SHADOW STUDY

1345 LAKESHORE ROAD EAST

CITY OF MISSISSAUGA

PREPARED FOR:
VANDYK Group of Companies

July
2019

BOUSFIELDS INC.

BOUSFIELDS INC.

Job Number - 1823

1.0 INTRODUCTION

The following information prepared by Bousfields Inc. is to be read in conjunction with the accompanying shadow drawings as well as the architectural drawing set prepared by Kohn Partnership Architects Inc.

1.1 Site Latitude and Longitude

The information taken from OpenStreetMap regarding the site of 1345 Lakeshore Road East, Mississauga, Ontario, L4X 1S9 is located at:

Latitude: 43°58′4332″N

Longitude: 79°55′1223″W

Astronomic north was determined by geolocating the 3D model in SketchUp based on OpenStreetMap. The origin of the base plan is from City of Mississauga CAD files, Google Earth satellite imagery, and architectural drawings prepared by Kohn Partnership Architects Inc.

1.2 Software Used to Prepare Shadow Analysis

SketchUp Pro was used for 3D work, calculations were done using AutoCad, final composite images were done in Photoshop.

1.3 Description of Areas

Residential private outdoor amenity spaces are determined as private rear yards, decks, patios and pools of surrounding residential dwellings (See fig. 1).

Communal outdoor amenity areas are determined as public amenity areas and common outdoor amenity areas that are part of proposed or existing development (See fig. 2).

Public realm is determined as sidewalks, open spaces, parks and plazas. (See fig. 3).

Turf and flower gardens in public parks within the public realm have not been identified.

Building faces have been identified to allow for possibility of using solar energy (See fig. 4).

The findings of the study are summarized as follows:

2.0 RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACES

Section 3.1 of the Mississauga Urban Design Terms of Reference - Standards for Shadow Studies requires the identification of private outdoor amenity spaces within the vicinity of the proposed development. Areas outlined in teal were identified as private outdoor amenity spaces, including rear yards, decks, patios and pools within 7.5m of the rear wall or other appropriate exterior building wall, known as the line of impact assessment or "no impact zone".

Testing times include June 21st and September 21st to maximize the use of these spaces.

The criteria 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.

The shadow analysis demonstrates that on June 21st, Area I located west of the subject site receives shadowing from 7:07 am to 10:15 am, a little over three consecutive hourly test times. Additionally, Area F, located northwest of the subject site, receives shadowing from 8:35 am to 10:55 am on September 21st. Therefore, criteria 3.1 are not met, however it should be noted that Appledale Park is located to the immediate east of Area I and is surrounded by heavy tree planting that cast significant shadow throughout the day (the shadow impact from the existing tree canopy is not accounted for in the 3D context model).

Figure 1 - Residential private outdoor amenity spaces key map identifies all areas in the vicinity.

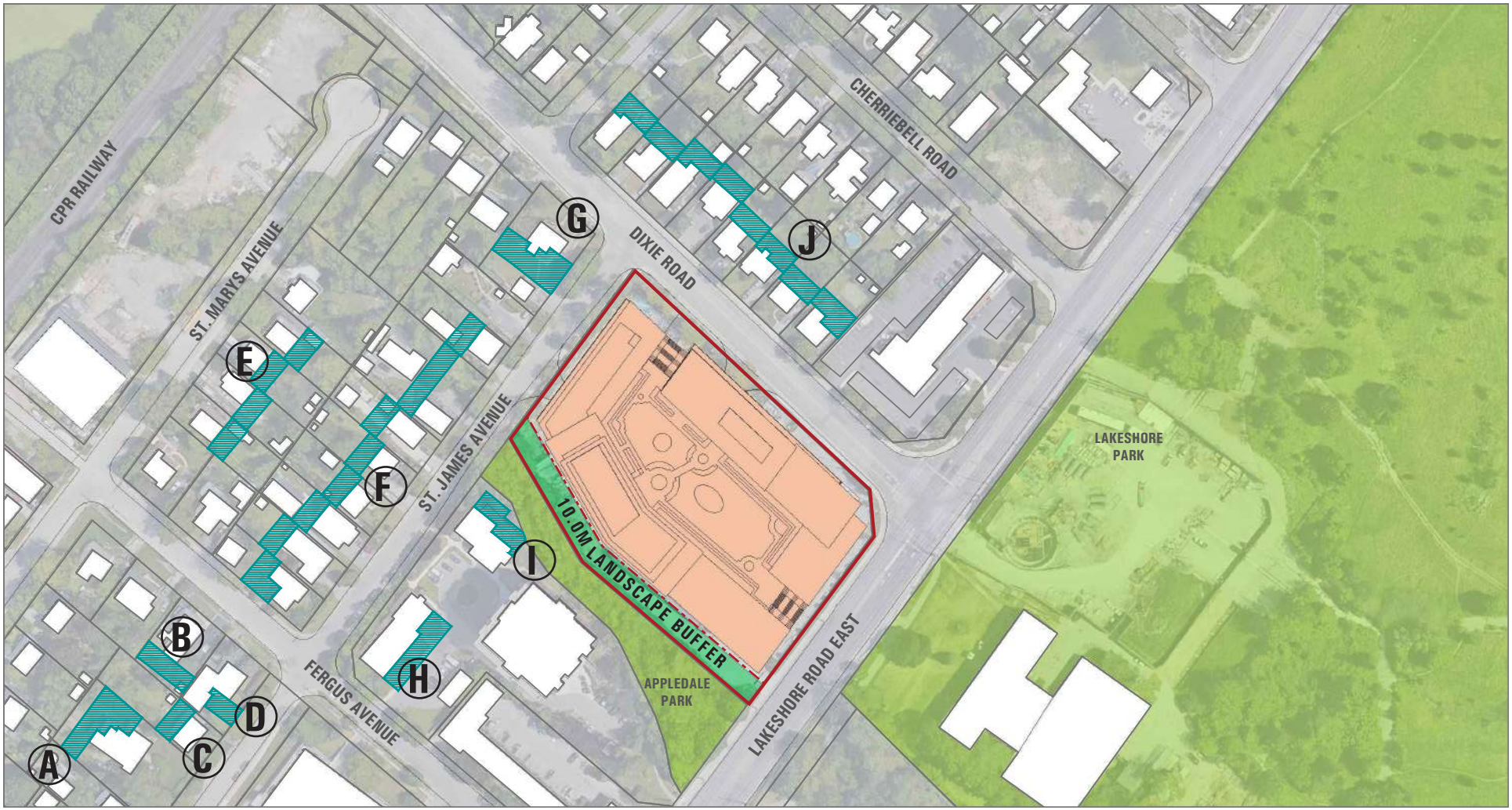


Figure 1 - Residential private outdoor amenity spaces key map

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Residential Private Outdoor Amenity Areas - 7.5m from rear wall

JUNE 21ST

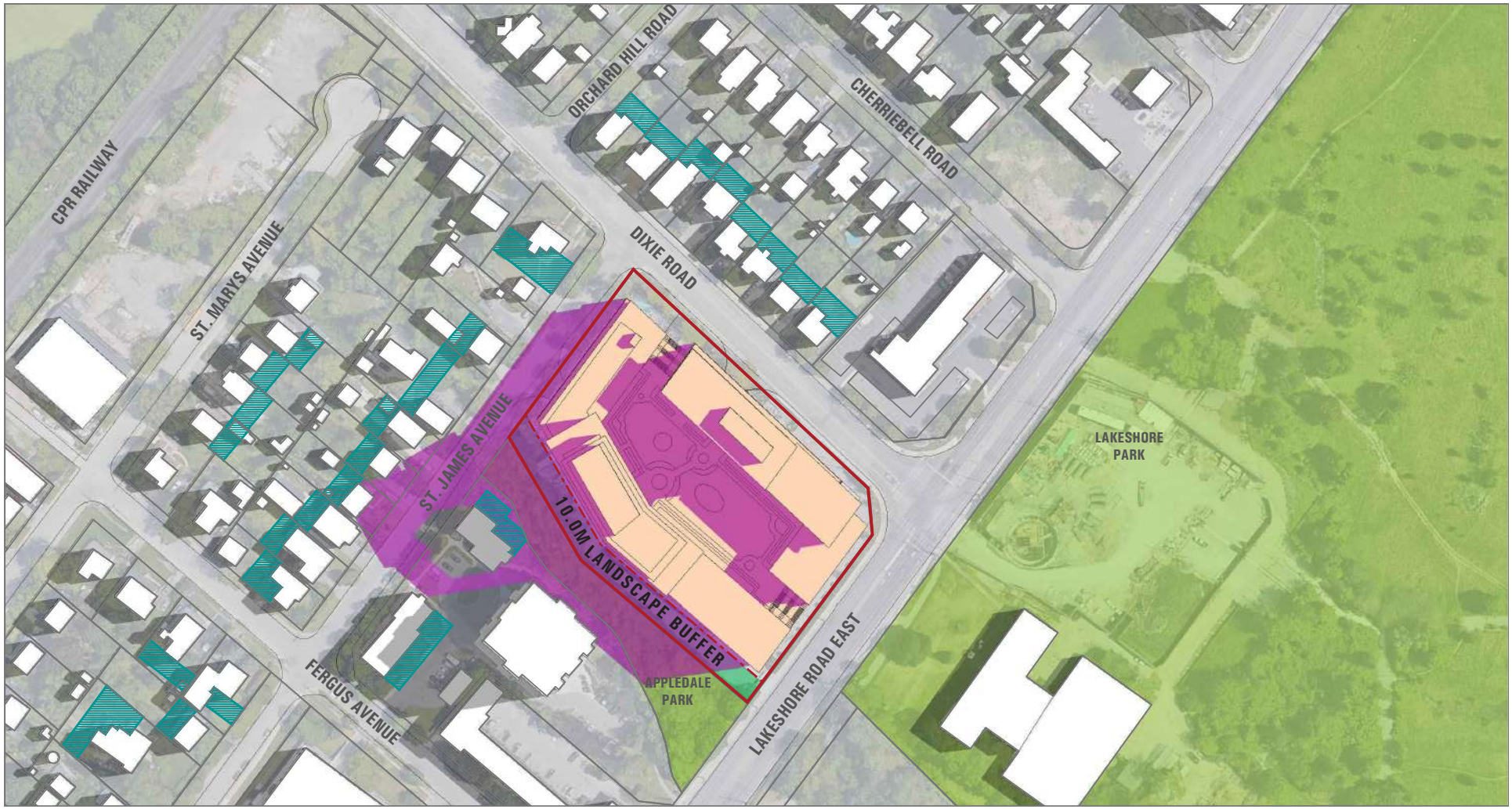
June 21st - 7:07 am

Subject Site
Existing Buildings
Proposed Development
Shadow Cast by Proposed Development
Shadow Cast by existing buildings
Existing Park
10.0m Landscape Buffer
Residential Private Outdoor Amenity Areas - 7.5m from rear wall

June 21st - 7:20 am

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Residential Private Outdoor Amenity Areas - 7.5m from rear wall

June 21st - 8:20 am



Subject Site
Existing Buildings
Proposed Development
Shadow Cast by Proposed Development
Shadow Cast by existing buildings
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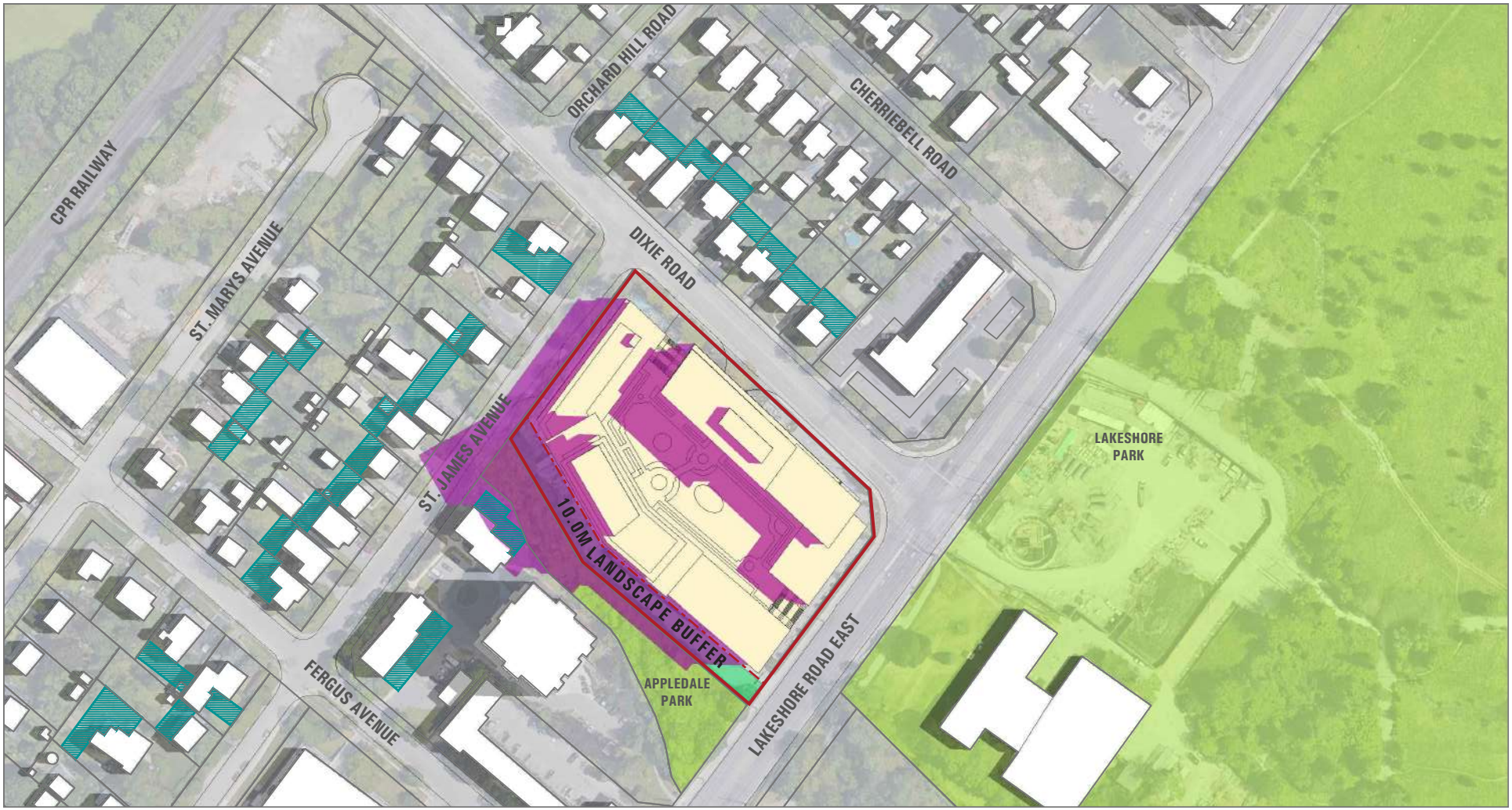
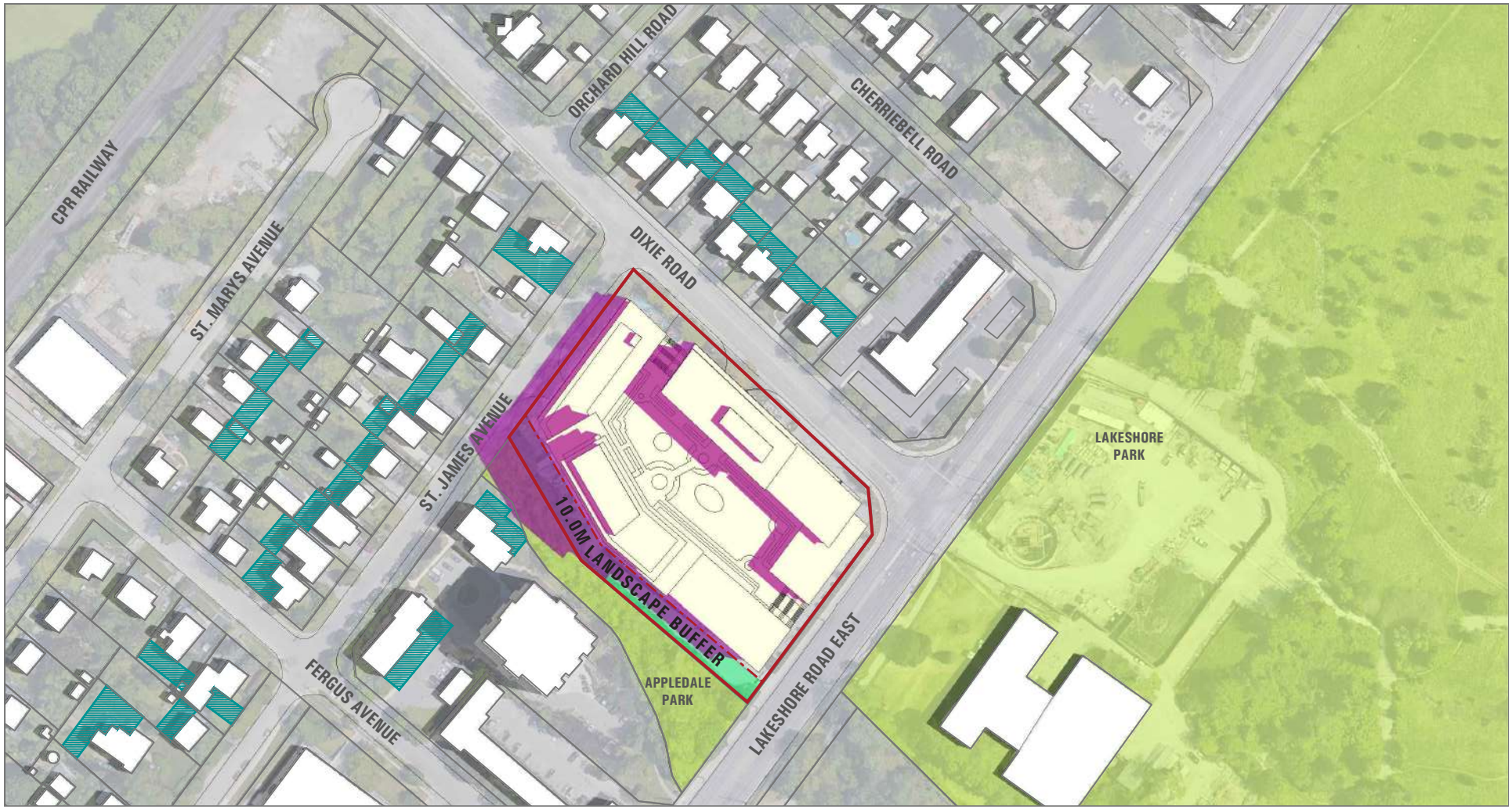
June 21st - 9:20 am



Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Residential Private Outdoor Amenity Areas - 7.5m from rear wall

June 21st - 10:20 am



Subject Site
Existing Buildings
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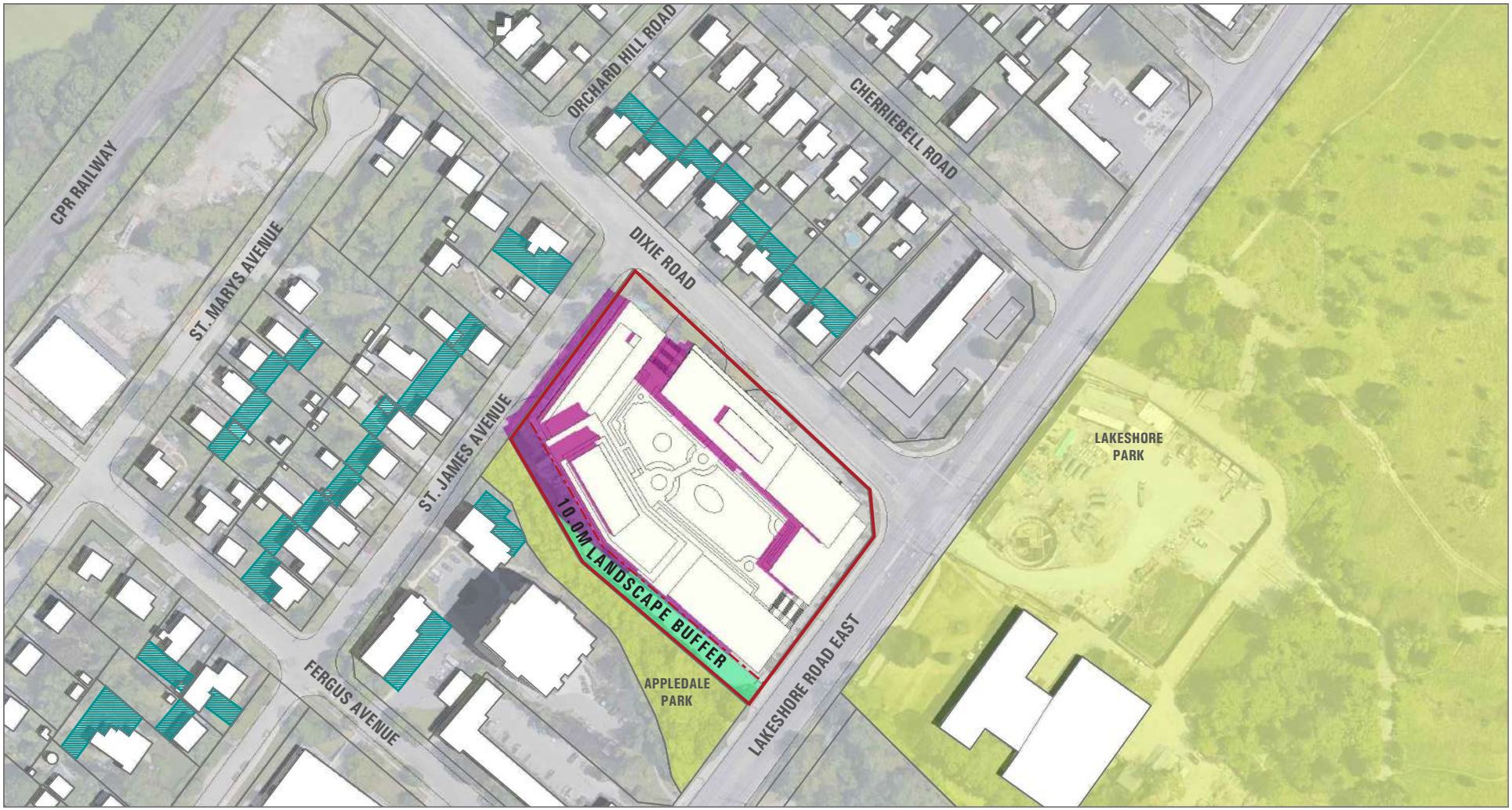
June 21st - 11:20 am



