PLAINS ROAD & FAIRVIEW STREET MASTERPLAN

BURLINGTON, ON

SUN SHADOW STUDY

PROJECT# 2004217

MAY 5, 2021

SUBMITTED TO

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INTRODUCTION

Rowan Williams Davies & Irwin Inc. (RWDI) was retained by the Molinaro Group to conduct a Sun Shadow Study for the proposed Plains Road and Fairview Street Masterplan development in Burlington, Ontario (Image 1).

The objectives of this study were to illustrate the shadow patterns for the proposed development and determine the potential exposure to sunlight and shadow on and around the study site.

RWDI has conducted this analysis per the requirements of the city of Burlington's Shadow Study Guidelines and Terms of Reference.

This study involved the use of a three-dimensional (3D) computer model of the existing surroundings and the proposed development in place. The 3D model was used to produce renderings of the new shadows cast by the proposed development. The following report provides a discussion of the methodology and graphic results of the Shadow Study.

Note that the results presented herein are based on an earlier iteration of this design with a shorter version of the Parcel B towers. RWDI does not expect the alteration to materially change the conclusions of this report.

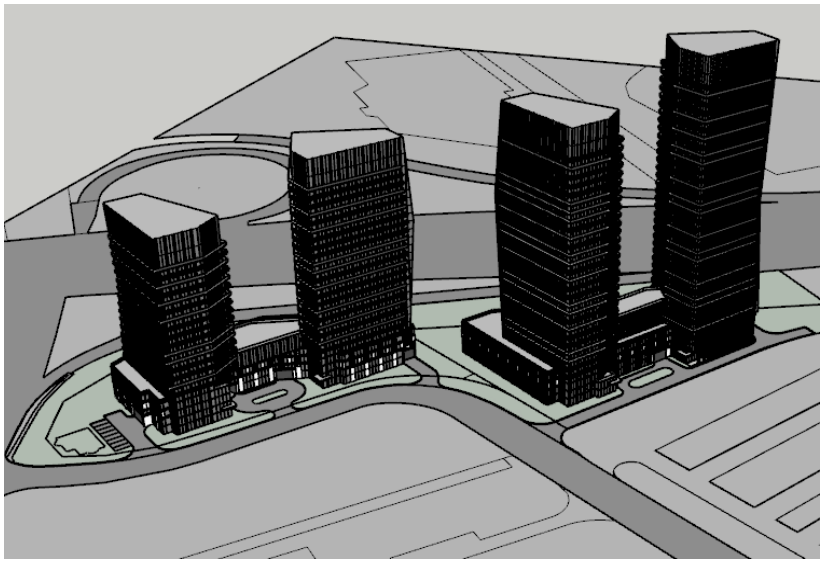


Image 1 – Rendering of the Proposed Project

SITE & BUILDING INFORMATION

The proposed development is located immediately to the east of the Queen Elizabeth Way (see Image 2). The latitude and longitude of the project site are 43.329428° and -79.825287°, respectively. The location was determined by a site plan provided by Molinaro Group and Google Earth. All Images are oriented with true north at the top of the page.

The heights of the proposed buildings for Paracel A and B are approximately 35 stories and 30 stories respectfully.

Currently the site contains commercial buildings, and the immediate surroundings consist mainly of low-rise commercial buildings. (see Images 1 and 2).

RWDI understands that the massing of the podium of this project has changed slightly between the time the 3D model was provided to RWDI and the publication of this report. RWDI has reviewed the updated drawings (dated January 21, 2021 and April 20, 2021) from Graziani and Corazza Architects and does not expect the alterations to significantly alter the conclusions of the study.



Image 2 – Aerial View of Existing Site and Surroundings (site outlined in blue) (Courtesy of Google Earth)

METHODOLOGY

The shadow plots illustrated in this report (found in Appendix A) were generated with the aid of RWDI's in-house proprietary *Eclipse* software. The software was configured to simulate the appropriate geographic characteristics and solar angles for this site.

Based on the concept plan prepared by Graziani and Corazza Architects (received by RWDI on August 10, 2020), a three-dimensional computer model of the study site was created by RWDI.

The computer-generated renderings exhibit the simulated shadow conditions anticipated to occur in the vicinity of the study site. The tests conducted in this study assume bright sunlight from sunrise to sunset to properly identify shadow patterns created by the proposed structure.

The output of this study illustrates the *net-new shadowing* created by the proposed development (coloured light purple on roof surfaces and light blue on ground surfaces). That is to say, the shadowing created by the proposed development, less any shadows that occur due to the existing built environment (coloured in dark grey in the plots).

Per standard industry practice, shadowing due to trees has been purposely neglected as a conservatism.

SUMMARY/CONCLUSIONS

Per the City of Burlington requirements, the new shadows cast by the proposed building were predicted for every hour between 9:00 am EDT and 6:00 pm EDT on March 21 and September 21, as well as for December 21 between 11:00 am EST and 3:00 pm EST and June 21 between 8:00 am EDT and 7:00 pm EDT.

The simulations indicate that the new shadowing from the proposed project will not reach the residential areas to the north and east of the site.

Shadows were predicted to reach Leighland Park between 10:00 am and 1:00 pm on the equinoxes and from 11:00 am to 2:00 pm on December 21. In all cases the shadowed area is small compared to the area of the park and in the case of the equinoxes, the majority of the required study period (6 of 9 hours) no new shadowing was predicted.

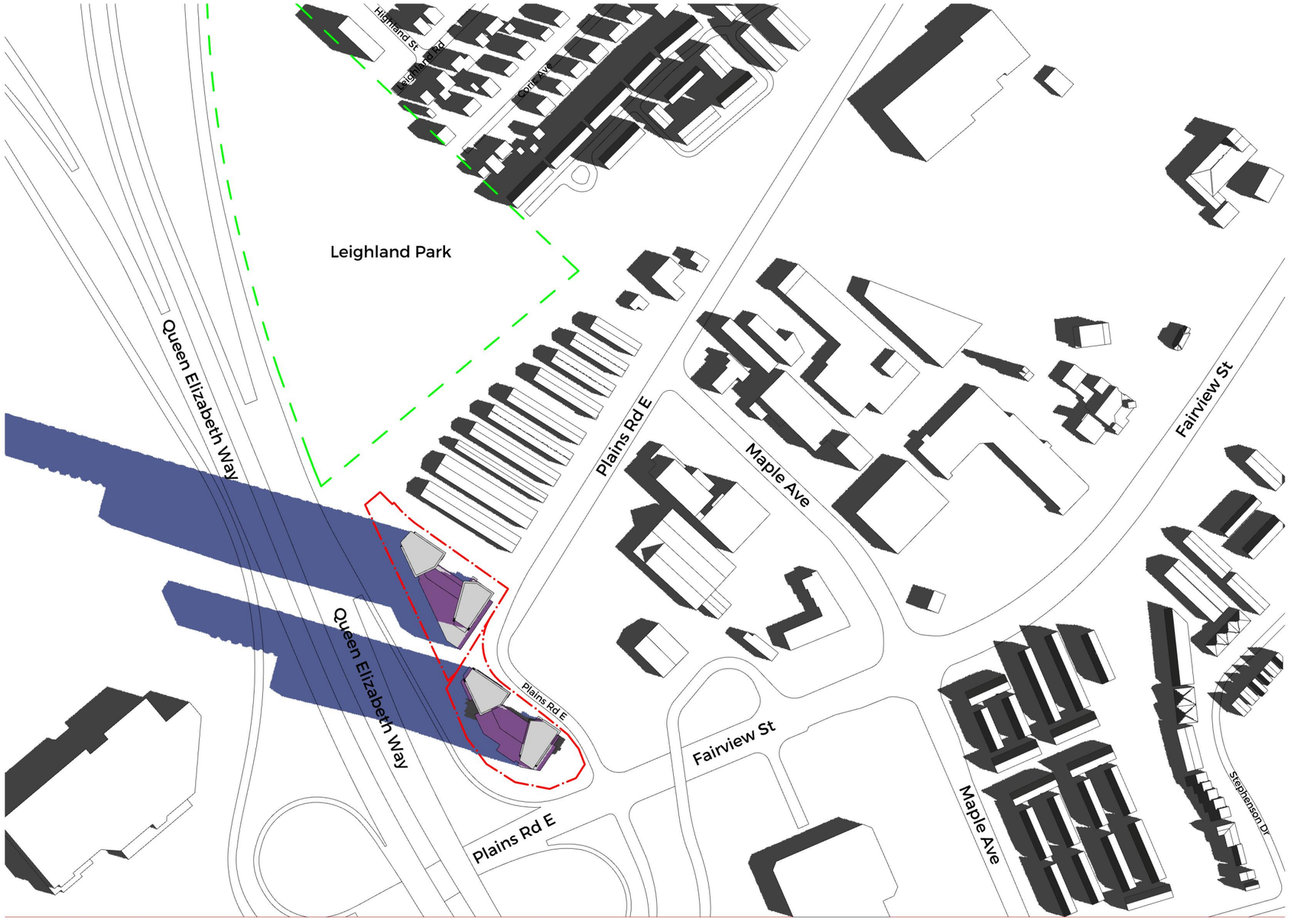
Shadows are also predicted to fall at grade and onto the roofs of neighboring buildings, however none of these areas are residential.

The roof top amenity spaces on both Parcels A and B are anticipated to receive new shadows during the morning hours. The majority of the spaces are exposed to sun by 1:00 pm with very little shadow occurring after 2:00 pm all year.

As noted above, RWDI received an updated design of this project subsequent to our analysis of the shadow impacts. Upon reviewing the drawings, the main change appears to be the massing of the podium structure. Given that the primary source of off-site shadowing was the towers, RWDI would not expect the change in the podium to significantly alter the conclusions of this study.

