

BDP. Quadrangle

Date: 11 January 2021

Project: Elia Lands
Mississauga, Ontario

Prepared By: Soha Shafiei Ardestani

Sun/Shadow Study

Sun angles used in this study are based on the latitude and longitude of the proposed development at 25, 35 and 55 Elia Avenue (Block 1), 136 Eglinton Avenue East (Block 2), 105 Elia Avenue (Block 3), 4615 Hurontario Street (Block 4), and 110 Elia Avenue (Block 5) in Mississauga, Ontario, as follows:

Latitude: 43° 36' 19.47" N

Longitude: 79° 39' 0.03" W

The base plan was derived from the site survey dated 9 October 2020, prepared by J.H. Gelbloom Surveying Limited) and from Google Earth images. The drawing was imported into SketchUp to develop the context model. The context model was imported to Revit and developed into a 3D mapping model showing the context and the proposed buildings.

The key plan on Page 2 shows the areas surrounding the proposed development that were included in the study as set out in the "Standards for Shadow Studies" of the City of Mississauga dated June 2014.

Pages 3 to 23 of the study show the existing shadows of the surrounding context, incremental shadows of the proposed development and the as-of-right shadows for the development.

- Pages 3 to 11 of the study show the shadows on 21 June at the following times: 05:37, 07:07, 07:20, 08:20, 09:20, 10:20, 11:20, 12:20, 13:20 (Solar Noon), 14:20, 15:20, 16:20, 17:20, 18:20, 19:20, 19:33 and 21:03.
- Pages 12 to 18 show shadows on 21 September at the following times: 07:05, 08:35, 09:12, 10:12, 11:12, 12:12, 13:12 (Solar Noon), 14:12, 15:12, 16:12, 17:12, 17:48 and 19:18.
- Pages 19 to 23 show the shadows on 21 December at the following times: 07:49, 09:19, 10:17, 11:17, 12:17 (Solar Noon), 13:17, 14:17, 15:15 and 16:45.

Areas Analyzed and Reviewed for Shadow Impact Criteria

1 Residential Private Outdoor Amenity Spaces

Study images were analyzed for shadow impacts on residential private outdoor amenity spaces as below:



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Townhouses 130 to 146 (east side of Block 2)

Townhouses 130 to 146 were analyzed to evaluate the feasibility of using solar energy on building faces. The shadow impact criteria were met for 21 June as the no-impact zone was impacted for no more than two consecutive hourly test times. The shadow impact criteria were not met for 21 September as the no-impact zone was impacted for more than two consecutive hourly test times. These townhouses were impacted from 1:12 pm to 5:48 pm from the proposed shadow and as-of-right shadow on 21 September.

Townhouses 148 to 166 (east side of Block 2)

Townhouses 148 to 166 were analyzed to evaluate the feasibility of using solar energy on building faces. The shadow impact criteria were not met on 21 June and 21 September as the no-impact zone was impacted for more than two consecutive hourly test times. These townhouses were impacted from 3:20 pm to 7:33 pm on 21 June and from 1:12 pm to 5:48 pm on 21 September from the proposed shadow and as-of-right shadows.

Townhouses 168 to 180 (east side of Block 2)

Townhouses 168 to 180 were analyzed to evaluate the feasibility of using solar energy on building faces. The shadow impact criteria were not met as the no-impact zone was impacted for more than two consecutive hourly test times on 21 June and 21 September. These townhouses were impacted from 3:20 pm to 7:33 pm on 21 June and from 1:12 pm to 5:48 pm on 21 September from the proposed shadow and as-of-right shadows.

4880-4898 James Austin Drive (east side of Block 3)

4880-4898 James Austin Drive was analyzed to evaluate the feasibility of using solar energy on building faces. The shadow impact criteria was met on 21 June and 21 September as the no-impact zone was impacted for no more than two consecutive hourly test times. These townhouses were impacted from 6:20 pm to 7:33 pm on 21 June and from 4:12 pm to 5:48 pm on 21 September from the proposed shadow.

4902-4938 James Austin Drive (east side of Block 3)

4902-4920 James Austin Drive and 4924-4938 James Austin Drive were analyzed to evaluate the feasibility of using solar energy on building faces. The shadow impact criteria were not met on 21 June and 21 September as the no-impact zone was impacted for more than two consecutive hourly test times. These townhouses were impacted from 4:20 pm to 7:33 pm on 21 June and from 3:12 pm to 5:48 pm on 21 September from the proposed shadow and as-of-right shadows.

4850-4868 James Austin Drive (east side of Block 5)

4850 to 4868 James Austin Drive was analyzed to evaluate the feasibility of using solar energy on building faces. The shadow impact criteria were met on 21 June and 21 September as the no-impact



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zone was impacted for no more than two consecutive hourly test times. These townhouses were impacted from 6:20 pm to 7:33 pm on 21 June and from 4:12 pm to 5:48 pm on 21 September.

4828-4846 James Austin Drive (east side of Block 5)

4828 to 4846 James Austin Drive was analyzed to evaluate the feasibility of using solar energy on building faces. The shadow impact criteria were met as the no-impact zone was impacted for no more than two consecutive hourly test times. These townhouses were impacted from 7:20 pm to 7:33 pm on 21 June and from 5:12 pm to 5:48 pm on 21 September.

2-54 Acorn Place (south side of Block 4)

2-54 Acorn Place was analyzed to evaluate the feasibility of using solar energy on building faces. The shadow impact criteria were not met on 21 June as the no-impact zone was impacted for more than two consecutive hourly test times. The shadow impact criteria were met for 21 September as the no-impact zone was impacted for no more than two consecutive hourly test times. These townhouses were impacted from 4:20 pm to 7:33 pm on 21 June and from 4:12 pm to 5:48 pm on 21 September.

2 Communal Outdoor Amenity Area

Existing Children's Play Areas Surrounding the Proposed Development

The children's play areas highlighted in the key plan were reviewed to confirm a 50% sun access factor as part of the communal outdoor amenity areas. These areas were found to meet the criteria on 21 June, 21 September, and 21 December, as the sun access factors were more than 50%.

Proposed Outdoor Amenity Area 1A

The proposed outdoor Amenity Area 1A at the podium roof of Building A in Block 1 was analyzed to confirm a 50% sun access factor as part of the communal outdoor amenity areas. This area was found to meet the criteria on 21 June, but this area was slightly below the criteria on 21 September and 21 December, as the sun access factors were less than 50%. Shadows cast by the proposed development resulted in a sun access factor of 68% on 21 June, 49% on 21 September and 41% on 21 December for Amenity Area 1A.

Proposed Outdoor Amenity Area 1B

The proposed outdoor Amenity Area 1B at the podium roof of Building B in Block 1 was analyzed to confirm a 50% sun access factor as part of the communal outdoor amenity areas. This area was found to meet the criteria on 21 June, but this area was just below the criteria on 21 September and 21 December, as the sun access factors were less than 50%. Shadows cast by the proposed development resulted in a sun access factor of 63% on 21 June, 49% on 21 September and 38% on 21 December for Amenity Area 1B. The amount of sunlight (38%) on 21 December is acceptable as the outdoor amenity space is largely shadowed by existing building and will not be heavily used in the winter months.



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Proposed Outdoor Amenity Area 2A

The proposed outdoor Amenity Area 2A at the podium roof of Building A in Block 2 was analyzed to confirm a 50% sun access factor as part of the communal outdoor amenity areas. This area was found to meet the criteria on 21 June and 21 September, but this area was below the criteria on 21 December, as the sun access factors were less than 50%. Shadows cast by the proposed development resulted in a sun access factor of 71% on 21 June, 50% on 21 September and 35% on 21 December for Amenity Area 2A. This area meets the criteria at the time of year that the amenity area will be most heavily used.

Proposed Outdoor Amenity Area 2B

The proposed outdoor Amenity Area 2B at the podium roof of Building B in Block 2 was analyzed to confirm a 50% sun access factor as part of the communal outdoor amenity areas. This area was found to meet the criteria on 21 June and 21 September, but this area was below the criteria on 21 December, as the sun access factors were less than 50%. Shadows cast by the proposed development resulted in a sun access factor of 68% on 21 June, 56% on 21 September and 33% on 21 December for Amenity Area 2B. This area meets the criteria at the time of year that the amenity area will be most heavily used.

Proposed Outdoor Amenity Area 3A

The proposed outdoor Amenity Area 3A at the podium roof of Building A in Block 3 was analyzed to confirm a 50% sun access factor as part of the communal outdoor amenity areas. This area was found to meet the criteria on 21 June and 21 September, but this area was below the criteria on 21 December, as the sun access factors were less than 50%. Shadows cast by the proposed development resulted in a sun access factor of 71% on 21 June, 58% on 21 September and 35% on 21 December for Amenity Area 3A. This area meets the criteria at the time of year that the amenity area will be most heavily used.

Proposed Outdoor Amenity Area 3B

The proposed outdoor Amenity Area 3B at the podium roof of Building B in Block 3 was analyzed to confirm a 50% sun access factor as part of the communal outdoor amenity areas. This area was found to meet the criteria on 21 June and 21 September, but this area was below the criteria on 21 December, as the sun access factors were less than 50%. Shadows cast by the proposed development resulted in a sun access factor of 62% on 21 June, 60% on 21 September and 39% on 21 December for Amenity Area 3B. This area meets the criteria at the time of year that the amenity area will be most heavily used.

Proposed Outdoor Amenity Area 3C

The proposed outdoor Amenity Area 3C located at the courtyard of Block 3 was analyzed to confirm a 50% sun access factor as part of the communal outdoor amenity areas. This area was found to meet the criteria on 21 June and 21 September, but this area was below the criteria on 21 December, as the sun access factors were less than 50%. Shadows cast by the proposed development resulted in a sun access factor of 62% on 21 June, 62% on 21 September and less than 10% on 21 December for



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Amenity Area 3C. This area meets the criteria at the time of year that the amenity area will be most heavily used.

Proposed Outdoor Amenity Area 4A

The proposed outdoor Amenity Area 4A at podium roof of building A in Block 4 was analyzed to confirm a 50% sun access factor as part of the communal outdoor amenity areas. This area was found to meet the criteria on 21 June and 21 September, but this area was slightly below the criteria on 21 December, as the sun access factors were less than 50%. Shadows cast by the proposed development resulted in a sun access factor of 64% on 21 June, 62% on 21 September and 48% on 21 December for amenity area 4A. This area meets the criteria at the time of year that the amenity area will be most heavily used.

Proposed Outdoor Amenity Area 4B

The proposed outdoor Amenity Area 4B at the podium roof of Building B at Block 4 was analyzed to confirm a 50% sun access factor as part of the communal outdoor amenity areas. This area was found to meet the criteria on 21 June, 21 September and 21 December, as the sun access factors were more than 50%. Shadows cast by the proposed development resulted in a sun access factor of 57% on 21 June, 58% on 21 September and 53% on 21 December for Amenity Area 4B.

Proposed Outdoor Amenity Area 5A

The proposed outdoor Amenity Area 5A at the podium roof of Building A in Block 5 was analyzed to confirm a 50% sun access factor as part of the communal outdoor amenity areas. This area was found to meet the criteria on 21 June, 21 September and 21 December, as the sun access factors were more than 50%. Shadows cast by the proposed development resulted in a sun access factor of 74% on 21 June, 63% on 21 September and 58% on 21 December for Amenity Area 5A.

Conclusion

All outdoor amenity areas comply with the 50% criteria, except for some areas on 21 December.

3 Public Realm

Eglinton Avenue East Opposite Boulevard

The opposite boulevard on Eglinton Avenue East was analyzed to confirm adequate sunlight on sidewalks and boulevards in mixed-use, commercial, employment and high-density streets as part of the public realm. Although the opposite boulevard had full sunlight on four consecutive hourly test time on 21 September, between 2:12 pm to 5:48 pm, this area was below the shadow impact criteria as the opposite boulevard did not have full sunlight at 12:12 pm and 1:12 pm. There were shadow impacts cast from the proposed development from 9:12 am to 11:12 am. As-of-right shadows would have the same impact on the opposite boulevard.

Hurontario Street Opposite Boulevard



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The opposite boulevard on Hurontario Street was analyzed to confirm adequate sunlight on sidewalks and boulevards in mixed-use, commercial, employment and high-density streets as part of the public realm. The opposite boulevard was found to meet the criteria on 21 September as there were no incremental shadows from the proposed development at 10:12 am, to 11:12 am and 12:12 pm to 2:12 pm and 3:12 pm to 5:12 pm.

Proposed Public Park on south side of Block 3

The proposed public park on the south side of Block 3 was analyzed to confirm a 50% sun access factor as part of the public realm. The sun access factor for 21 September was 79% and significantly exceeds the criteria.

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Part of Block 1 = 25, 35, 55 Elia Avenue
Block 2 = 136 Eglinton East
Block 3 = 105 Elia Avenue
Block 4 = 4615 Hurontario Street
Block 5 = 110 Elia Avenue