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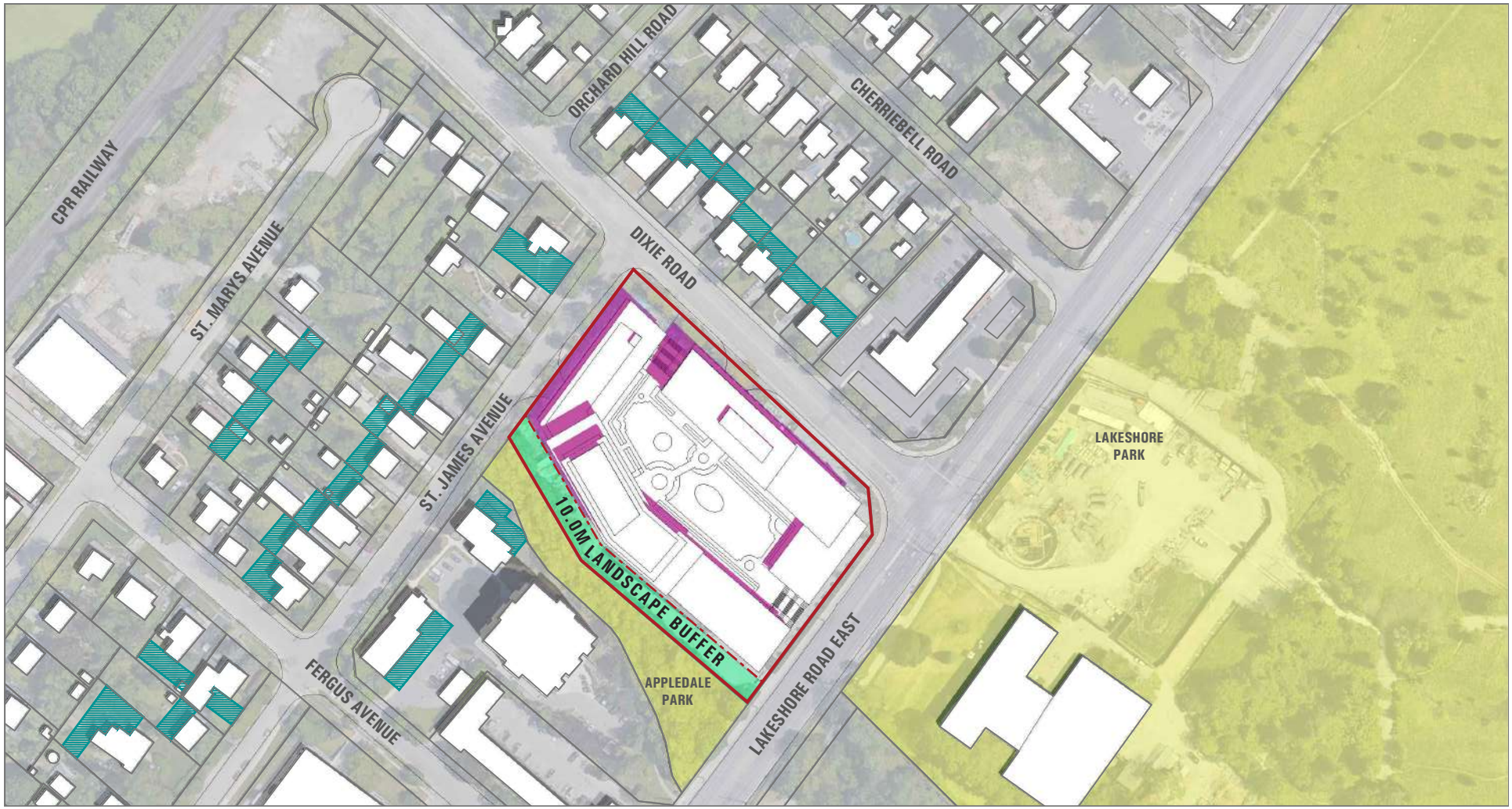
June 21st - 12:20 pm



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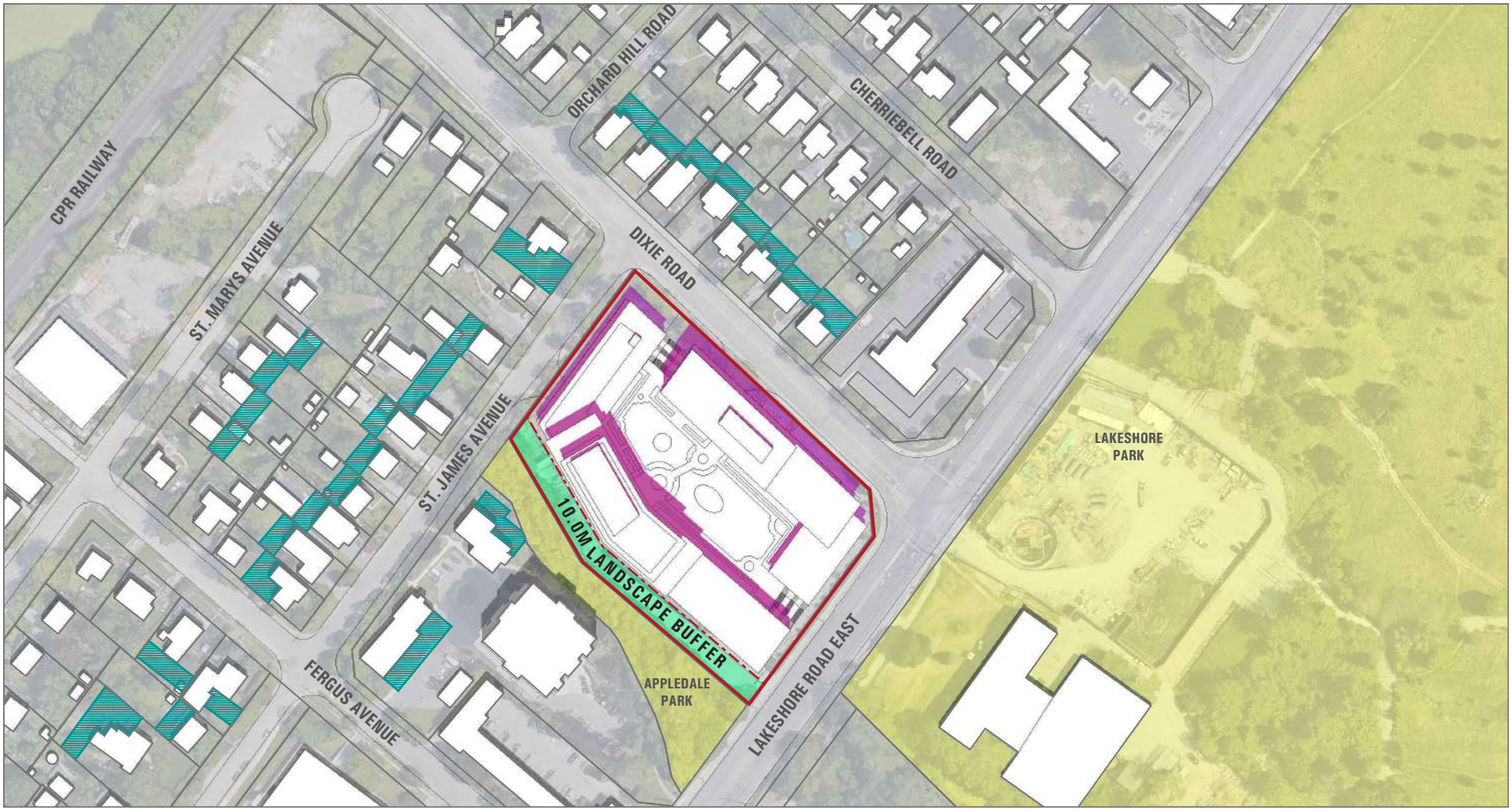
June 21st - 1:20 pm



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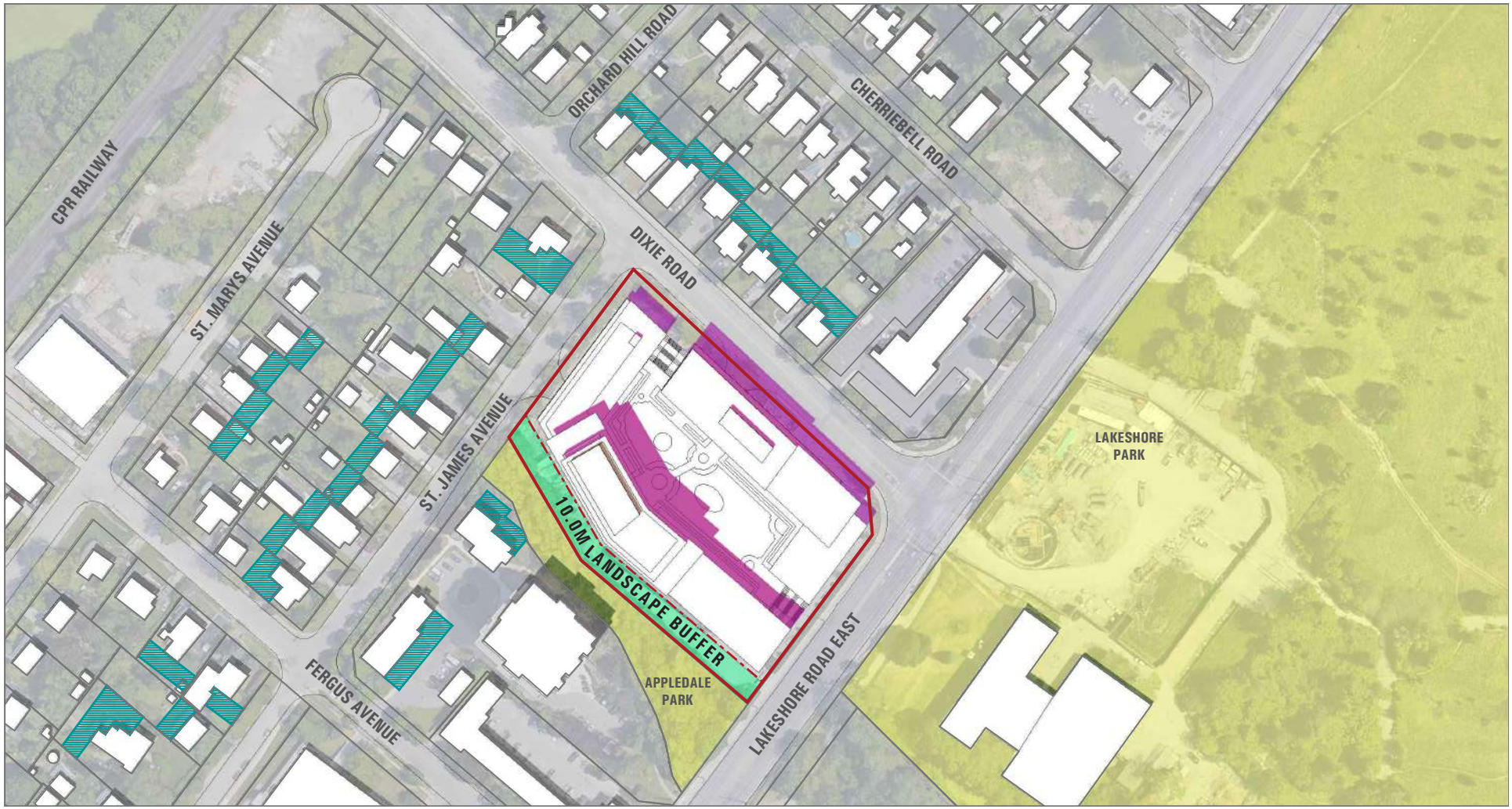
June 21st - 2:20 pm



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Existing Buildings
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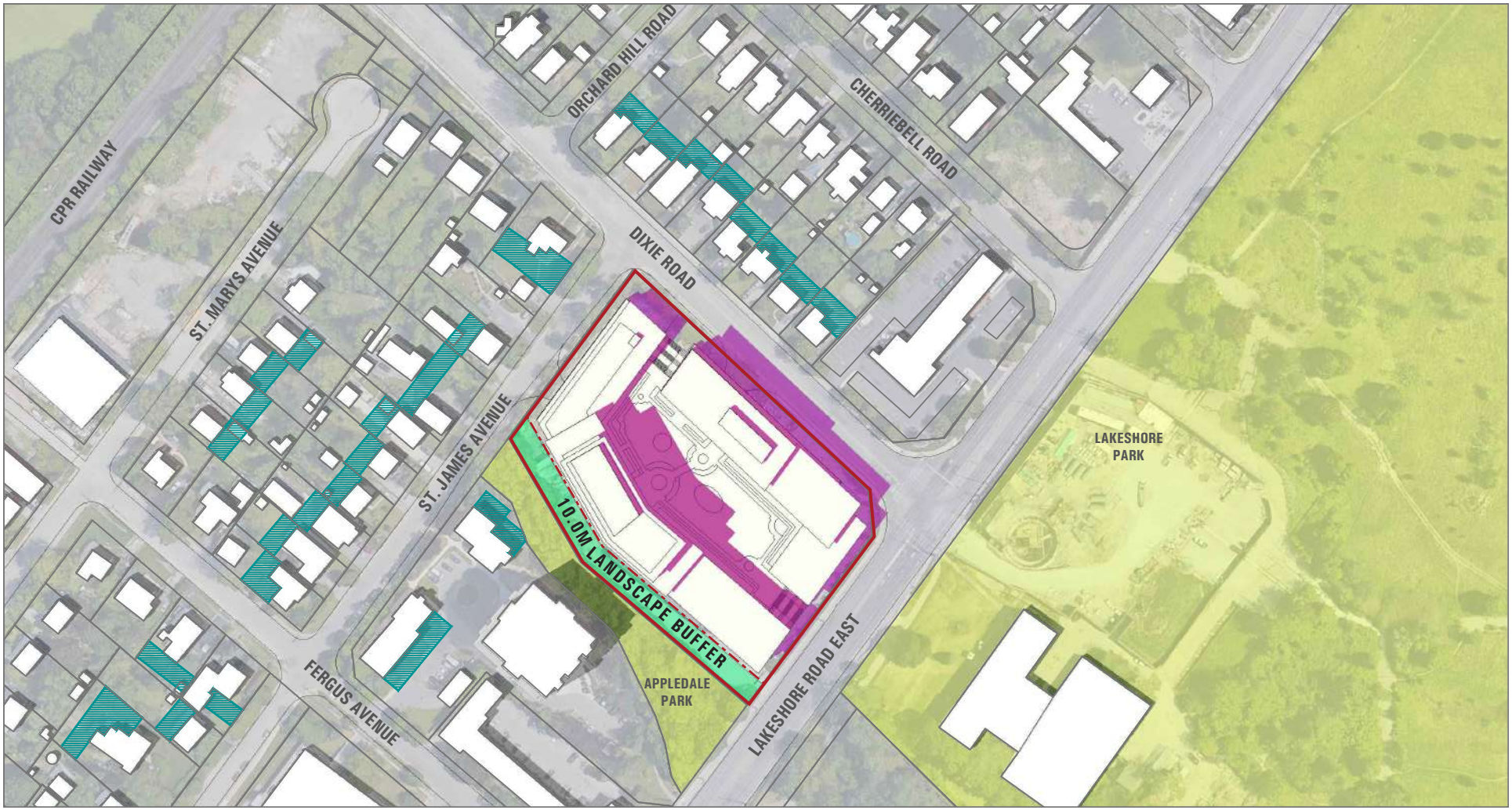
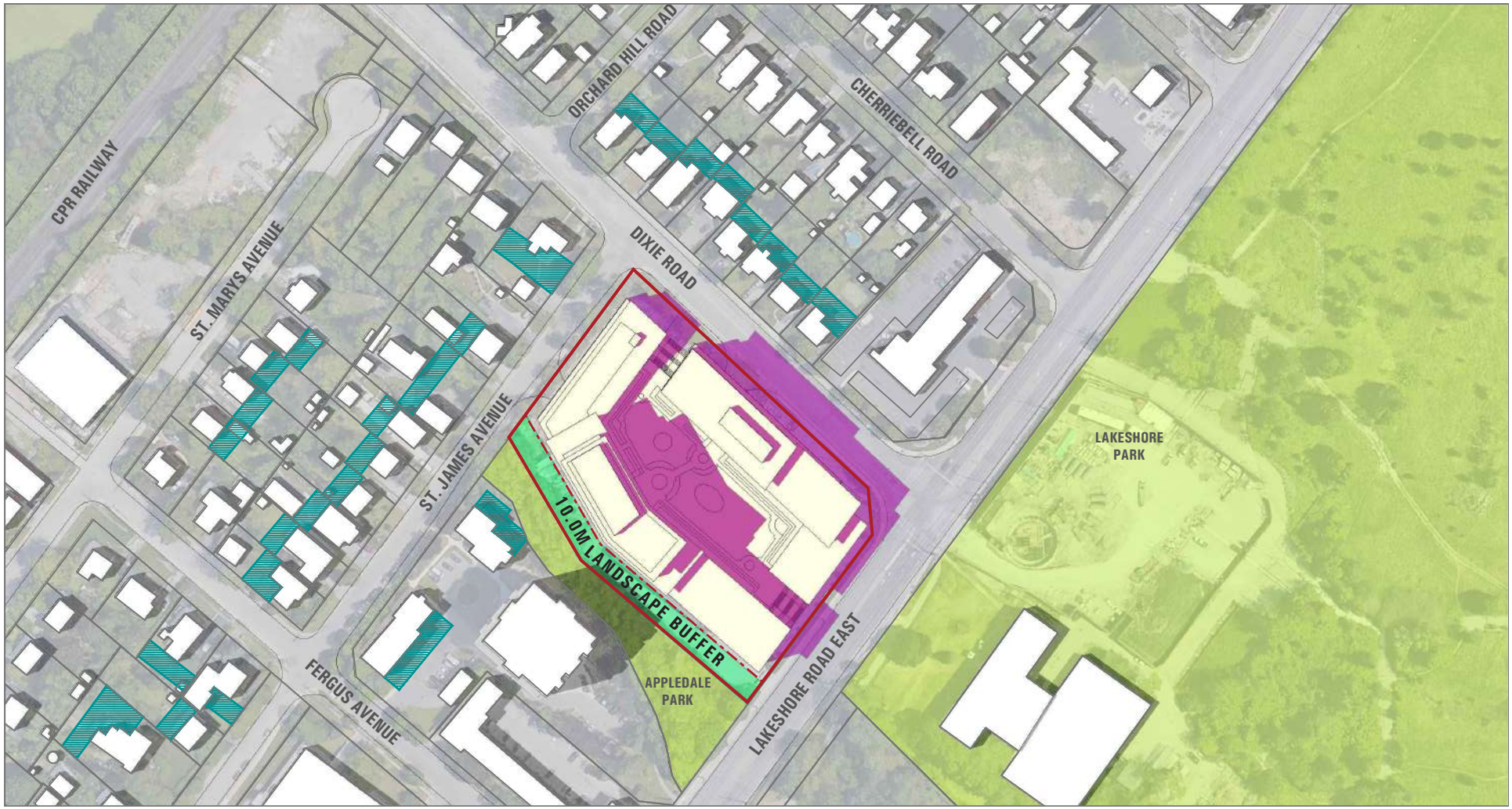
June 21st - 3:20 pm



Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Residential Private Outdoor Amenity Areas - 7.5m from rear wall

June 21st - 4:20 pm



Subject Site
Existing Buildings
Proposed Development
Shadow Cast by Proposed Development
Shadow Cast by existing buildings
Existing Park
10.0m Landscape Buffer
Residential Private Outdoor Amenity Areas - 7.5m from rear wall

June 21st - 5:20 pm

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Residential Private Outdoor Amenity Areas - 7.5m from rear wall