APPENDIX A

SHADOW PLOTS



Sun Shade Assessment

Proposed Site Configuration | March 21st, 09:00 EDT

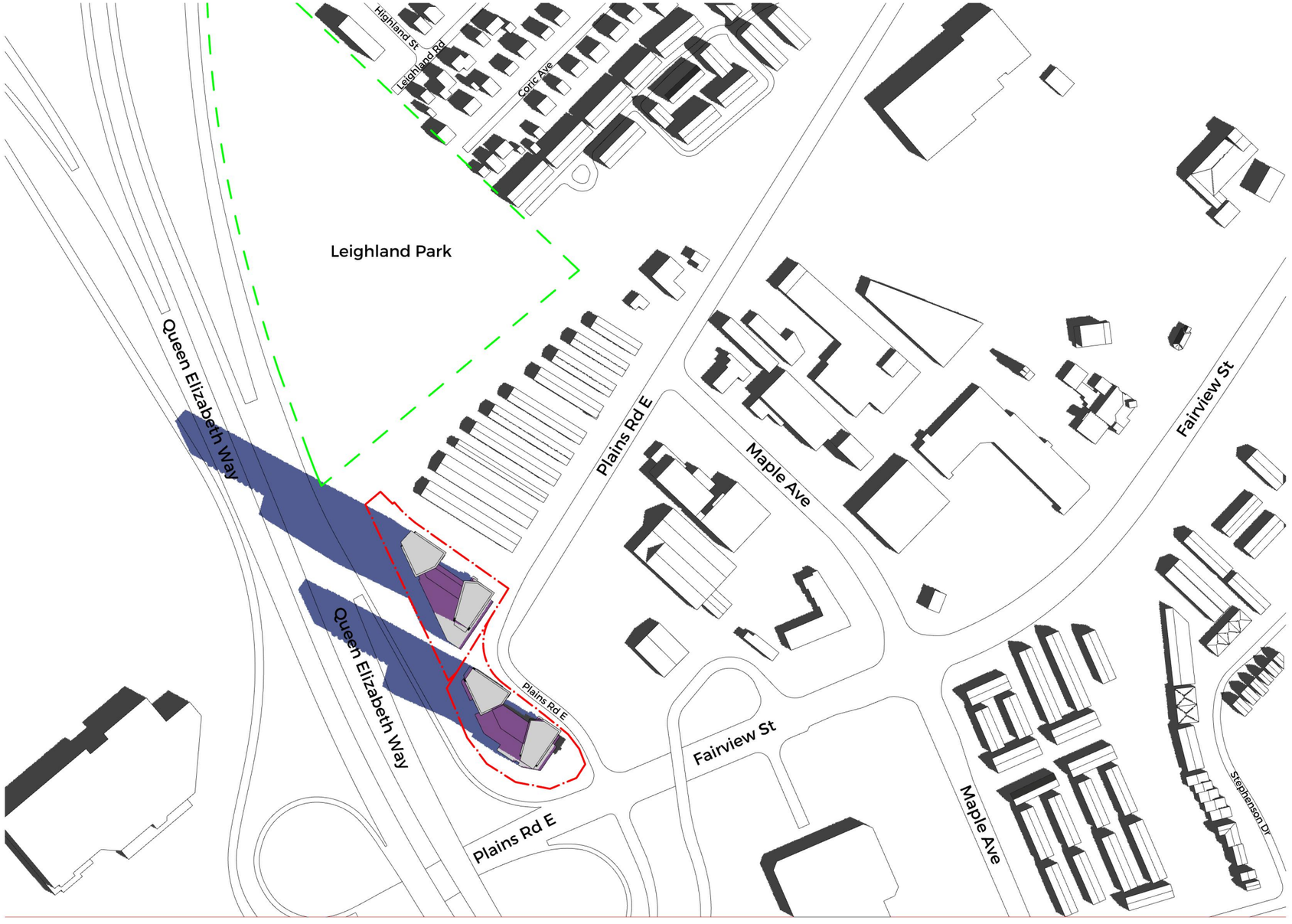
Plains + Fairview Masterplan - Burlington, ON
Project # 2004217

- Net New Shadows Cast on Roof Surfaces
- Net New Shadows Cast on Ground Surfaces
- Shadows Cast by Existing Buildings on All Surfaces
- Open Space
- Site Boundary

True North

Scale = 1:4000

0 25 50 100 200 m



Sun Shade Assessment

Proposed Site Configuration | March 21st, 10:00 EDT

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Sun Shade Assessment

Proposed Site Configuration | March 21st, 11:00 EDT

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Sun Shade Assessment

Proposed Site Configuration | March 21st, 12:00 EDT

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Sun Shade Assessment

Proposed Site Configuration | March 21st, 13:00 EDT

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Sun Shade Assessment

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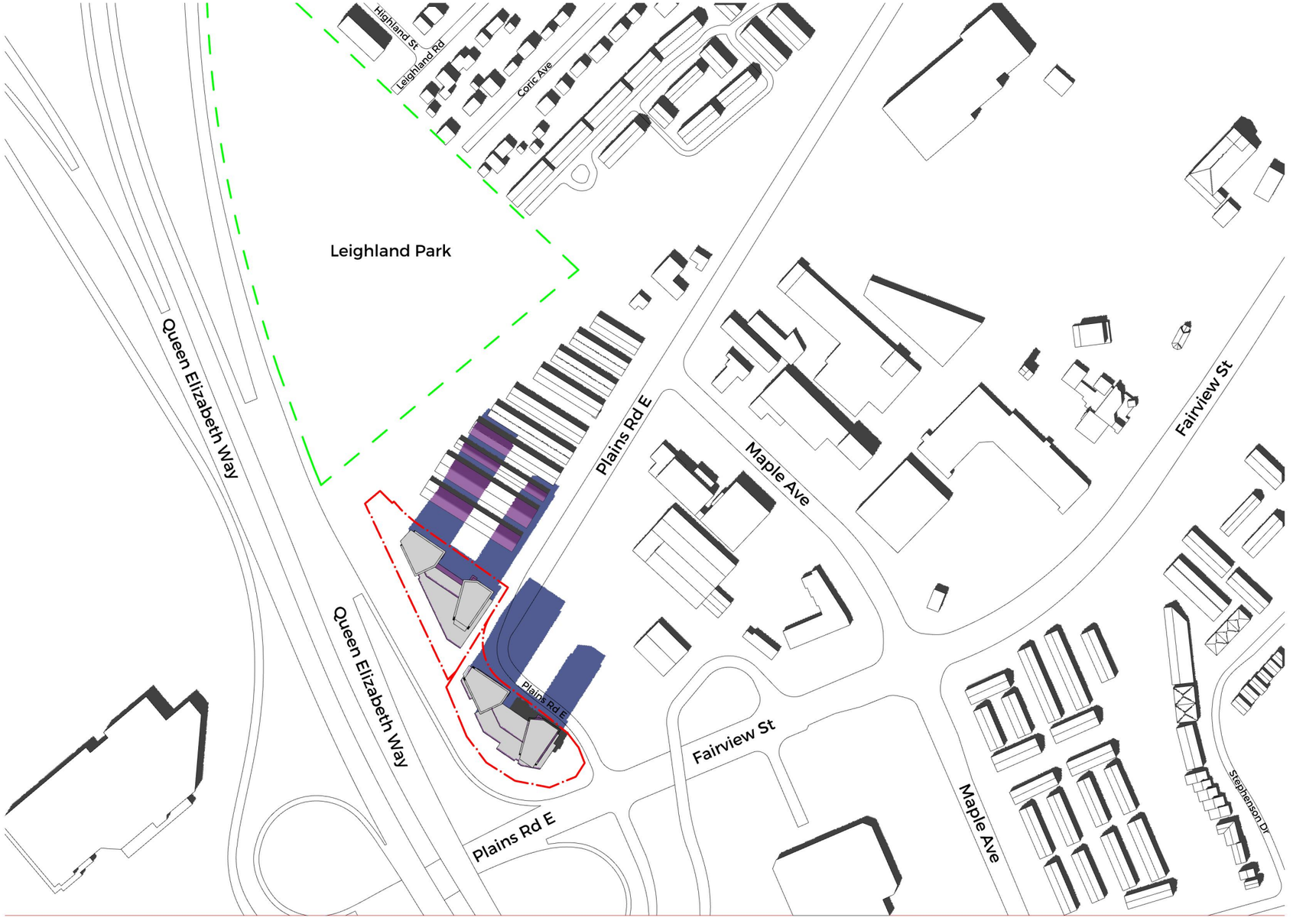
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Sun Shade Assessment