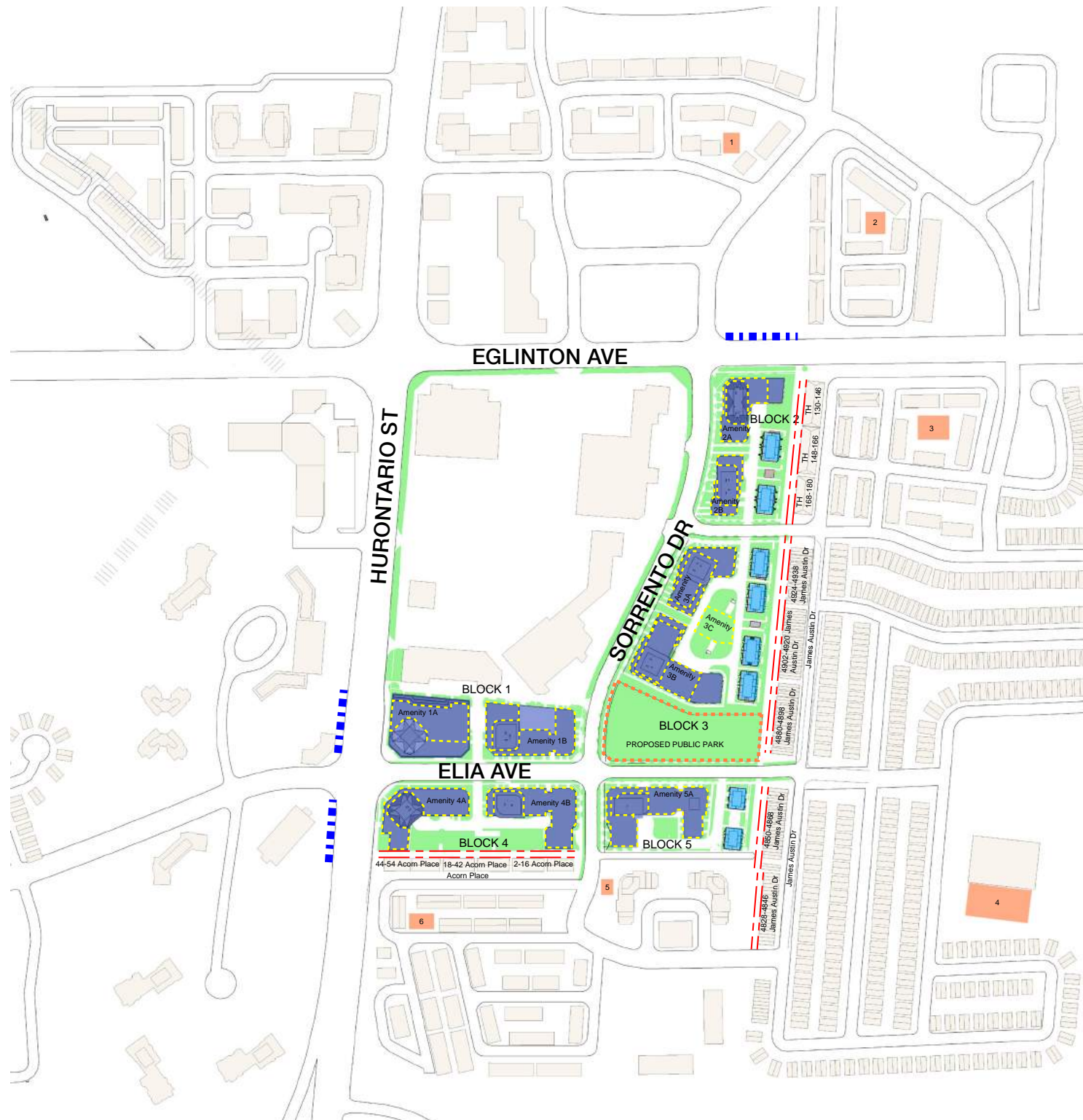
Mississauga, Ontario

Shadow Study

17 December 2020

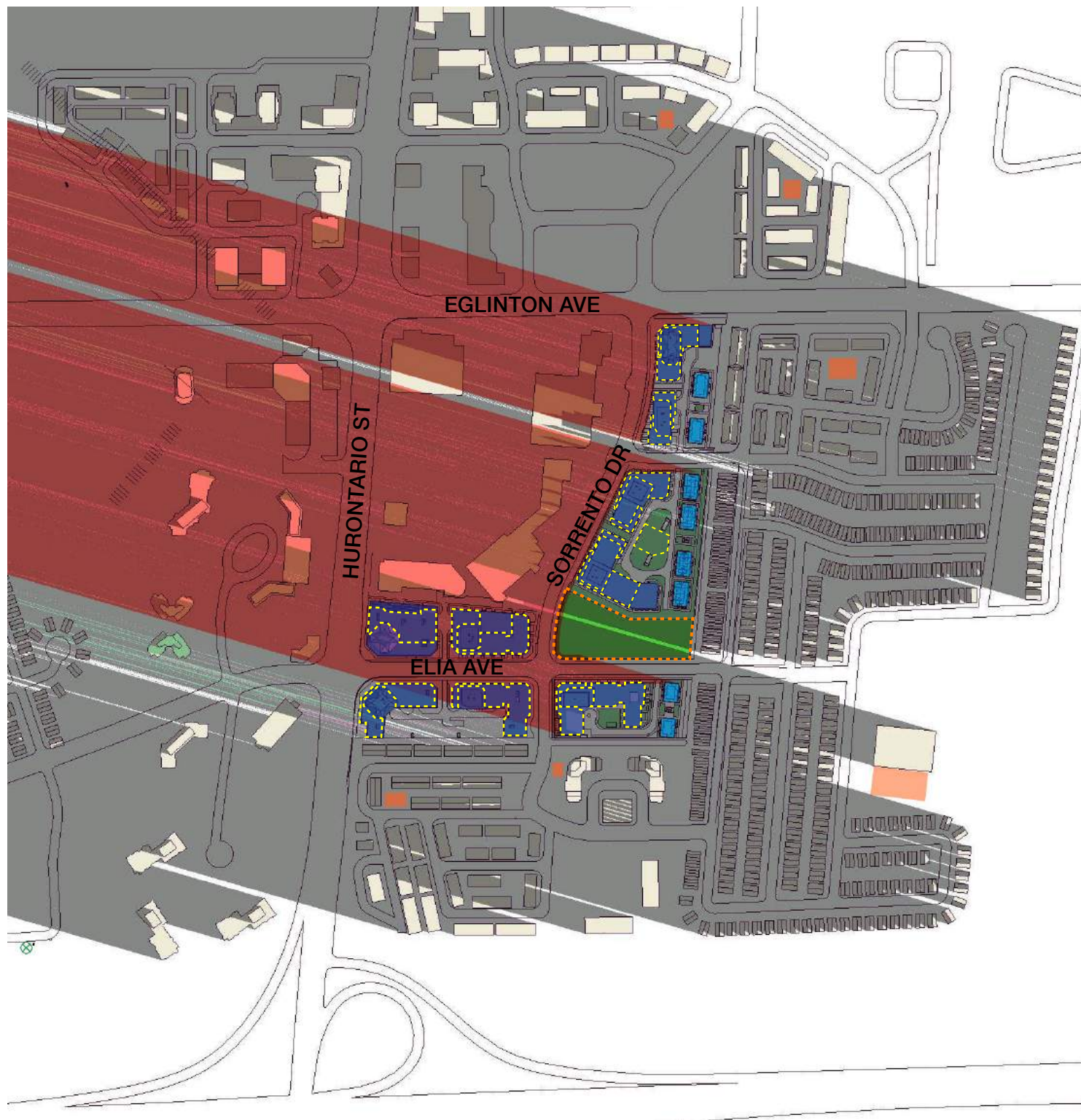
t 416 598 1240
www.bdpquadrangle.com

Quadrangle Architects Limited
901 King Street West, Suite 701
Toronto, ON M5V 3H5

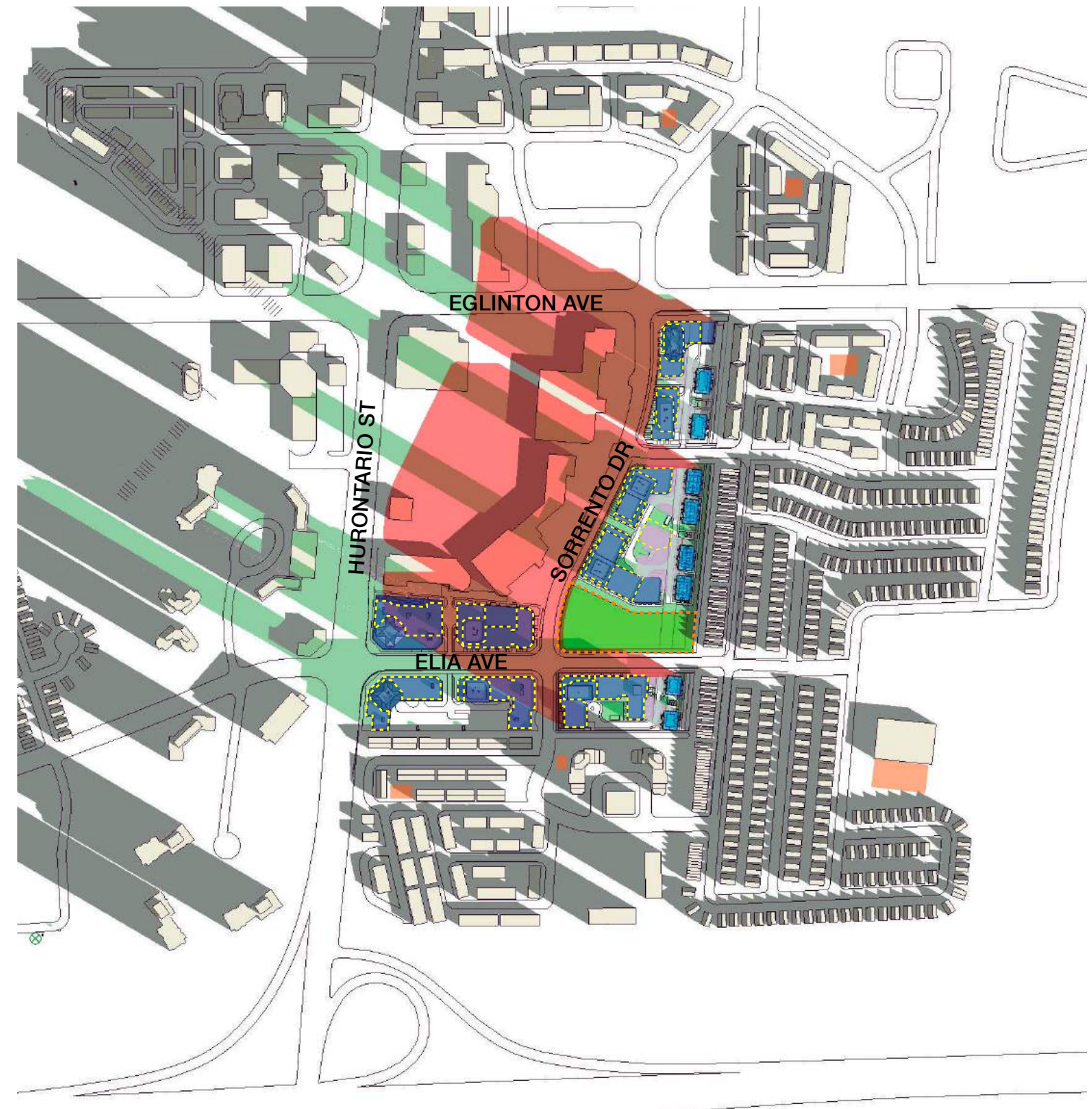


Key Plan

NOTE: Existing Building Existing Building Shadows Proposed Building Proposed Building Shadows Proposed Townhouse Shadow from Proposed Townhouse
 Opposite Boulevard Outdoor Amenity Park 7.5m (No Impact Zone) As-of-Right Playground/Park



June 21 - 5:37am



June 21 - 7:07am

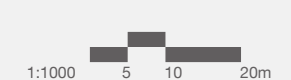
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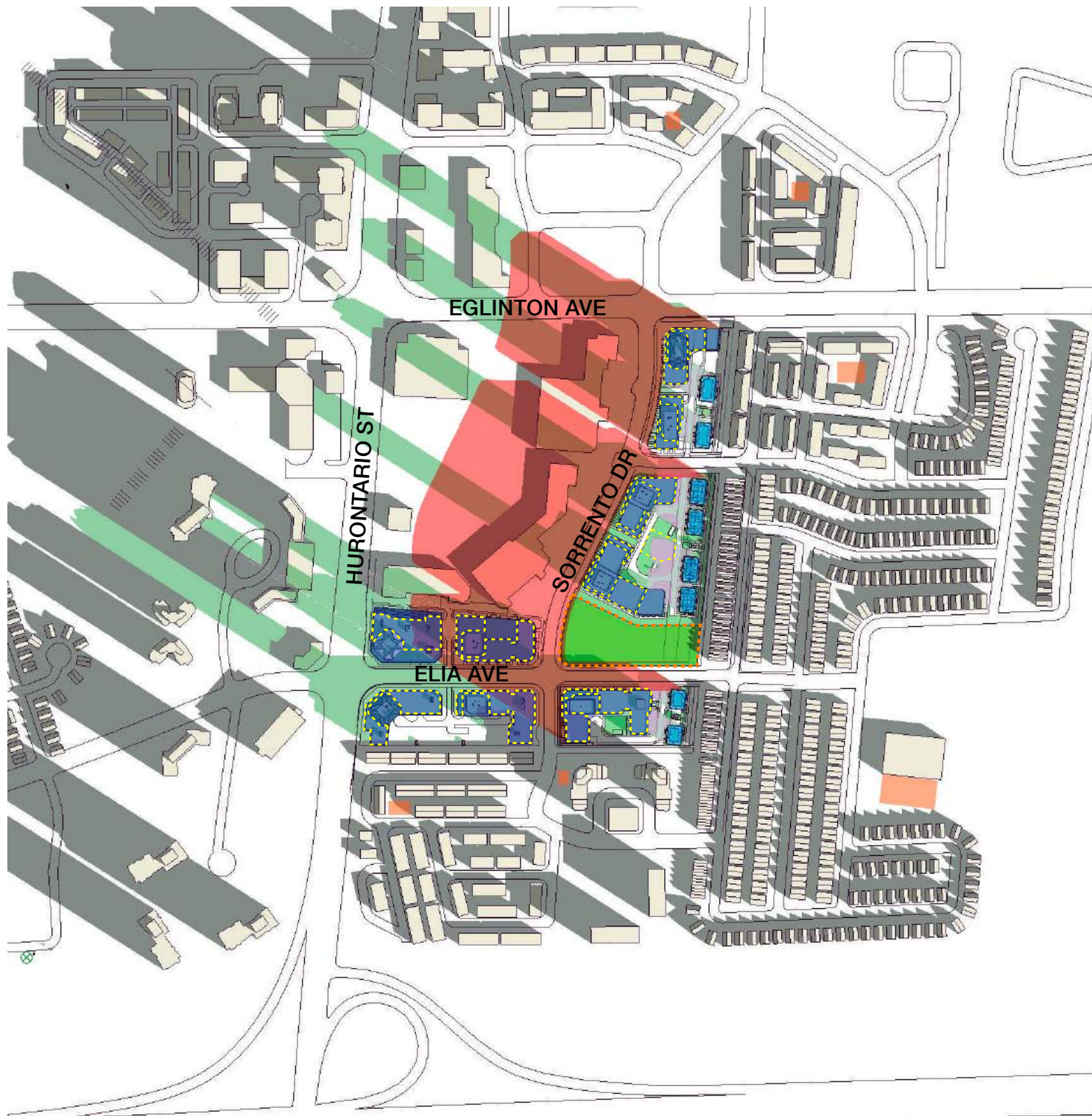
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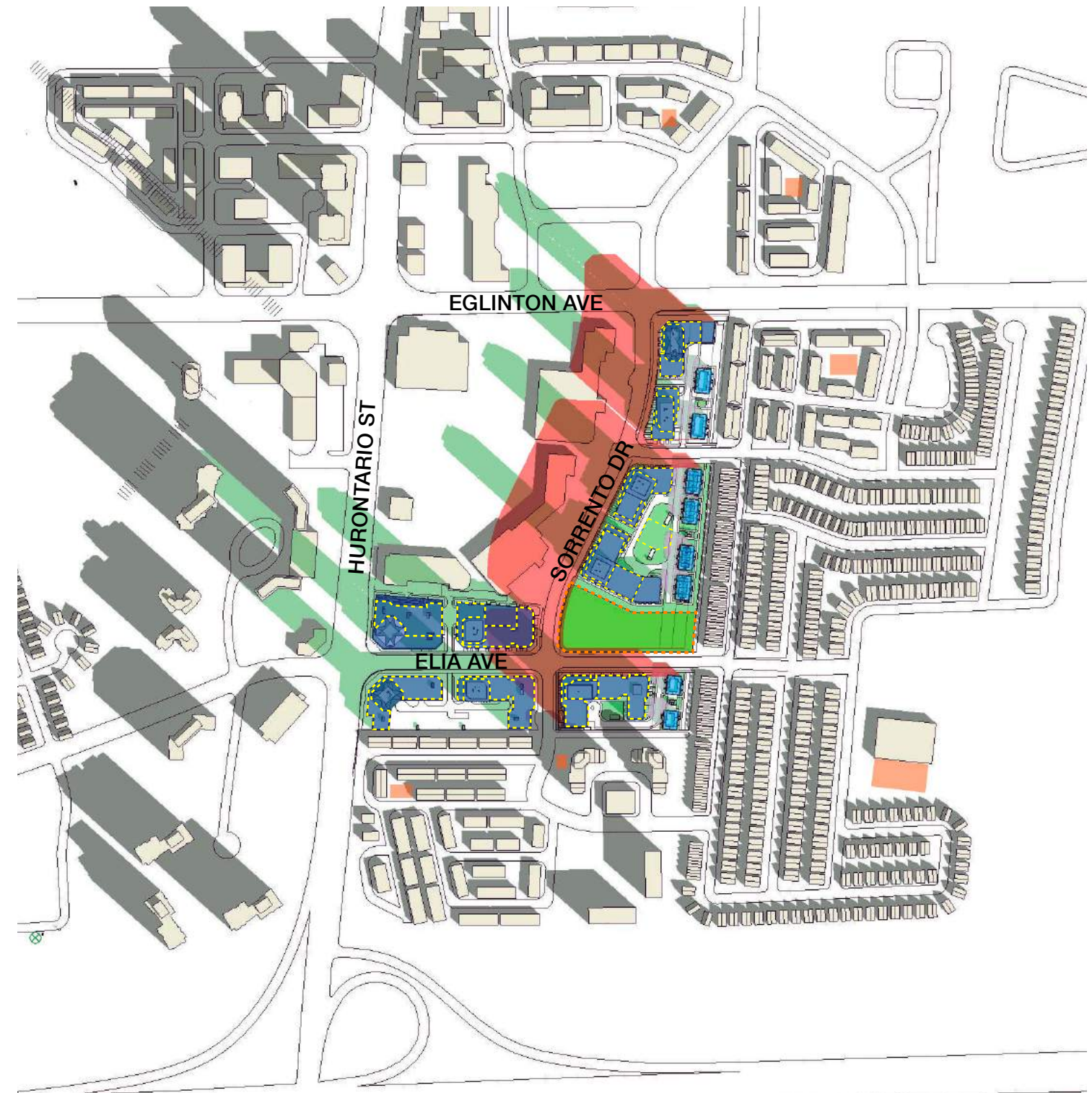
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Shadow Study



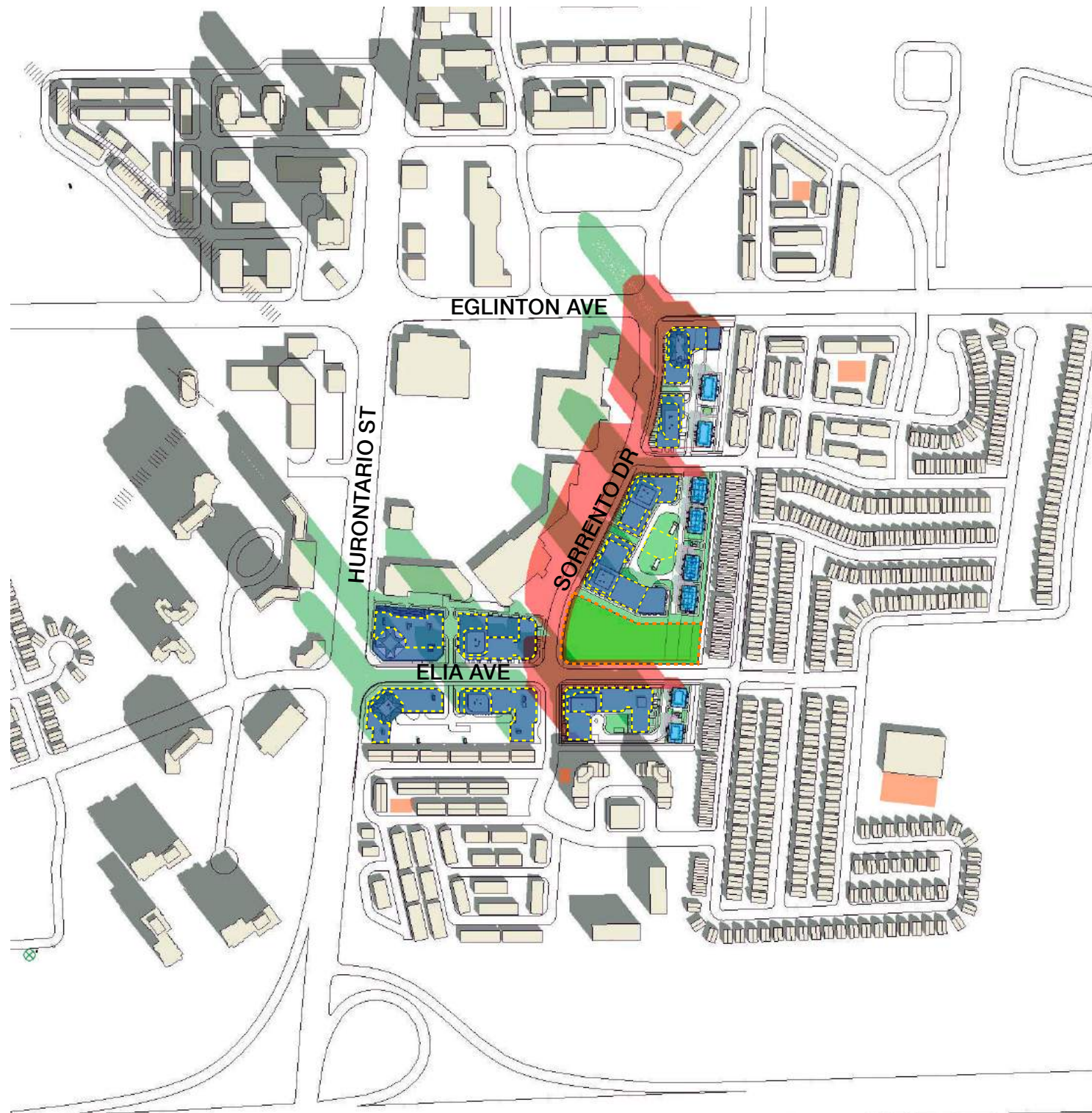


June 21 - 7:20am



June 21 - 8:20am

- NOTE:**
- Existing Building
 - Existing Building Shadows
 - Proposed Building
 - Proposed Building Shadows
 - Proposed Townhouse
 - Shadow from Proposed Townhouse
 - Opposite Boulevard
 - Outdoor Amenity
 - Park
 - 7.5m (No Impact Zone)
 - As-of-Right
 - Playground/Park