June 21st - 6:20 pm

Subject Site
Existing Buildings
Proposed Development
Shadow Cast by Proposed Development
Shadow Cast by existing buildings
Existing Park
10.0m Landscape Buffer
Residential Private Outdoor Amenity Areas - 7.5m from rear wall

June 21st - 7:20 pm

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Residential Private Outdoor Amenity Areas - 7.5m from rear wall

June 21st - 7:33 pm

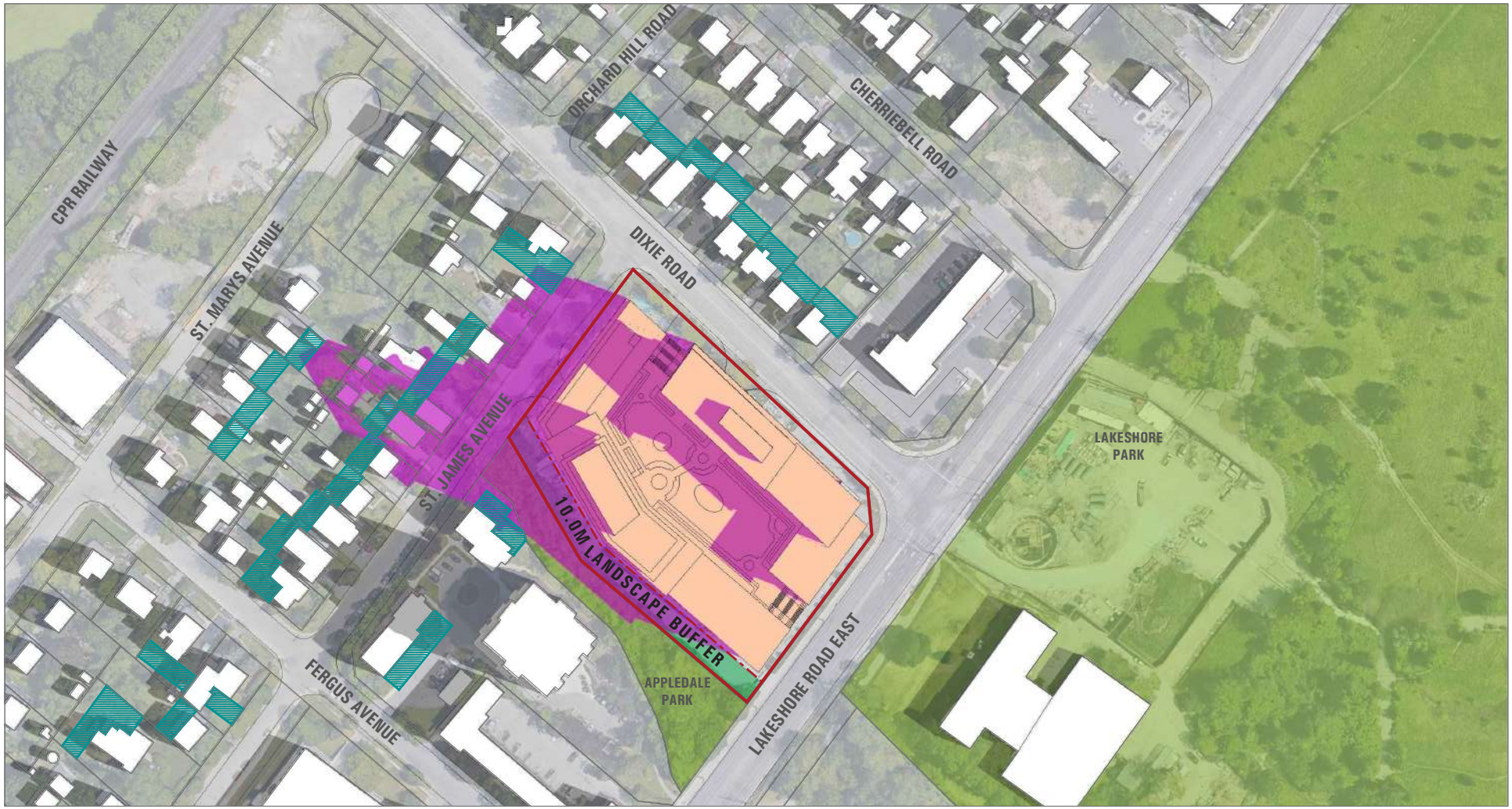
Subject Site
Existing Buildings
Proposed Development
Shadow Cast by Proposed Development
Shadow Cast by existing buildings
Existing Park
10.0m Landscape Buffer
Residential Private Outdoor Amenity Areas - 7.5m from rear wall

SEPTEMBER 21ST

September 21st - 8:35 am

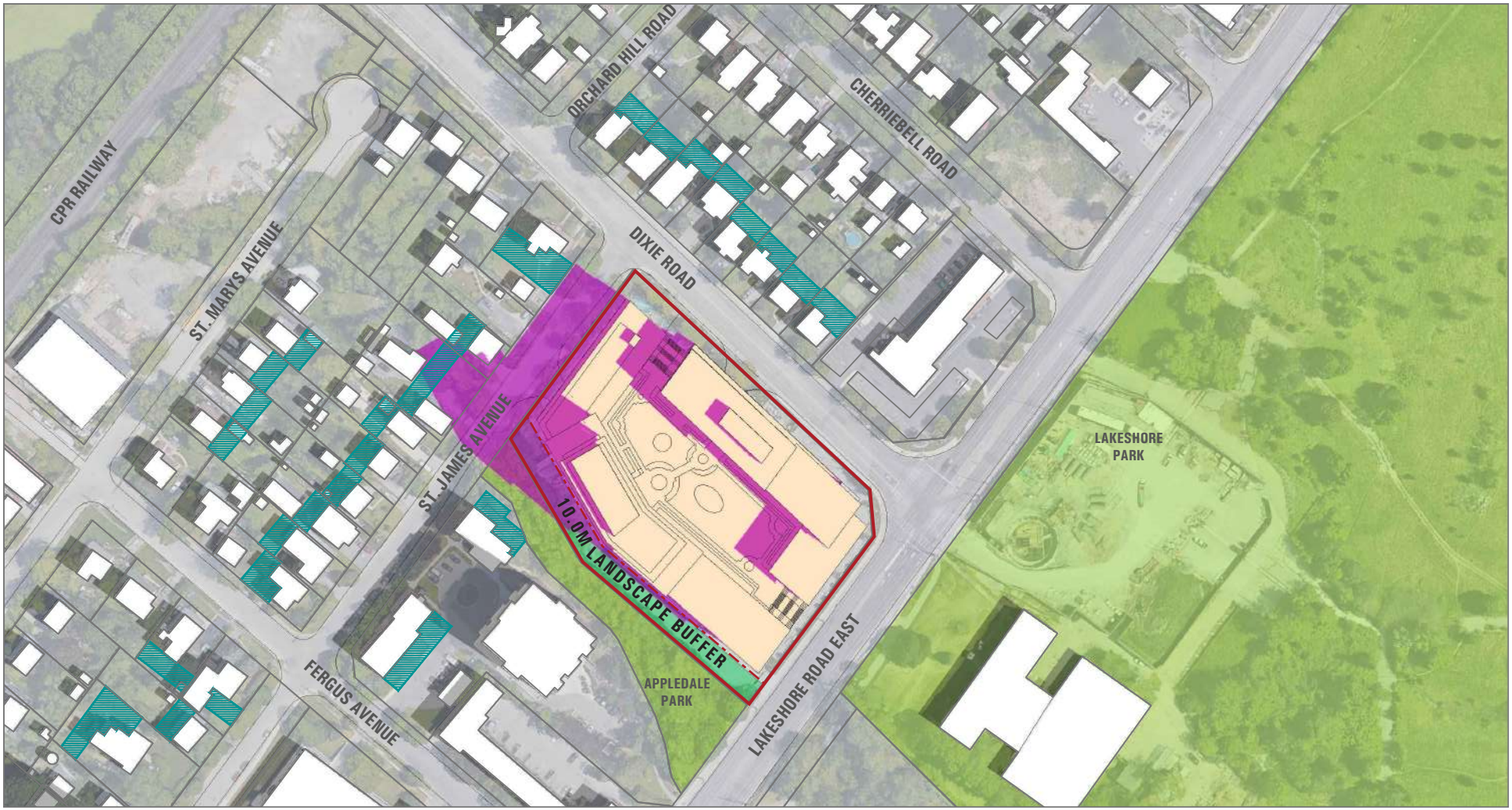
Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Residential Private Outdoor Amenity Areas - 7.5m from rear wall

September 21st - 9:12 am



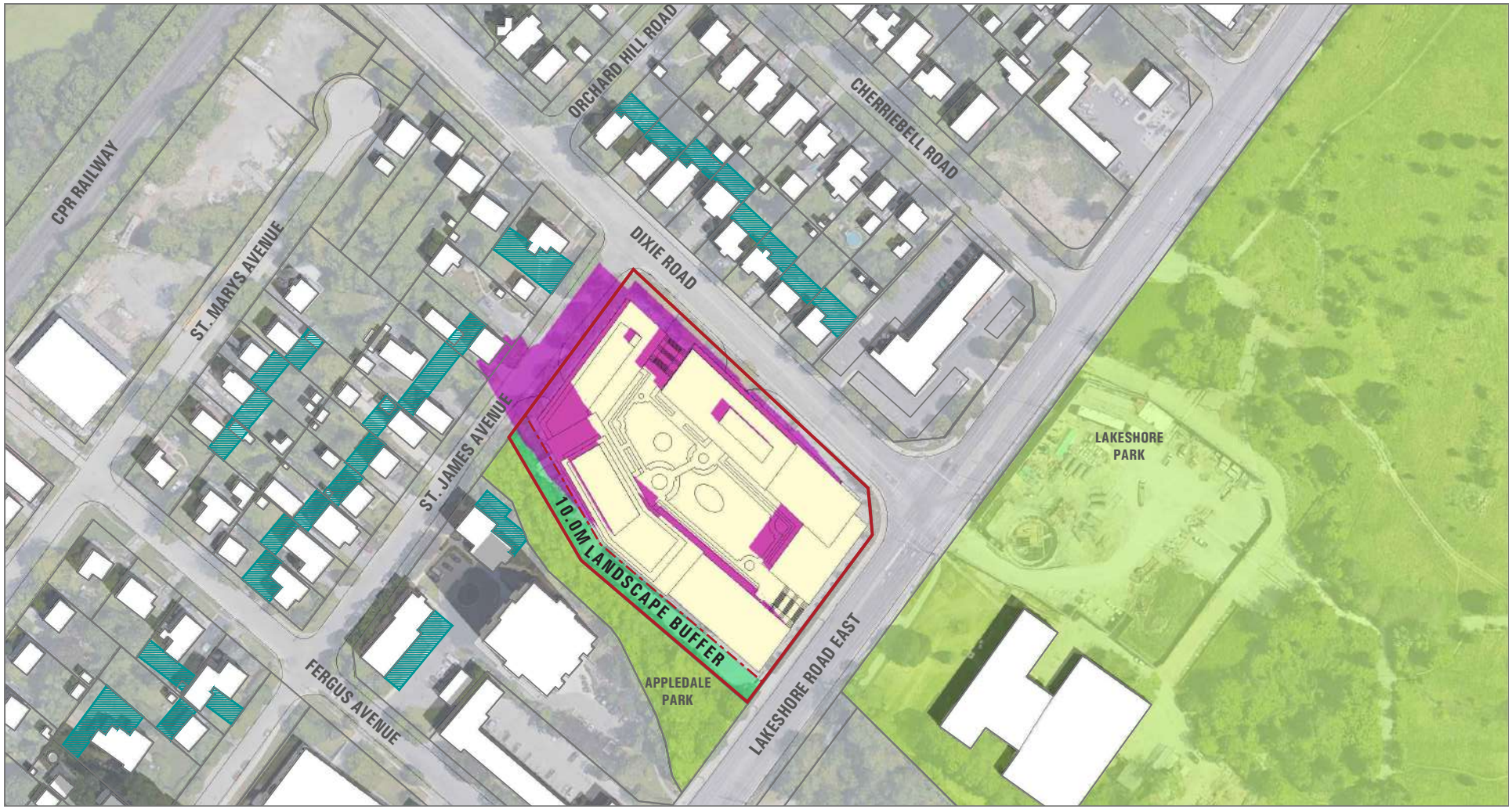
Subject Site
Existing Buildings
Proposed Development
Shadow Cast by Proposed Development
Shadow Cast by existing buildings
Existing Park
10.0m Landscape Buffer
Residential Private Outdoor Amenity Areas - 7.5m from rear wall

September 21st - 10:12 am



Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Residential Private Outdoor Amenity Areas - 7.5m from rear wall

September 21st - 11:12 am



Subject Site
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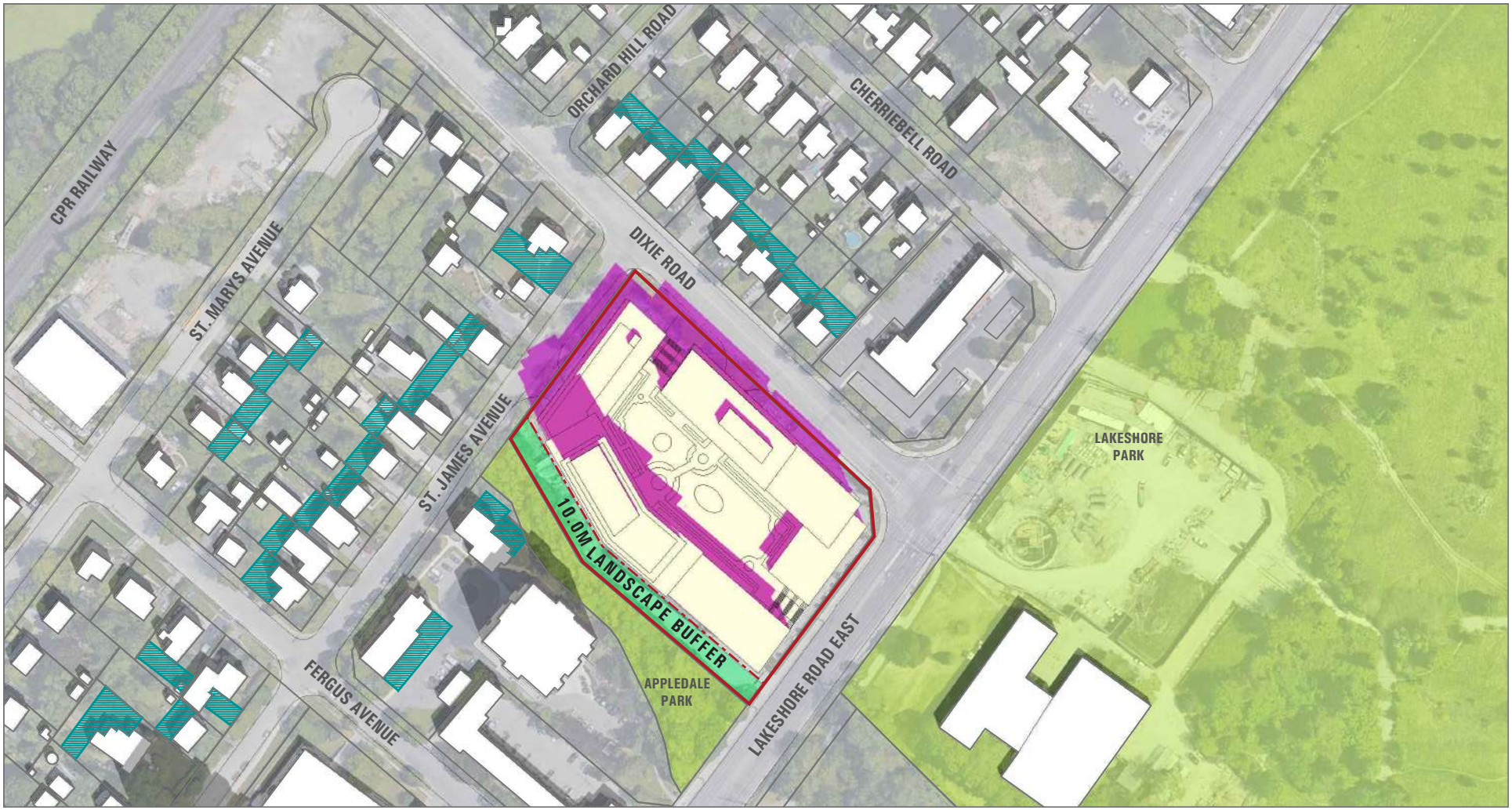
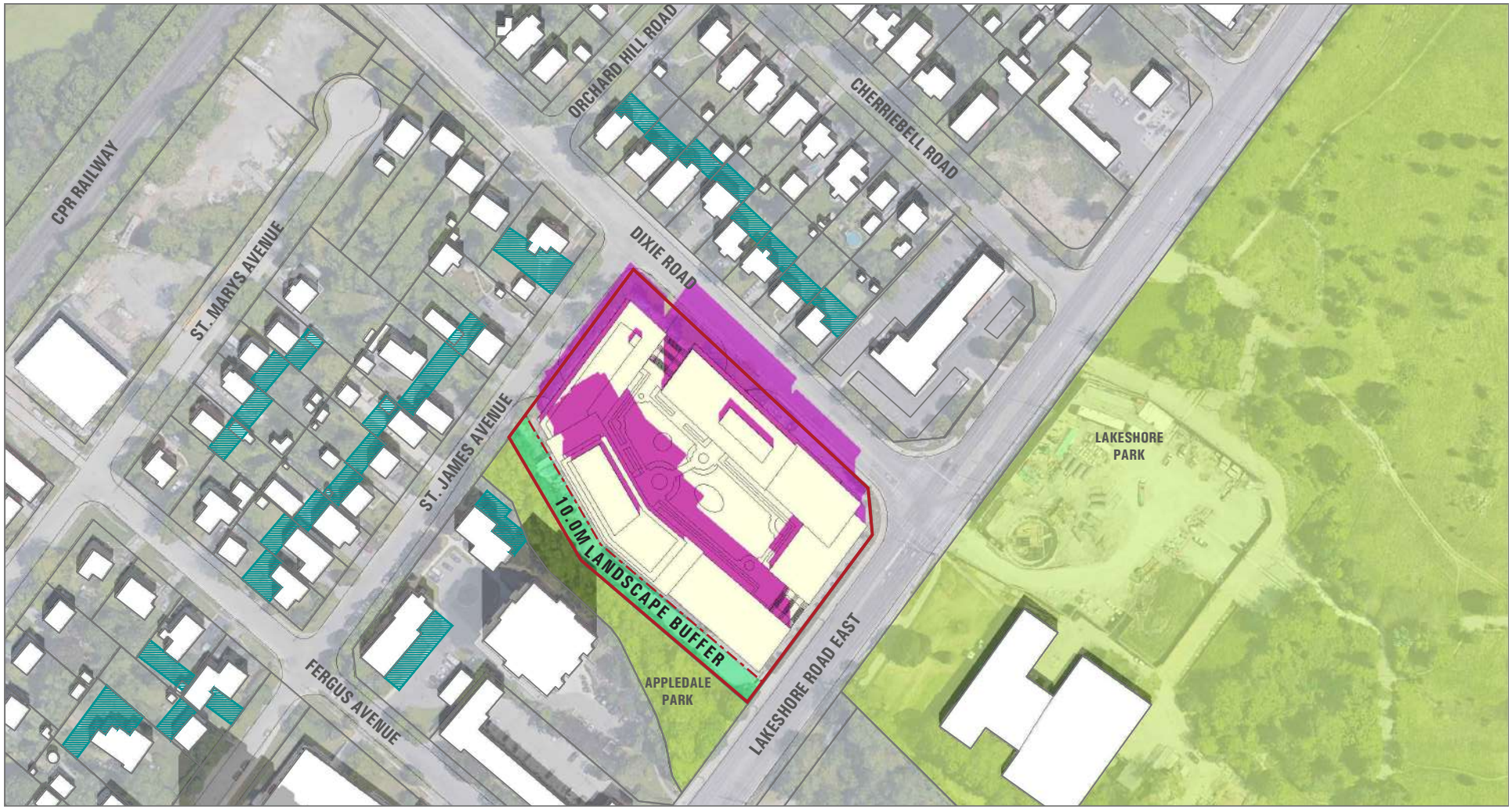
September 21st - 12:12 pm



Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Residential Private Outdoor Amenity Areas - 7.5m from rear wall

