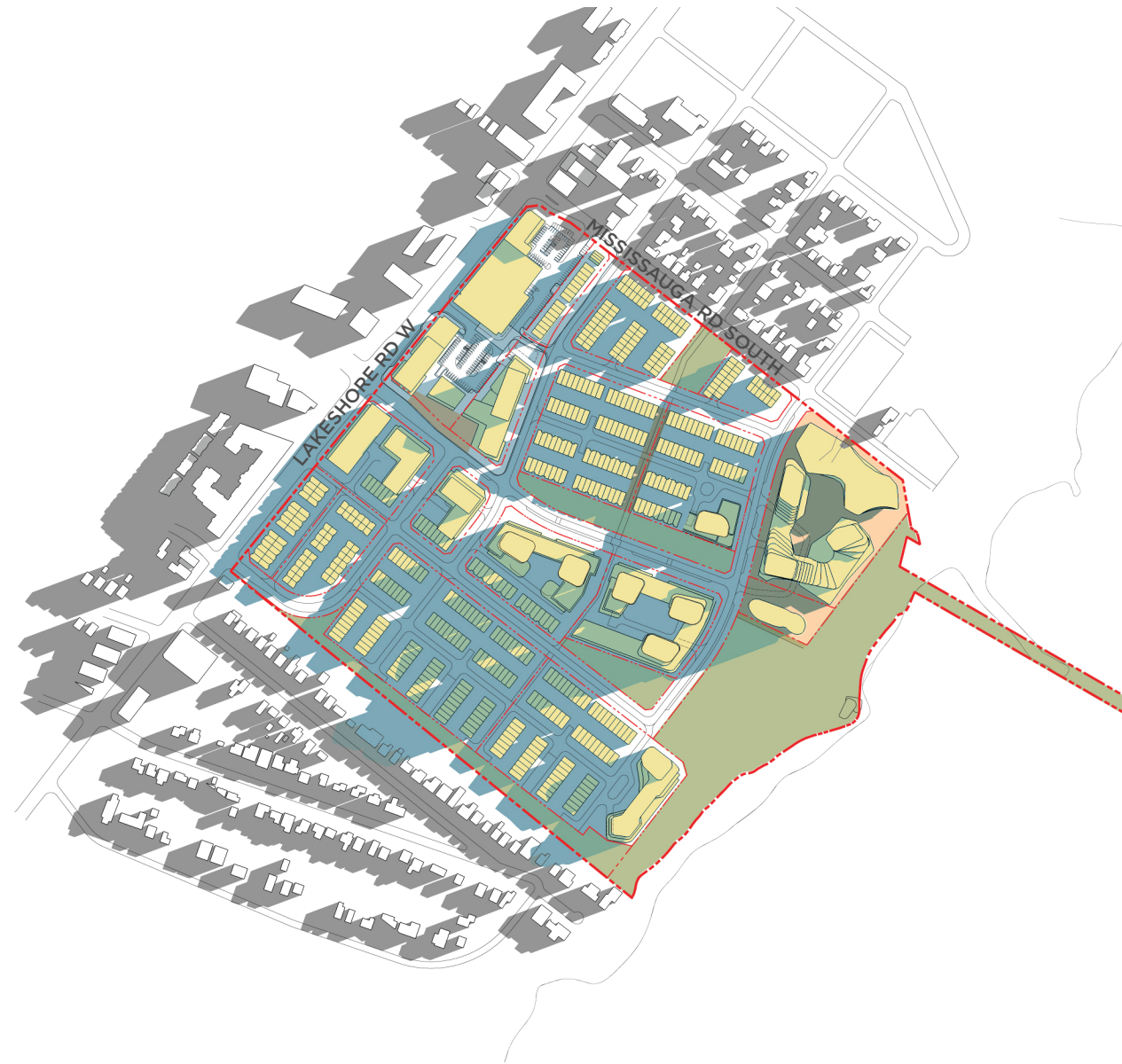


WEST VILLAGE LANDS | SHADOW STUDY

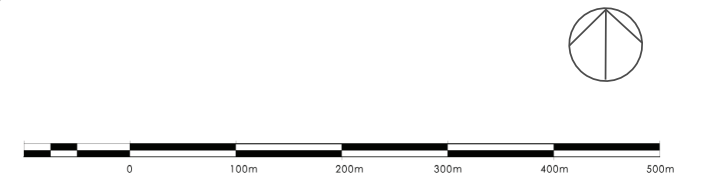
2018.11.02



JUNE 21 07:07



JUNE 21 07:20



LEGEND

- CONTEXT MASSING SHADOW
- PROPOSED MASSING SHADOW
- PROPOSED MASSING
- PARK SPACE
- POPS

Giannone Petricone Associates

WEST VILLAGE LANDS

SHADOW STUDY PROPOSED: JUNE 21 [UTC -4]

01

2018-11-02



JUNE 21 08:20



JUNE 21 09:20

LEGEND

- CONTEXT MASSING SHADOW
- PROPOSED MASSING SHADOW
- PROPOSED MASSING
- PARK SPACE
- POPS

WEST VILLAGE LANDS

SHADOW STUDY PROPOSED: JUNE 21 [UTC -4]

Giannone Petricone Associates

02

2018-11-02



JUNE 21 10:20



JUNE 21 11:20

LEGEND

- CONTEXT MASSING SHADOW
- PROPOSED MASSING SHADOW
- PROPOSED MASSING
- PARK SPACE
- POPS

WEST VILLAGE LANDS

SHADOW STUDY PROPOSED: JUNE 21 [UTC -4]

Giannone Petricone Associates

03

2018-11-02



JUNE 21 12:20



JUNE 21 13:20

LEGEND

- CONTEXT MASSING SHADOW
- PROPOSED MASSING SHADOW
- PROPOSED MASSING
- PARK SPACE
- POPS

WEST VILLAGE LANDS

SHADOW STUDY PROPOSED: JUNE 21 [UTC -4]

Giannone Petricone Associates

04

2018-11-02



JUNE 21 14:20



JUNE 21 15:20

LEGEND

- CONTEXT MASSING SHADOW
- PROPOSED MASSING SHADOW
- PROPOSED MASSING
- PARK SPACE
- POPS

WEST VILLAGE LANDS

SHADOW STUDY PROPOSED: JUNE 21 [UTC -4]

Giannone Petricone Associates

05

2018-11-02



JUNE 21 16:20



JUNE 21 17:20

LEGEND

- CONTEXT MASSING SHADOW
- PROPOSED MASSING SHADOW
- PROPOSED MASSING
- PARK SPACE
- POPS

WEST VILLAGE LANDS

SHADOW STUDY PROPOSED: JUNE 21 [UTC -4]