June 21 - 9:20am



June 21 - 10:20am

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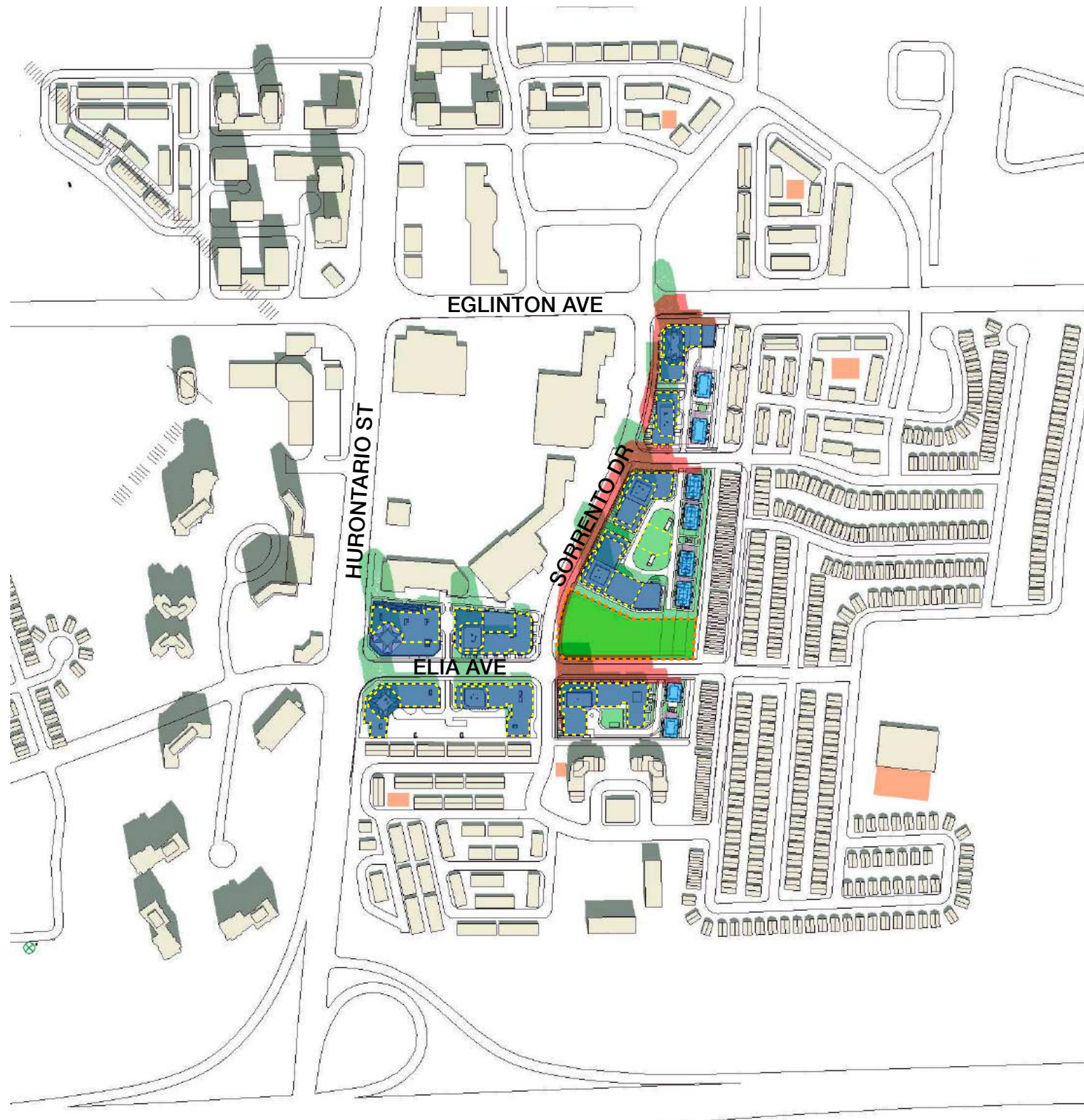
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June 21 - 11:20am



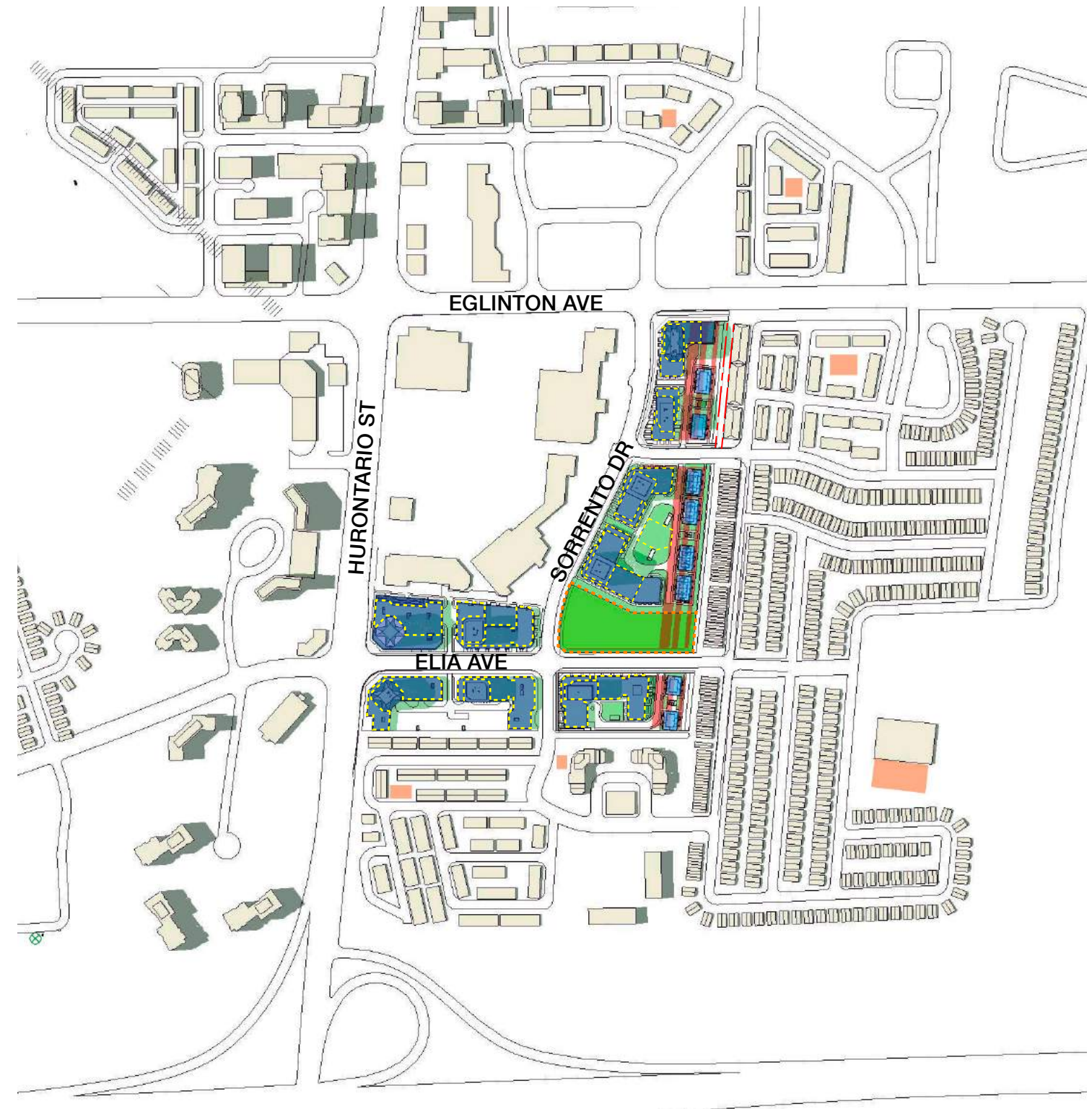
June 21 - 12:20pm

NOTE: Existing Building Existing Building Shadows Proposed Building Proposed Building Shadows Proposed Townhouse Shadow from Proposed Townhouse
 Opposite Boulevard Outdoor Amenity Park 7.5m (No Impact Zone) As-of-Right Playground/Park





June 21 - 1:20pm



June 21 - 2:20pm

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 Opposite Boulevard Outdoor Amenity Park 7.5m (No Impact Zone) As-of-Right Playground/Park

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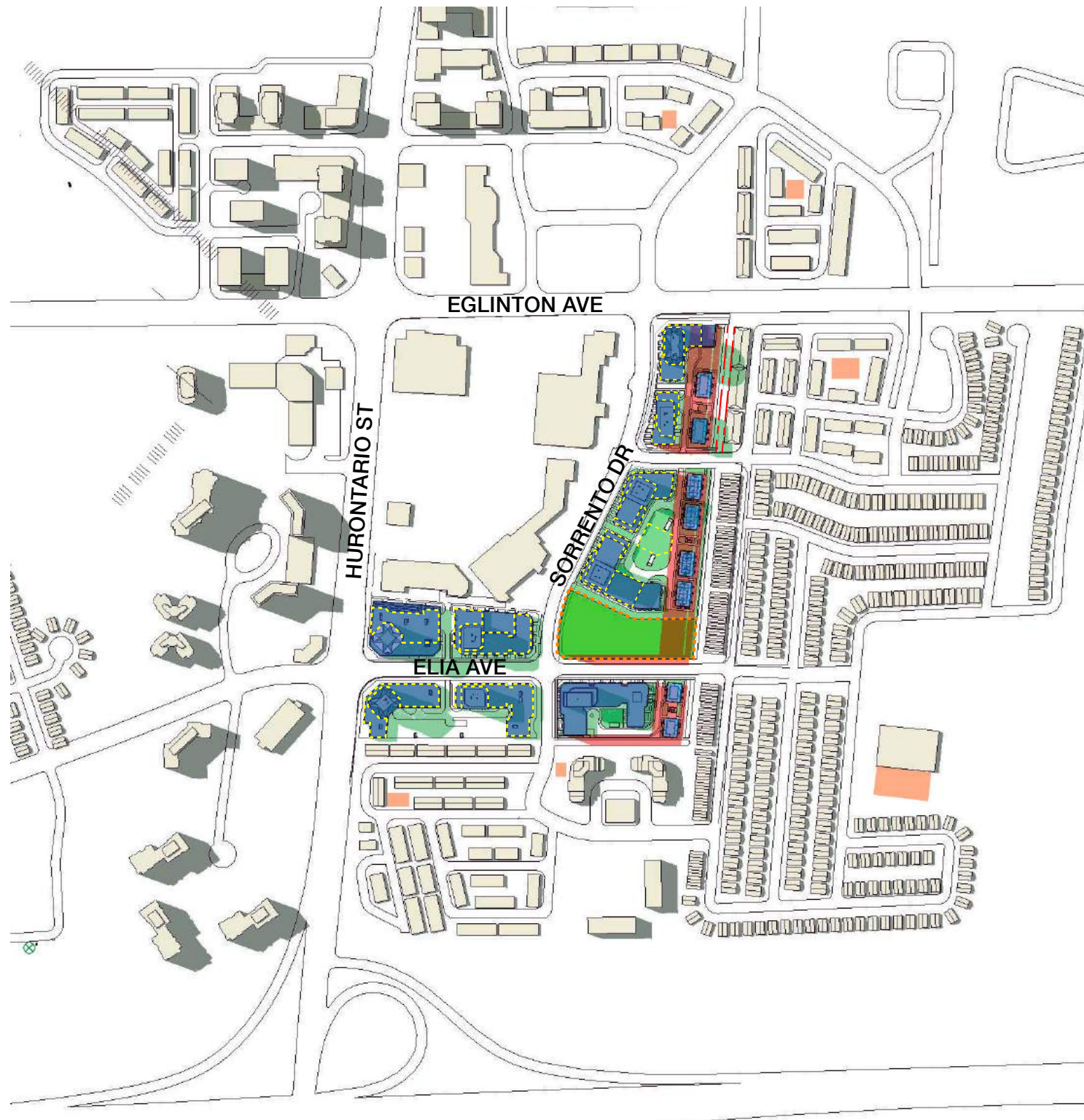
Elia Land

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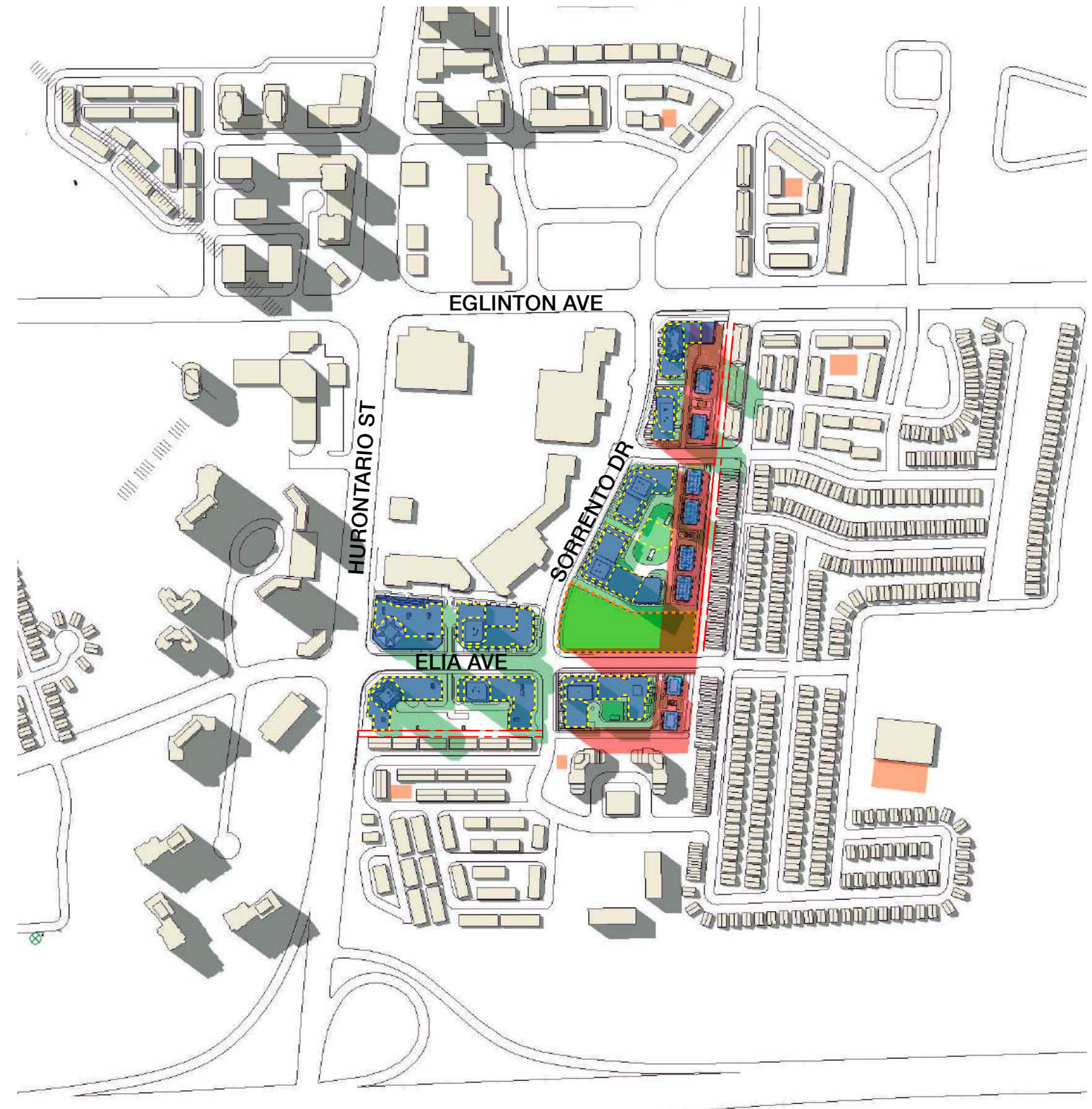
Shadow Study