September 21st - 1:12 pm

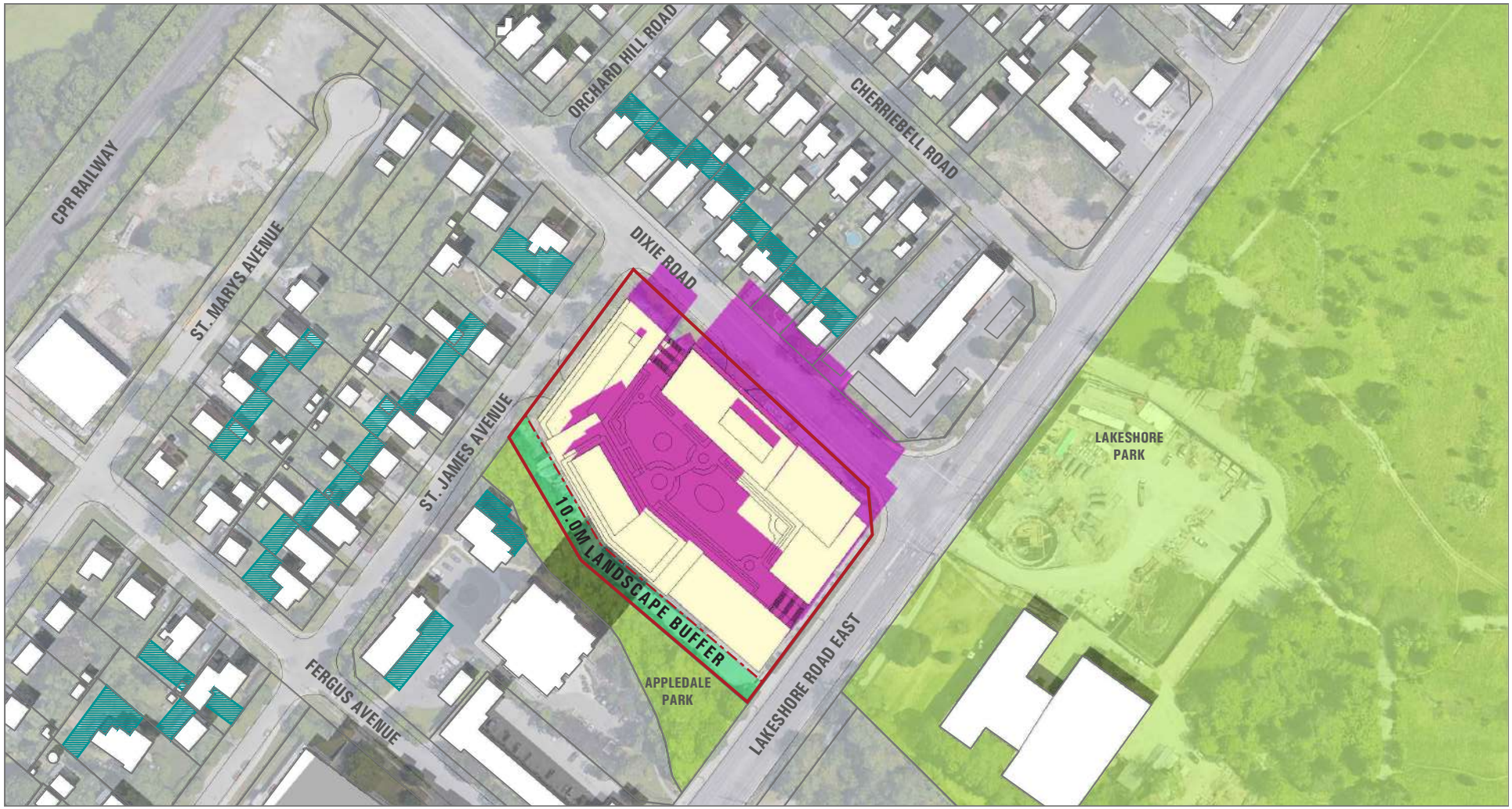


Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Residential Private Outdoor Amenity Areas - 7.5m from rear wall

September 21st - 2:12 pm

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Residential Private Outdoor Amenity Areas - 7.5m from rear wall

September 21st - 3:12 pm



Subject Site
Existing Buildings
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Shadow Cast by existing buildings
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September 21st - 4:12 pm

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Residential Private Outdoor Amenity Areas - 7.5m from rear wall

September 21st - 5:12 pm

Subject Site
Existing Buildings
Proposed Development
Shadow Cast by Proposed Development
Shadow Cast by existing buildings
Existing Park
10.0m Landscape Buffer
Residential Private Outdoor Amenity Areas - 7.5m from rear wall

September 21st - 5:48 pm

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Residential Private Outdoor Amenity Areas - 7.5m from rear wall

3.0 COMMUNAL OUTDOOR AMENITY AREAS

Section 3.2 of the Mississauga Urban Design Terms of Reference - Standards for Shadow Studies requires the identification of communal outdoor amenity areas within the vicinity of the proposed developments. Areas outlined in orange were identified as communal outdoor amenity areas and include children's play areas, school yards, tot lots, and park features such as sandboxes, wading pools etc. It also includes outdoor amenity areas used by seniors and those associated with commercial and employment areas.

Testing times include June 21st, September 21st, and December 21st.

As defined by the Terms of Reference, shadows from a proposed development should allow for full sun on identified areas at least half the time, or 50% sun coverage all the time. If the "sun access factor" is at least 50% or 0.5 on each of the test dates (Areas in Sunshine(average)/Total Area = 0.5 or more), then the shadow impact is considered to be in compliance with these terms of reference.

The findings of the shadow analysis show that the proposal allows for full sun on the communal outdoor amenity areas are in accordance with this standard for June 21st and September 21st. This study found that the average sun access factor for December 21st was slightly below the standard of compliance, at 0.41. As such, the criteria for Section 3.2 are met for the June and September test times, but not for December. However, it should be noted that use of these spaces is naturally limited during the winter months due to climatic conditions. Therefore, we are of the opinion that the shadow cast by the proposal will not adversely impact the enjoyment of the communal outdoor amenity areas.

Please refer to the calculations in Section 8.0 for details.

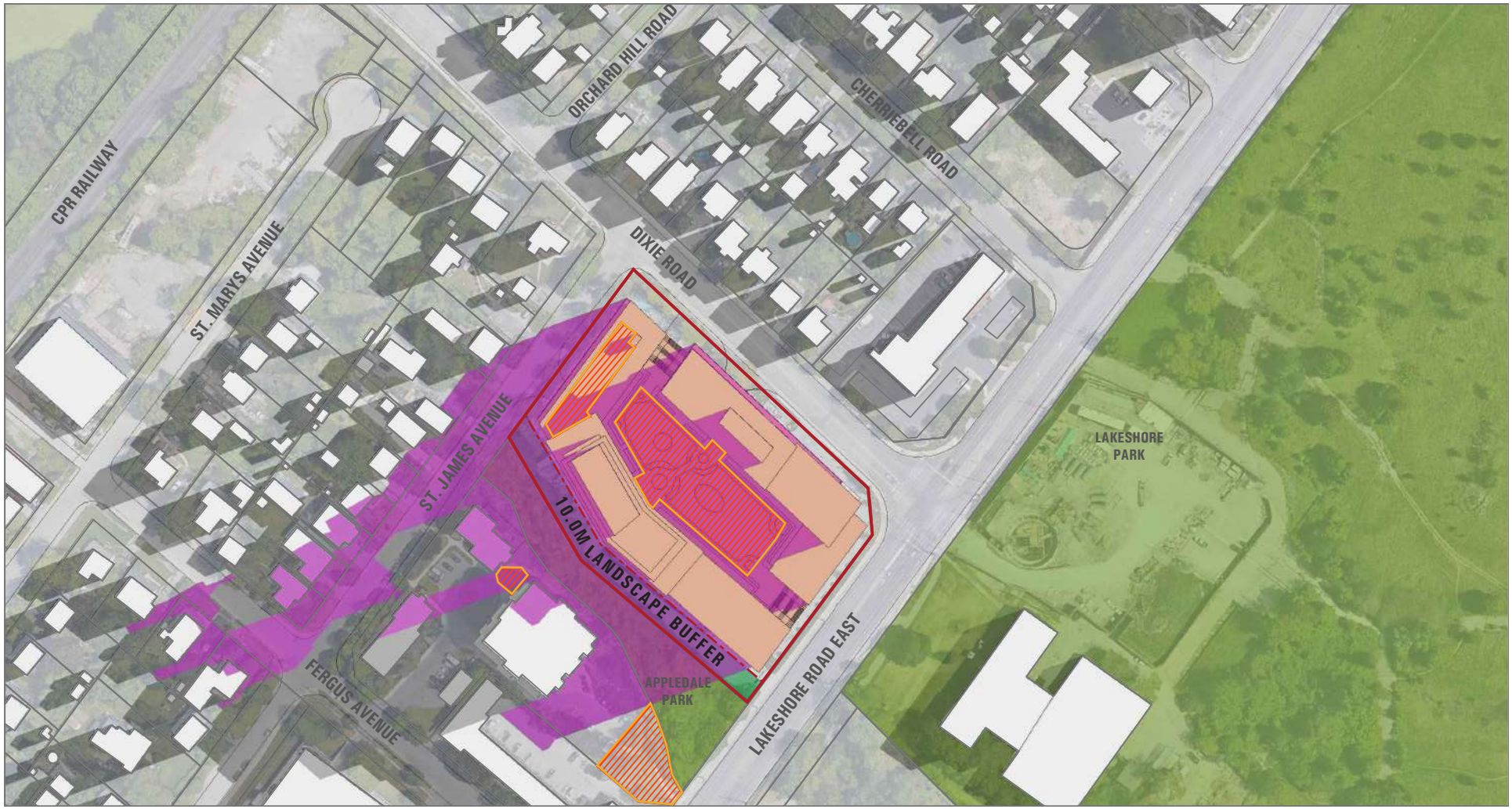
Figure 2 - Communal outdoor amenity areas key map identifies all areas in the vicinity.

Figure 2 - Communal outdoor amenity areas key map

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Communal Outdoor Amenity Areas

JUNE 21ST

June 21st - 7:07 am



Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Communal Outdoor Amenity Areas

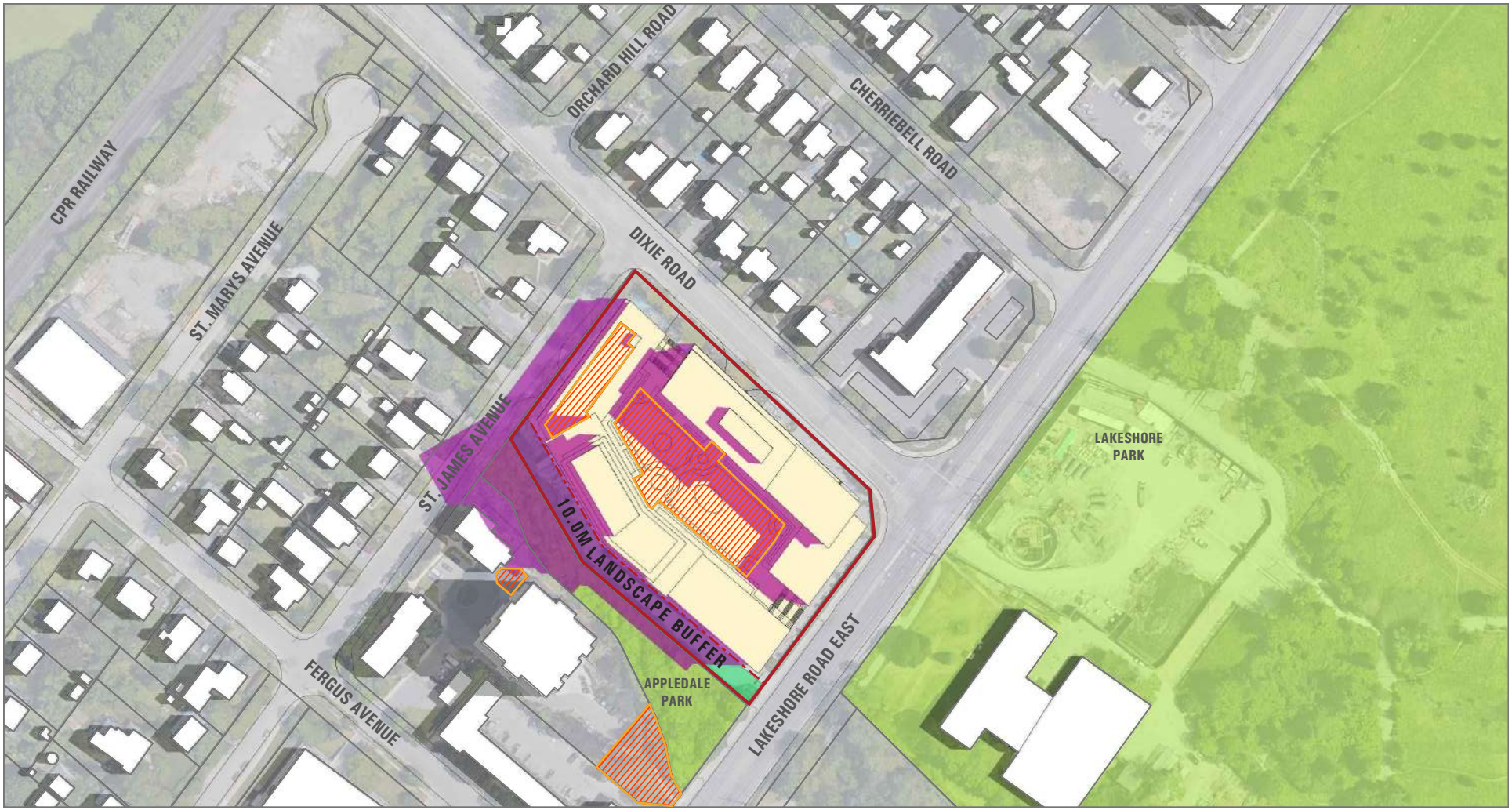
June 21st - 7:20 am

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Communal Outdoor Amenity Areas

June 21st - 8:20 am

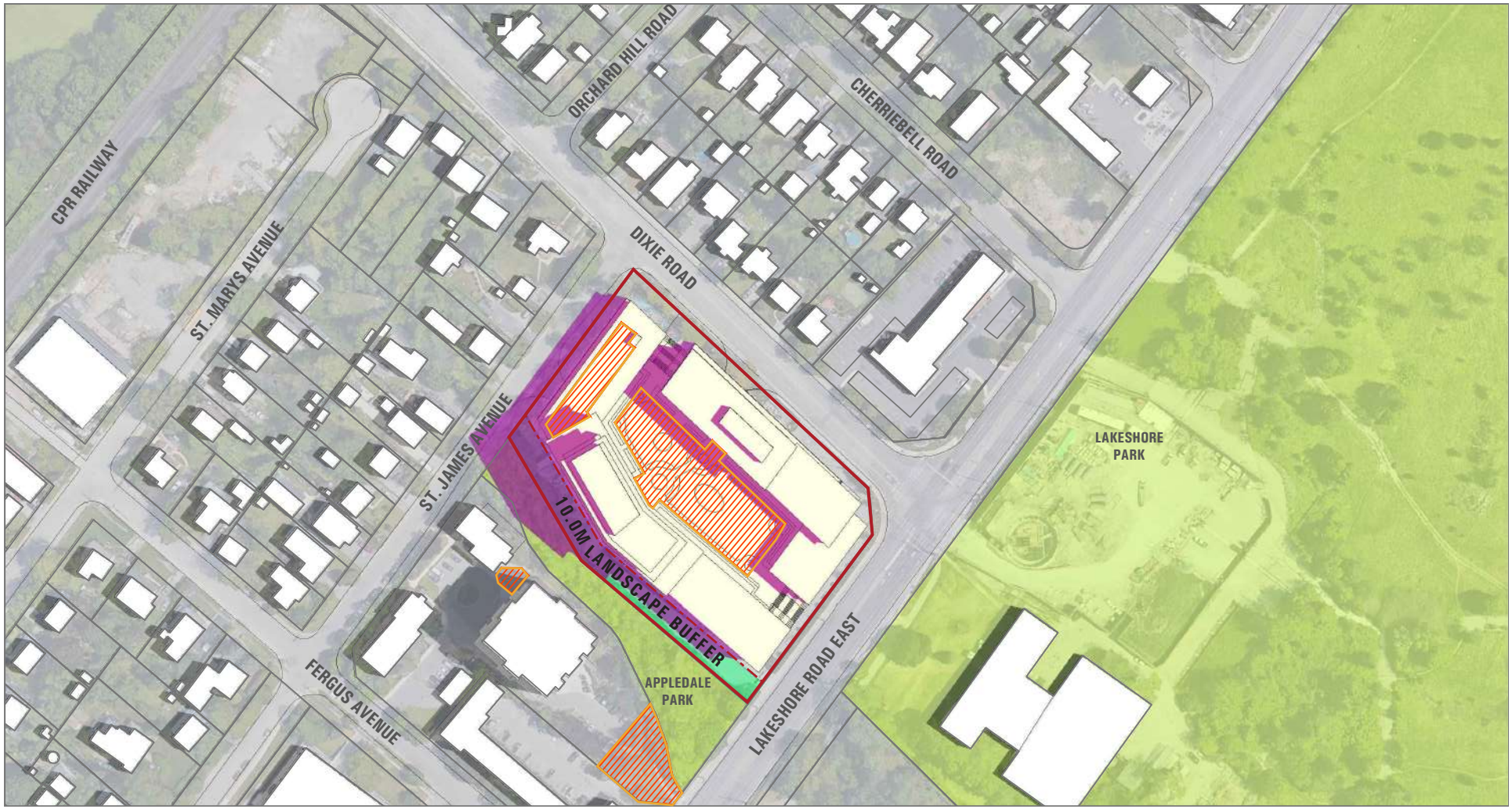
Subject Site
Existing Buildings
Proposed Development
Shadow Cast by Proposed Development
Shadow Cast by existing buildings
Existing Park
10.0m Landscape Buffer
Communal Outdoor Amenity Areas

June 21st - 9:20 am



Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Communal Outdoor Amenity Areas

June 21st - 10:20 am



Subject Site
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Shadow Cast by Proposed Development
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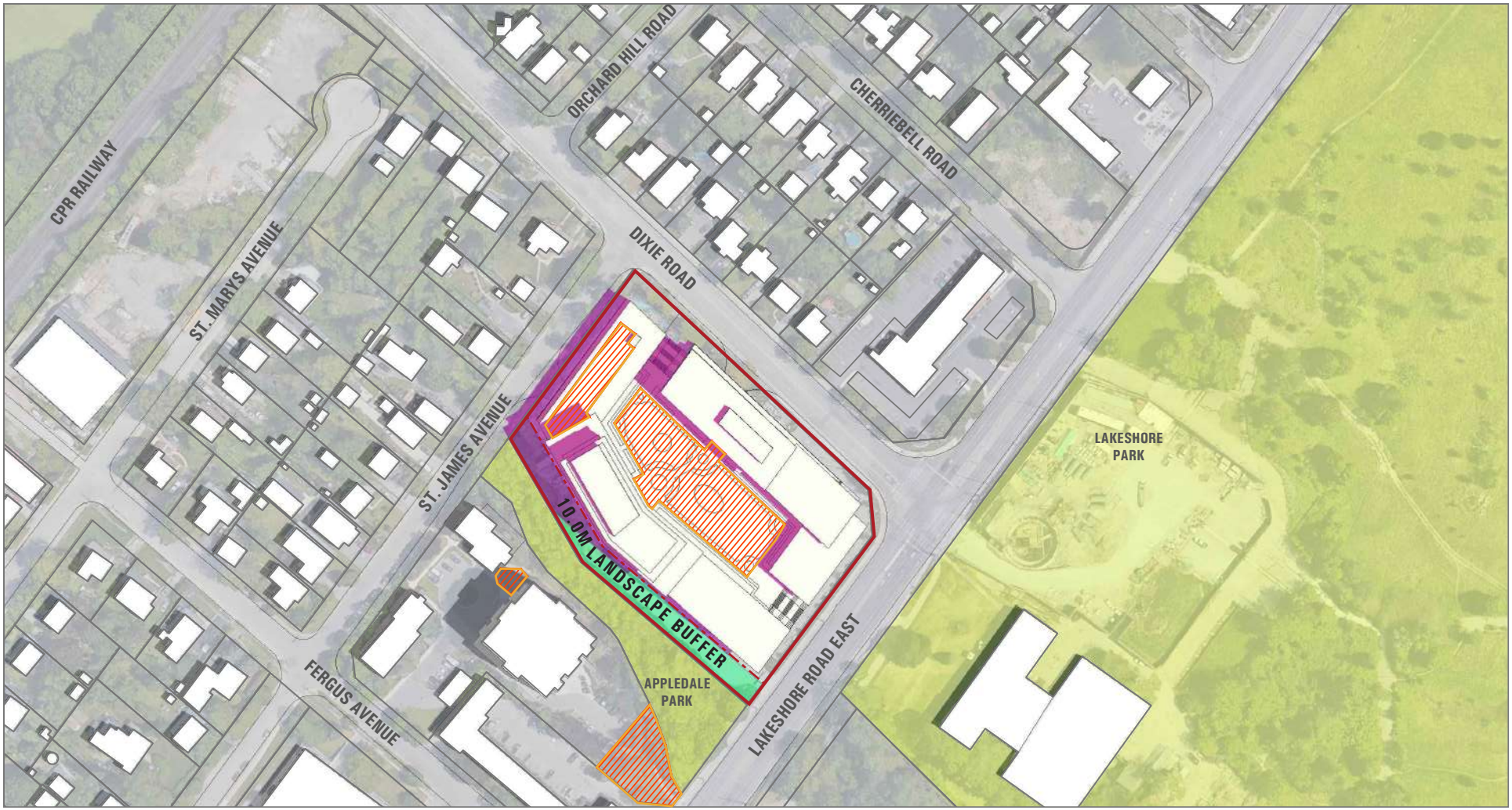
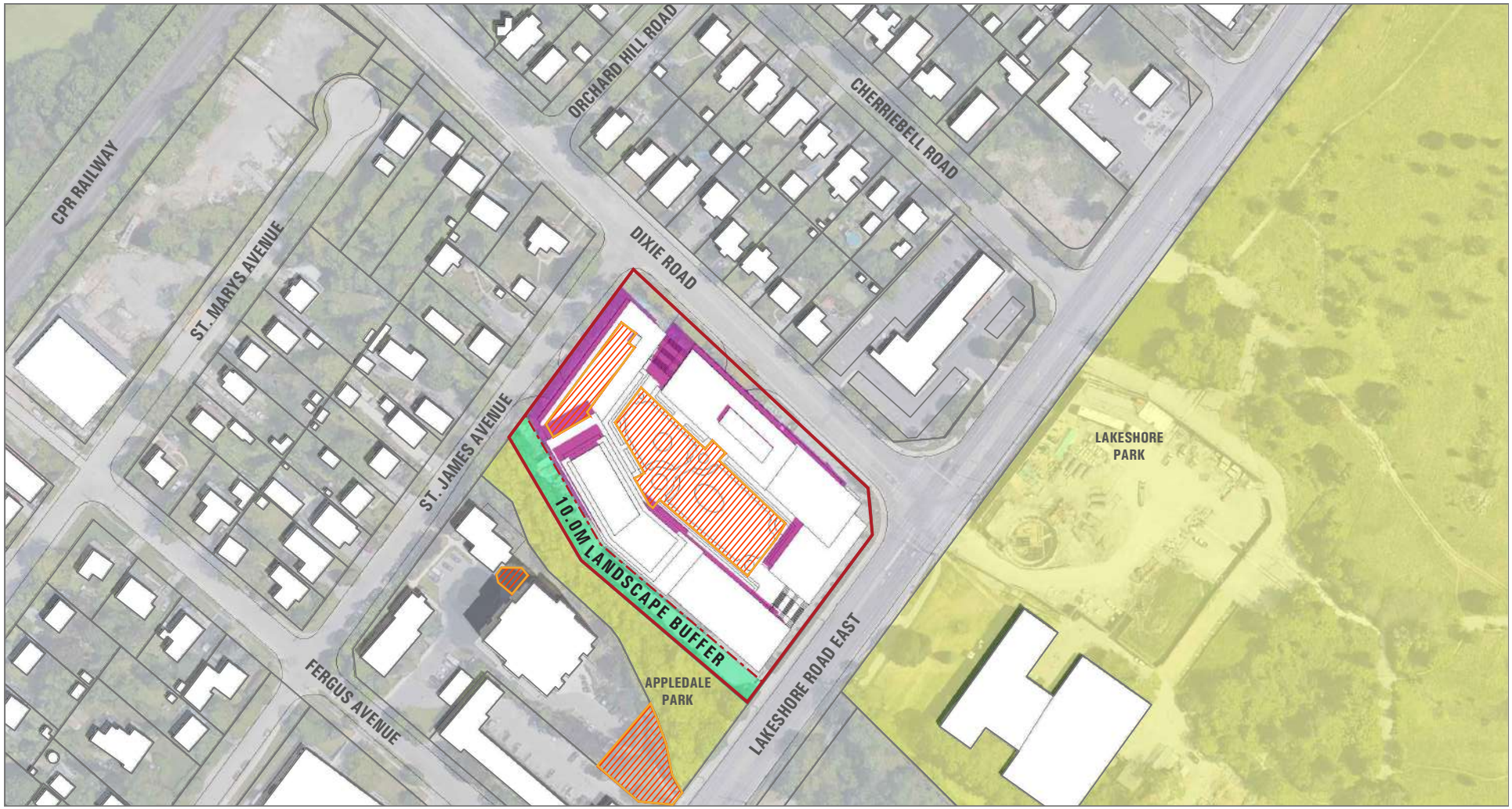
June 21st - 11:20 am



Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Communal Outdoor Amenity Areas

June 21st - 12:20 pm



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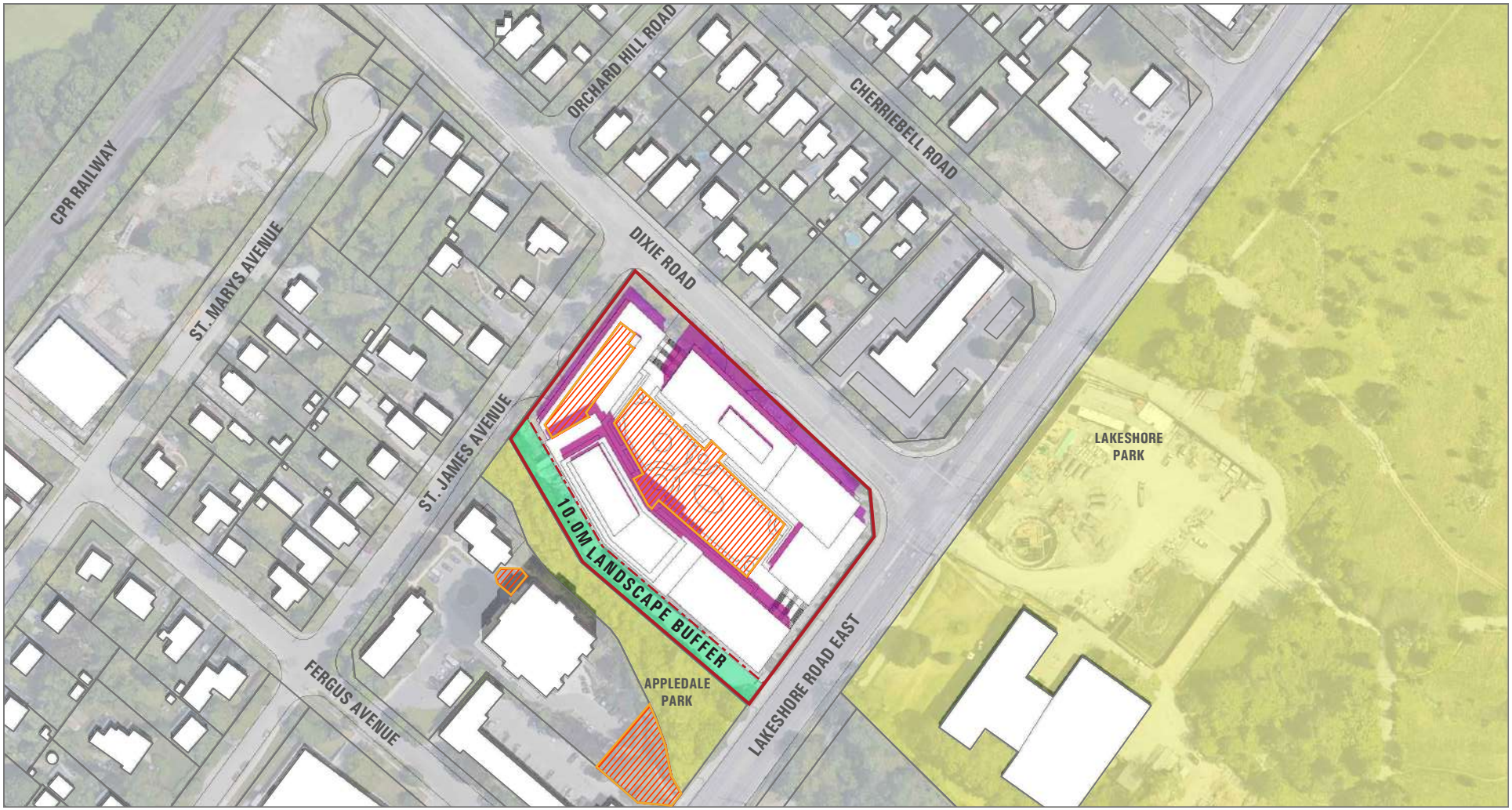
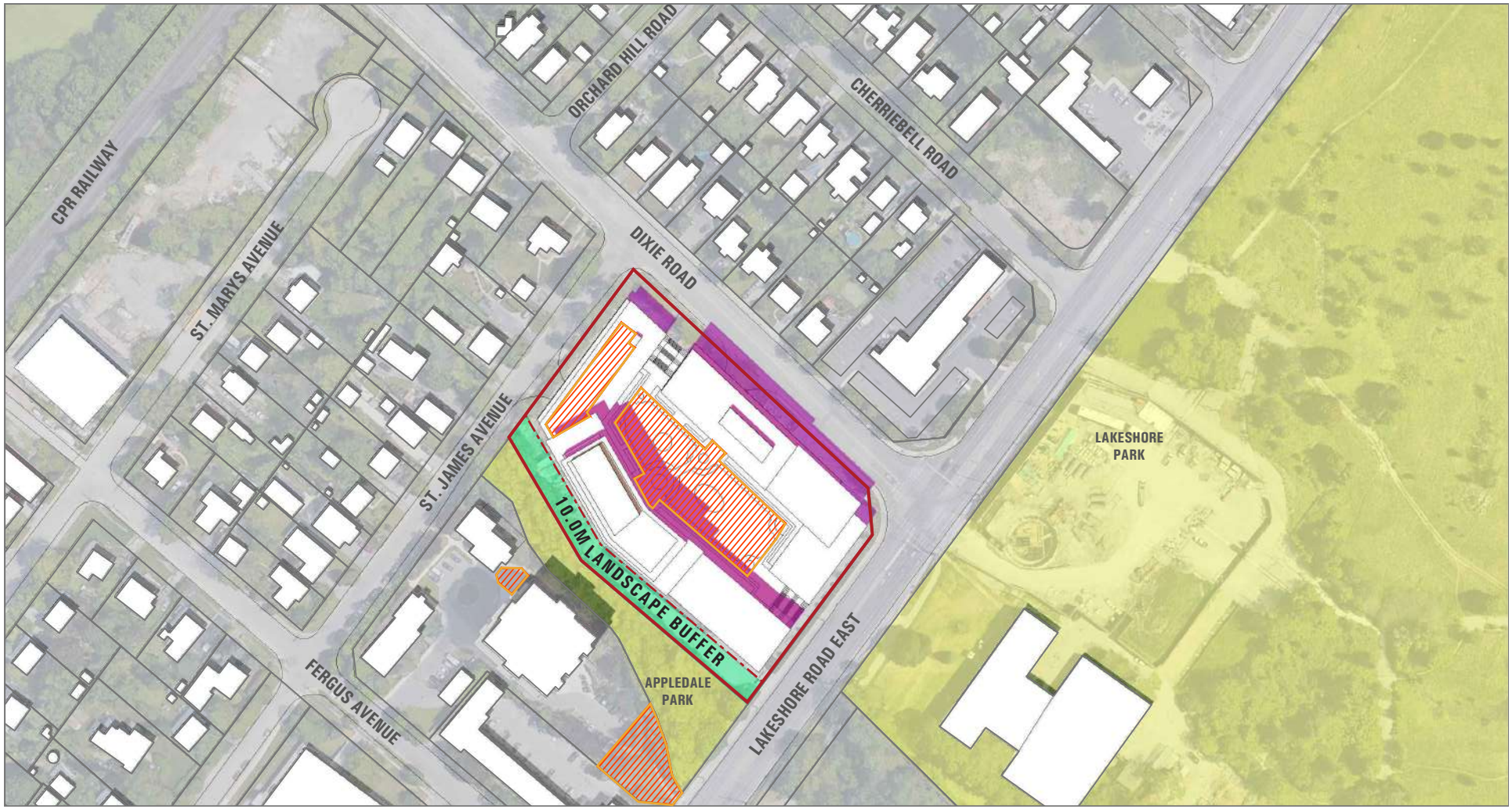
Communal Outdoor Amenity Areas

June 21st - 1:20 pm



Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Communal Outdoor Amenity Areas

June 21st - 2:20 pm



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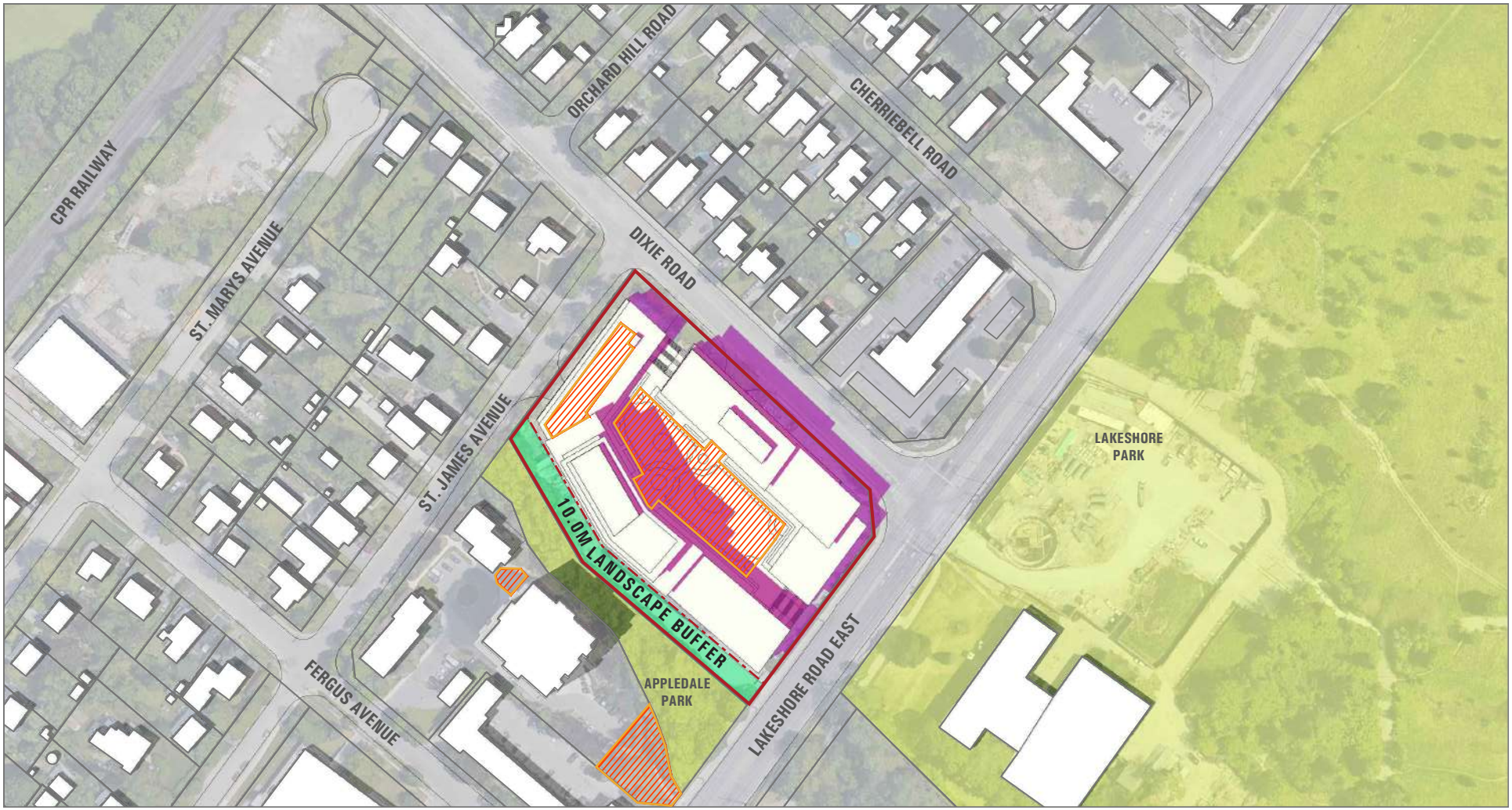
June 21st - 3:20 pm



Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Communal Outdoor Amenity Areas

June 21st - 4:20 pm

Subject Site
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Shadow Cast by existing buildings
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10.0m Landscape Buffer
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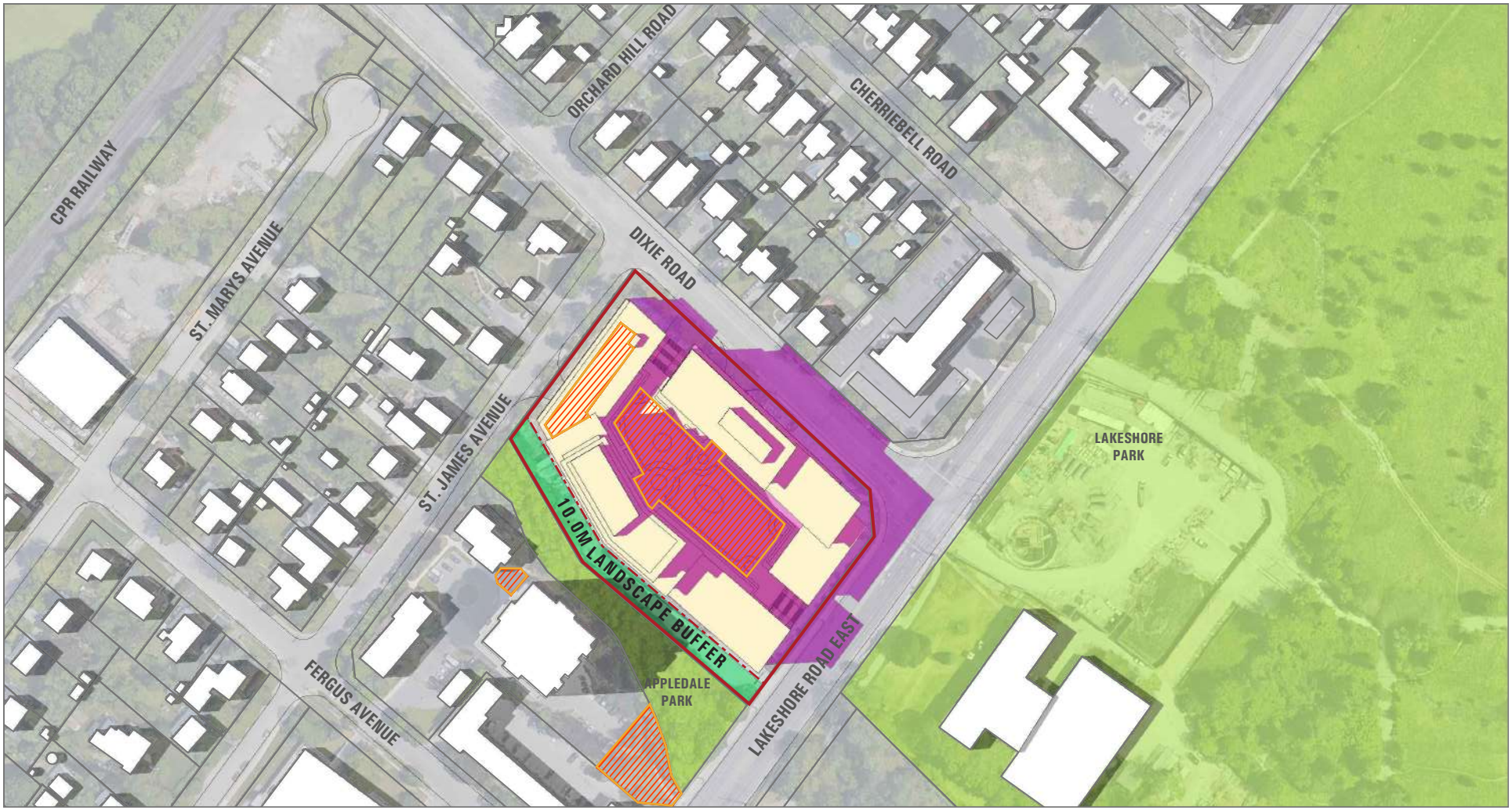
June 21st - 5:20 pm



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June 21st - 6:20 pm

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Existing Buildings
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Shadow Cast by Proposed Development
Shadow Cast by existing buildings
Existing Park
10.0m Landscape Buffer
Communal Outdoor Amenity Areas

June 21st - 7:20 pm

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Communal Outdoor Amenity Areas