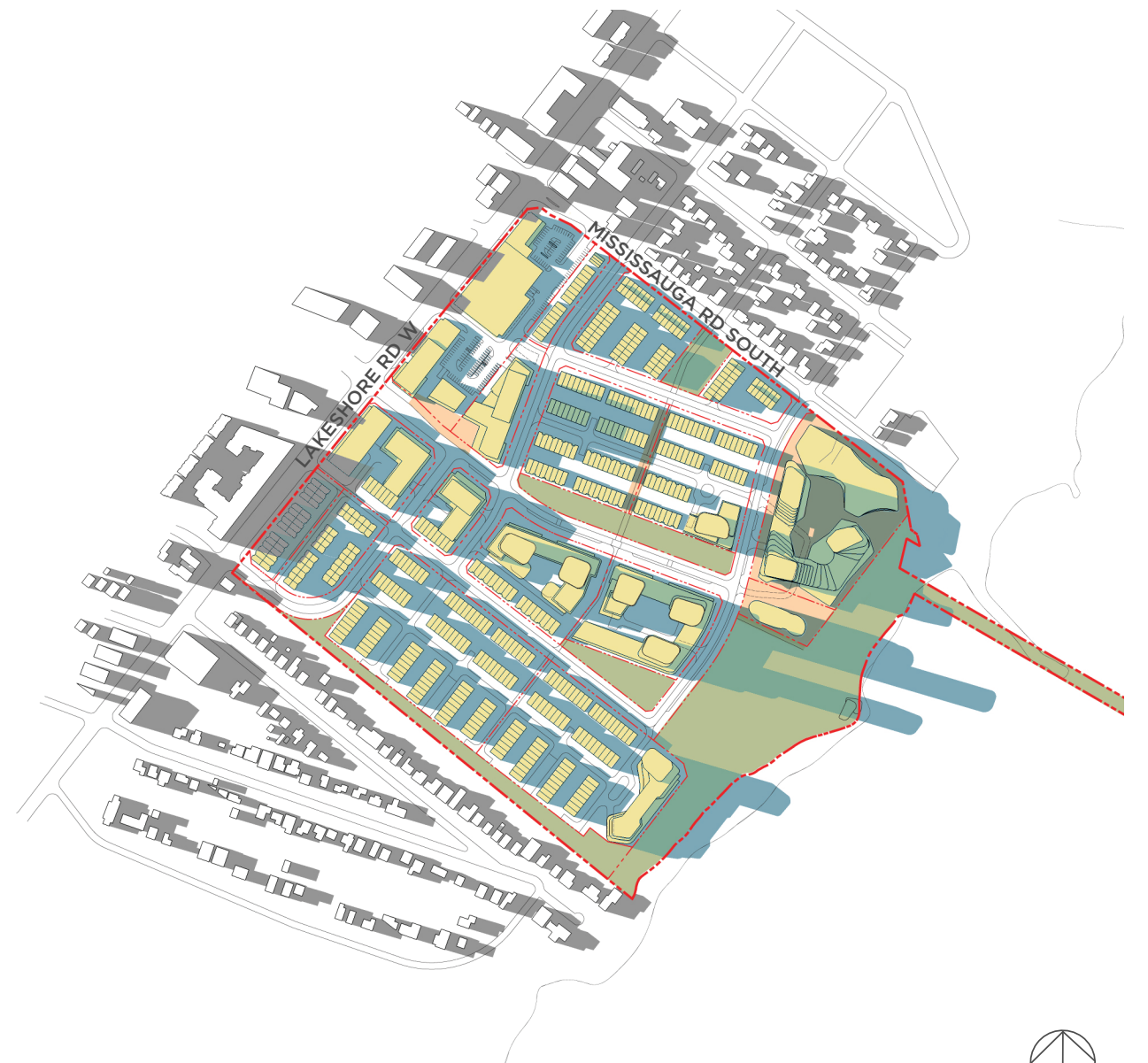
Giannone Petricone Associates

06

2018-11-02



JUNE 21 18:20



JUNE 21 19:20

LEGEND

- CONTEXT MASSING SHADOW
- PROPOSED MASSING SHADOW
- PROPOSED MASSING
- PARK SPACE
- POPS

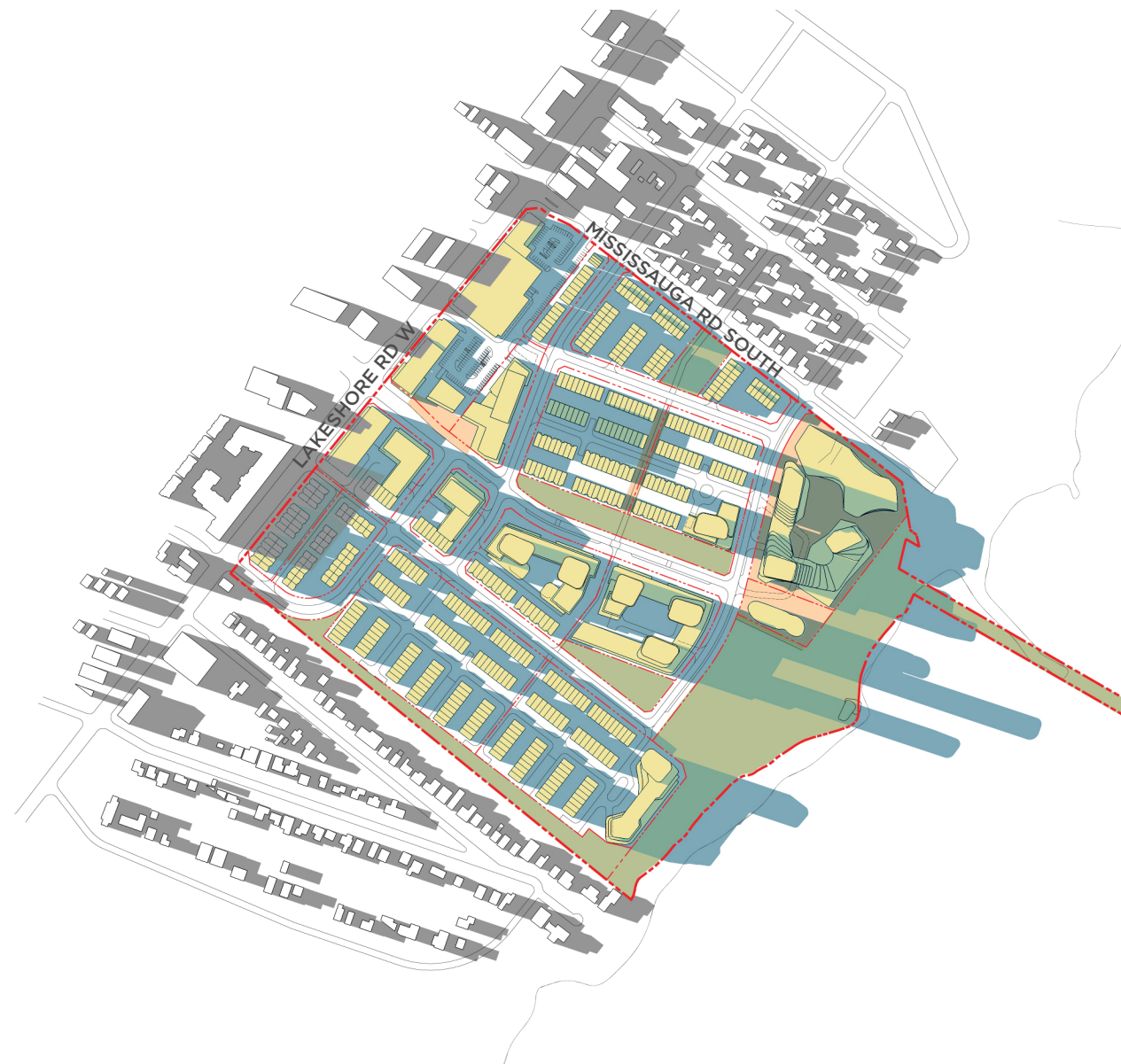
WEST VILLAGE LANDS

SHADOW STUDY PROPOSED: JUNE 21 [UTC -4]

Giannone Petricone Associates

07

2018-11-02



JUNE 21 19:33

LEGEND

- CONTEXT MASSING SHADOW
- PROPOSED MASSING SHADOW
- PROPOSED MASSING
- PARK SPACE
- POPS

WEST VILLAGE LANDS

SHADOW STUDY PROPOSED: JUNE 21 [UTC -4]

Giannone Petricone Associates

08

2018-11-02



SEPT 21 08:35



SEPT 21 09:12

LEGEND

- CONTEXT MASSING SHADOW
- PROPOSED MASSING SHADOW
- PROPOSED MASSING
- PARK SPACE
- POPS

WEST VILLAGE LANDS

SHADOW STUDY PROPOSED: SEPT 21 [UTC -4]

Giannone Petricone Associates

09

2018-11-02



SEPT 21 10:12



SEPT 21 11:12

LEGEND

- CONTEXT MASSING SHADOW
- PROPOSED MASSING SHADOW
- PROPOSED MASSING
- PARK SPACE
- POPS

WEST VILLAGE LANDS

SHADOW STUDY PROPOSED: SEPT 21 [UTC -4]