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June 21 - 3:20pm



June 21 - 4:20pm

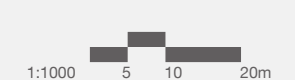
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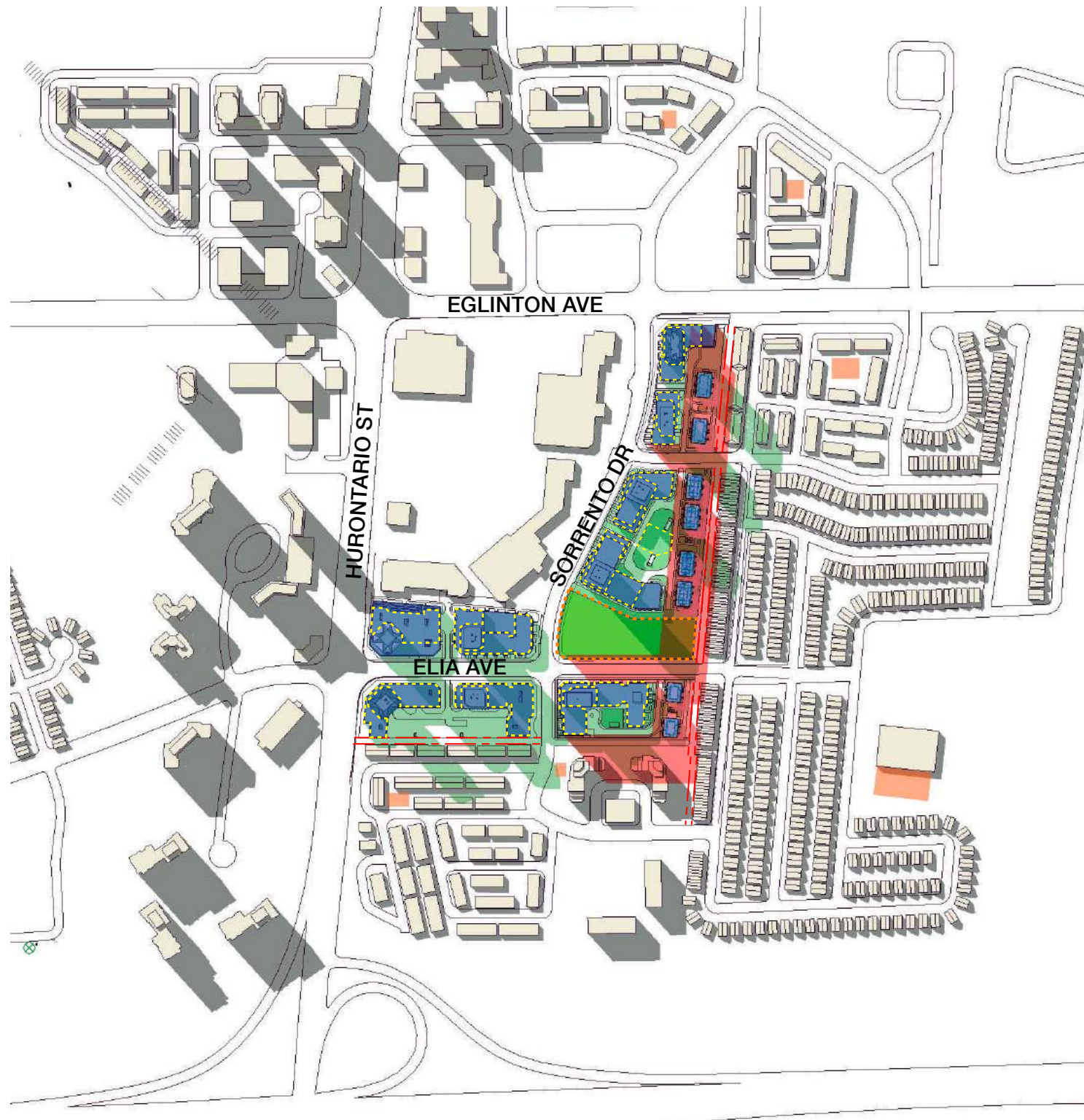
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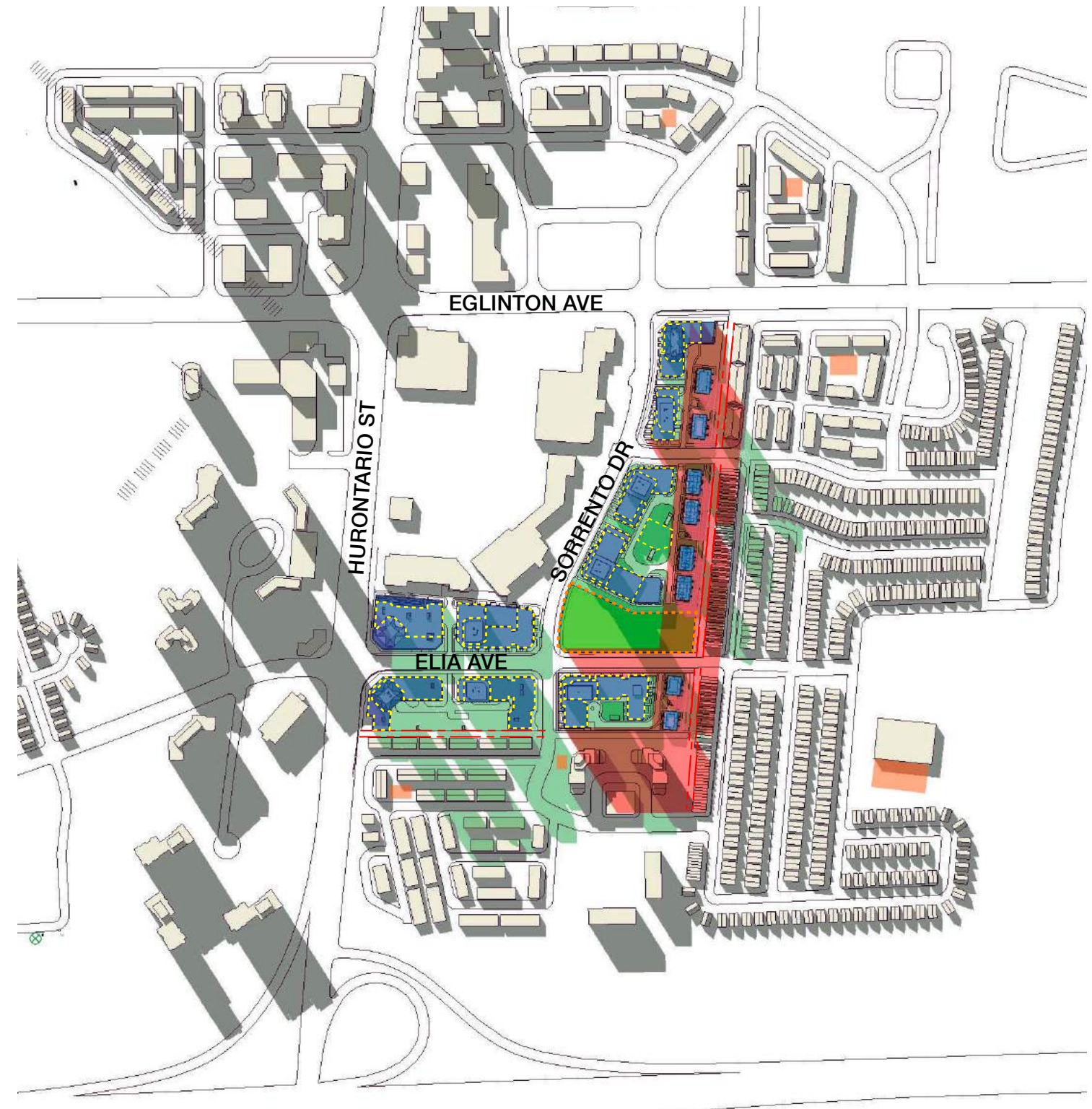
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 17 December 2020

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June 21 - 5:20pm



June 21 - 6:20pm

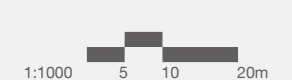
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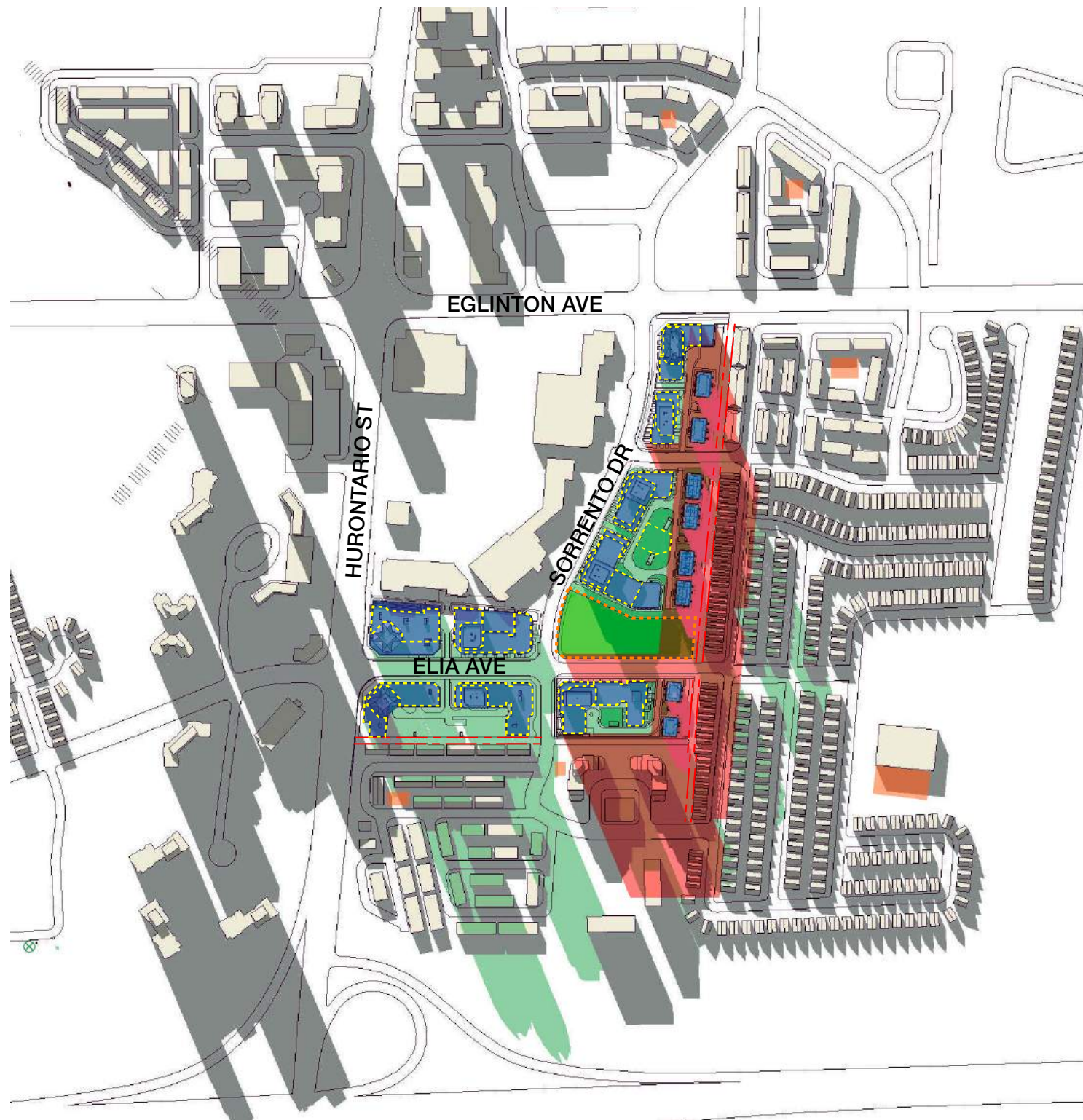
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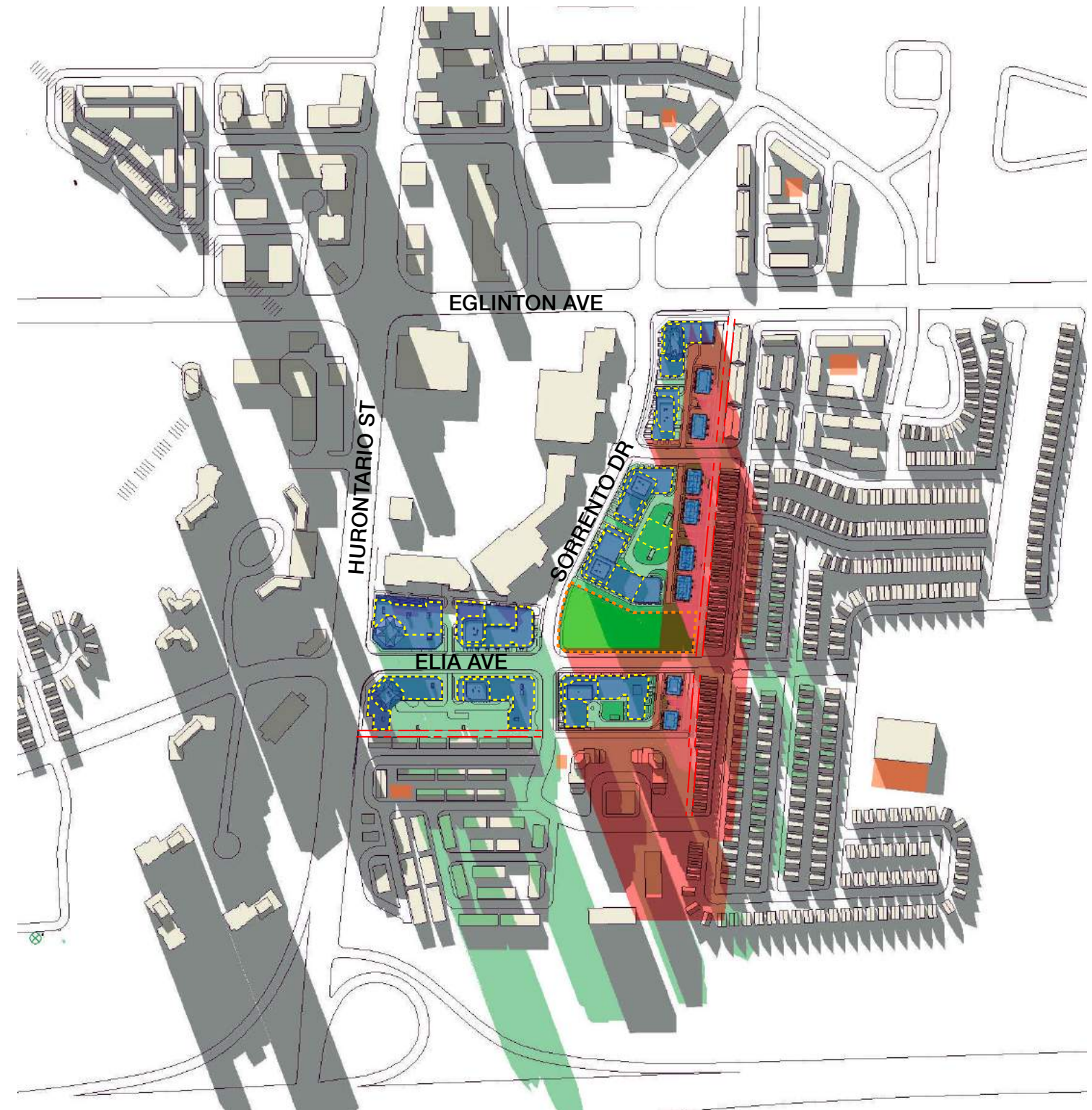
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Shadow Study