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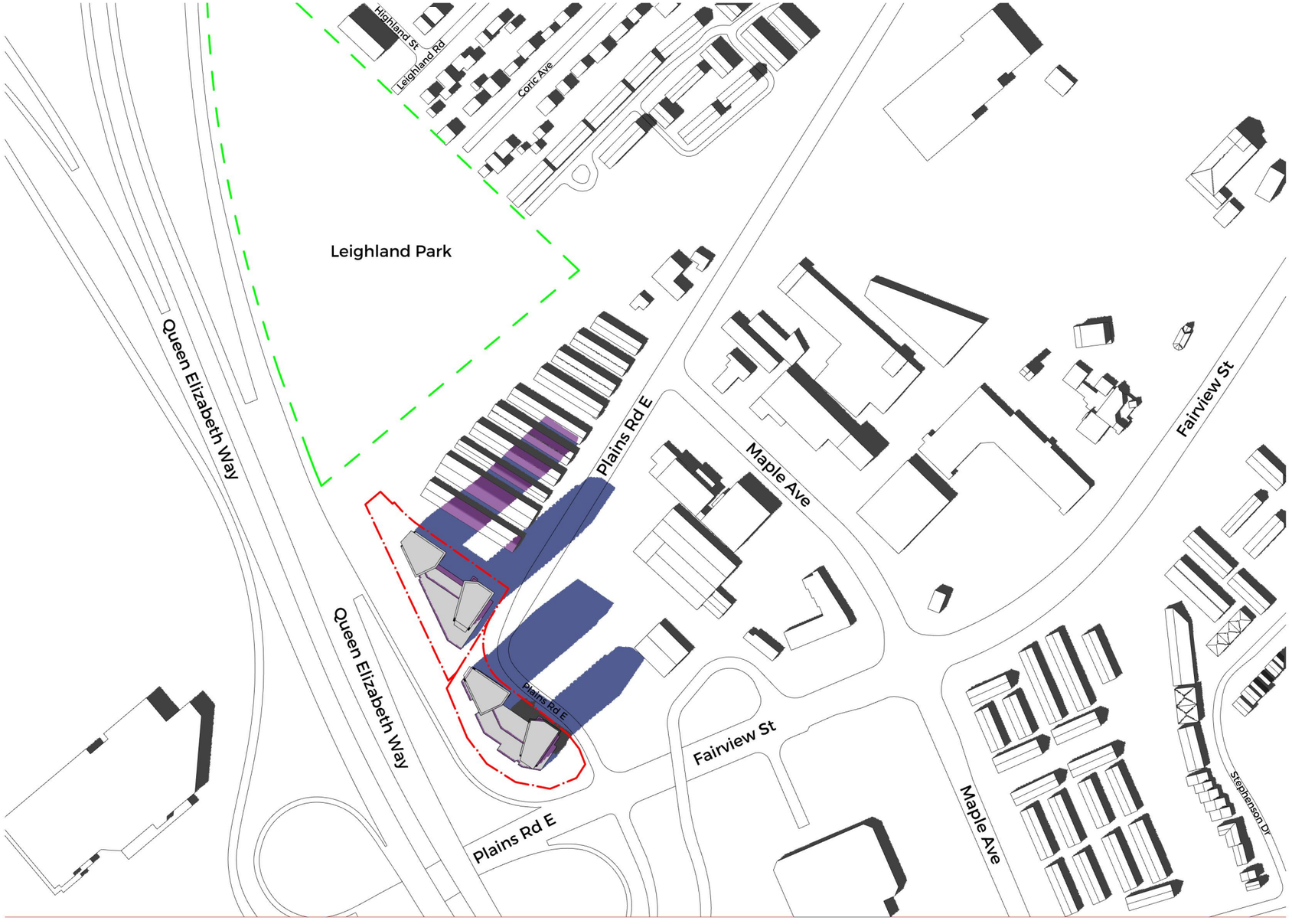
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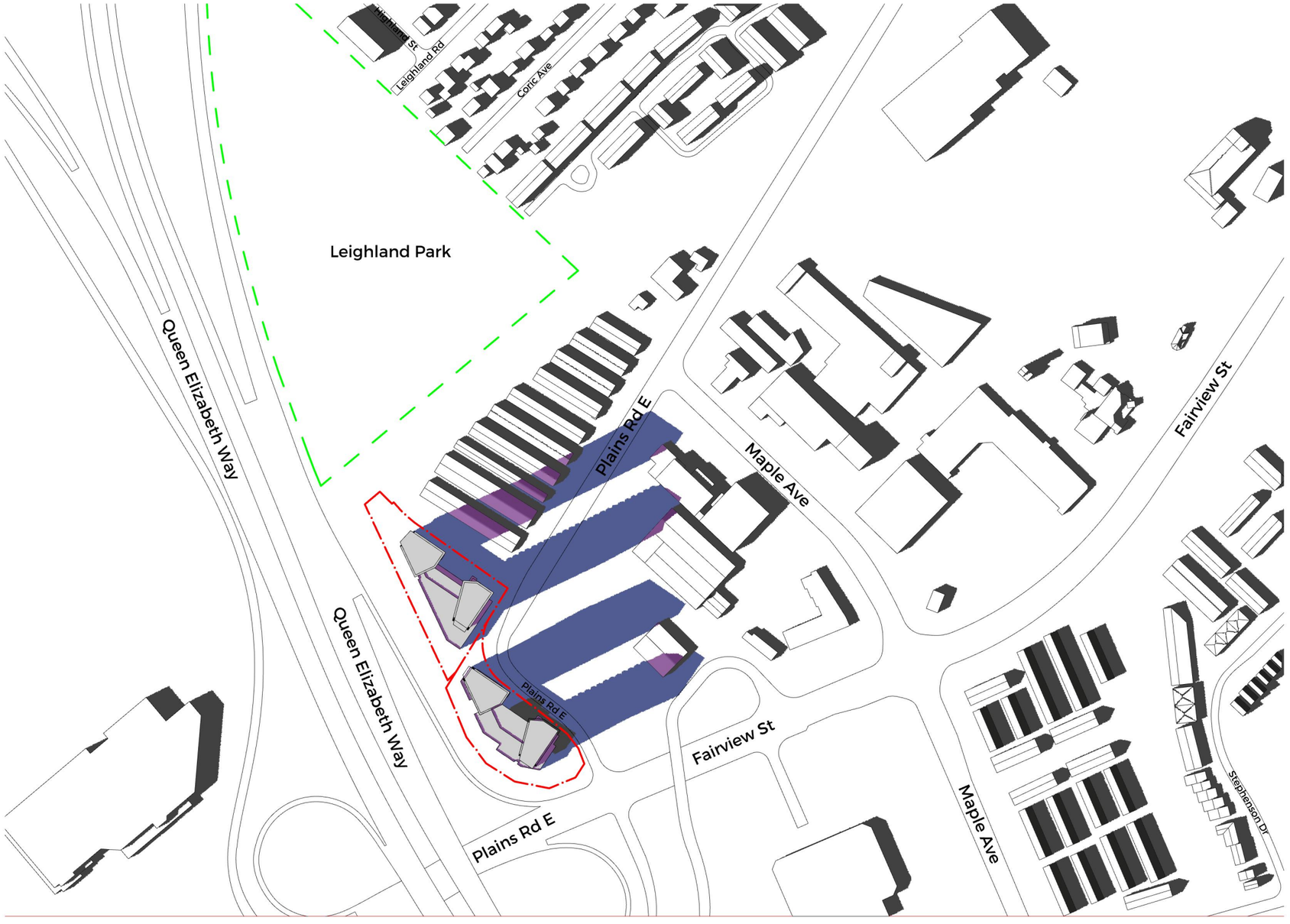
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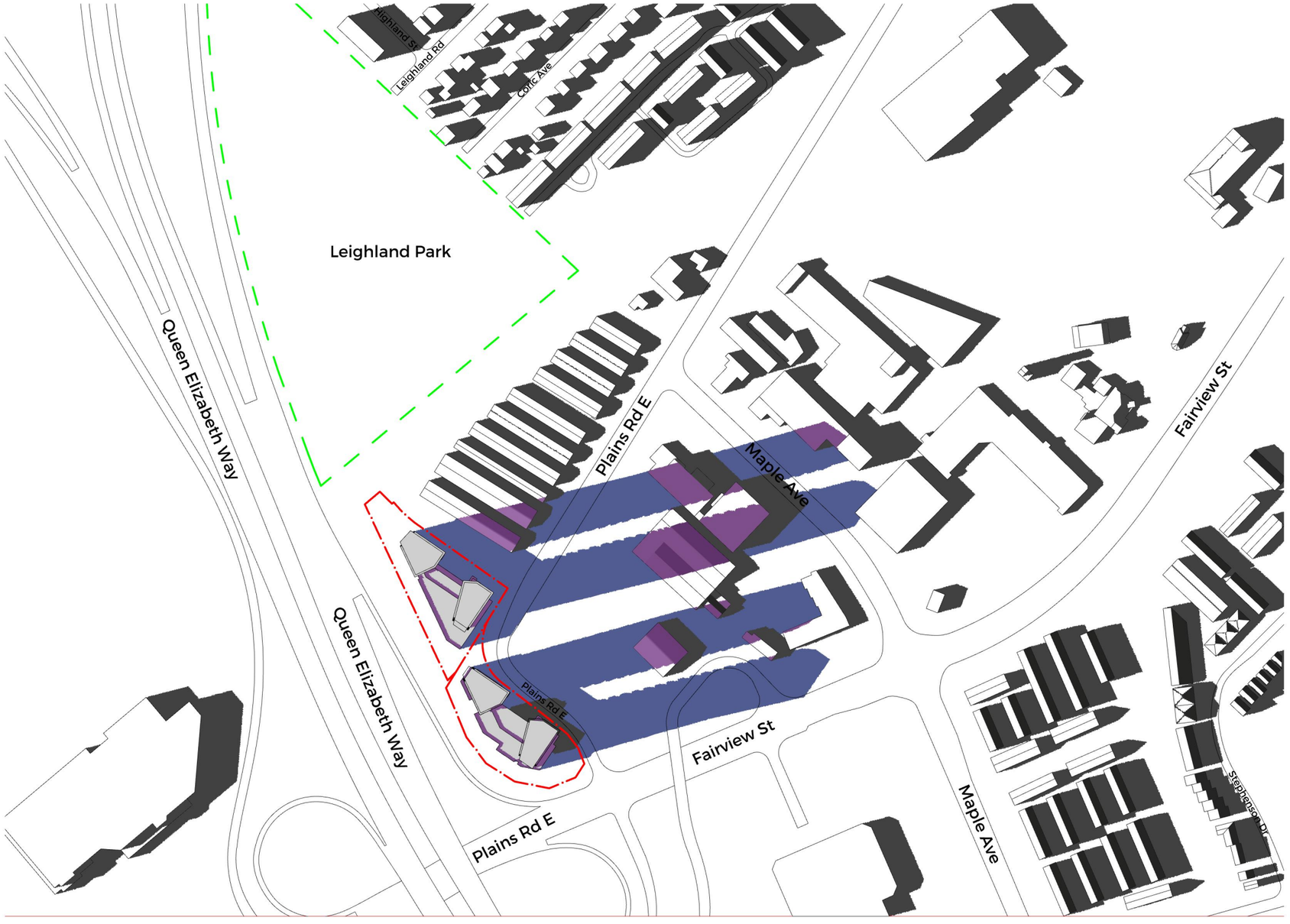
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Sun Shade Assessment