Giannone Petricone Associates

10

2018-11-02



SEPT 21 12:12



SEPT 21 13:12

LEGEND

- CONTEXT MASSING SHADOW
- PROPOSED MASSING SHADOW
- PROPOSED MASSING
- PARK SPACE
- POPS

WEST VILLAGE LANDS

SHADOW STUDY PROPOSED: SEPT 21 [UTC -4]

Giannone Petricone Associates



SEPT 21 14:12



SEPT 21 15:12

LEGEND

- CONTEXT MASSING SHADOW
- PROPOSED MASSING SHADOW
- PROPOSED MASSING
- PARK SPACE
- POPS

WEST VILLAGE LANDS

SHADOW STUDY PROPOSED: SEPT 21 [UTC -4]

Giannone Petricone Associates

12

2018-11-02



SEPT 21 16:12



SEPT 21 17:12

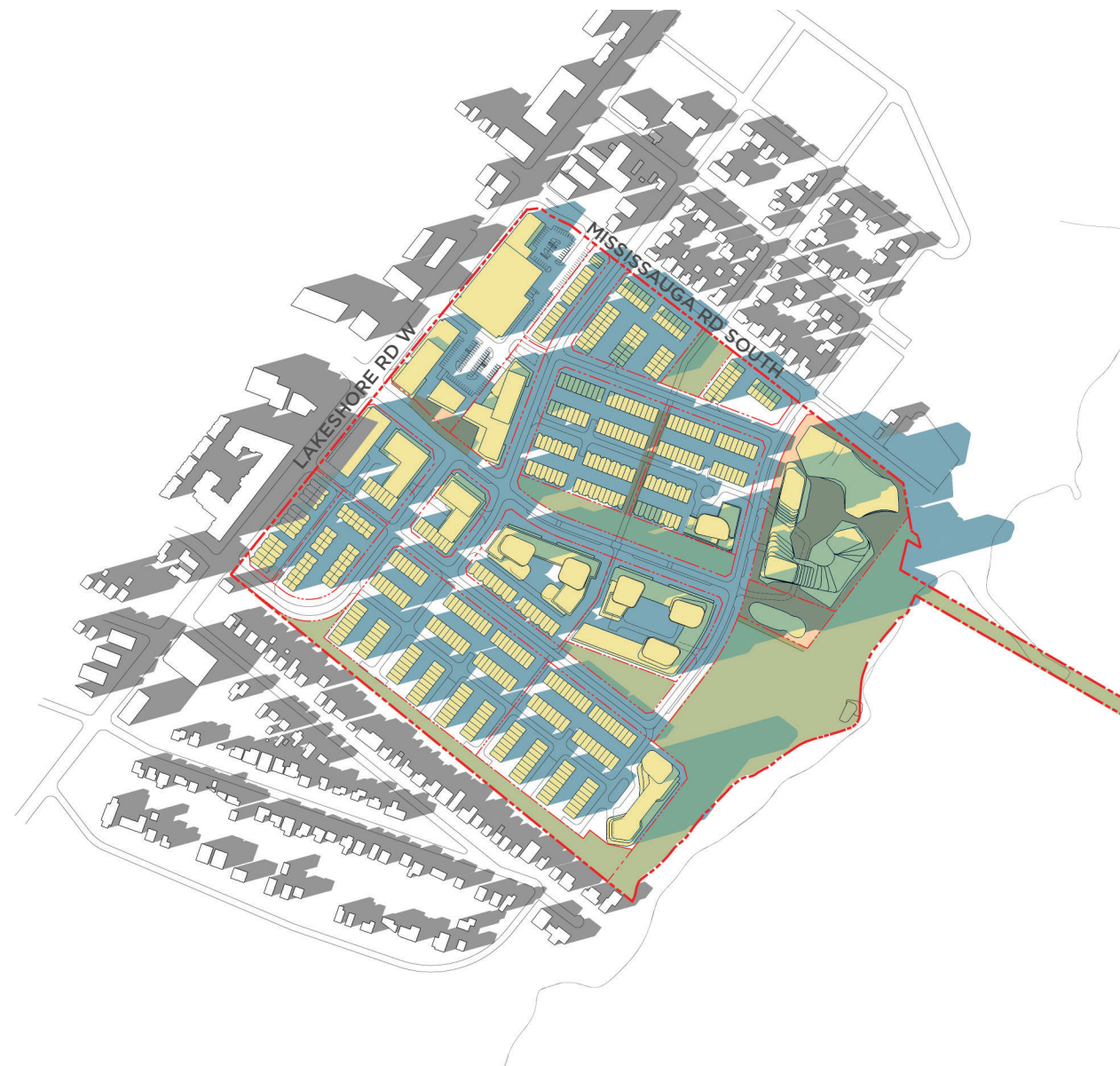
LEGEND

- CONTEXT MASSING SHADOW
- PROPOSED MASSING SHADOW
- PROPOSED MASSING
- PARK SPACE
- POPS

WEST VILLAGE LANDS

SHADOW STUDY PROPOSED: SEPT 21 [UTC -4]

Giannone Petricone Associates



SEPT 21 17:48

LEGEND

CONTEXT MASSING SHADOW
 PROPOSED MASSING SHADOW
 PROPOSED MASSING
 PARK SPACE
 POPS

WEST VILLAGE LANDS

SHADOW STUDY PROPOSED: SEPT 21 [UTC -4]

Giannone Petricone Associates

14

2018-11-02



DEC 21 09:19



DEC 21 10:17



LEGEND

- CONTEXT MASSING SHADOW
- PROPOSED MASSING SHADOW
- PROPOSED MASSING
- PARK SPACE
- POPS

WEST VILLAGE LANDS

SHADOW STUDY PROPOSED: DEC 21 [UTC -5]

Giannone Petricone Associates

15

2018-11-02



DEC 21 11:17



DEC 21 12:17

LEGEND

- CONTEXT MASSING SHADOW
- PROPOSED MASSING SHADOW
- PROPOSED MASSING
- PARK SPACE
- POPS

WEST VILLAGE LANDS

SHADOW STUDY PROPOSED: DEC 21 [UTC -5]

Giannone Petricone Associates

16

2018-11-02



DEC 21 13:17



DEC 21 14:17

LEGEND

- CONTEXT MASSING SHADOW