June 21 - 7:20pm



June 21 - 7:33pm

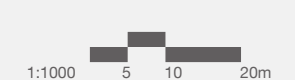
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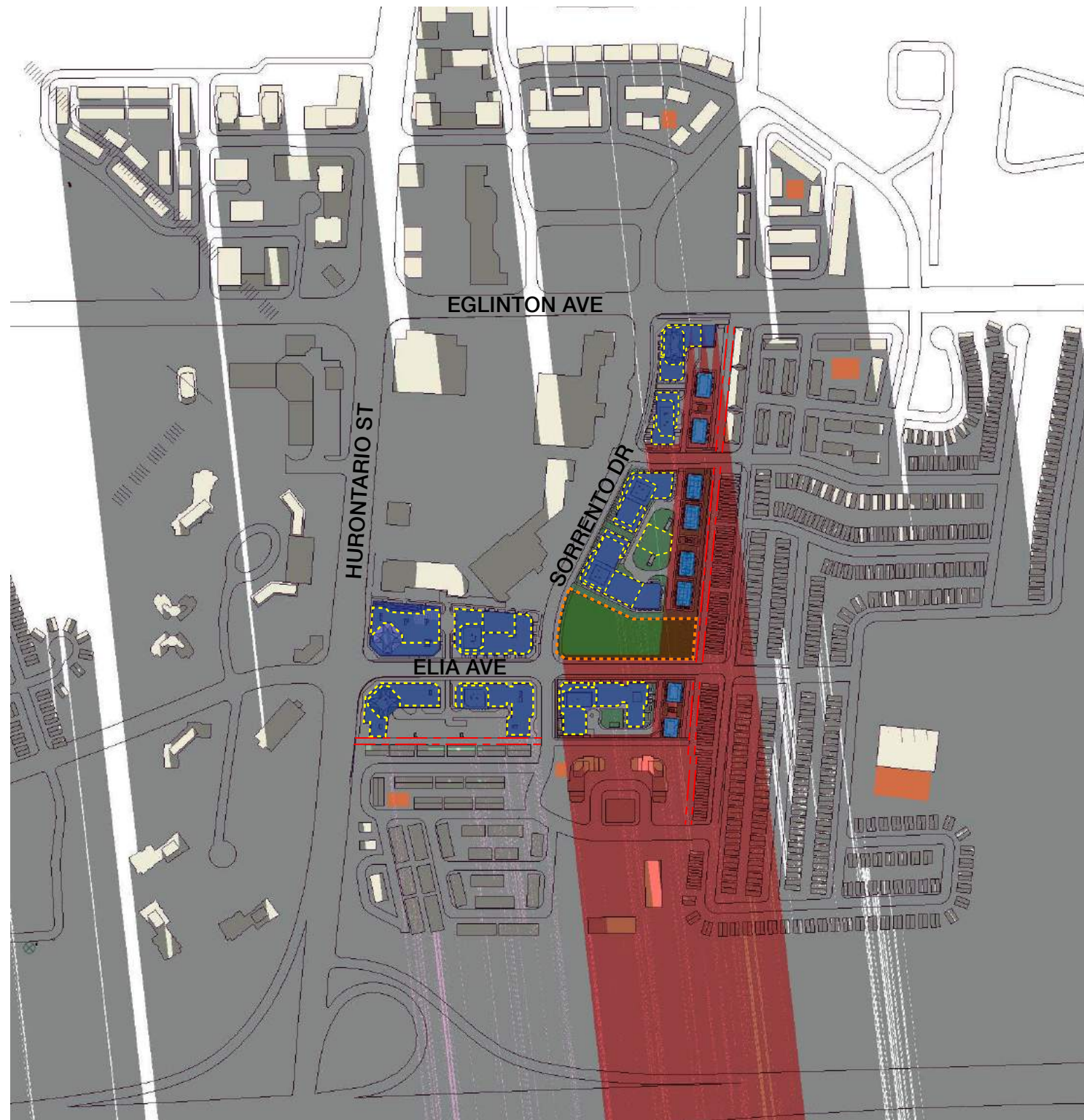
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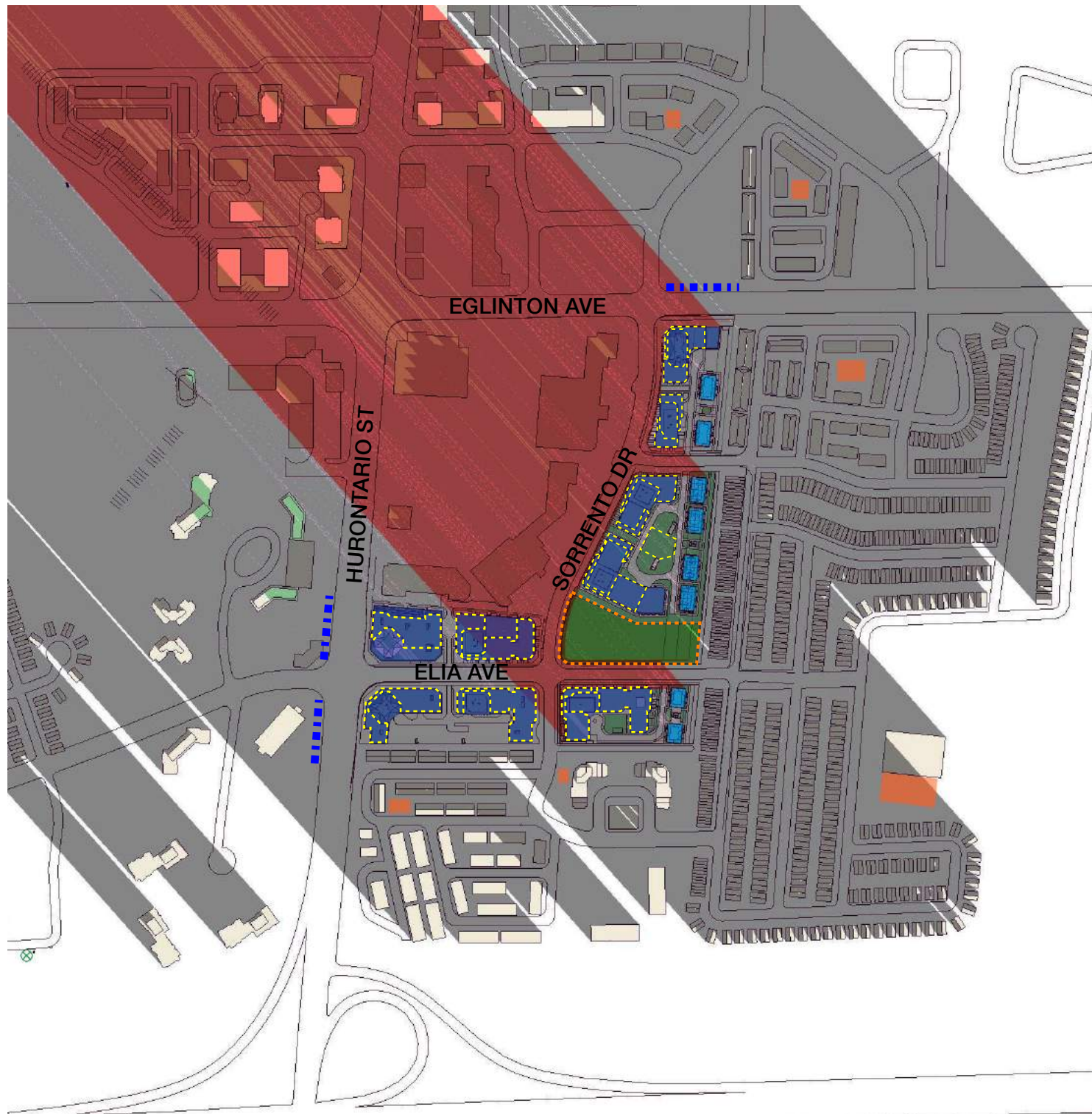




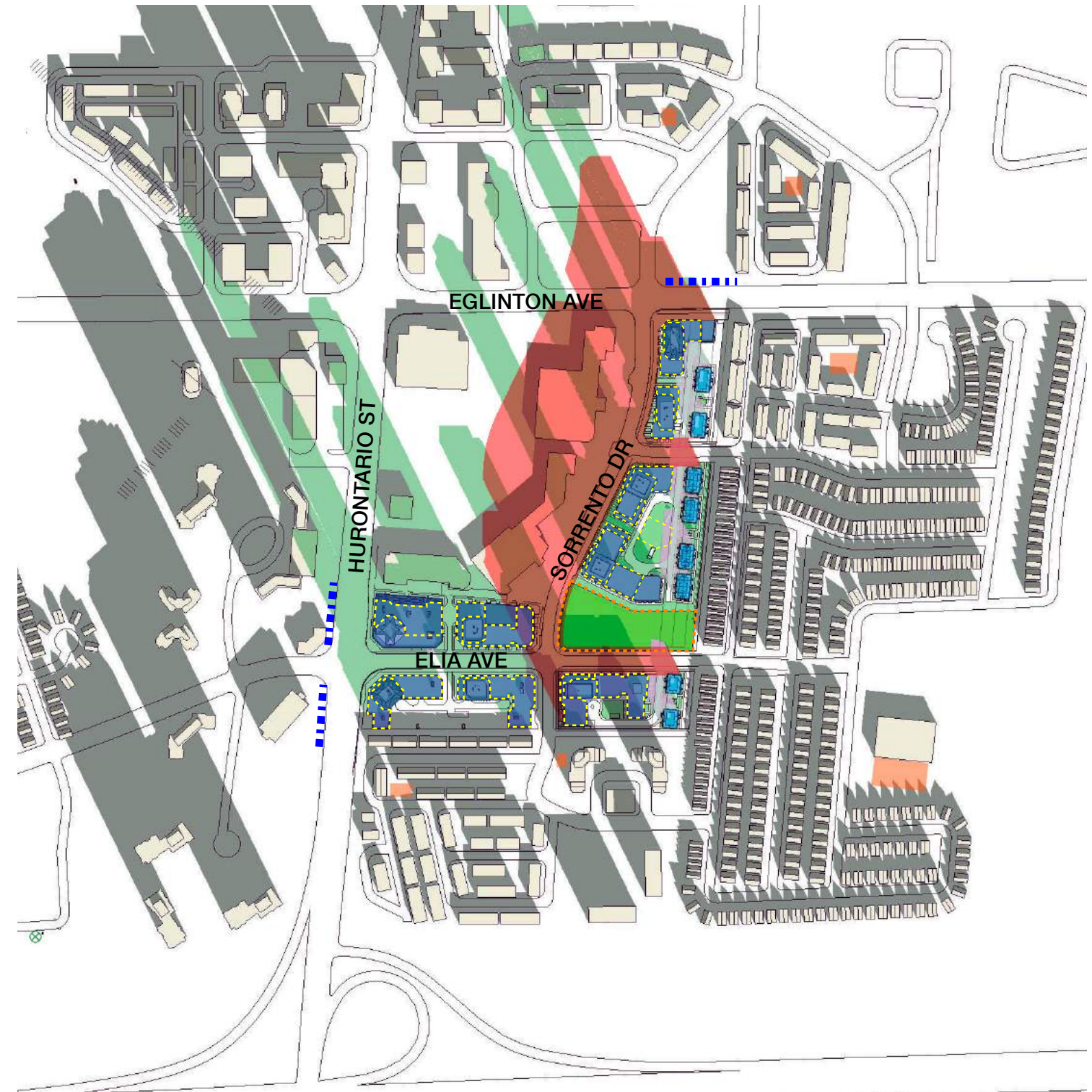
June 21 - 9:03pm

NOTE: Existing Building Existing Building Shadows Proposed Building Proposed Building Shadows Proposed Townhouse Shadow from Proposed Townhouse
 Opposite Boulevard Outdoor Amenity Park 7.5m (No Impact Zone) As-of-Right Playground/Park





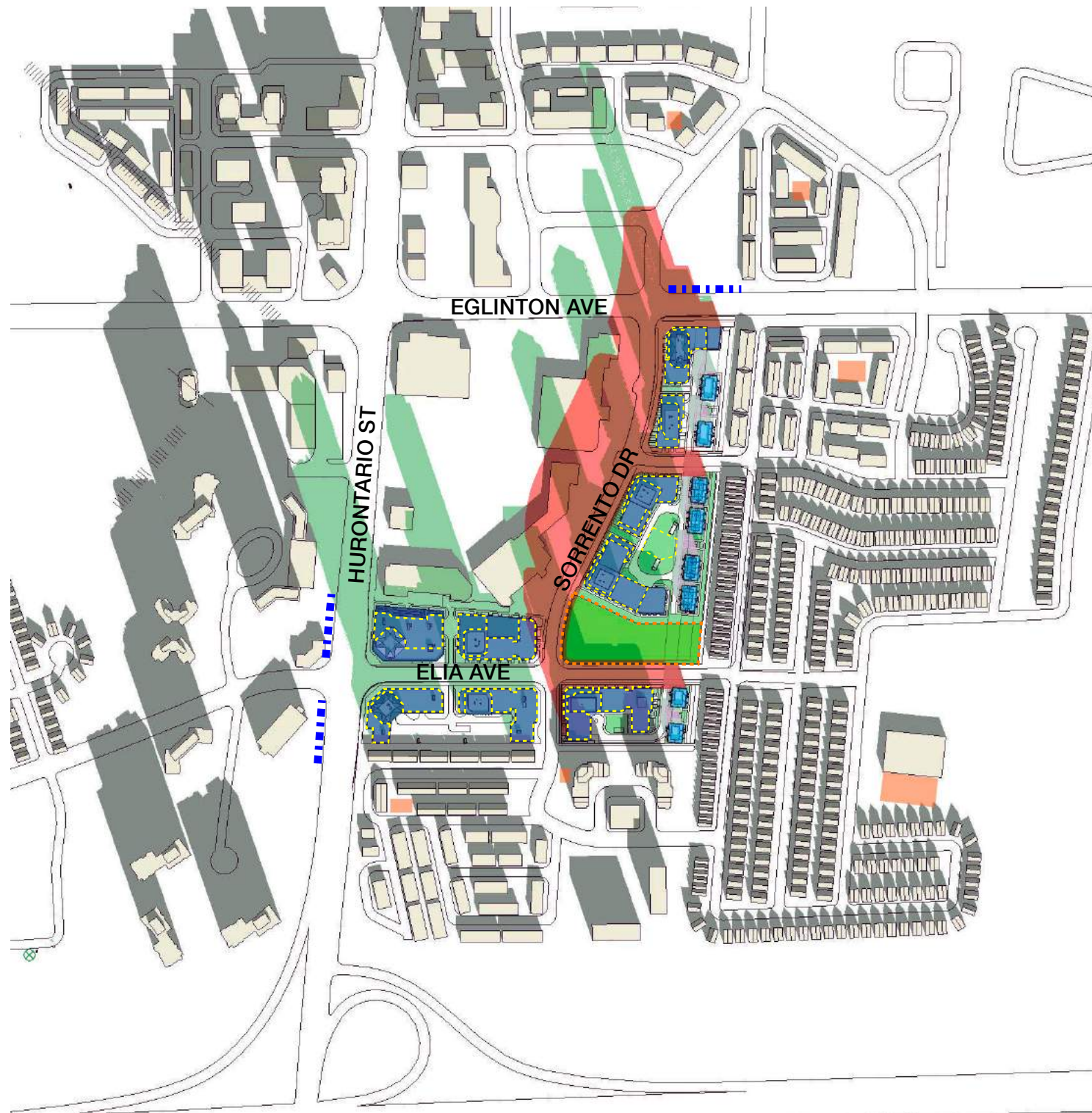
September 21 - 7:05am



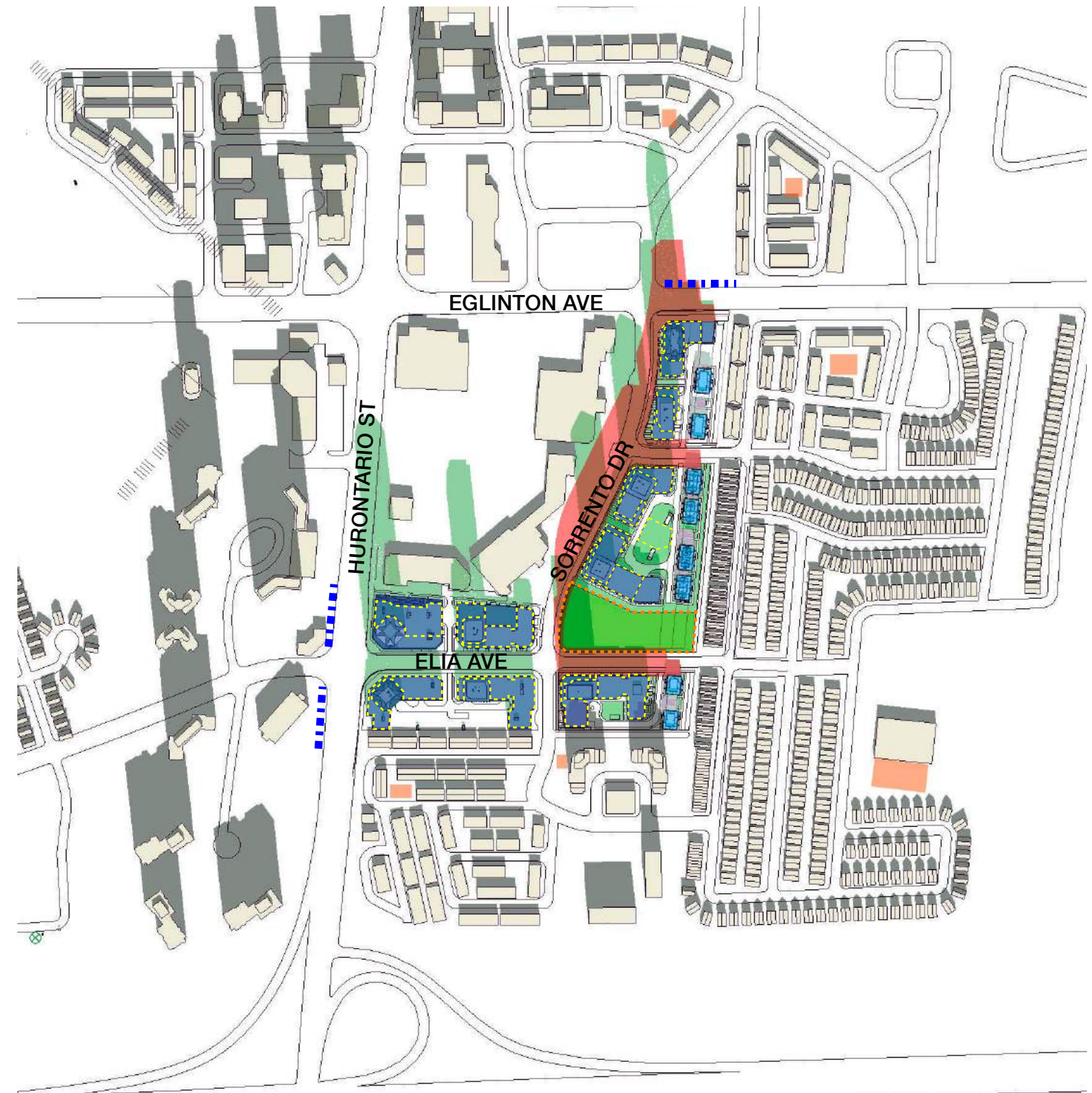
September 21 - 8:35am

NOTE: Existing Building Existing Building Shadows Proposed Building Proposed Building Shadows Proposed Townhouse Shadow from Proposed Townhouse
 Opposite Boulevard Outdoor Amenity Park 7.5m (No Impact Zone) As-of-Right Playground/Park





