park)	
2024 Proposal	
September 21	0.51
	Pass

Parcel J1	
2024 Proposal	
September 21	0.95
	Pass

Parcel E	
2024 Proposal	
September 21	0.93
	Pass

Parcel S	
2024 Proposal	
September 21	0.93
	Pass

J.C. Saddington Park	
2024 Proposal	
September 21	0.96
	Pass

Mississauga Sun Angle Data (June 21)

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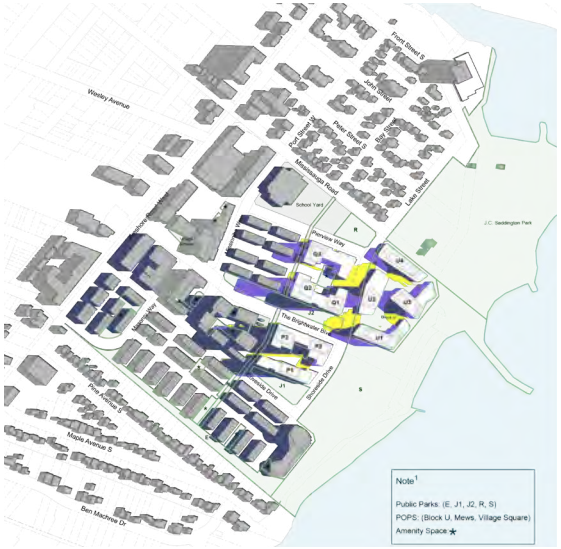
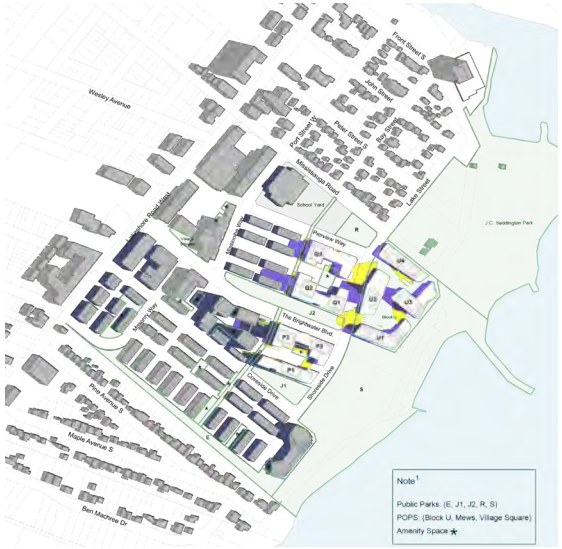
JUNE 21 7:20 AM

JUNE 21 8:20 AM



JUNE 21 9:20 AM



JUNE 21 10:20 AM

Mississauga Sun Angle Data (June 21)

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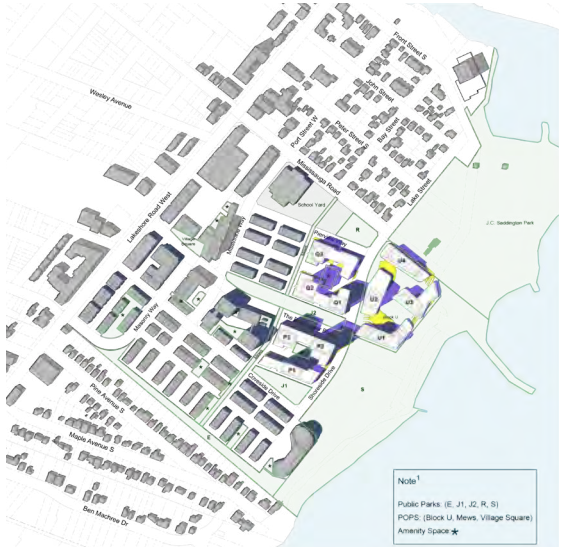
JUNE 21 12:20 PM

JUNE 21 1:20 PM

JUNE 21 2:20 PM



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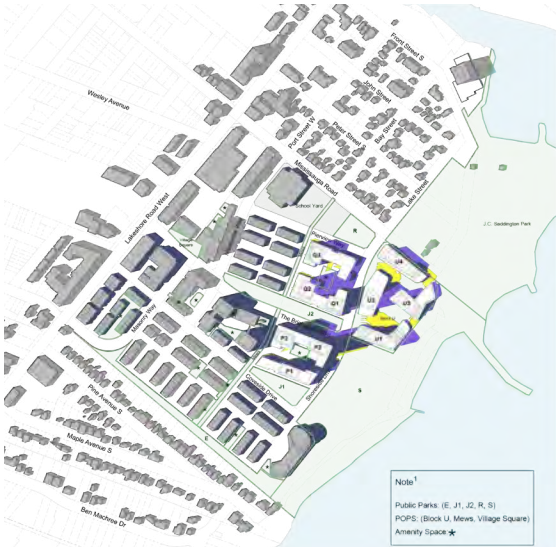