June 21st - 7:33 pm

Subject Site
Existing Buildings
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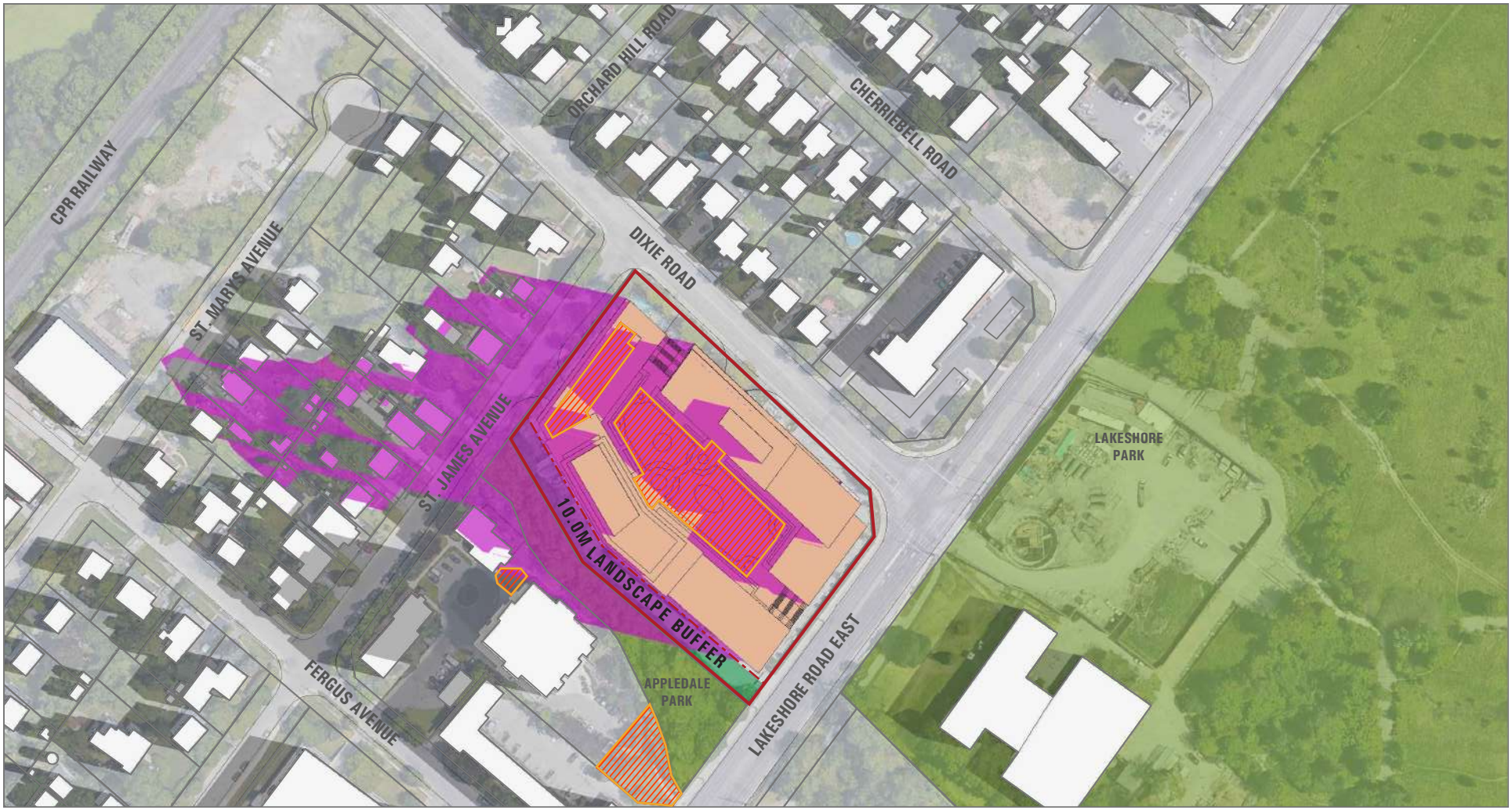
Shadow Cast by Proposed Development
Shadow Cast by existing buildings
Existing Park
10.0m Landscape Buffer
Communal Outdoor Amenity Areas

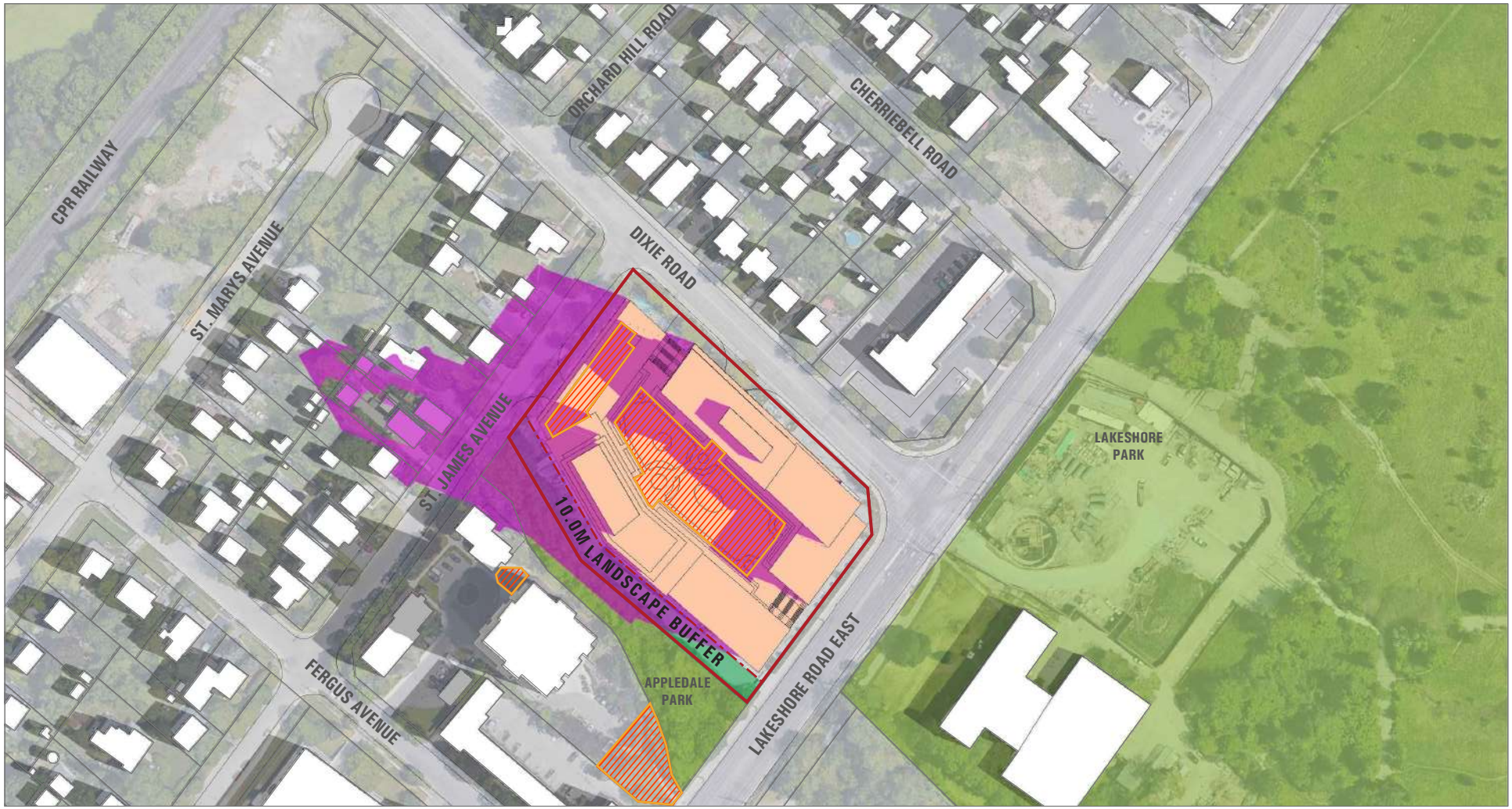
SEPTEMBER 21ST

September 21st - 8:35 am



Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Communal Outdoor Amenity Areas

September 21st - 9:12 am



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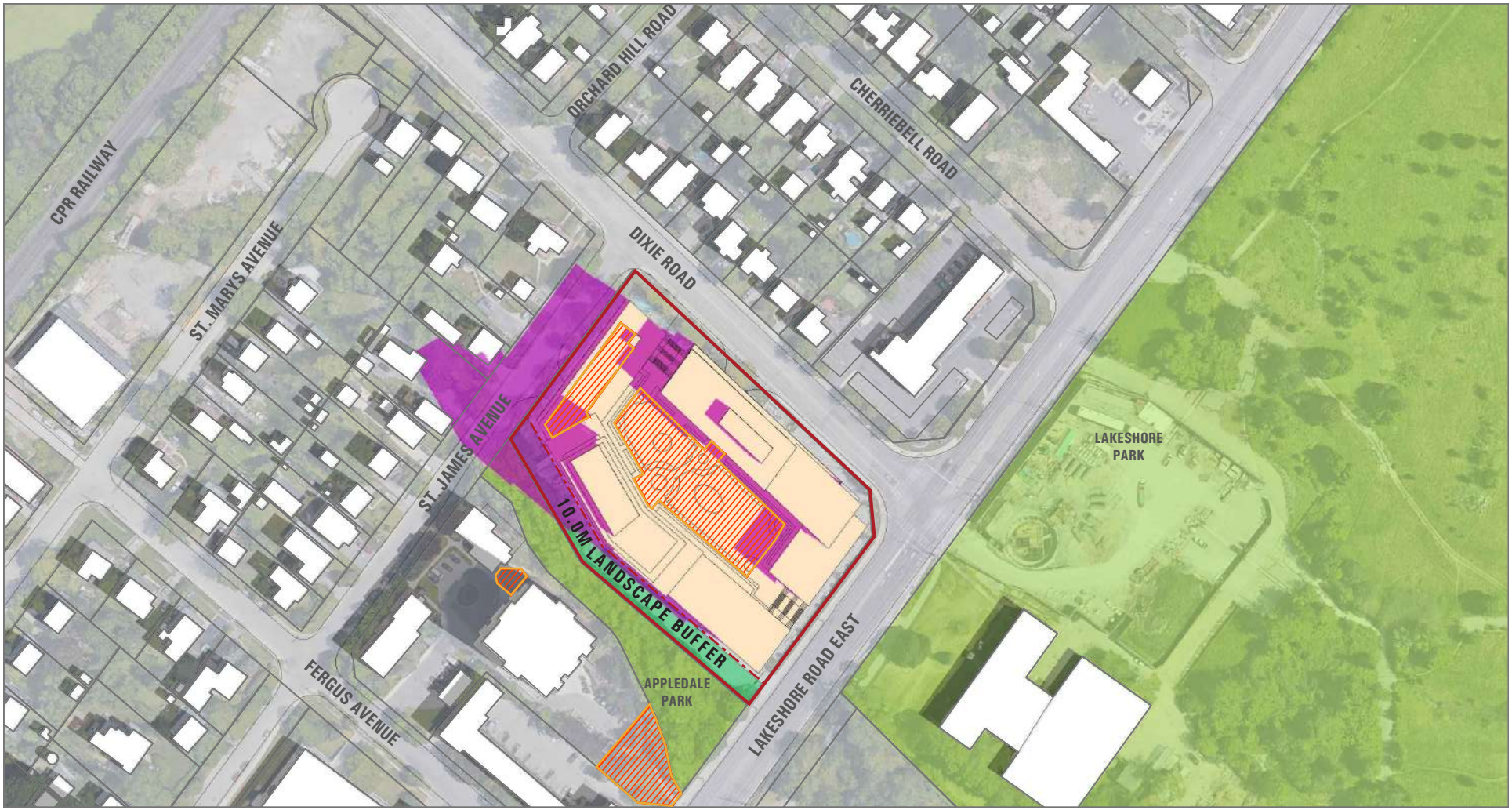

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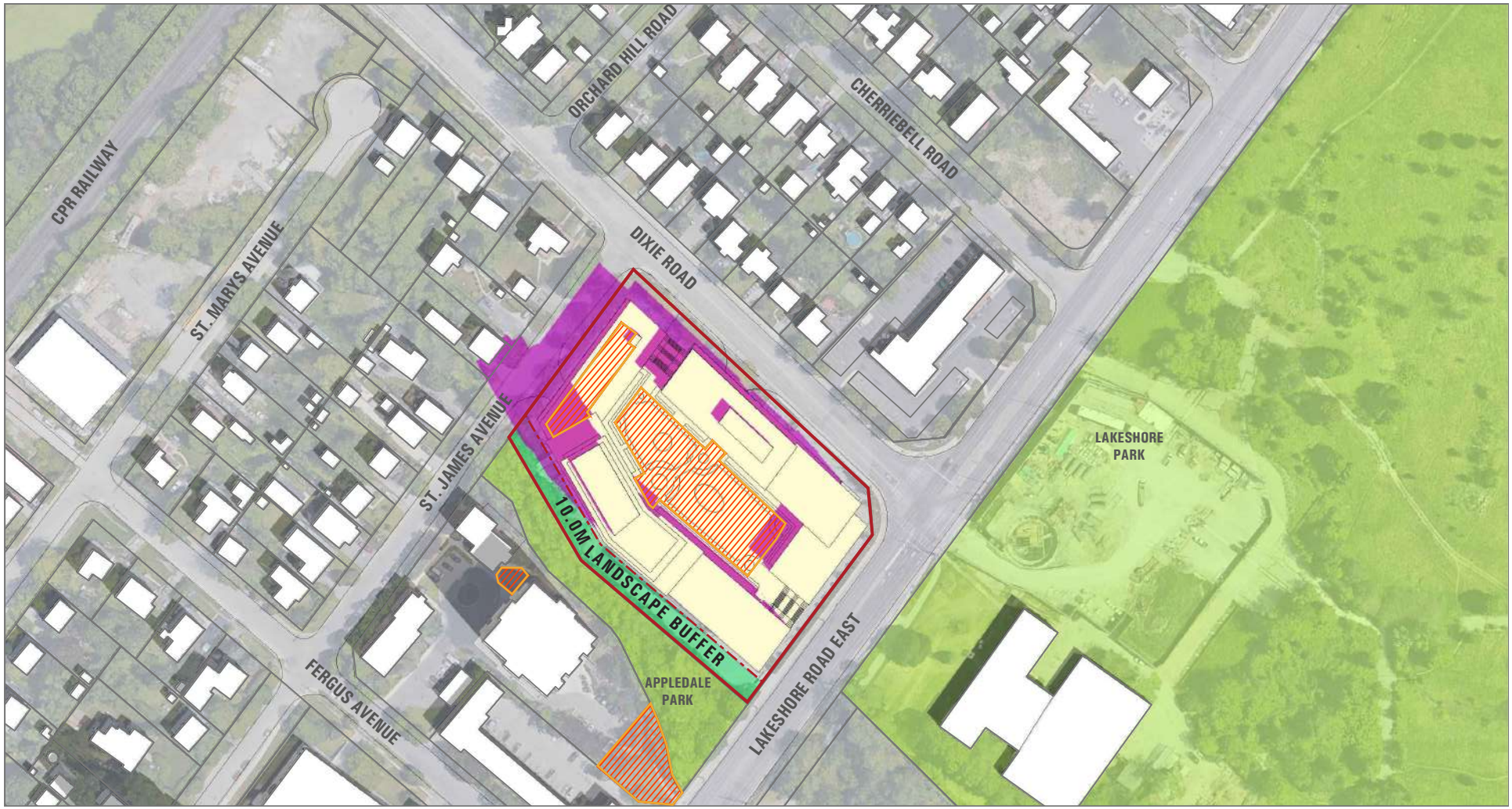

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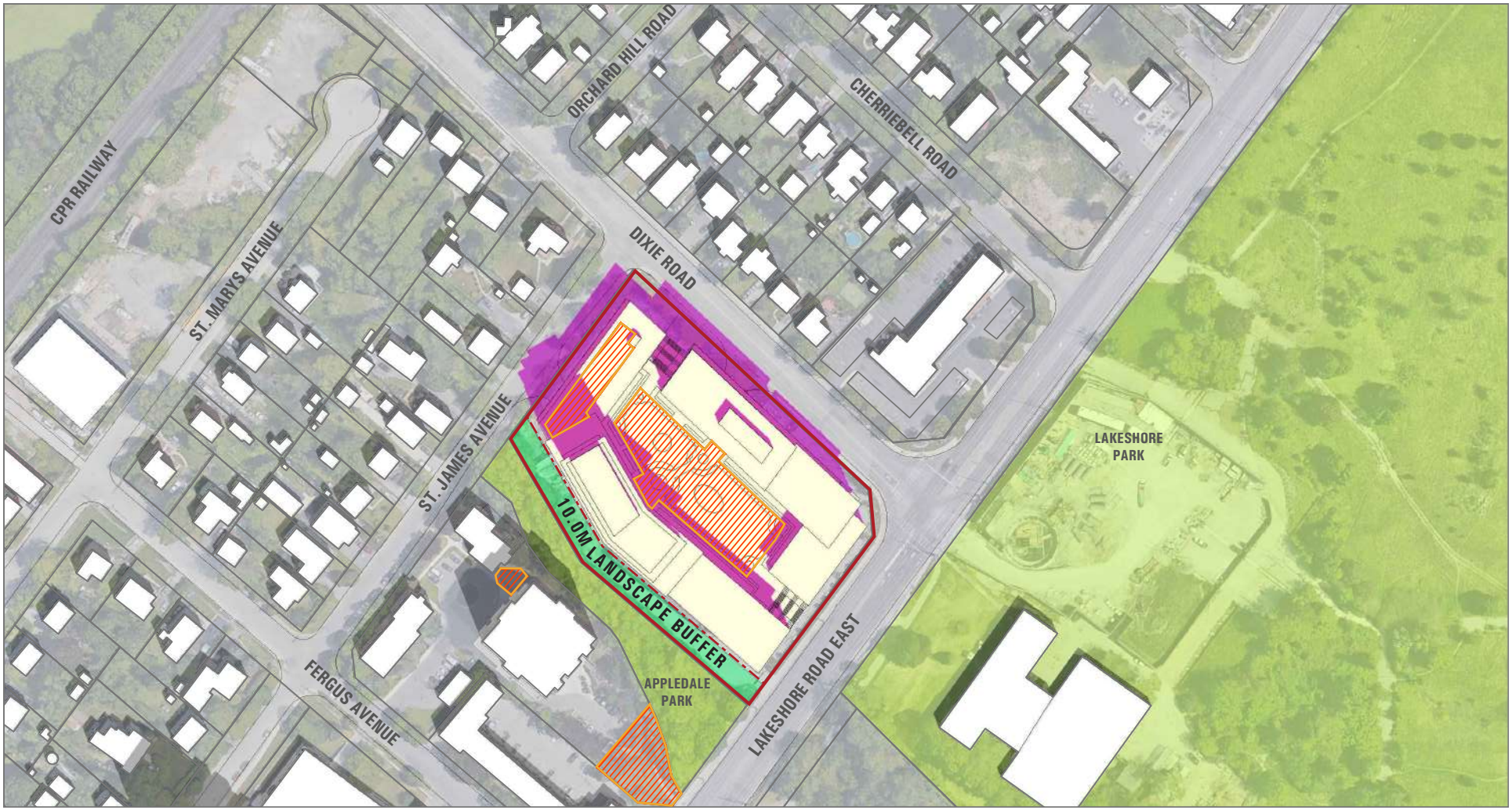
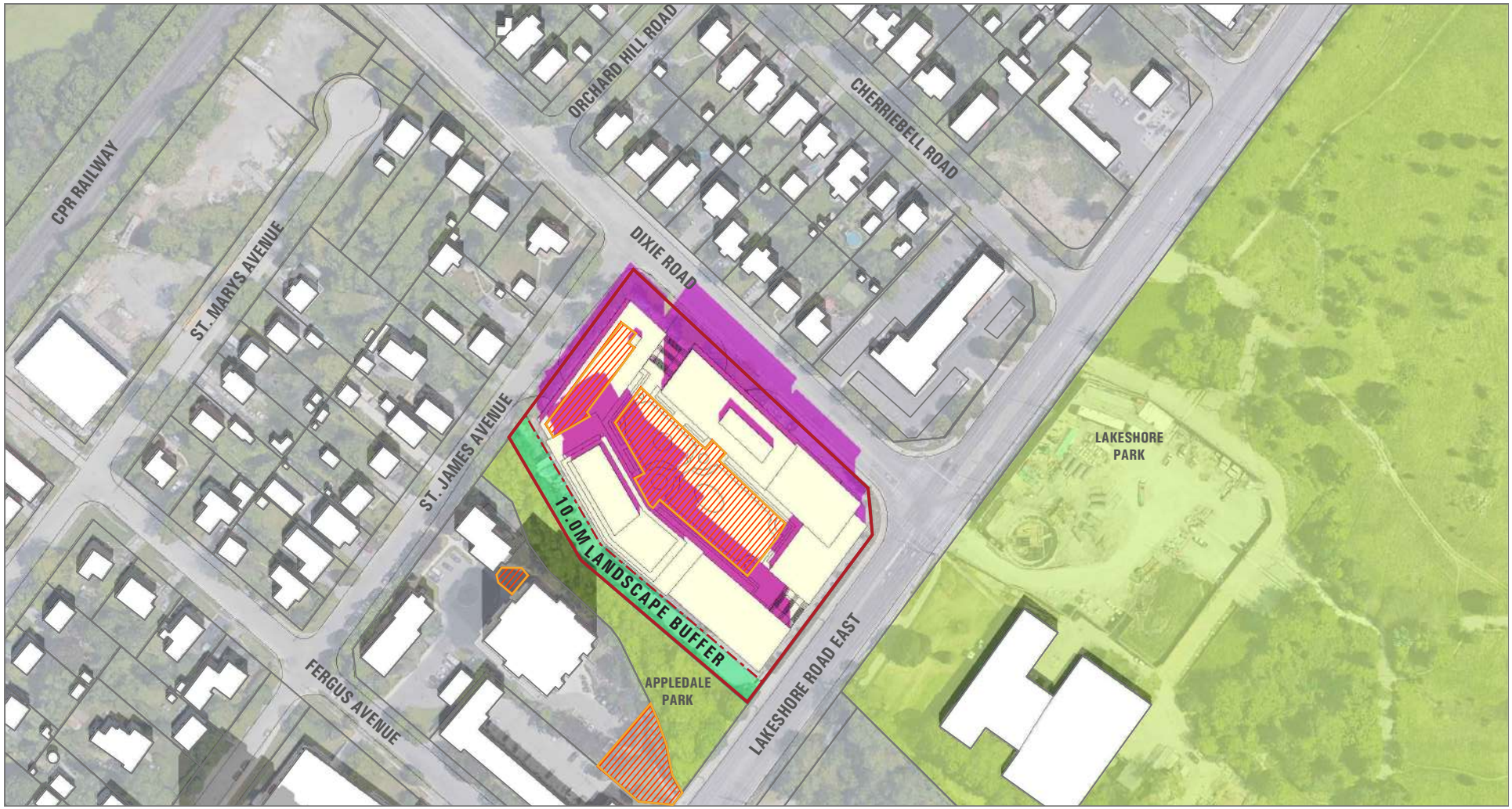
September 21st - 12:12 pm



Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Communal Outdoor Amenity Areas

September 21st - 1:12 pm



Subject Site
Existing Buildings
Proposed Development
Shadow Cast by Proposed Development
Shadow Cast by existing buildings
Existing Park
10.0m Landscape Buffer
Communal Outdoor Amenity Areas

September 21st - 2:12 pm

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Communal Outdoor Amenity Areas

September 21st - 3:12 pm

Subject Site
Existing Buildings
Proposed Development
Shadow Cast by Proposed Development
Shadow Cast by existing buildings
Existing Park
10.0m Landscape Buffer
Communal Outdoor Amenity Areas

September 21st - 4:12 pm

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Communal Outdoor Amenity Areas

September 21st - 5:12 pm

Subject Site
Existing Buildings
Proposed Development
Shadow Cast by Proposed Development
Shadow Cast by existing buildings
Existing Park
10.0m Landscape Buffer
Communal Outdoor Amenity Areas

September 21st - 5:48 pm

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Communal Outdoor Amenity Areas

DECEMBER 21ST

December 21st - 9:19 am

Subject Site
Existing Buildings
Proposed Development
Shadow Cast by Proposed Development
Shadow Cast by existing buildings
Existing Park
10.0m Landscape Buffer
Communal Outdoor Amenity Areas

December 21st - 10:17 am

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Communal Outdoor Amenity Areas

December 21st - 11:17 am

Subject Site
Existing Buildings
Proposed Development
Shadow Cast by Proposed Development
Shadow Cast by existing buildings
Existing Park
10.0m Landscape Buffer
Communal Outdoor Amenity Areas

December 21st - 12:17 pm

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Communal Outdoor Amenity Areas

December 21st - 1:17 pm

Subject Site
Existing Buildings
Proposed Development
Shadow Cast by Proposed Development
Shadow Cast by existing buildings
Existing Park
10.0m Landscape Buffer
Communal Outdoor Amenity Areas

December 21st - 2:17 pm

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Communal Outdoor Amenity Areas

December 21st - 3:15 pm

Subject Site
Existing Buildings
Proposed Development
Shadow Cast by Proposed Development
Shadow Cast by existing buildings
Existing Park
10.0m Landscape Buffer
Communal Outdoor Amenity Areas

4.0 PUBLIC REALM

Section 3.3 of the Mississauga Urban Design Terms of Reference - Standards for Shadow Studies requires the identification of Public Realm within the vicinity of the proposed development. Areas outlined in yellow were identified as Public Realm and include sidewalks, open spaces, parks and plazas.