September 21 - 9:12am



September 21 - 10:12am

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Opposite Boulevard Outdoor Amenity Park 7.5m (No Impact Zone) As-of-Right Playground/Park

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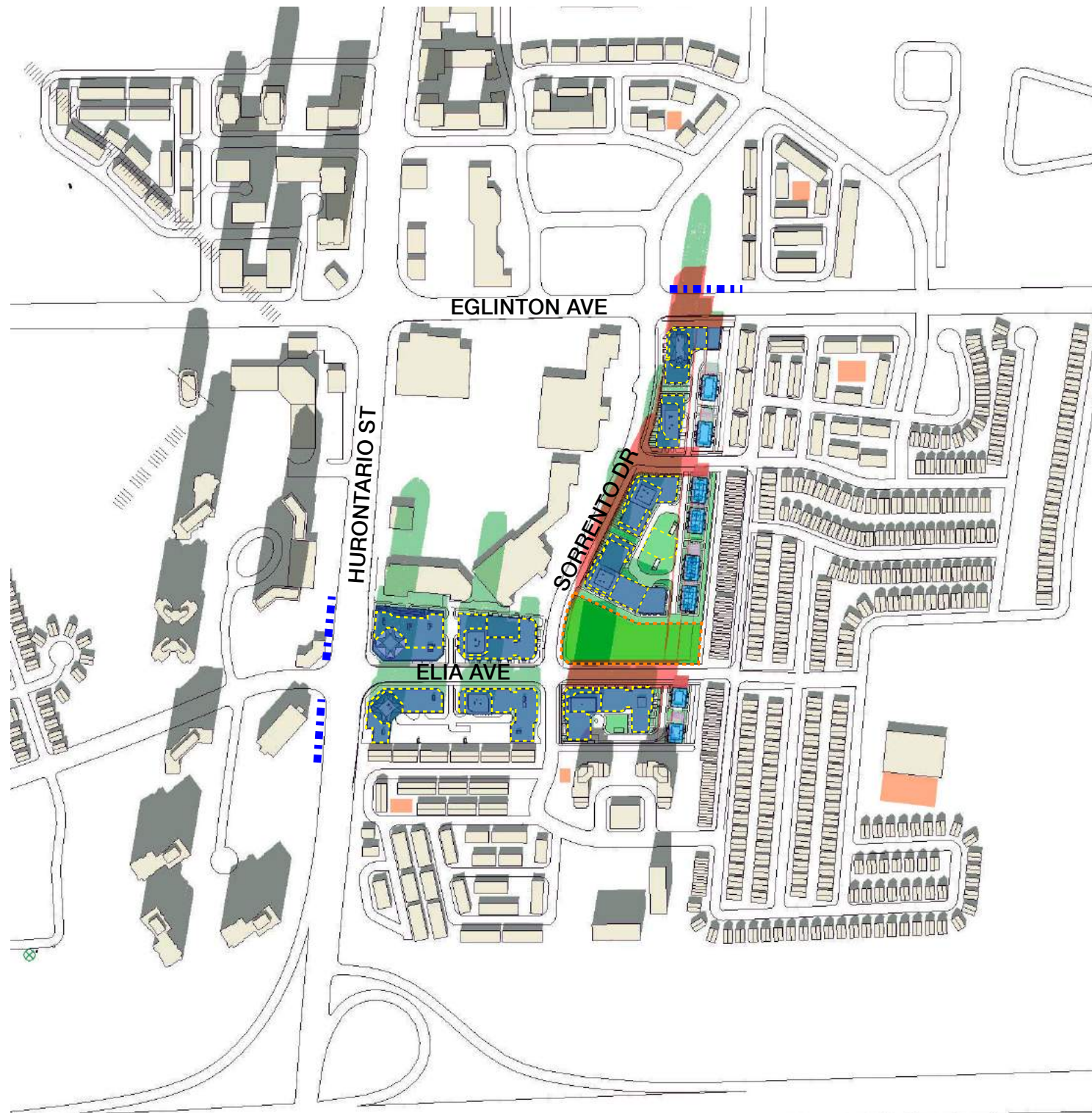
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1:1000 5 10 20m





September 21 - 11:12am



September 21 - 12:12pm

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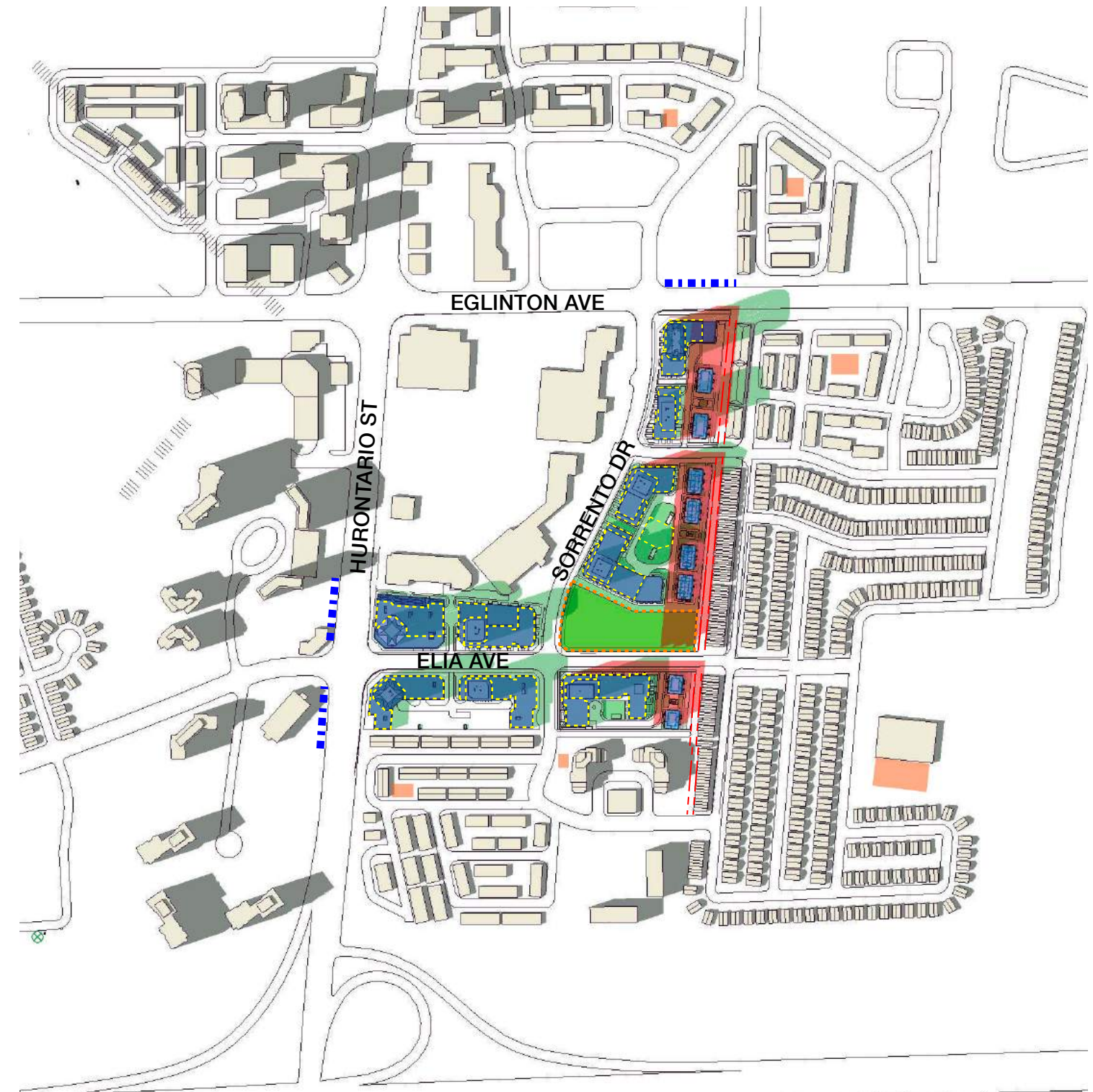
Shadow Study

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September 21 - 1:12pm



September 21 - 2:12pm

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Opposite Boulevard Outdoor Amenity Park 7.5m (No Impact Zone) As-of-Right Playground/Park

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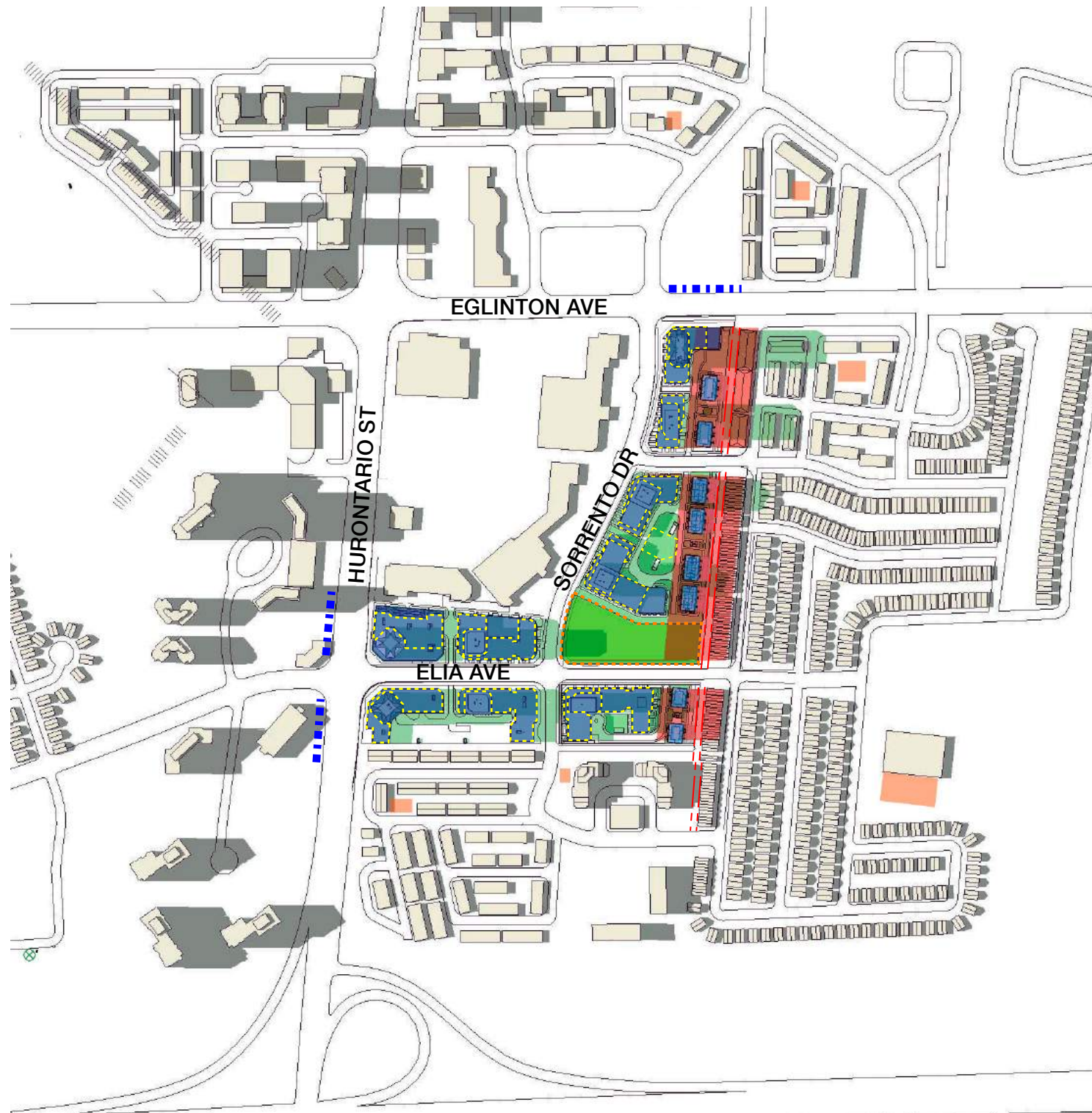
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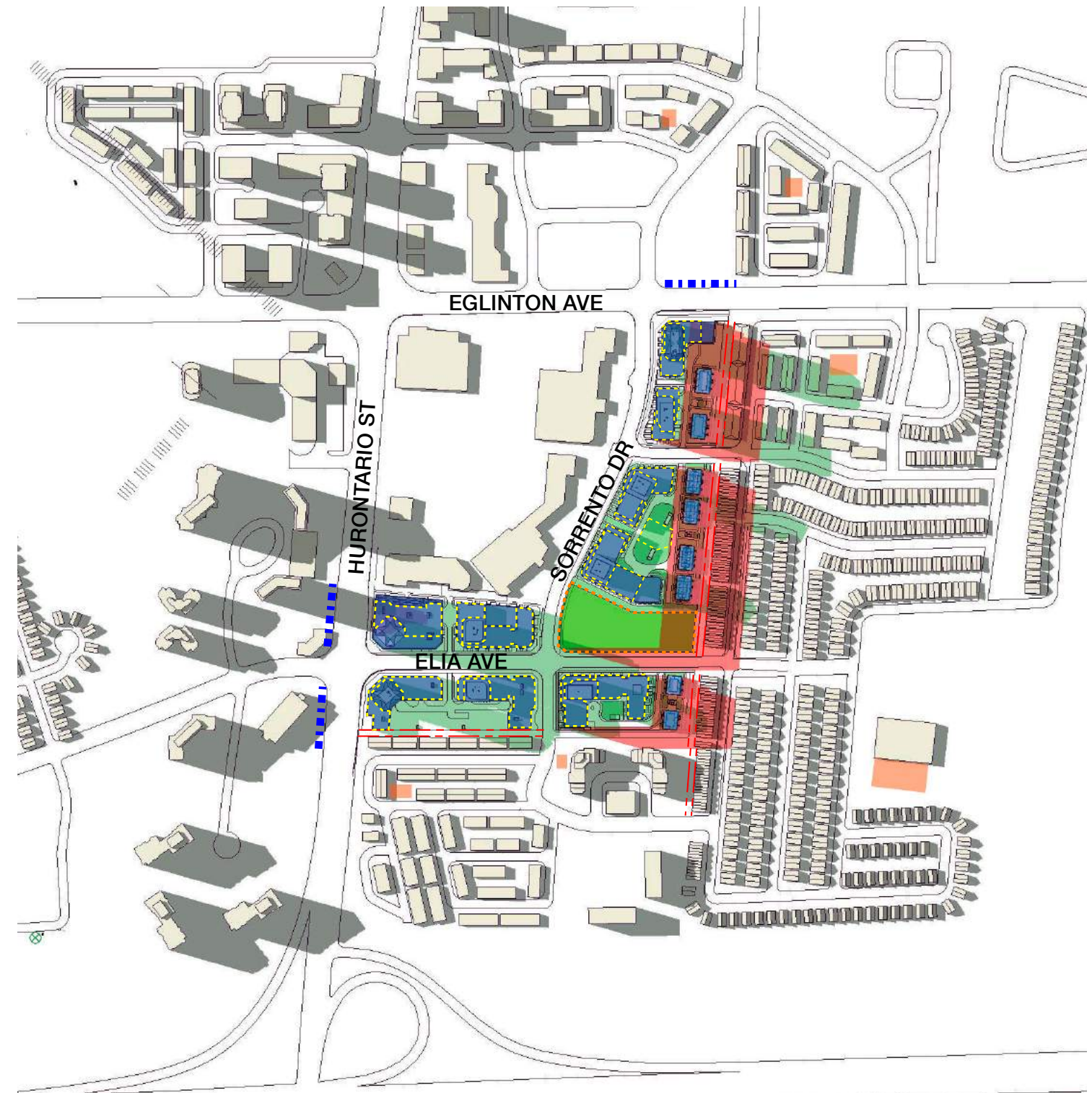
Shadow Study