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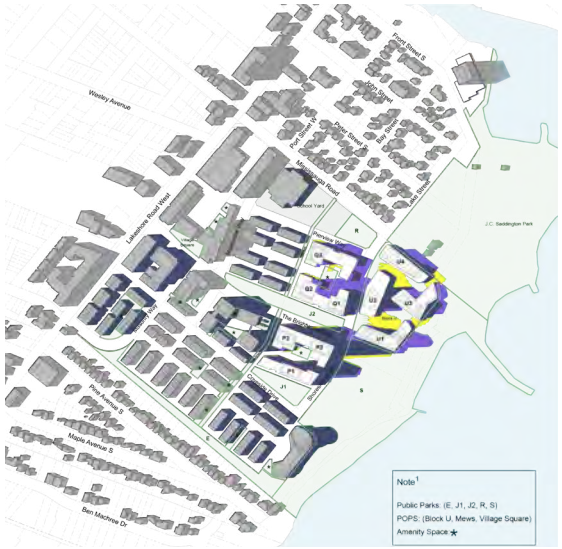

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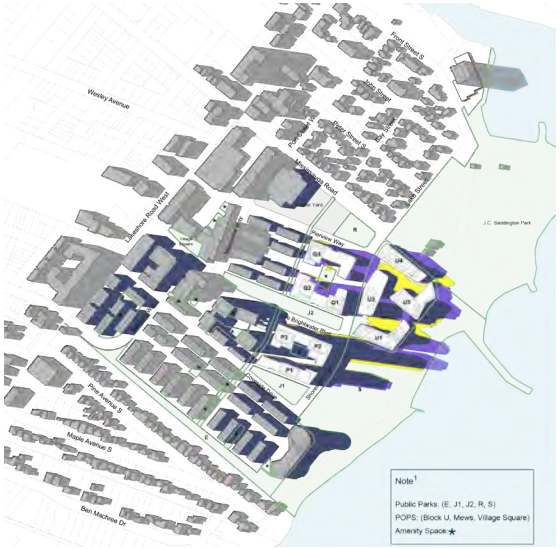

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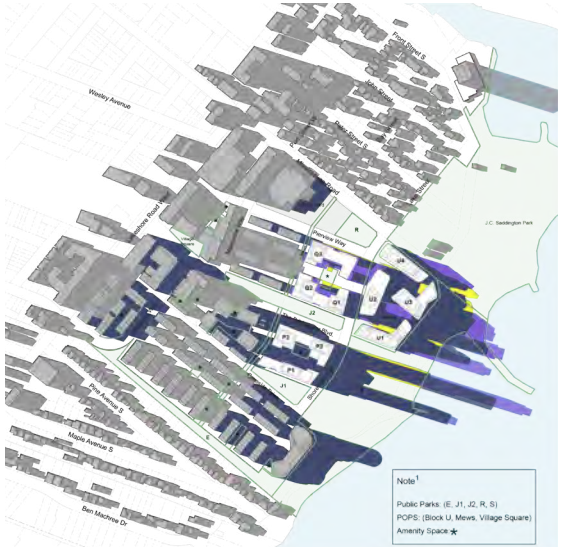

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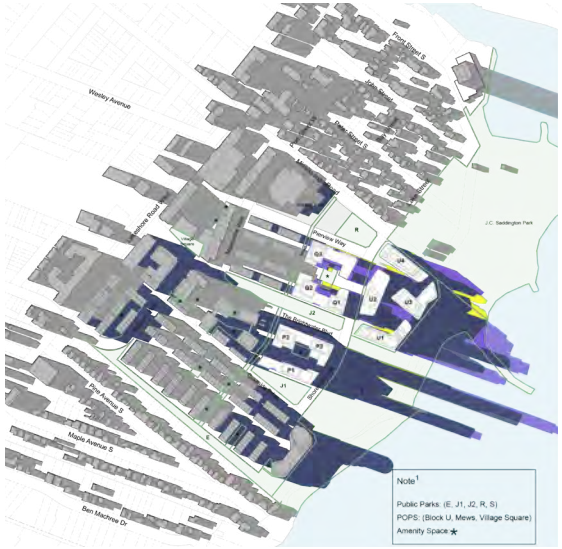

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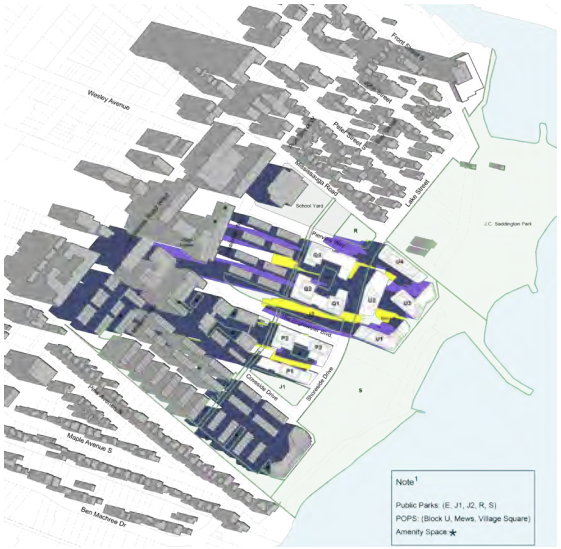
Mississauga Sun Angle Data (September 21)