- PROPOSED MASSING SHADOW
- PROPOSED MASSING
- PARK SPACE
- POPS

WEST VILLAGE LANDS

SHADOW STUDY PROPOSED: DEC 21 [UTC -5]

Giannone Petricone Associates

17

2018-11-02



DEC 21 15:15

LEGEND

- | | | | | | | | | | |
|---|------------------------|---|-------------------------|---|------------------|---|------------|---|------|
|  | CONTEXT MASSING SHADOW |  | PROPOSED MASSING SHADOW |  | PROPOSED MASSING |  | PARK SPACE |  | POPS |
|---|------------------------|---|-------------------------|---|------------------|---|------------|---|------|

WEST VILLAGE LANDS

SHADOW STUDY PROPOSED: DEC 21 [UTC -5]

Giannone Petricone Associates

18

2018-11-02

Purpose of the Shadow Study

A Shadow Study is required in support of this development application to demonstrate that the location and height of a proposed building, if greater than 10.7m, will not cause undue shade on the subject lands, and on the surrounding context, including building facades, private and public outdoor amenity and open spaces, public parkland, sidewalks and other components of the public realm. Shadow Studies illustrate the impact of development in terms of sun and daylight access to the surrounding context including, surrounding buildings, the public realm, public and private open space.

Mississauga’s terms of reference for Shadow Studies require development proponents to meet five criteria for the dates of June 21, September 21 (similar to March 21, and therefore, criteria for September 21 are deemed to apply to March 21), and December 21.