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September 21 - 3:12pm



September 21 - 4:12pm

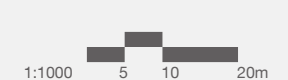
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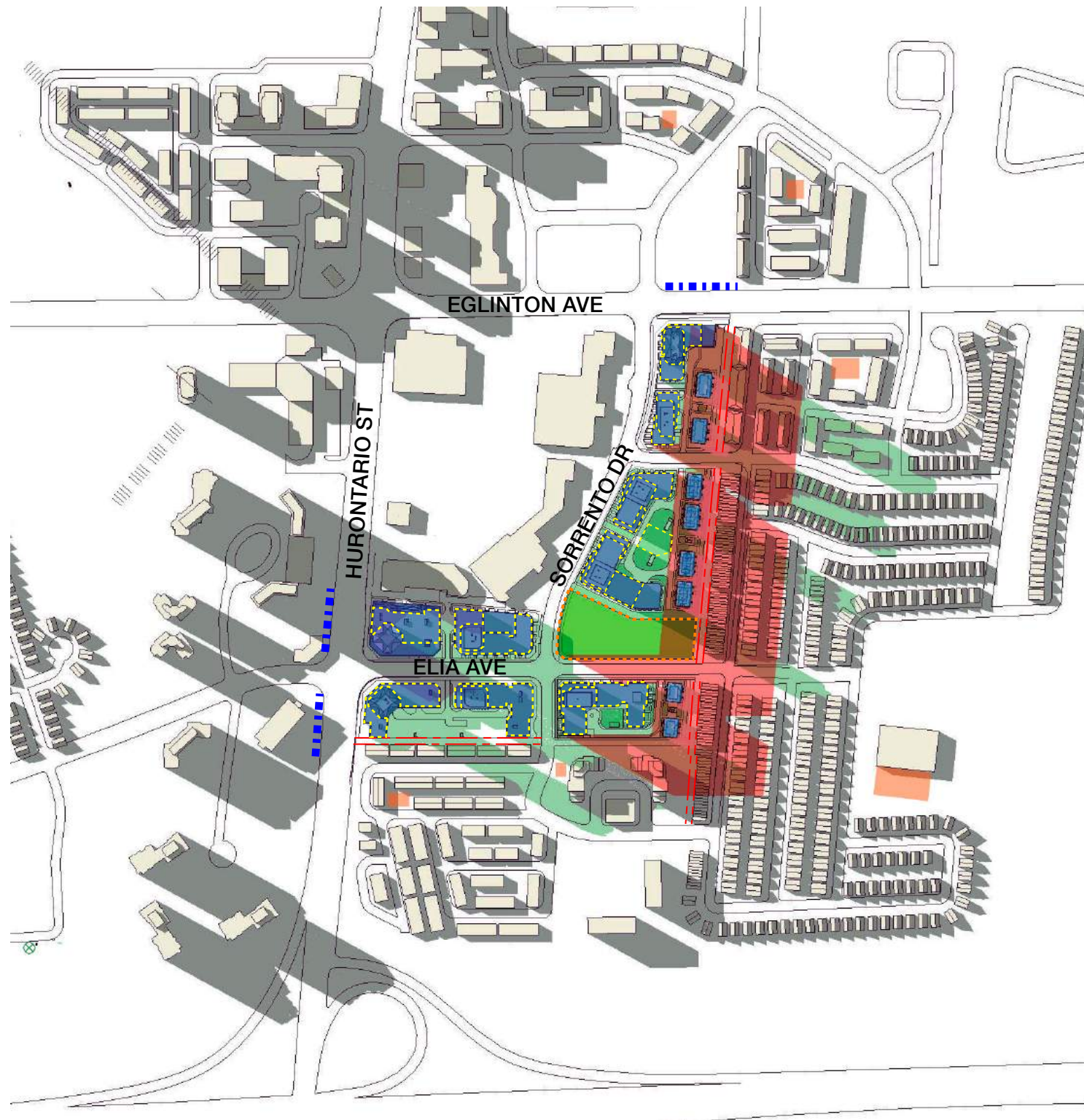
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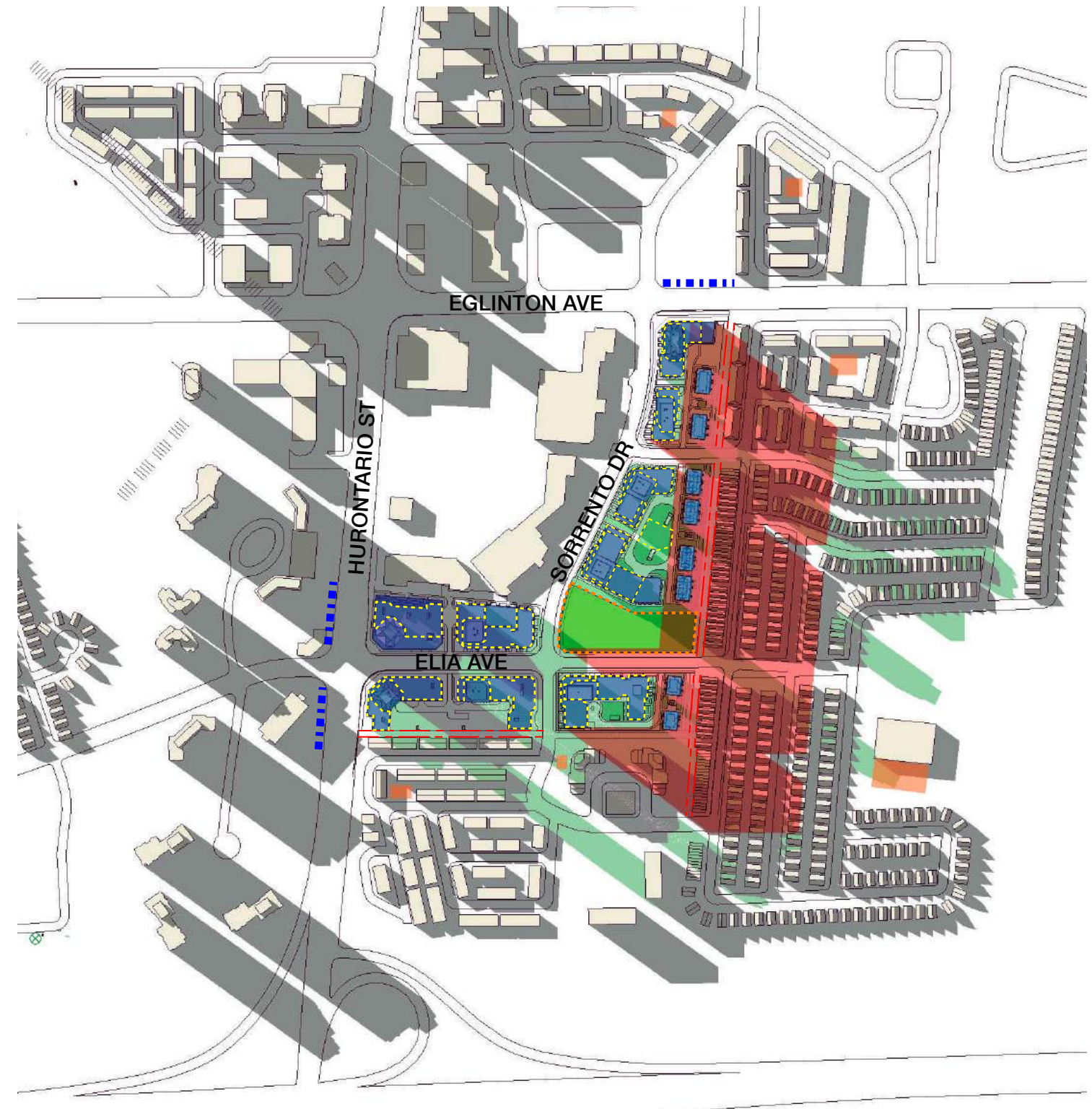
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Shadow Study





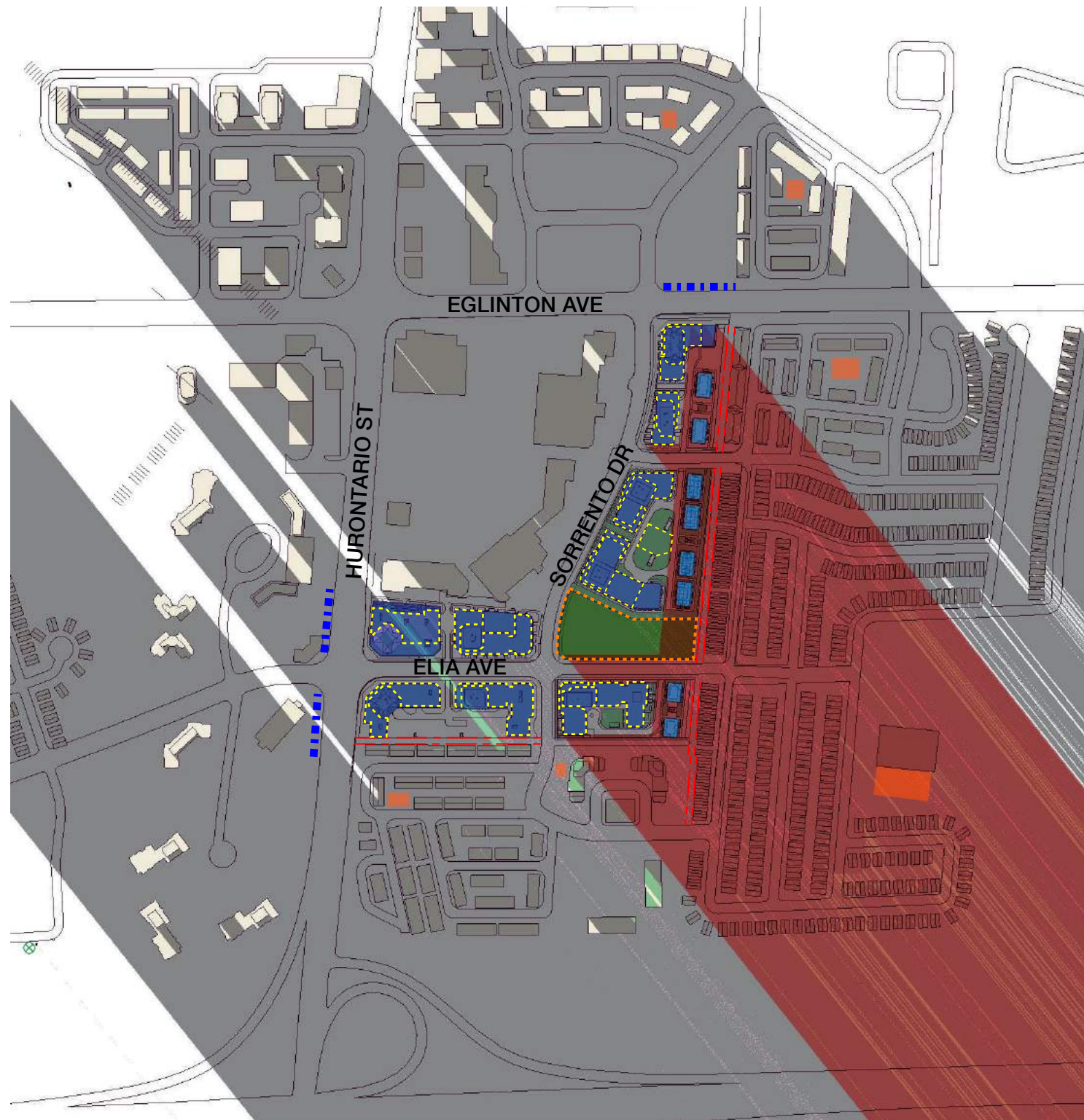
September 21 - 5:12pm



September 21 - 5:48pm

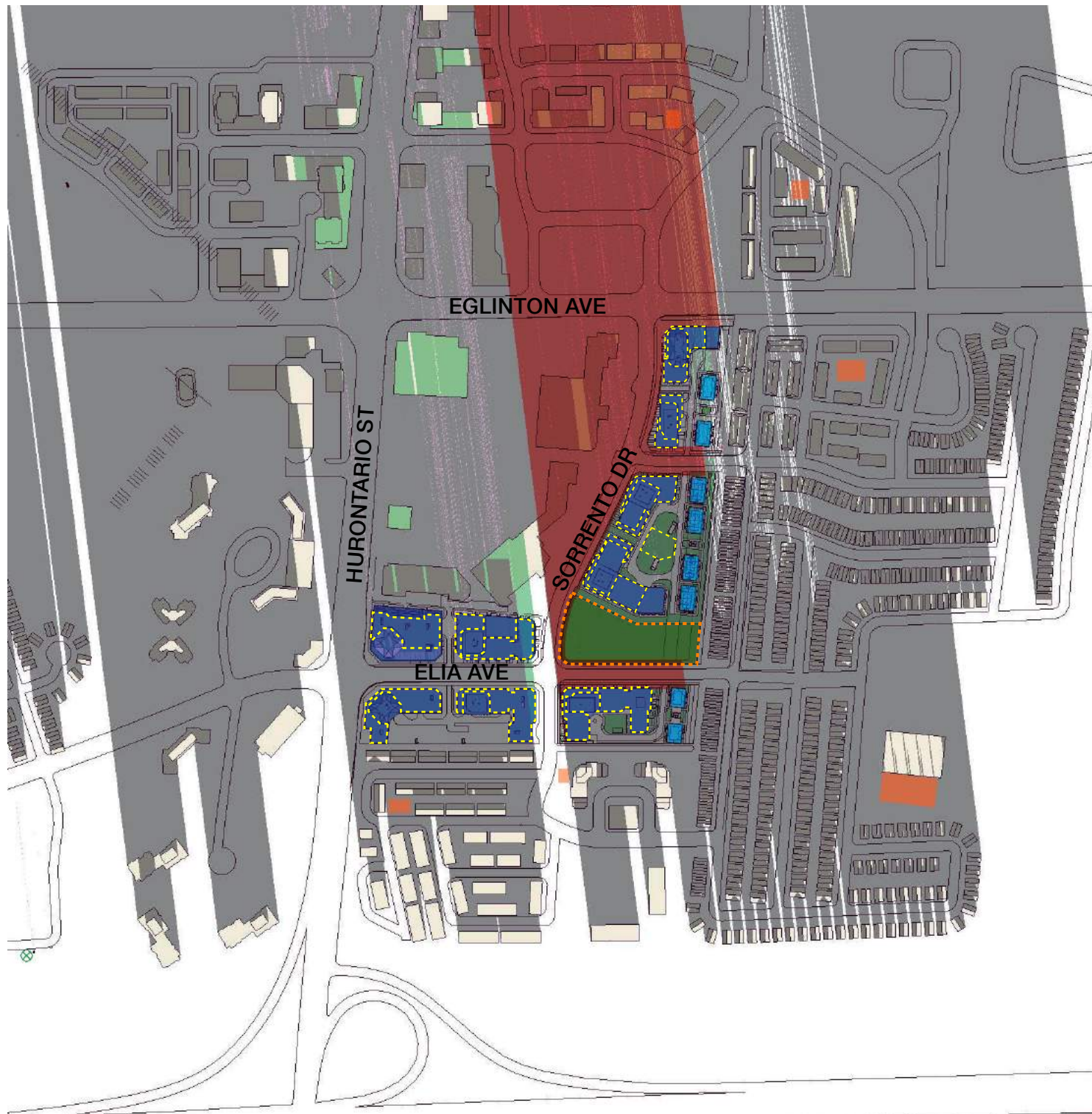
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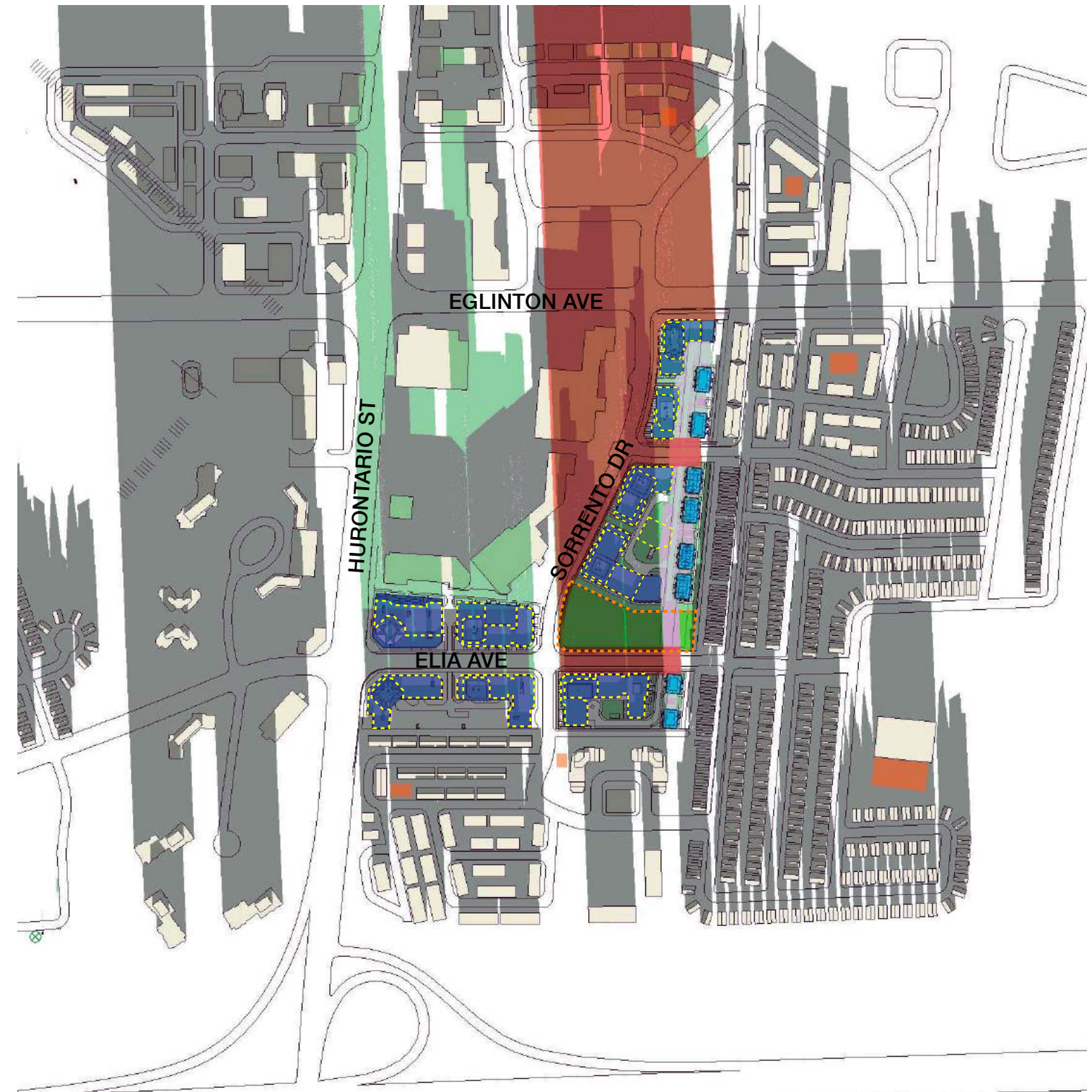