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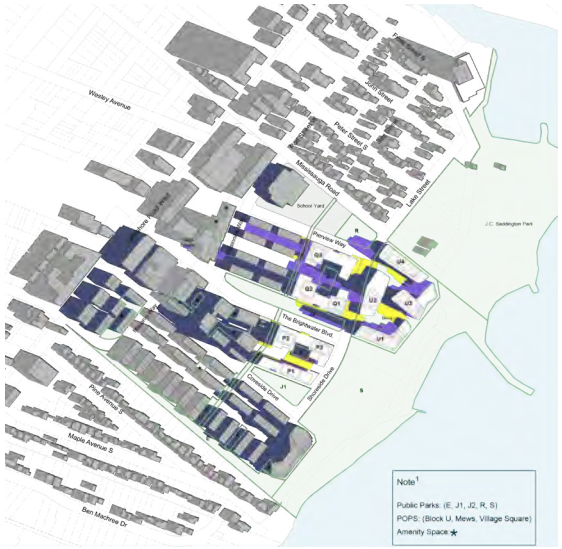

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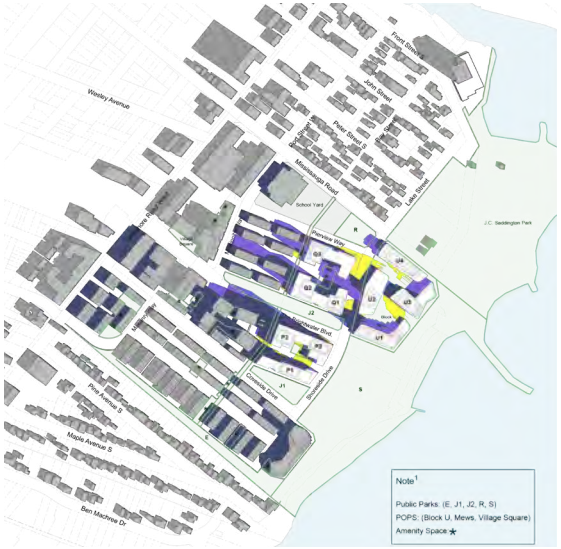

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SEPTEMBER 21 11:12 AM

Mississauga Sun Angle Data (September 21)

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SEPTEMBER 21 1:12 PM

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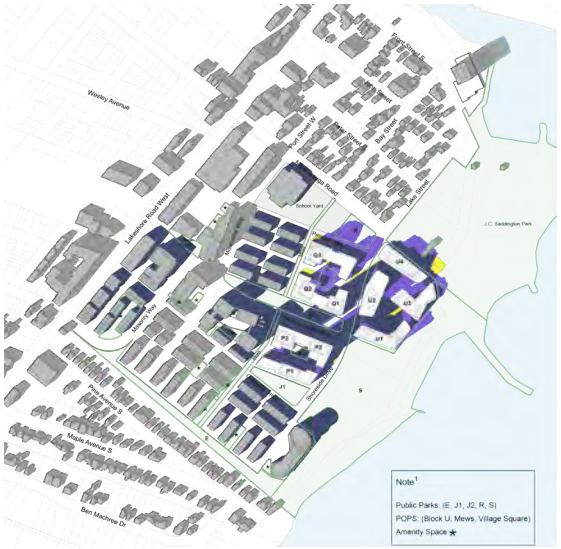
SEPTEMBER 21 3:12 PM



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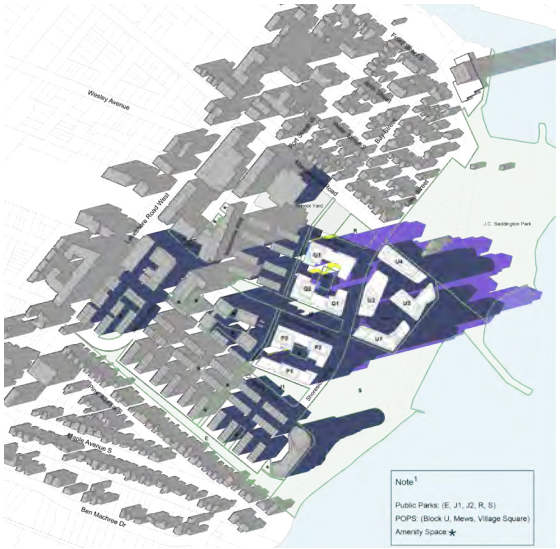

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DECEMBER 21 9:19 AM

DECEMBER 21 10:17 AM

DECEMBER 21 11:17 AM

DECEMBER 21 12:17 PM

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Mississauga Sun Angle Data (December 21)

DECEMBER 21 1:17 PM

DECEMBER 21 2:17 PM

DECEMBER 21 3:15 PM

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