Low and Medium Density Residential Streets

As defined by the Terms of Reference, Low and Medium Density Residential Streets should be designed to allow full sunlight on the opposite boulevard including the full width of the sidewalk on September 21st for a total of at least 4 hours between 9:12 am and 11:12 am, and between 3:12 pm and 5:12 pm.

As demonstrated by the shadow study, there is shadow from the proposed development on St.James Avenue sidewalk from 9:12 am to 11:12 am and on Dixie Road sidewalk from 2:12 pm to 5:48 pm, therefore criteria 3.3 Low and Medium Density Residential Streets is not met. However, in examining the shadowing impact on the north side of St. James Avenue, it should be noted that there are no sidewalks on the north side of the street, therefore, it is not expected to be heavily used by pedestrians. With respect to shadowing on the east sidewalk along Dixie Road, it is our opinion that the shadowing impact is limited, as the sidewalk does not front any high traffic public zones such as parks or retail storefronts, etc., rather the sidewalk abuts residential front yards/driveways, and the parking area of the commercial plaza.

Public Open Spaces, Parks and Plazas

As defined by the Terms of Reference, shadows from proposed developments should allow for full sun on public open spaces, parks and plazas at least half the time, or 50% sun coverage all the time. If the "sun access factor" is at least 50% or 0.5 on each of the test dates (As(ave)/AT = 0.5 or more), then the shadow impact is considered to be in compliance with these terms of reference. As per City Recommendation Report comments, a sun access factor specifically for Appledale Park has also been provided.

The findings of the shadow study conclude that the proposed development complies with this standard by providing a sun access factor of at least 0.5 for all identified public open space, parks and plazas as well as for Appledale Park when considered separately. Please refer to the calculations in Section 8.0 for details.

Figure 3 - Public Realm key map identifies all areas in the vicinity.

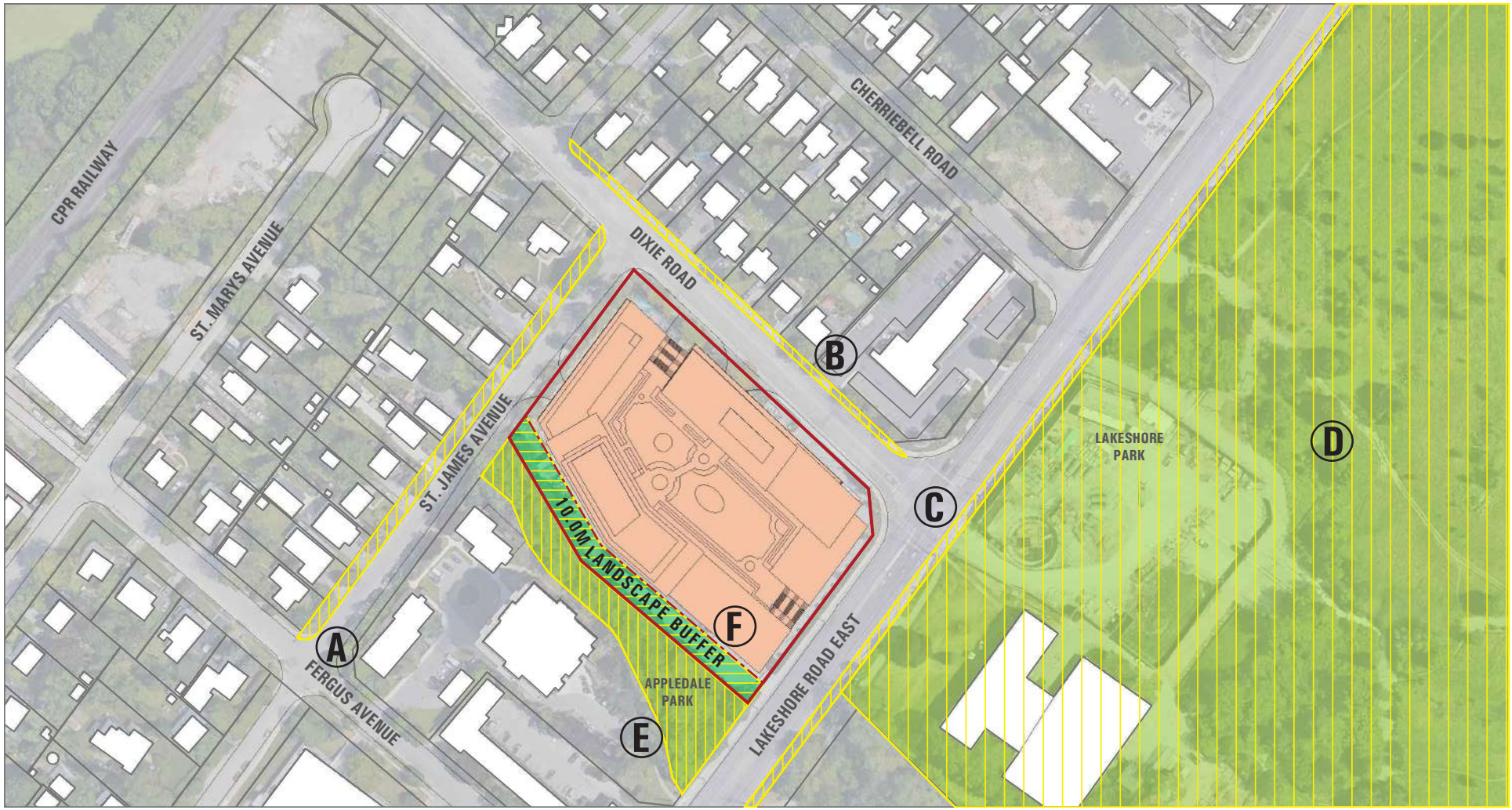
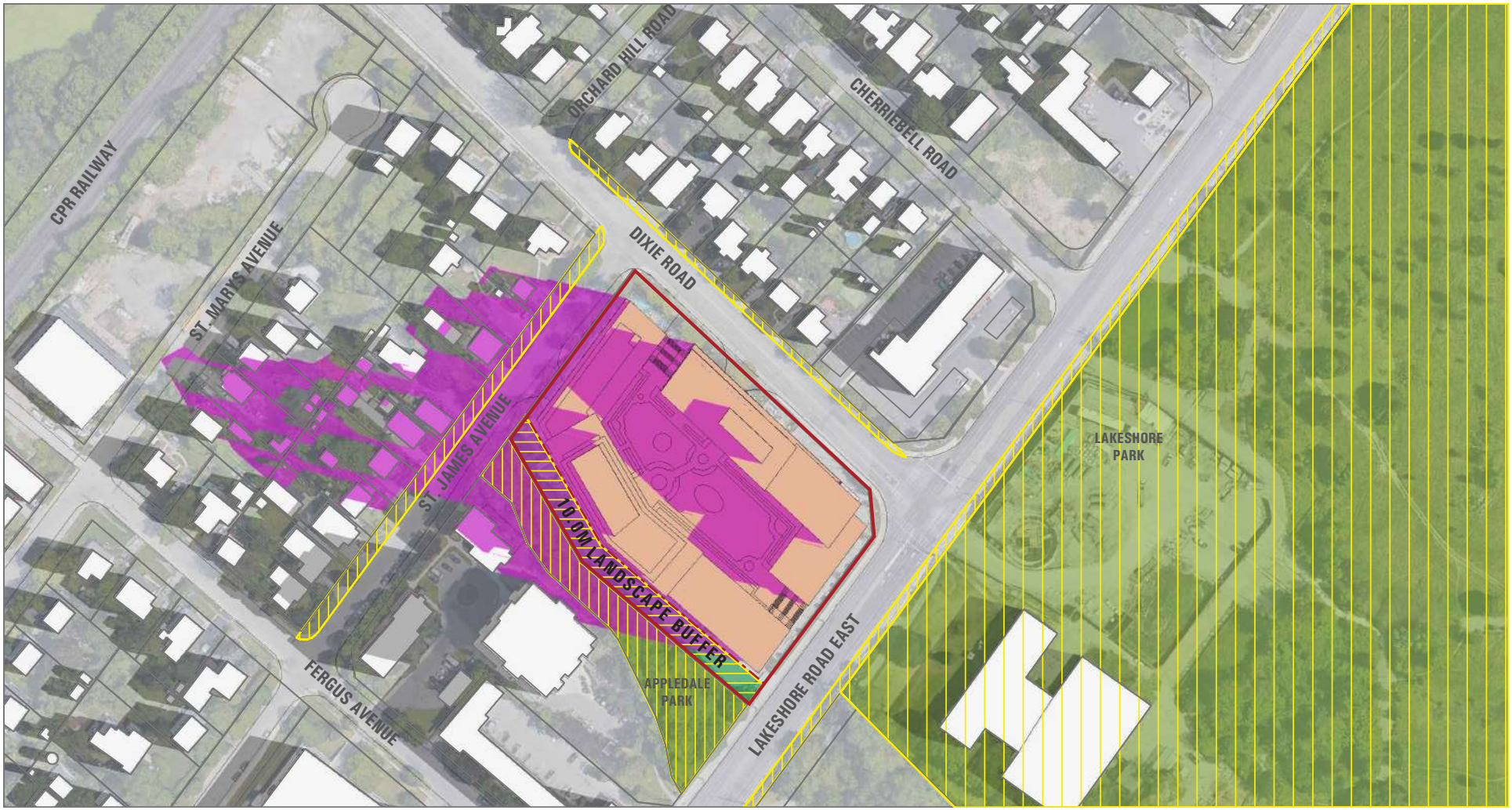


Figure 3 - Public realm key map

SEPTEMBER 21ST

September 21st - 8:35 am

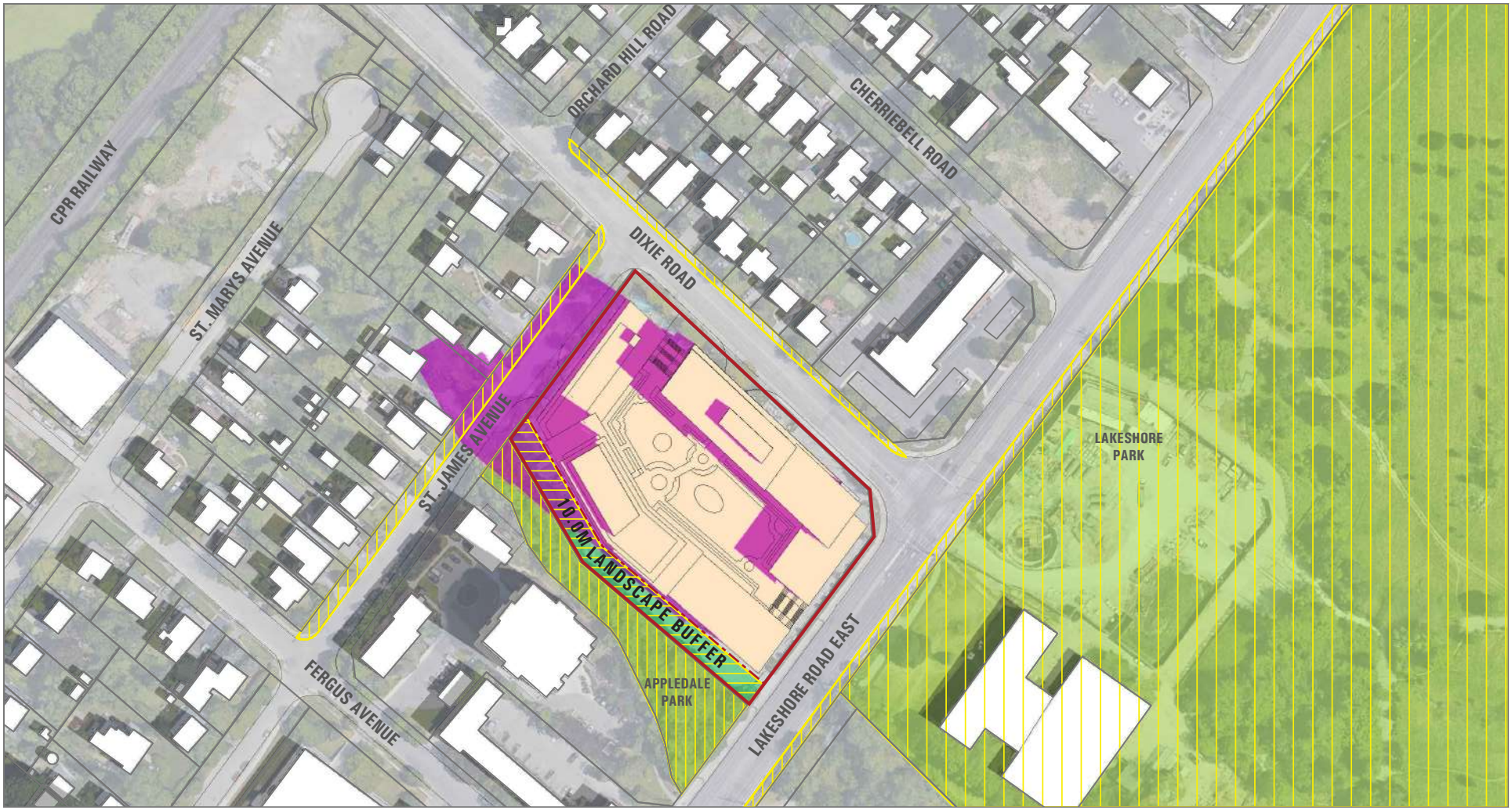


Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Public Realm

September 21st - 9:12 am

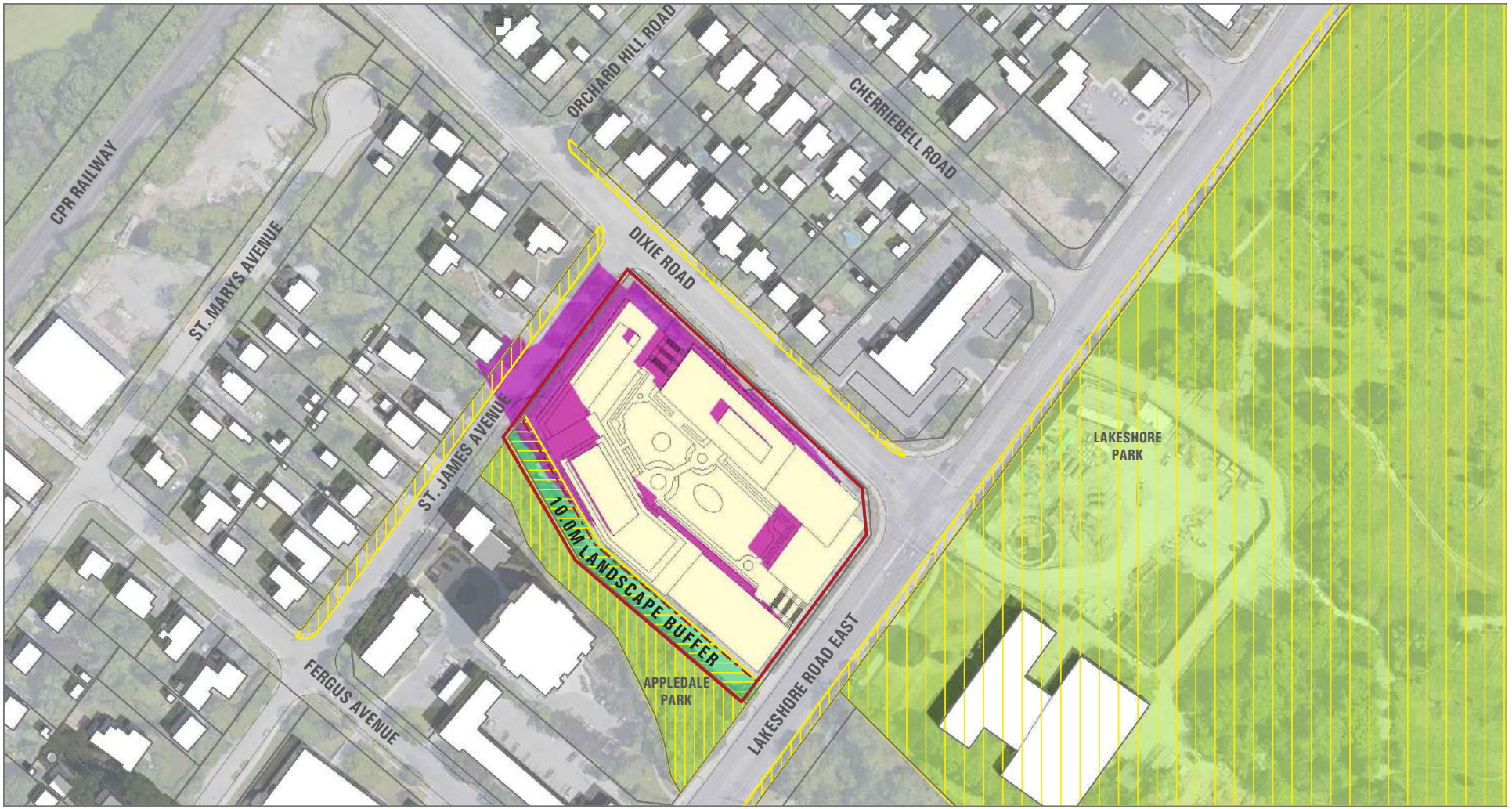
Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Public Realm