The five criteria are:

- 1. Ensure adequate sunlight on residential private outdoor amenity spaces
- 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.
- 3. Ensure adequate sunlight on the public realm including sidewalks, open spaces, parks and plazas to maximize their use during the shoulder seasons (spring and fall).
- 4. Ensure adequate sunlight on turf and flower gardens in public parks.
- 5. Ensure adequate sunlight on building faces to allow for the possibility of using solar energy.

This Shadow Study builds on the previous shadow study that was submitted in March, 2018 as part of a resubmission package. The changes in this study reflect the changes to building layout and open space design.

The Site

The subject site municipally known as 70 Mississauga Road South and 181 Lakeshore Road West is bounded by Lake Ontario to the south, Lakeshore Road West to the north, Mississauga Road South to the east and a residential neighbourhood fronting onto Pine Avenue south to the west. The geographic coordinate location of the site is latitude: 43.544 and longitude: 79.59.

The origin/source of the base plan was downloaded from the City of Mississauga’s website. Astro-nomic north was determined by using the base plan downloaded from the City and measured with SketchUp, a Computer Aid Design software.

Criteria 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.

Shadows produced by the proposed townhouses at 16 metres tall, preserves at least two hours of direct sunlight within the “No Impact Zone” on the adjacent private residential outdoor amenity spaces, northeast of Mississauga Road. A great amount of attention and consideration was given when determining the height and built form of the proposed townhouses fronting onto Mississauga Road South in order to prevent any undue shadow impacts onto the heritage neighbourhood opposite of the boulevard. This criterion is met as there are no shadowing on the “No Impact Zone” throughout the day on June 21 and September 21, an important attribute since residents may utilize their private outdoor amenity spaces during spring, summer, and fall.

Within the subject site, the proposed townhouses that have private front yards and rear yards remain well lit throughout the day on June 21, and September 21. Private front yards and rear yards share an equal distribution of sunlight throughout the day with front yards mainly being sunlit in the morning and rear yards mainly sunlit in the afternoon. This is ideal for residents since they will have the opportunity to utilize different outdoor amenity spaces at different time of the day.

Criteria 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, which applies to public amenity areas that are part of the proposed development, 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 does not cast any shadows on the adjacent J.C. Saddington Park, north-east of Mississauga Road South throughout the day on June 21. On September 21, shadowing only occurs onto the parking lots of the park in the late afternoon starting at 5:12pm. All of the amenity areas within JC Saddington Park including the playground, picnic area, and the open space plaza beside the pond have a Sun Access Factor of 1.0 which means none of the above mentioned spaces will be shadowed at any given time throughout the day. On December 21, the park remains fully sunlit until 1:17pm where shadowing starts to occur on the parking lot areas. It is important to note that the amenity spaces mentioned above maintains a Sun Access Factor of 1.0.

There are a number of proposed amenity areas throughout the subject site which provide residents and visitors a wide selection of outdoor space. These amenity areas remain well lit and have a Sun Access Factor of 0.5 or more on June 21, and September 21. On December 21, several outdoor amenity areas have a Sun Access Factor below 0.5, ranging from around 0.3 to 0.4. However, this matter is mitigated since nearby outdoor amenity areas with a Sun Access Factor of 0.5 or greater is close by and easily accessible.

Criteria 3: Ensure adequate sunlight on the public realm including sidewalks, open spaces, parks and plazas to maximize their use during the shoulder seasons (spring and fall).

a) STREETS
Low and medium density residential streets

Developments should be designed to allow full sunlight on the opposite boulevard including the full width of the sidewalk on September 21 as follows:
9:12 a.m., and 11:12 a.m.,
and at 3:12 p.m., and 5:12 p.m.

This criterion is met if there is no incremental shade from the proposed development at 9:12 a.m., 10:12a.m. and 11:12 a.m.,
And between 3:12 p.m., 4:12p.m., and 5:12 p.m.