September 21 - 7:18pm

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December 21 - 7:49am



December 21 - 9:19am

NOTE: Existing Building Existing Building Shadows Proposed Building Proposed Building Shadows Proposed Townhouse Shadow from Proposed Townhouse
 Opposite Boulevard Outdoor Amenity Park 7.5m (No Impact Zone) As-of-Right Playground/Park





December 21 - 10:17am



December 21 - 11:17am

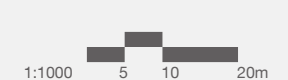
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Quadrangle

Elia Land

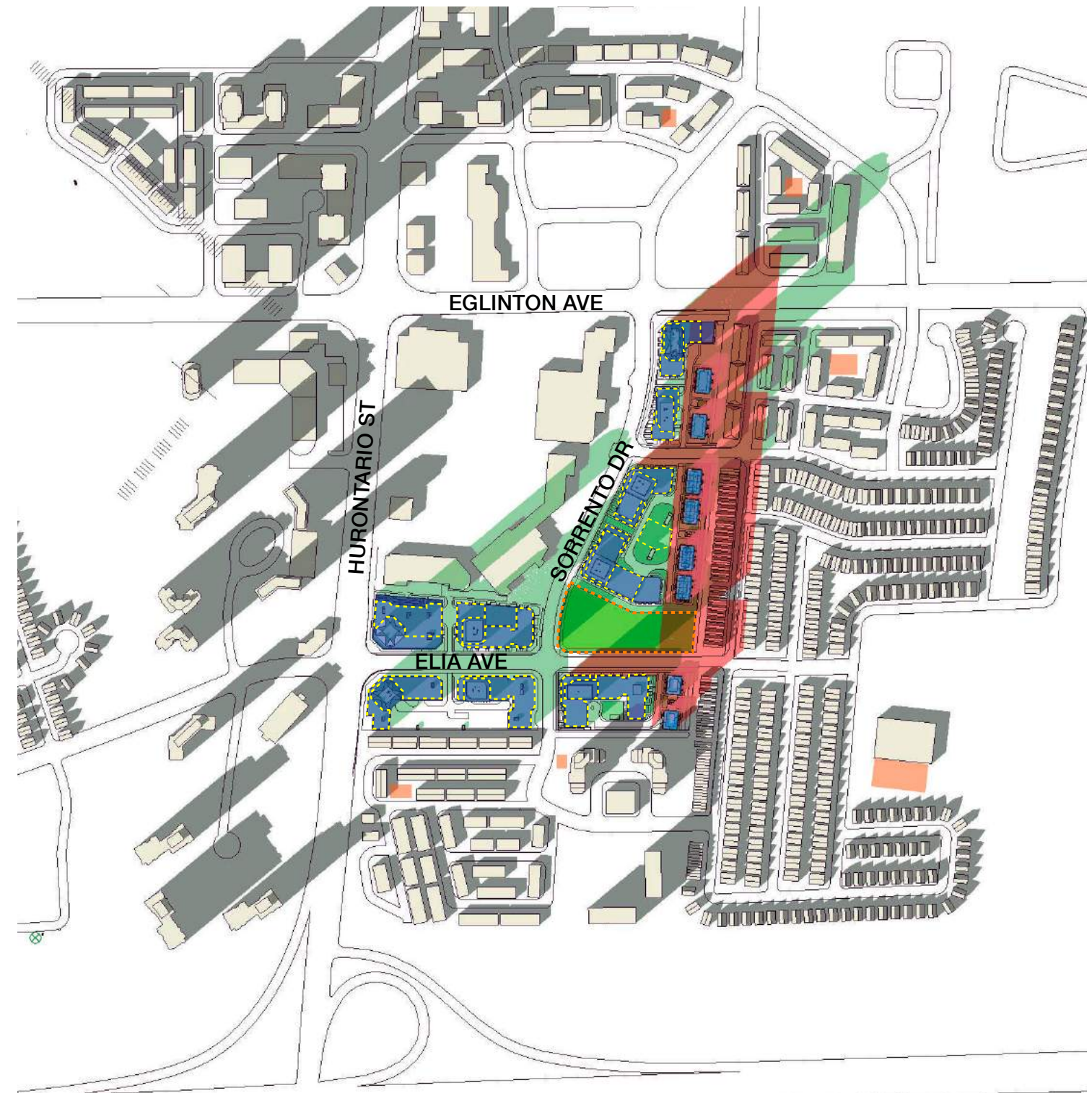
Project No. 14033
 17 December 2020

Shadow Study



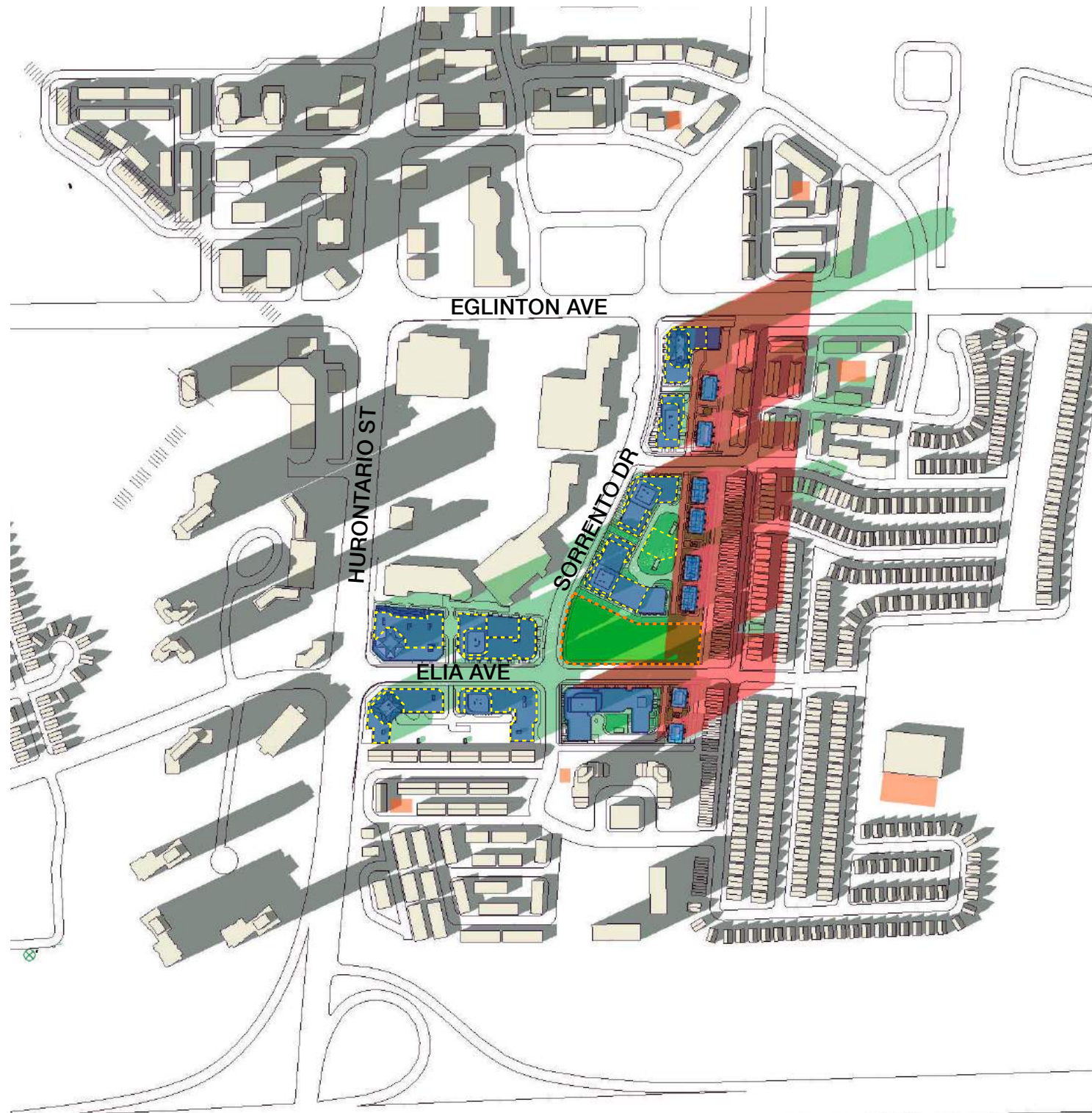


December 21 - 12:17pm

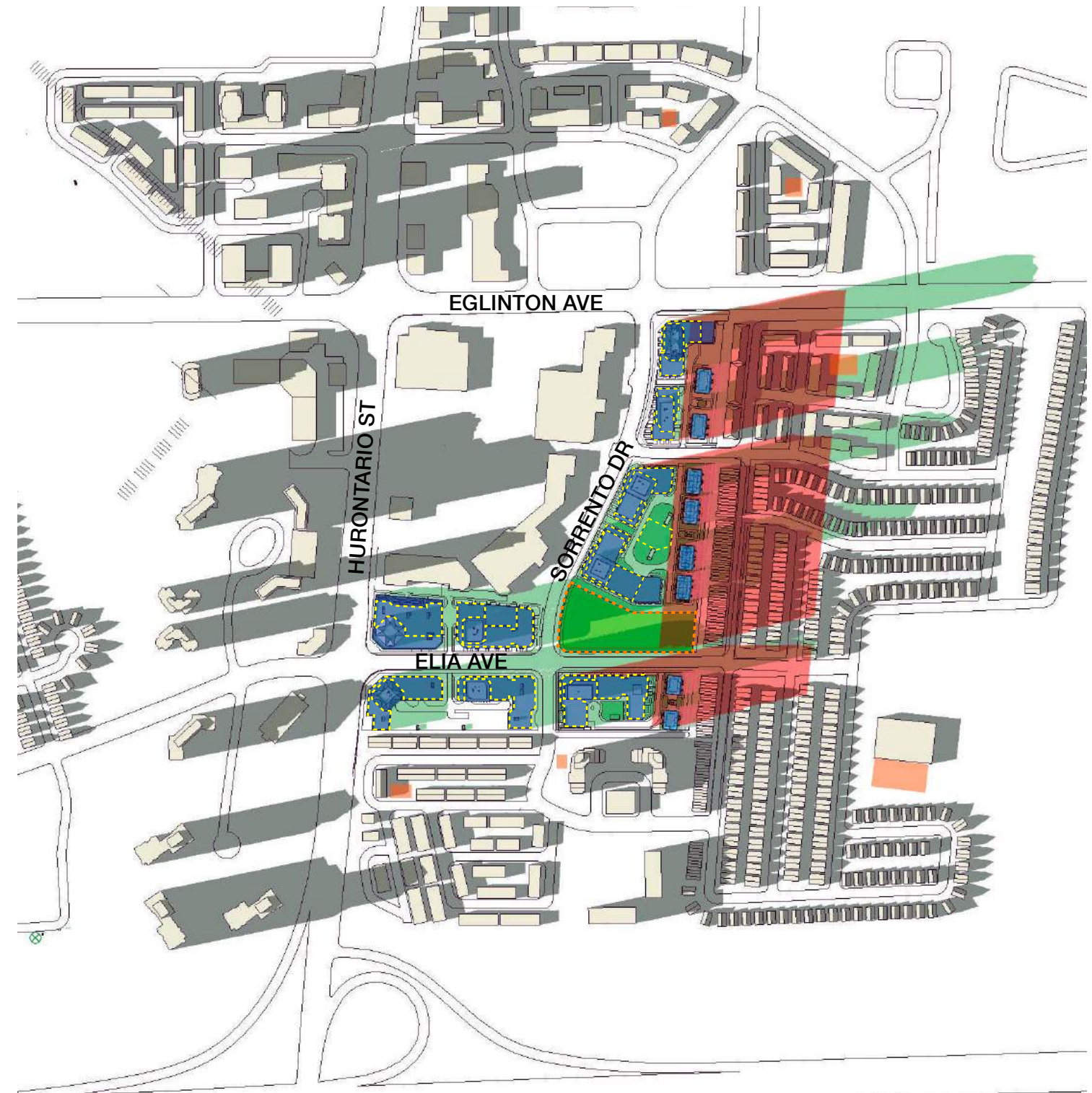


December 21 - 1:17pm

NOTE: Existing Building Existing Building Shadows Proposed Building Proposed Building Shadows Proposed Townhouse Shadow from Proposed Townhouse
 Opposite Boulevard Outdoor Amenity Park 7.5m (No Impact Zone) As-of-Right Playground/Park

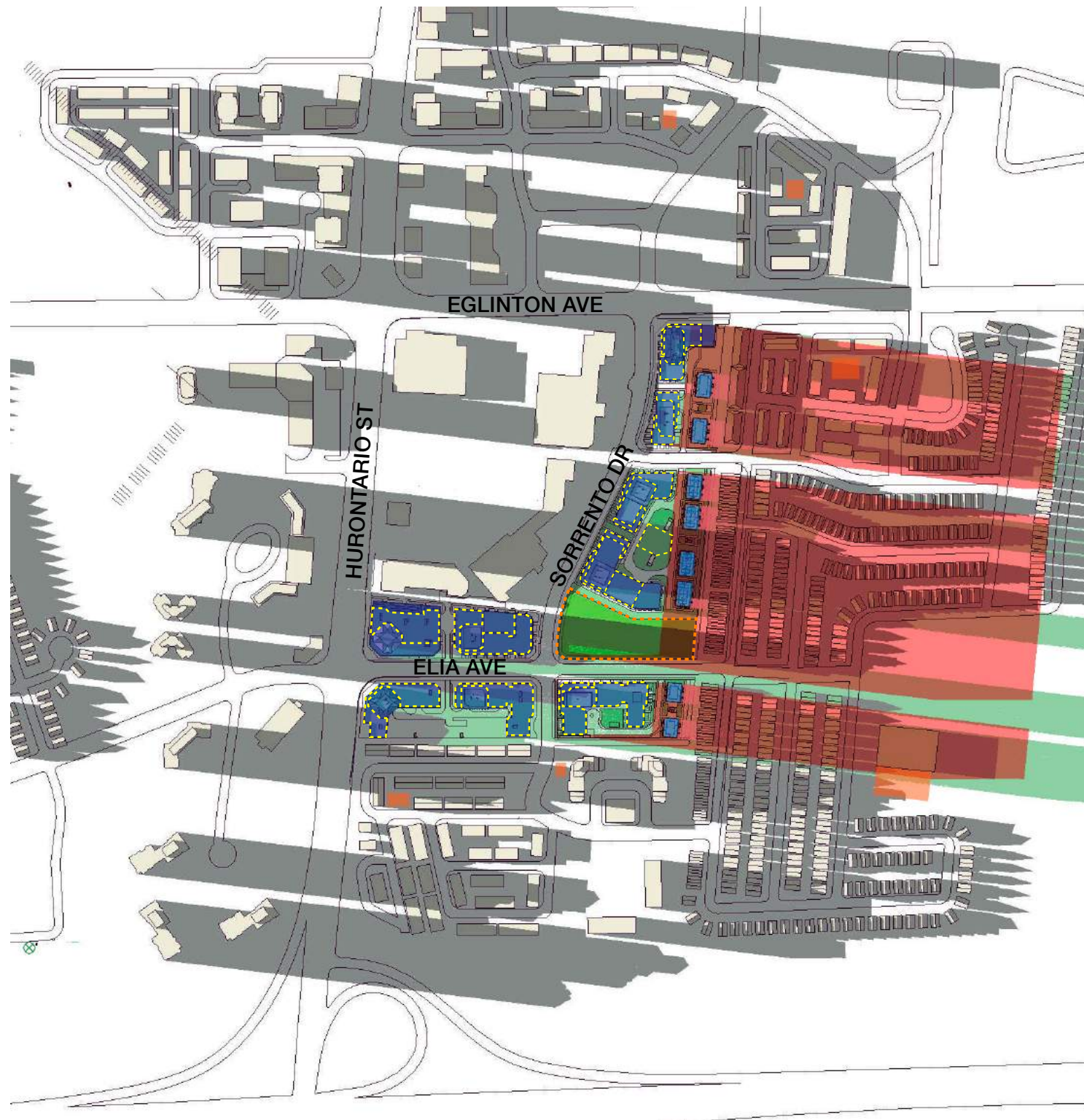


December 21 - 2:17pm



December 21 - 3:15pm

NOTE:	Existing Building	Existing Building Shadows	Proposed Building	Proposed Building Shadows	Proposed Townhouse	Shadow from Proposed Townhouse
	Opposite Boulevard	Outdoor Amenity	Park	7.5m (No Impact Zone)	As-of-Right	Playground/Park



December 21 - 4:45pm

NOTE: Existing Building Existing Building Shadows Proposed Building Proposed Building Shadows Proposed Townhouse Shadow from Proposed Townhouse
 Opposite Boulevard Outdoor Amenity Park 7.5m (No Impact Zone) As-of-Right Playground/Park