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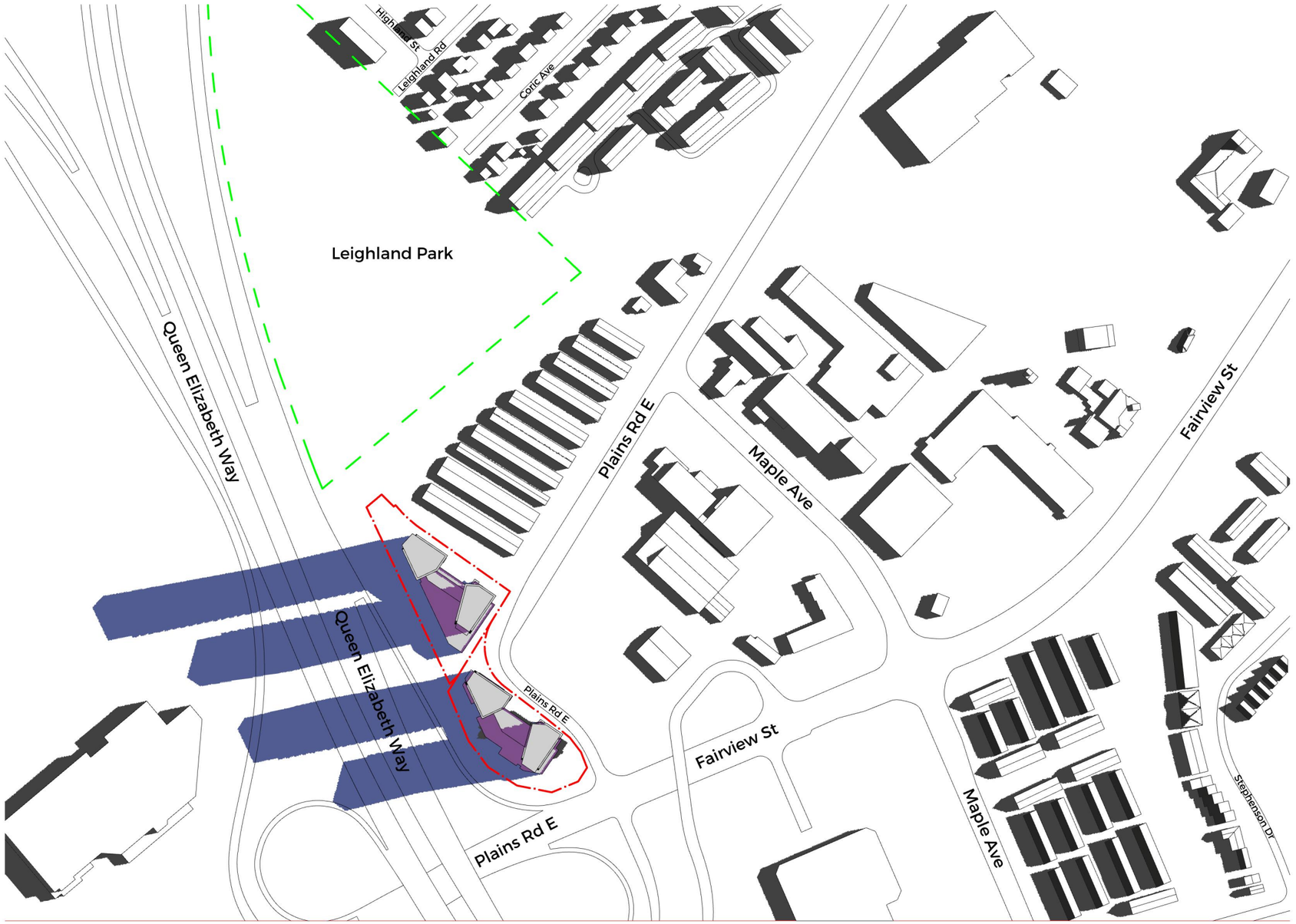
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Sun Shade Assessment

Proposed Site Configuration | June 21st, 08:00 EDT

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True North

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Sun Shade Assessment

Proposed Site Configuration | June 21st, 09:00 EDT

Plains + Fairview Masterplan - Burlington, ON
Project # 2004217

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True North

Scale = 1:4000

0 25 50 100 200 m



Sun Shade Assessment

Proposed Site Configuration | June 21st, 10:00 EDT

Plains + Fairview Masterplan - Burlington, ON
Project # 2004217

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True North

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Sun Shade Assessment

Proposed Site Configuration | June 21st, 11:00 EDT

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True North

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Sun Shade Assessment

Proposed Site Configuration | June 21st, 12:00 EDT

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Sun Shade Assessment

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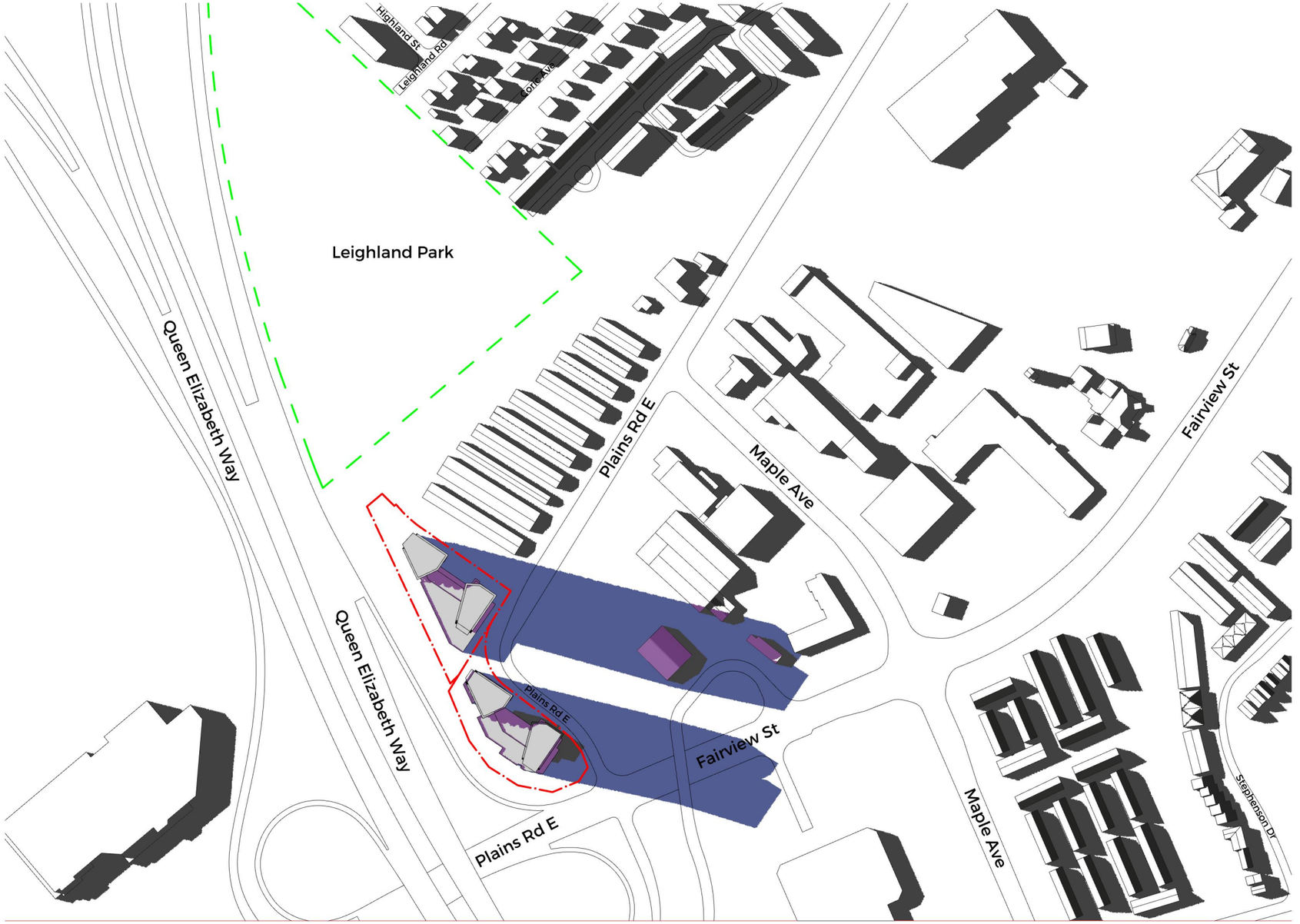
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Sun Shade Assessment