Sidewalks on the opposite side of the proposed development on Mississauga Road South remain free from any incremental shadows from the proposed development. This criterion is met as the opposite sidewalk remain free from any incremental shadows between 9:12am and 11:12am, and between 3:12pm and 5:12pm.

Mixed use, commercial, employment, and high density residential streets

Developments should be designed to allow full sunlight on the opposite boulevard including the full width of the sidewalk on September 21 as follows:

For 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. and 11:12 a.m. or
3:12 p.m. and 5:12 p.m.

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

12:12 p.m. 1:12p.m. and 2:12 p.m.,

and three consecutive times either:

9:12 a.m., 10:12a.m. and 11:12 a.m.,
Or at 3:12 p.m., 4:12p.m. and 5:12 p.m.

The proposed development only casts shadow onto the opposite sidewalk north of Lakeshore Road West at 9:12am. From 10:12am onward, the sidewalk remains free from any shadow casted by the proposed development. This criterion is met as the opposite sidewalk remain free from any incremental shadows at 12:12pm, 1:12pm, 2:12pm, and three consecutive times from 3:12pm to 5:12pm.

b) Public Open Spaces, Parks and Plazas

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

As mentioned in criteria 2, the proposed development does not cast any shadows onto the adjacent J.C. Saddington Park, northeast of Mississauga Road South. With a Sun Access Factor of 1.0 on September 21, the park and amenity areas remain 100 percent sunlit throughout the day, and shadowing only occurs onto the parking lot in the late afternoon starting from 5:12pm.

Proposed public open spaces, parks and POPs within the subject site are strategically designed to capture as much sunlight as possible throughout the day. Therefore, all of the public open spaces, parks and POPs maintains a Sun Access Factor of 0.5 or greater on September 21. The only exception to this is block U and T which has a Sun Access Factor of 0.44. The reason is due to the fact that majority of the site is occupied by buildings and open spaces are interlaced between building footprints. This issue is mitigated thanks to the generous building steps back which provide ample of outdoor spaces for its users. This criterion is met with tremendous results due to the strategic placement of tall buildings and configuration of built form. As a result, majority of the open spaces and POPs has either achieved or close to achieving a 1.0 Sun Access Factor.

Criteria 4: Ensure adequate sunlight on turf and flower gardens in public parks.

Proposed developments should allow for adequate sunlight during the growing season from March to October by allowing for a minimum of 6 hours of direct sunlight on September 21.

This criterion is met if full sun is provided on any 7 test times on September 21, from 1.5 hours after sunrise to 1.5 hours before sunset. As previously stated in Criteria 3, J.C. Saddington Park will remain nearly 100% sunlit during the test period on June 21 and September 21 (including March 21). The proposed development would not cast undue shadows onto the turf and flower gardens within the park, which allows for adequate sunlight during the growing season from March to October.

At this stage of the design process, landscape such as turf and flower garden locations within the proposed open spaces, parks, and POPs have not yet been determined. However, with majority of the proposed public open spaces, parks, and POPs achieving, or close to achieving a Sun Access Factor of 1.0, shadowing will be very limited. Therefore, this criterion is met since sun is provided at any of the 7 test times on September 21. Future landscaping features and plants will have sufficient sunlight to grow and flourish.

Criteria 5: Ensure adequate sunlight on building faces to allow for the possibility of using solar energy.

This criterion is met if there is shadow impact for 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.

As mentioned in Criteria 1, the shadow casted by the proposed townhouses do not encroach into the “No Impact Zone” on the heritage neighbourhood properties to the northeast of Mississauga Road South. The Shadow Study analysis demonstrates that this criterion is met as the proposed development do not shadow on the roofs, front, rear and exterior side walls of adjacent low-rise residential buildings to the north during the test period on September 21. Minor shadowing only occur onto the front yard on 3 of the 13 houses at 5:12pm on September 21.

Within the subject site, the roofs of the proposed townhouses remain relatively free from shadows casted by the proposed towers. Shadowing onto the townhouses in block Q only occurs briefly in the afternoon and the duration is no more than two consecutive hourly test times.