Proposed Site Configuration | June 21st, 19:00 EDT

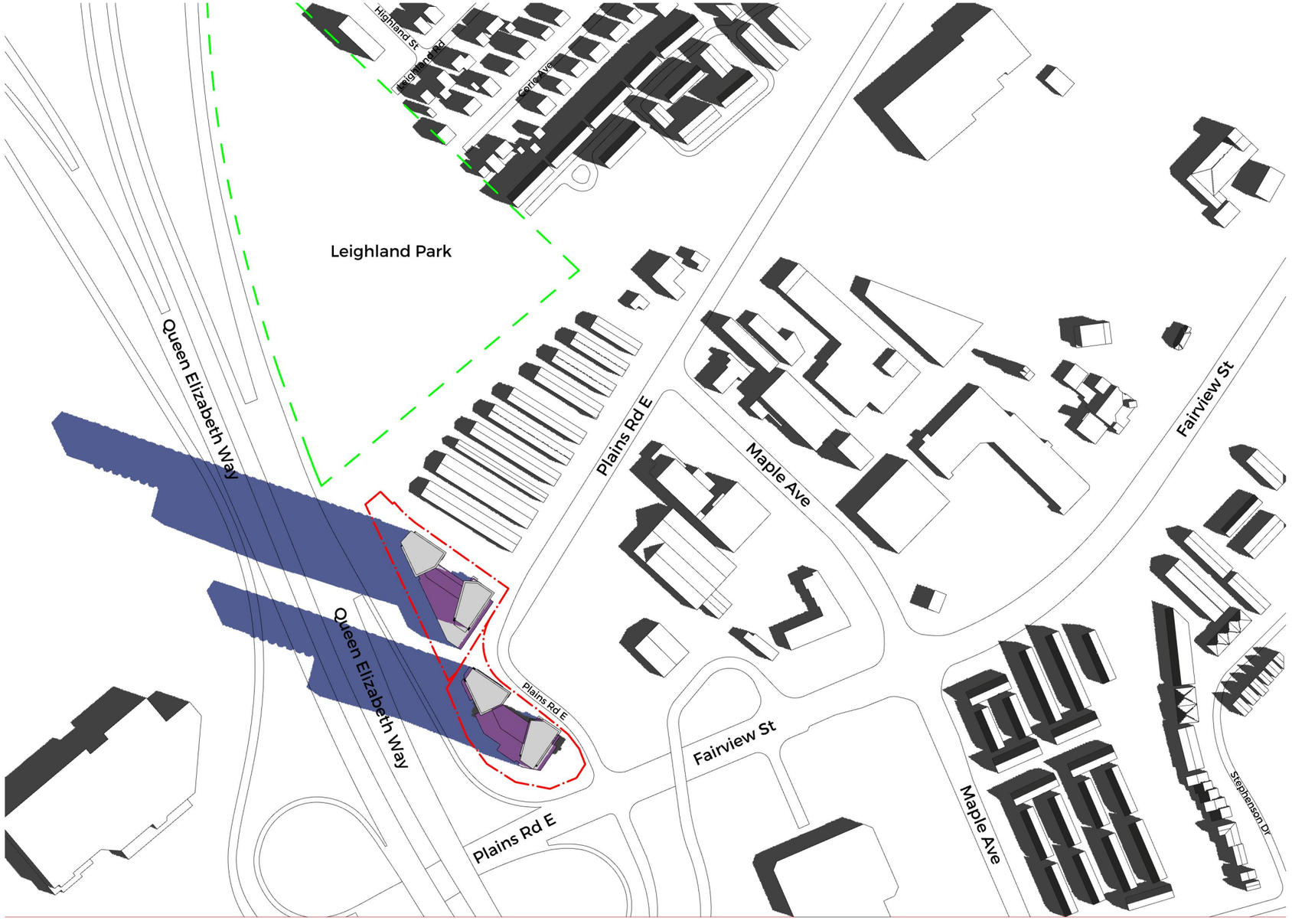
Plains + Fairview Masterplan - Burlington, ON
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Proposed Site Configuration | September 21st, 09:00 EDT

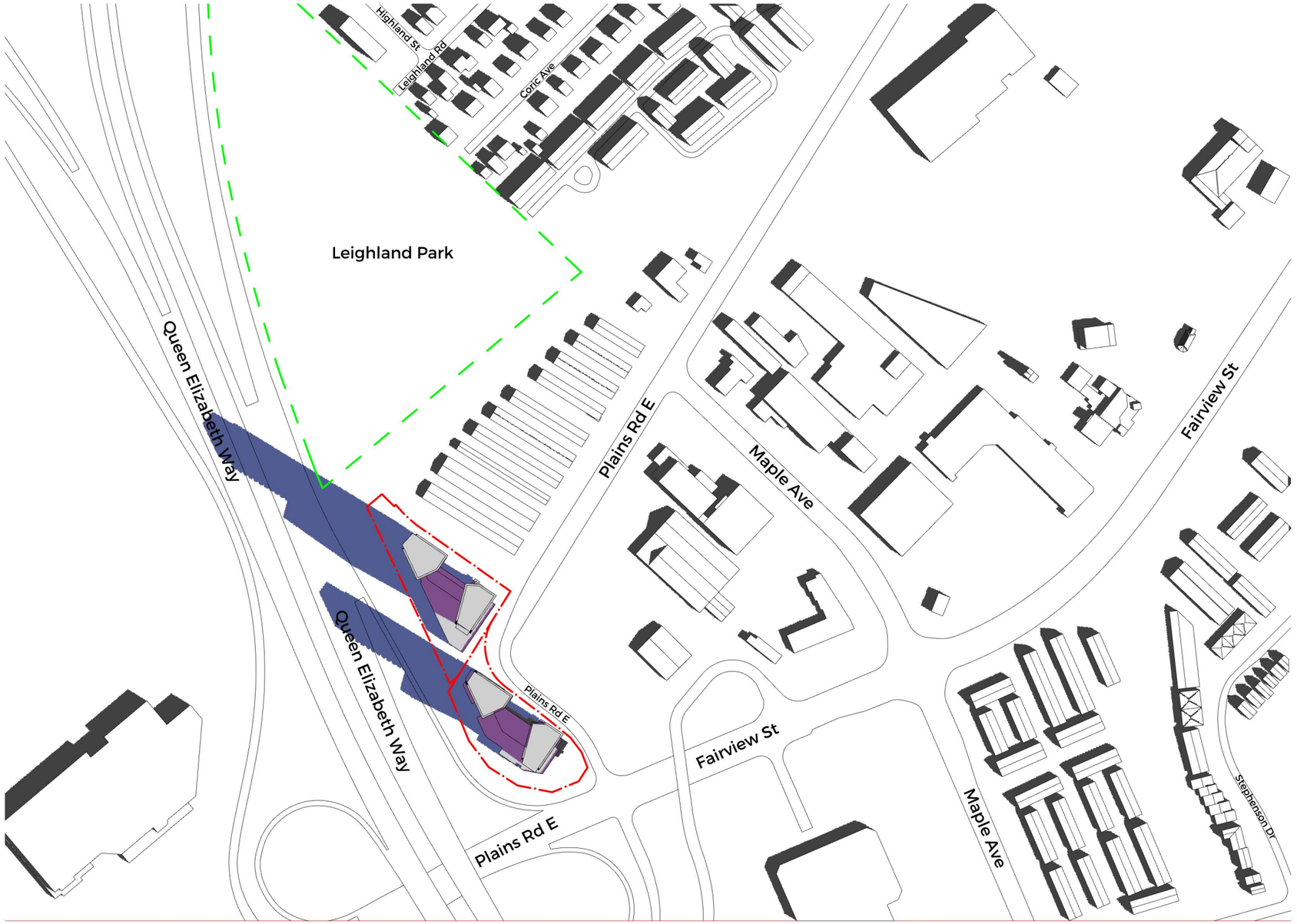
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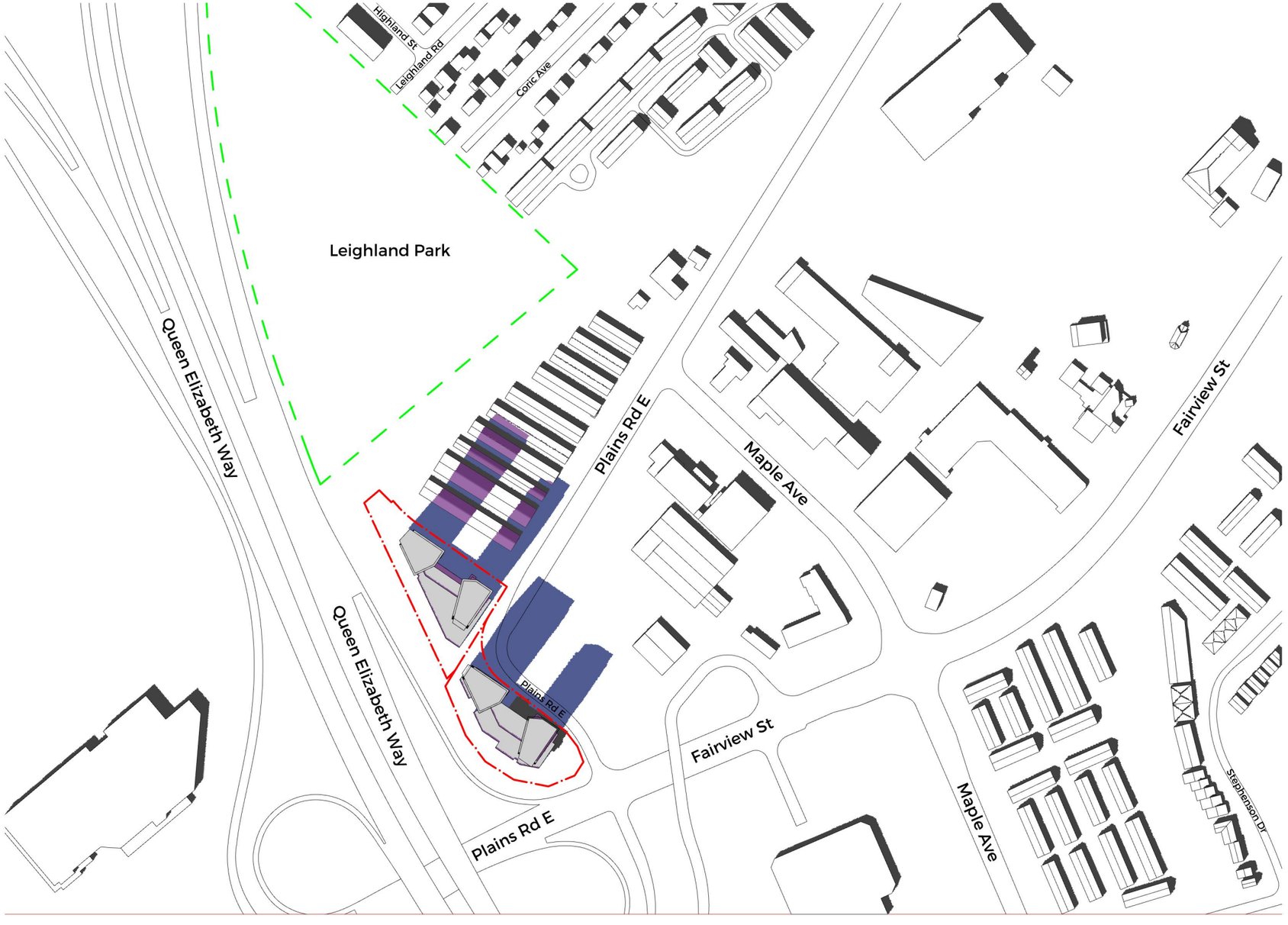
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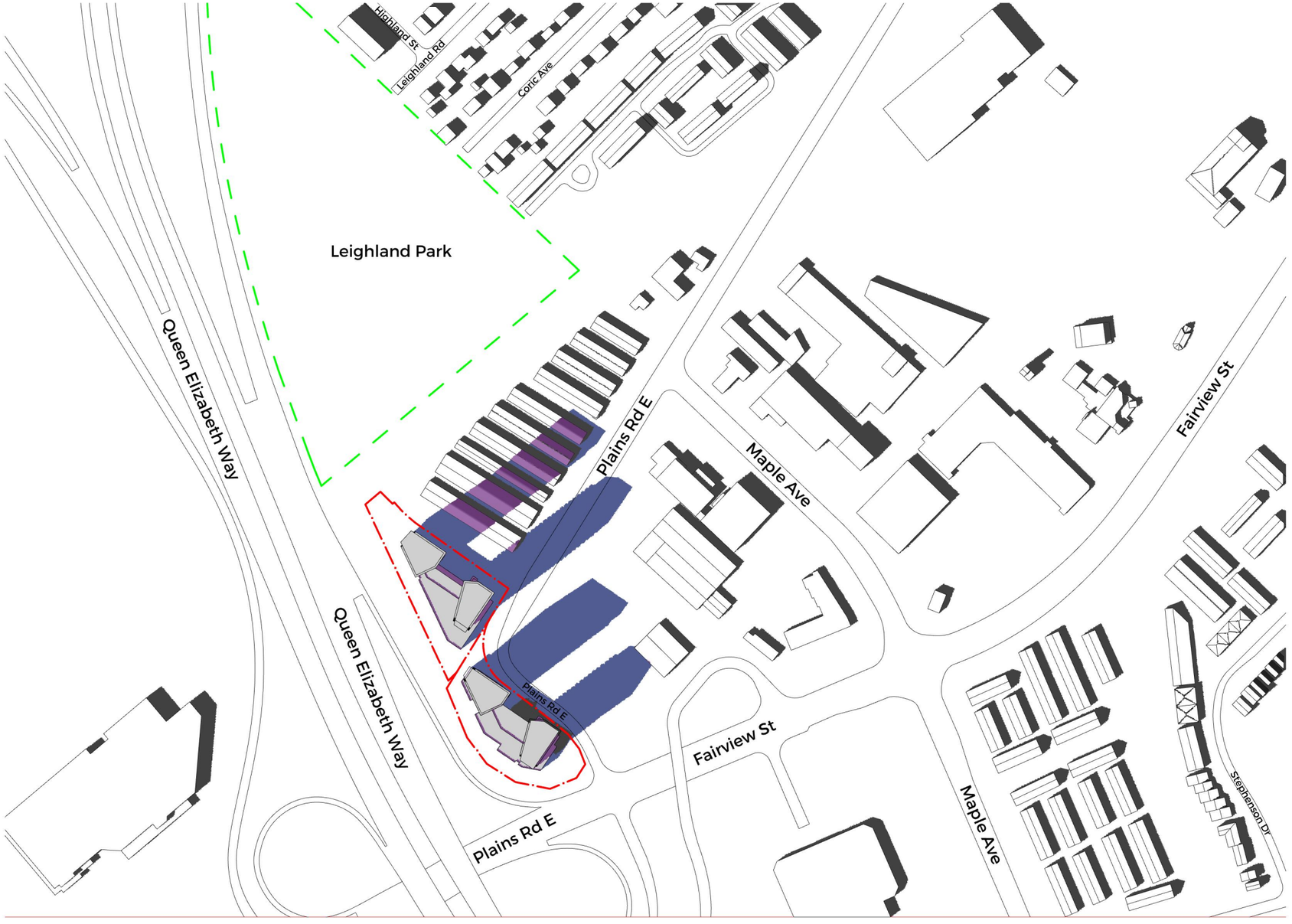
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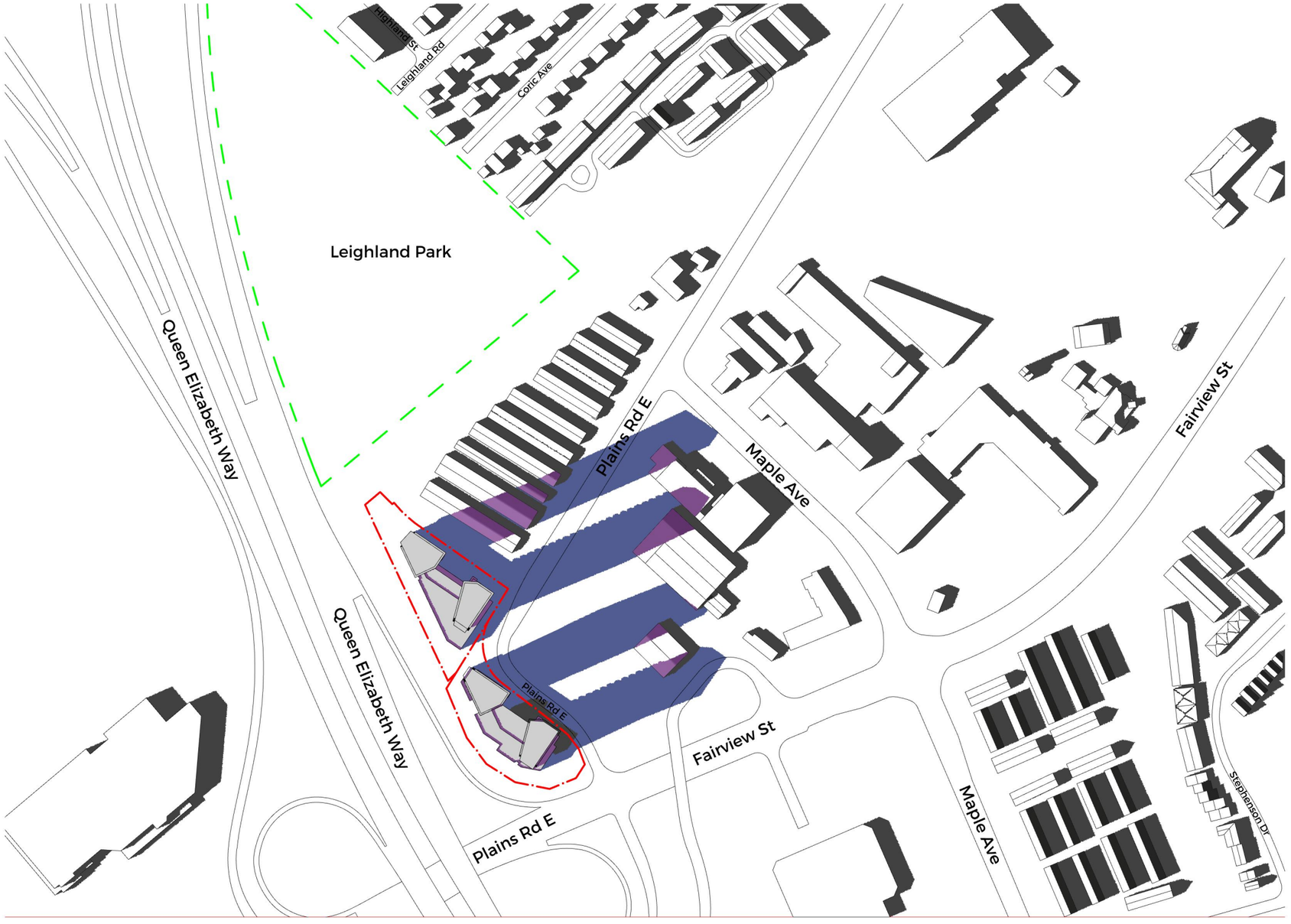
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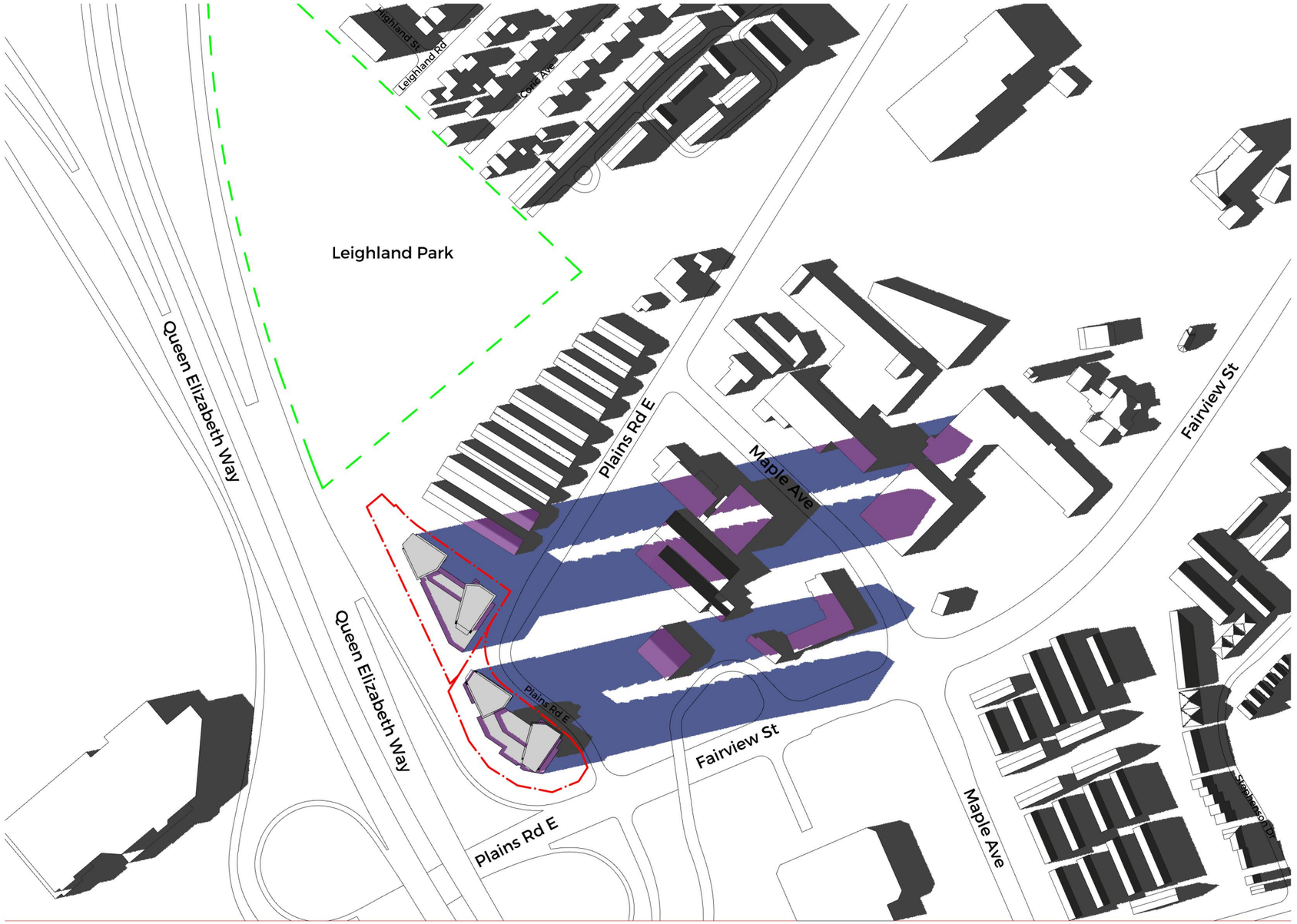
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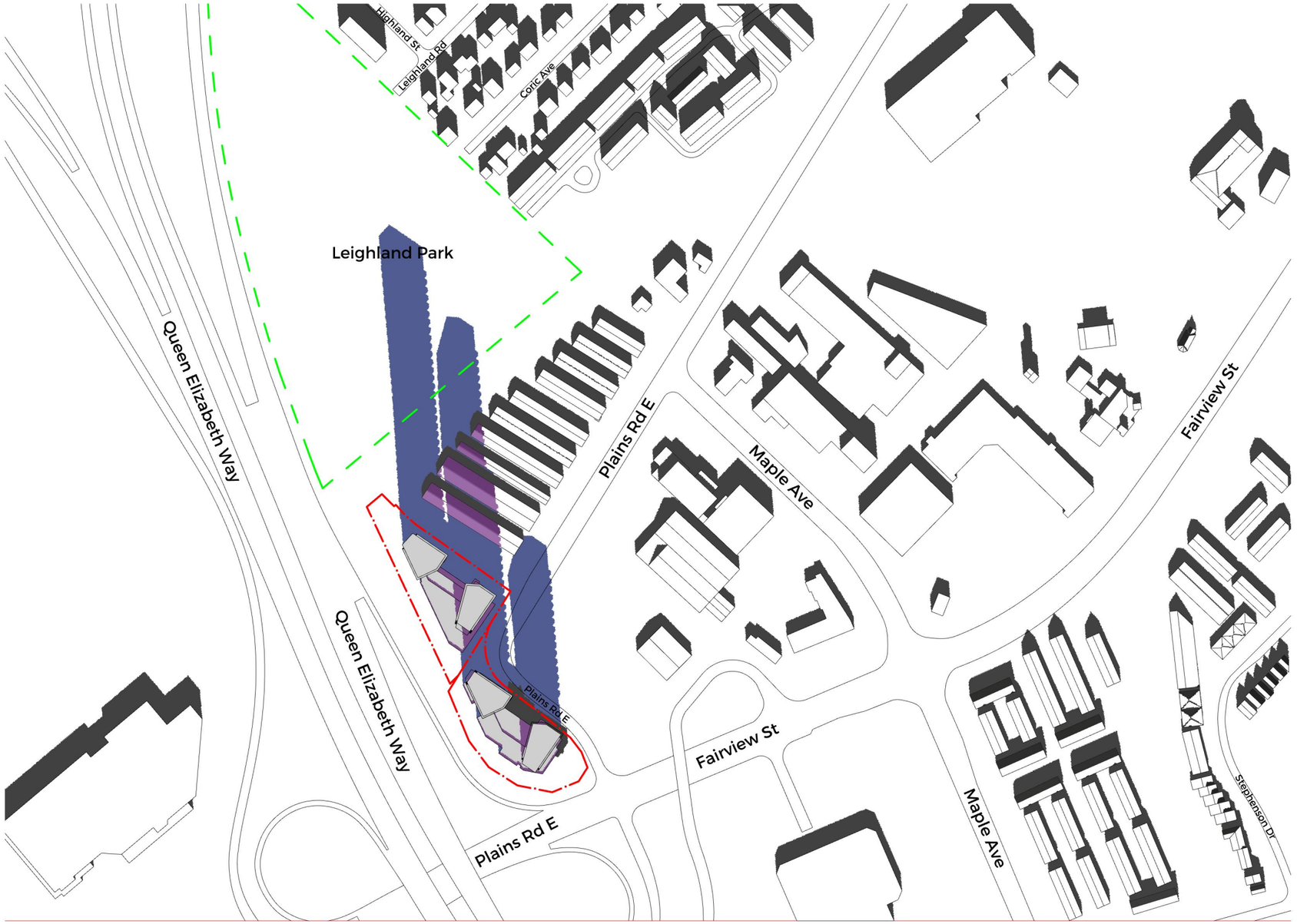
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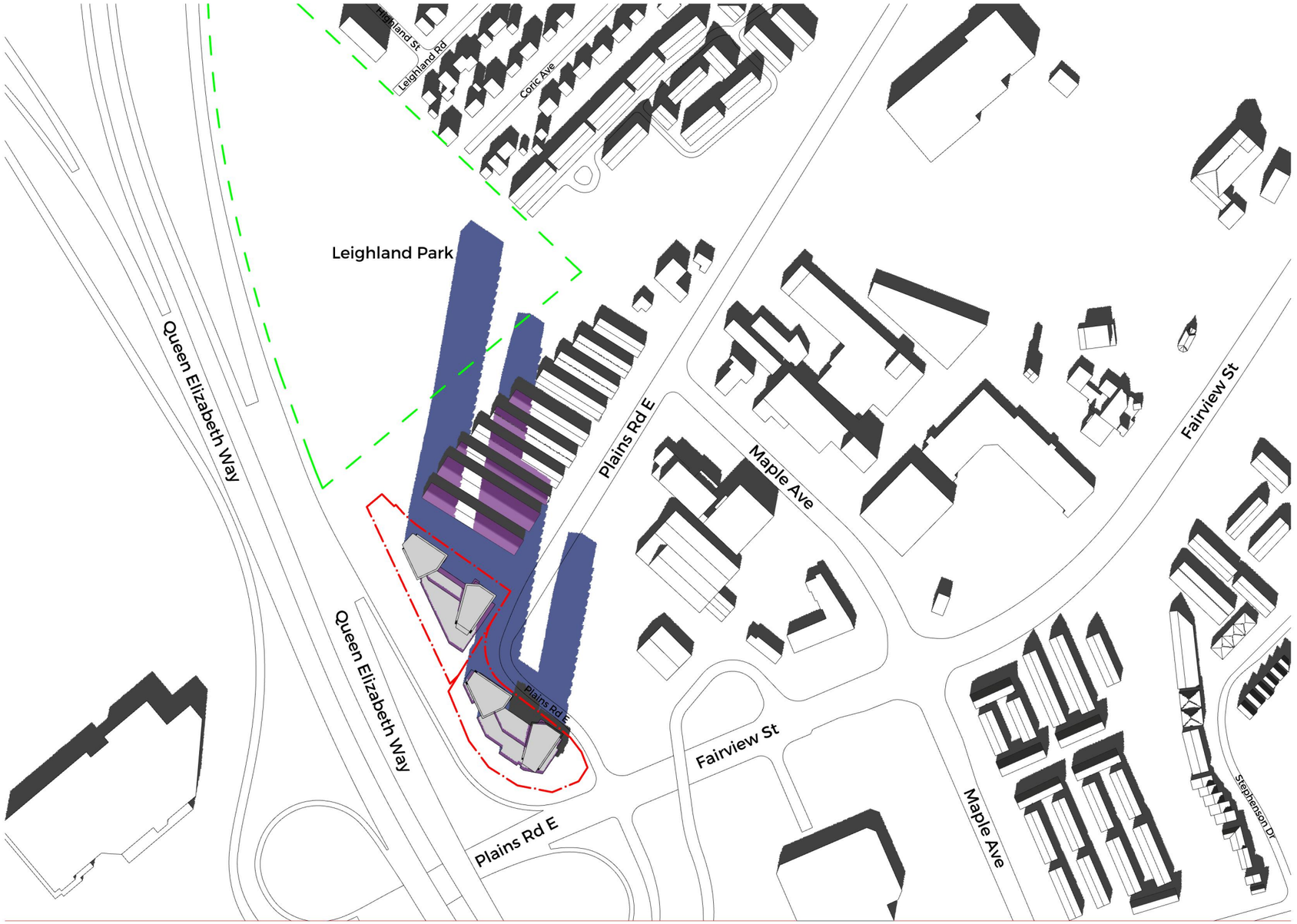
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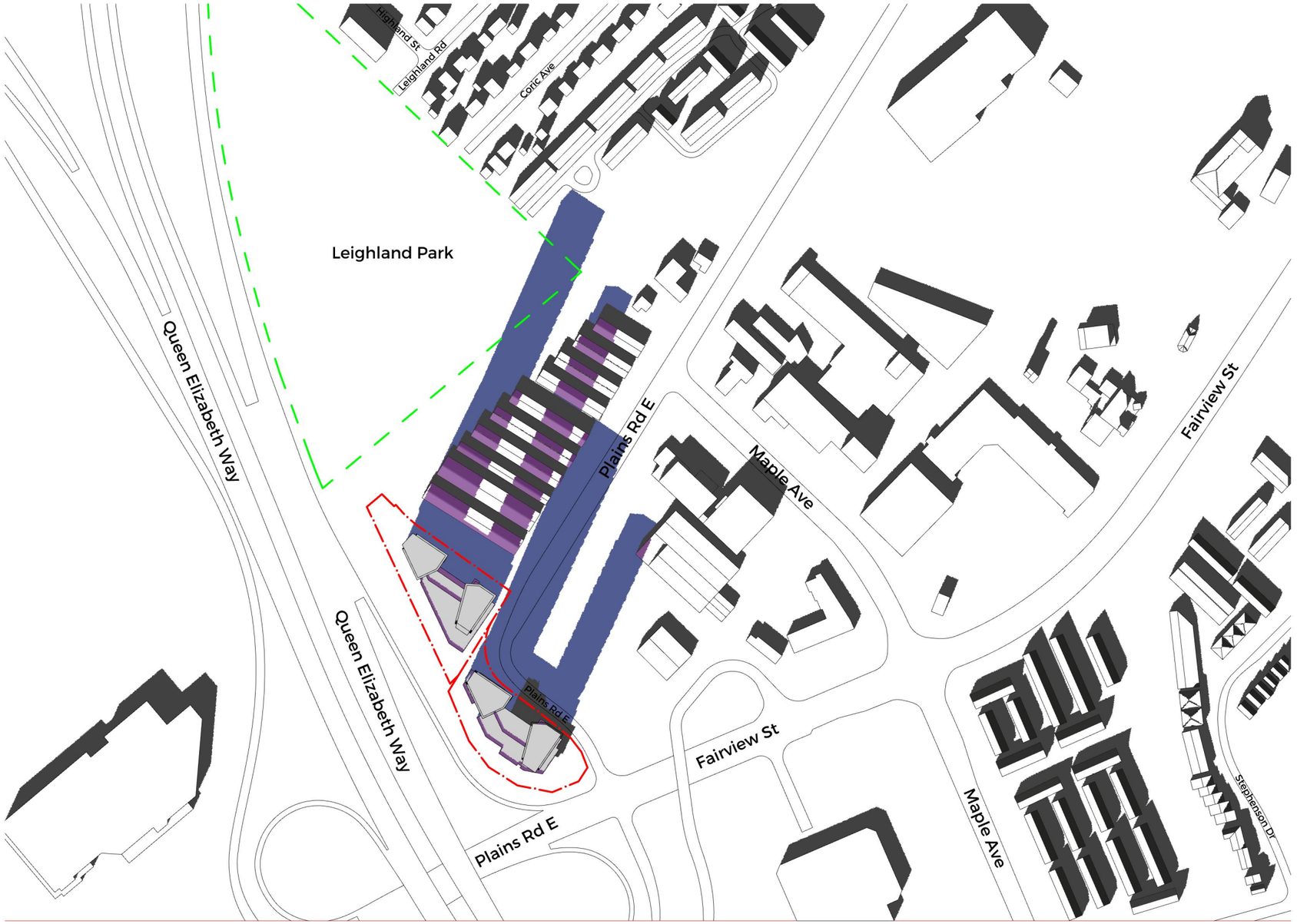
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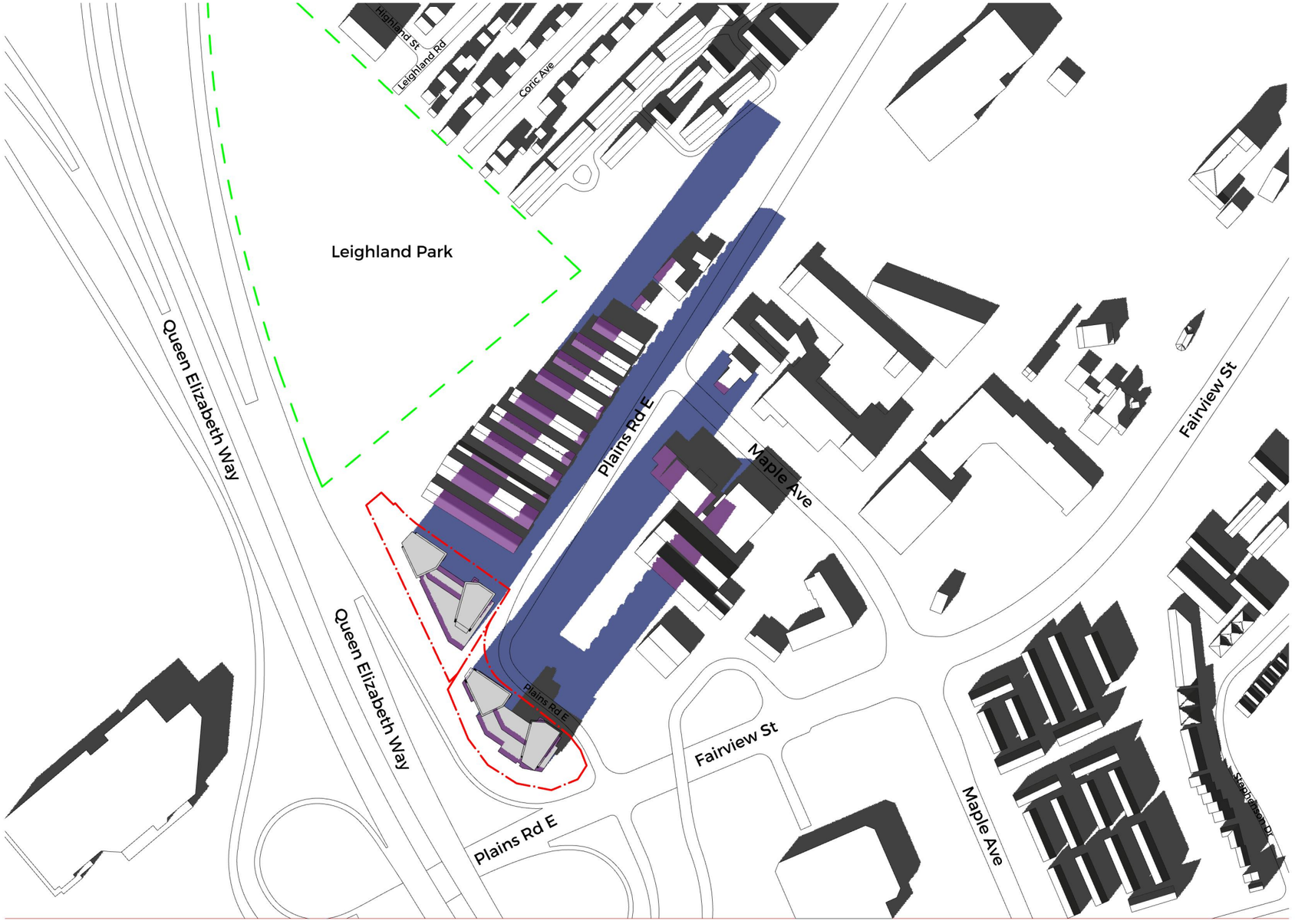
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