September 21st - 10:12 am



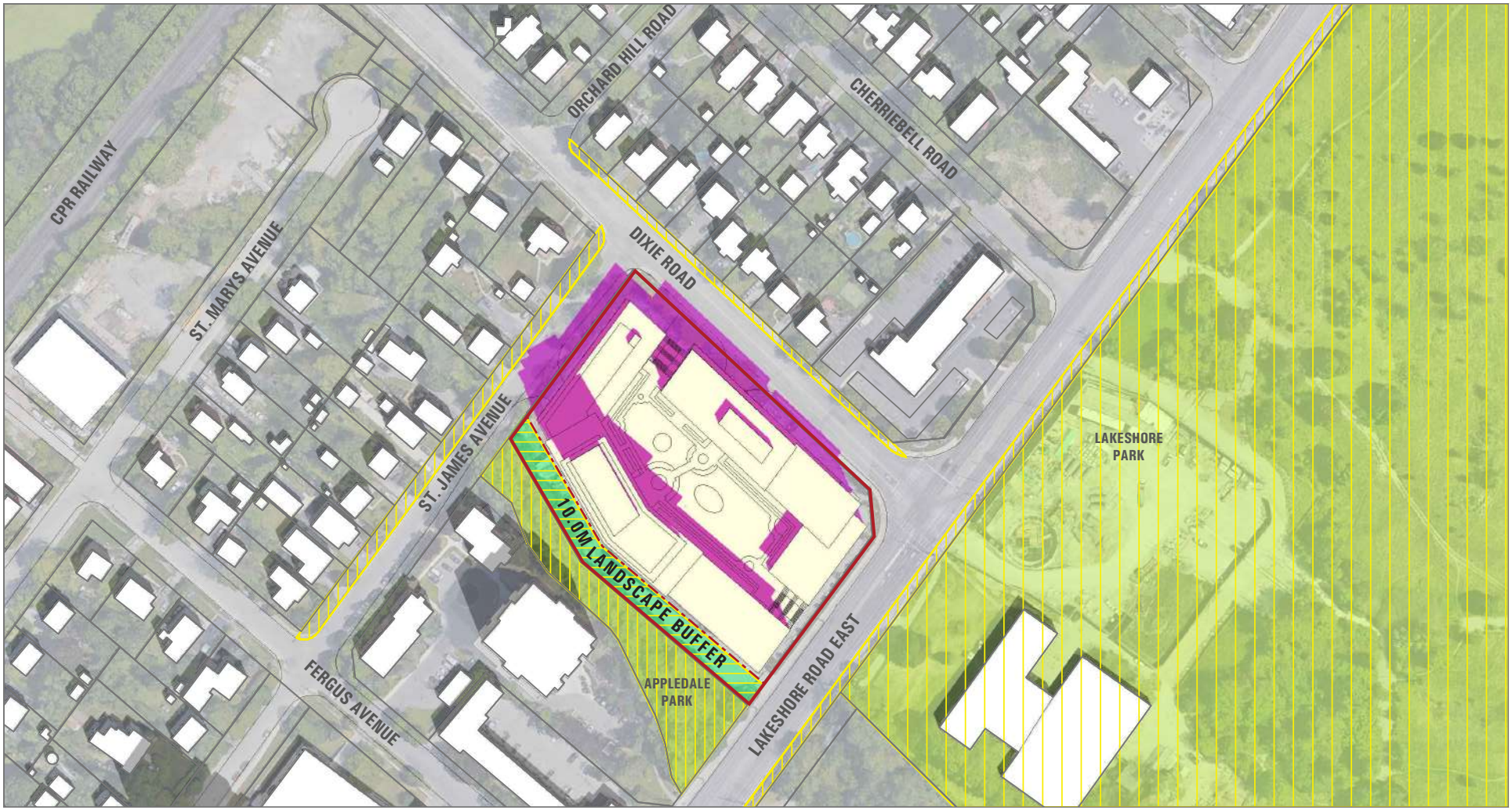
Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Public Realm

September 21st - 11:12 am



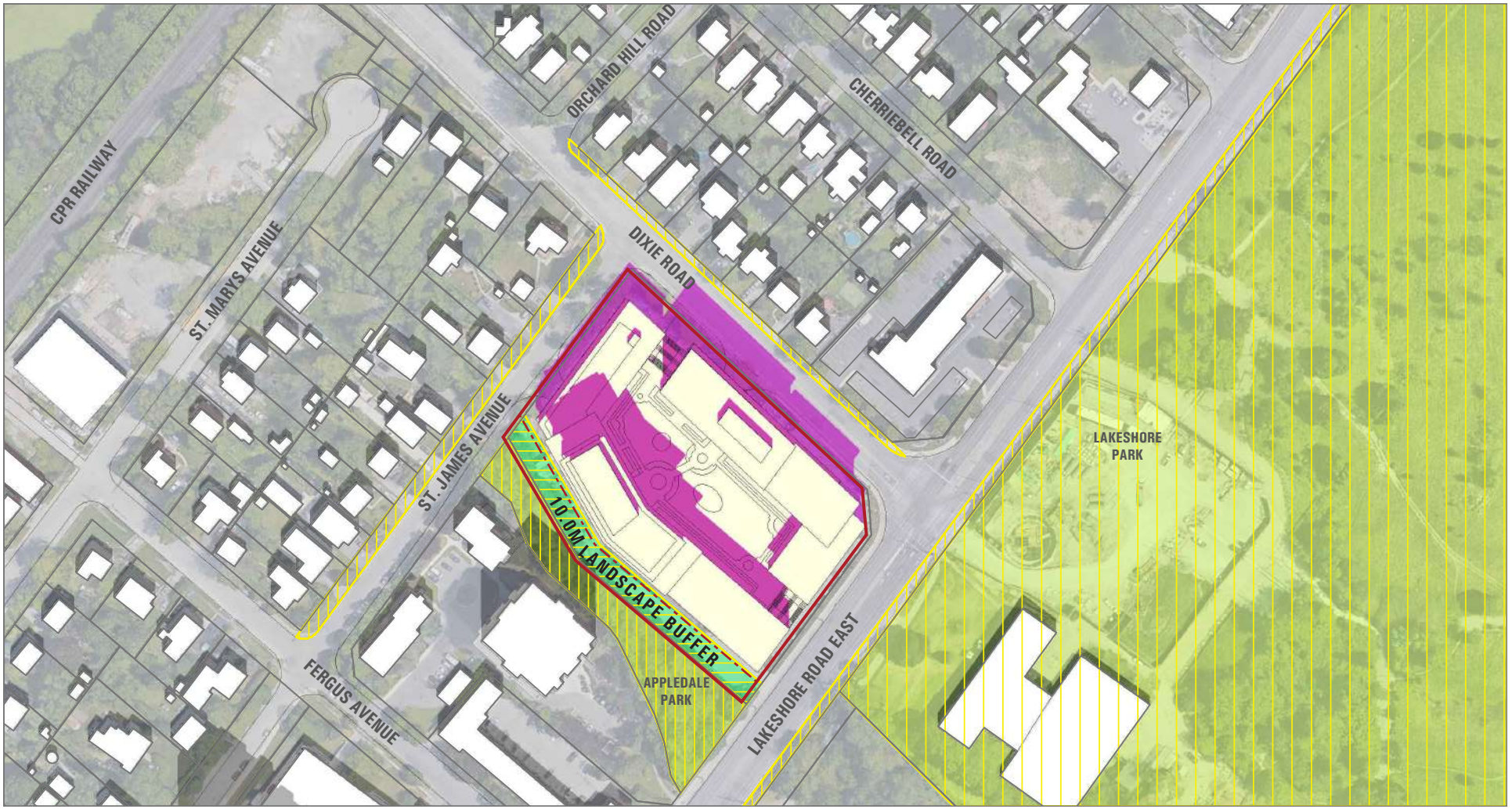
Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Public Realm

September 21st - 12:12 pm



Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Public Realm

September 21st - 1:12 pm



Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Public Realm

September 21st - 2:12 pm

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Public Realm

September 21st - 3:12 pm

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Public Realm

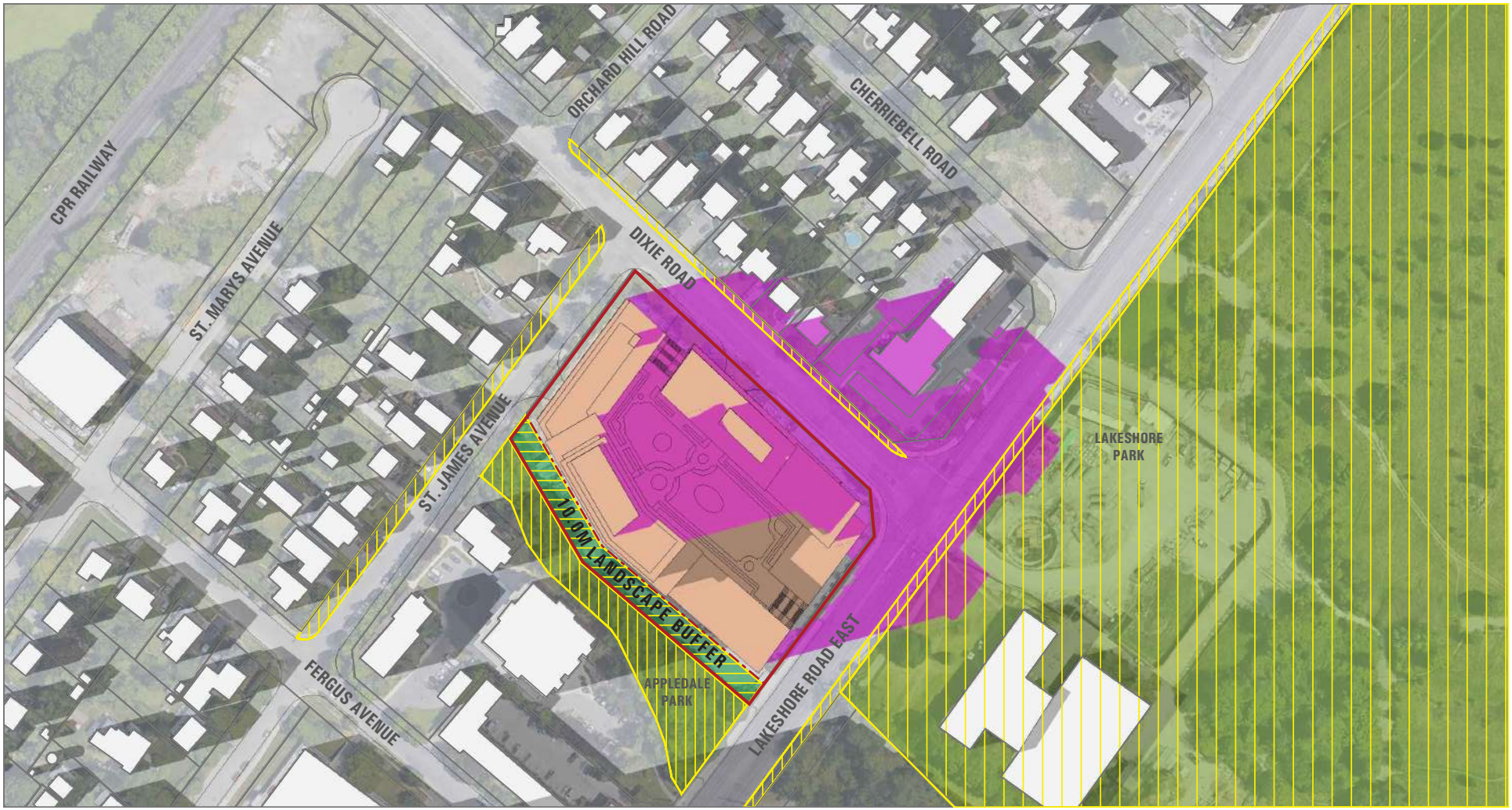
September 21st - 4:12 pm

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Public Realm

September 21st - 5:12 pm

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Public Realm

September 21st - 5:48 pm



Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Public Realm

5.0 TURF AND FLOWER GARDENS IN PUBLIC PARKS (SECTION 3.4)

Section 3.4 of the Mississauga Urban Design Terms of Reference - Standards for Shadow Studies states that 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.

Turf and flower gardens have not been identified within the areas of Appledale Park and Lakeshore Park that would be affected by the shadows cast by the proposal.

6.0 BUILDING FACES TO ALLOW FOR THE POSSIBILITY OF USING SOLAR ENERGY (SECTION 3.5)

Section 3.5 of the Mississauga Urban Design Terms of Reference - Standards for Shadow Studies states that shadow impacts from proposed developments should not exceed one hour in duration on the roofs, front, rear and exterior side walls of adjacent low rise (one to four storeys) residential buildings including townhouses, detached and semi-detached dwellings on September 21st, in order to allow for the possibility of harvesting solar energy.

The line of impact assessment shall be a line at grade, 3 m from the front, rear and exterior side wall of the adjacent low rise residential buildings.

This criteria is met if there is shadow impact for no more than two consecutive hourly test times in the "No Impact Zone" (identified in blue) 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.

The shadow analysis demonstrates that Area C located directly north west of the subject site receives shadowing from 8:35 am to 11:12 am or almost 3 consecutive hourly test times. Additionally, Area F located north east of the subject site receives shadowing from 3:12 pm to 5:48 pm. For these reasons, the criteria for 3.5 are not met.

In the exisiting condition, Areas C and F are surrounded by trees that cast significant shadow throughout the day as well as other vegetation that covers or obstructs areas of the exterior walls and therefore limiting their solar energy utility (the shadow impact from the existing tree canopy and other vegetation is not accounted for in the 3D context model).

Although shadowing from the proposed development will impact building faces to the north for the possibility of using solar energy in the early- to late-morning on September 21st, and building faces to the east will be impacted in the mid- to late-afternoon on September 21st, the "No Impact Zone" remains in sunlight for the majority of the day. As such, the incrememtal shadow cast by the proposal likely does not represent adverse or undue impacts on the possibility of using solar energy in these areas.

Figure 4 - Building faces to allow for possibility of using solar energy key map identifies all areas in the vicinity.

Figure 4 - Building faces areas key map

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Building faces to allow for possibility of using solar energy

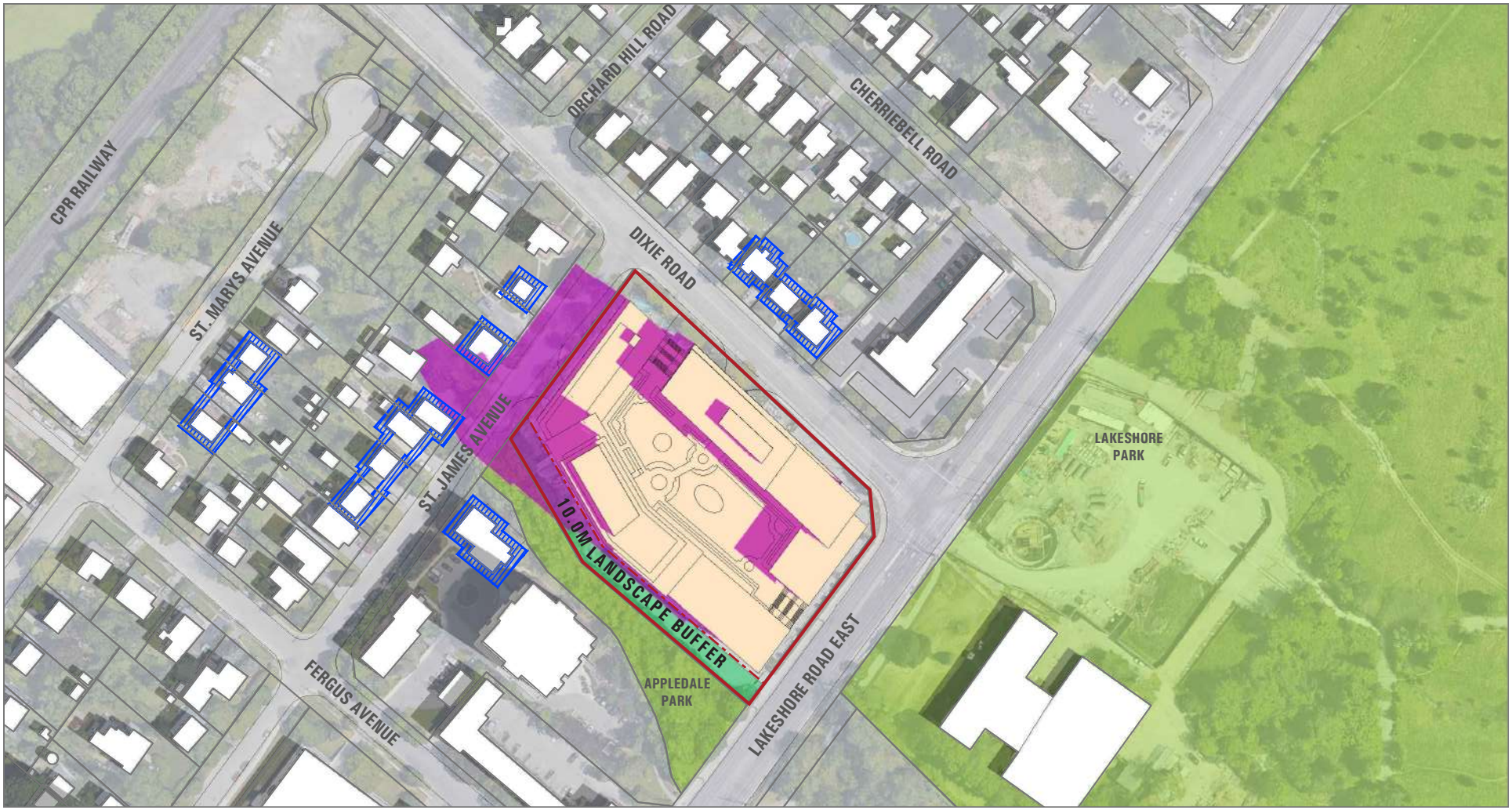
September 21st - 8:35 am

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Building faces to allow for possibility of using solar energy

September 21st - 9:12 am

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Building faces to allow for possibility of using solar energy

September 21st - 10:12 am

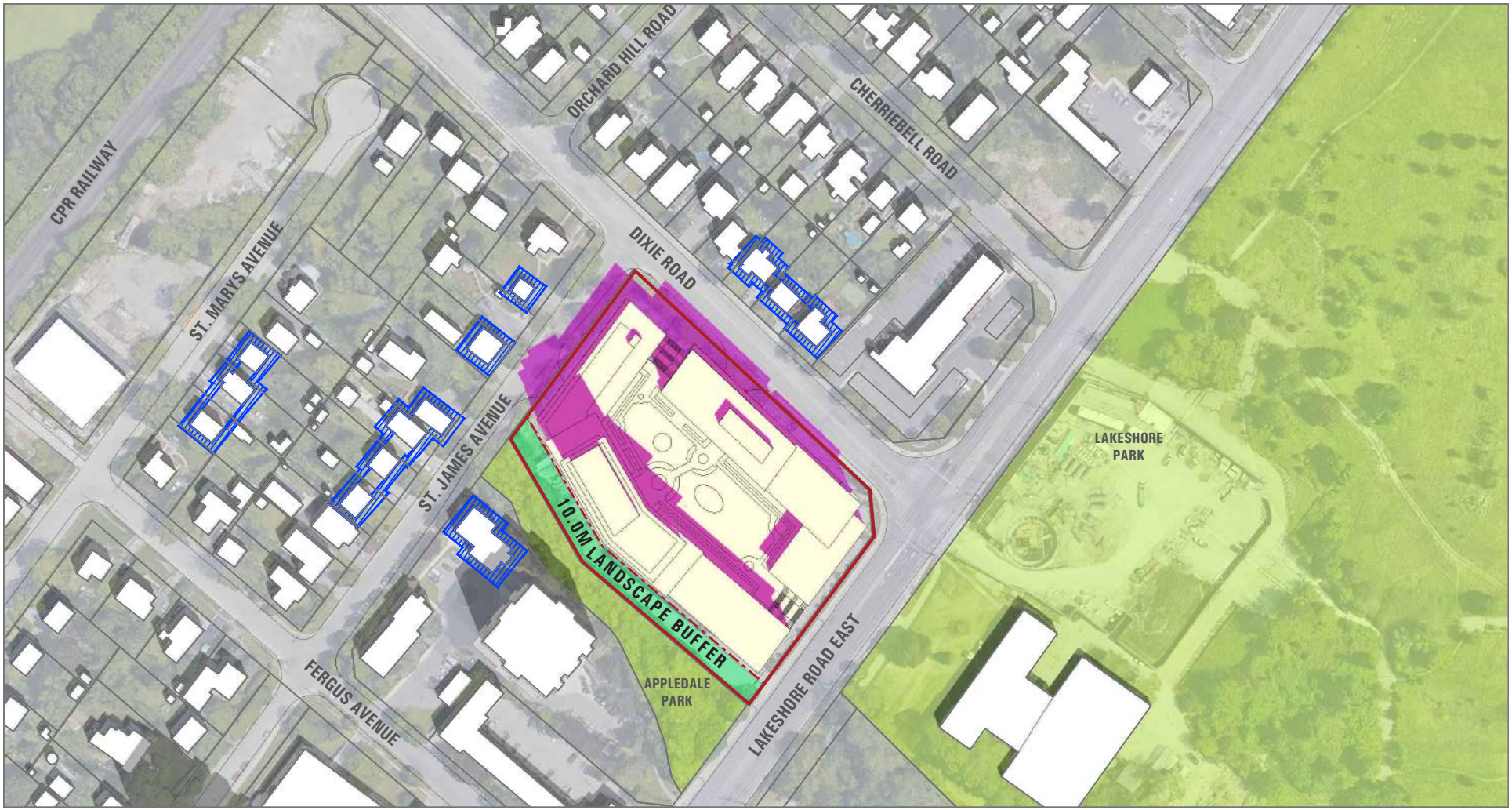


Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Building faces to allow for possibility of using solar energy

September 21st - 11:12 am

Subject Site
Existing Buildings
Proposed Development
Shadow Cast by Proposed Development
Shadow Cast by existing buildings
Existing Park
10.0m Landscape Buffer
Building faces to allow for possibility of using solar energy

September 21st - 12:12 pm

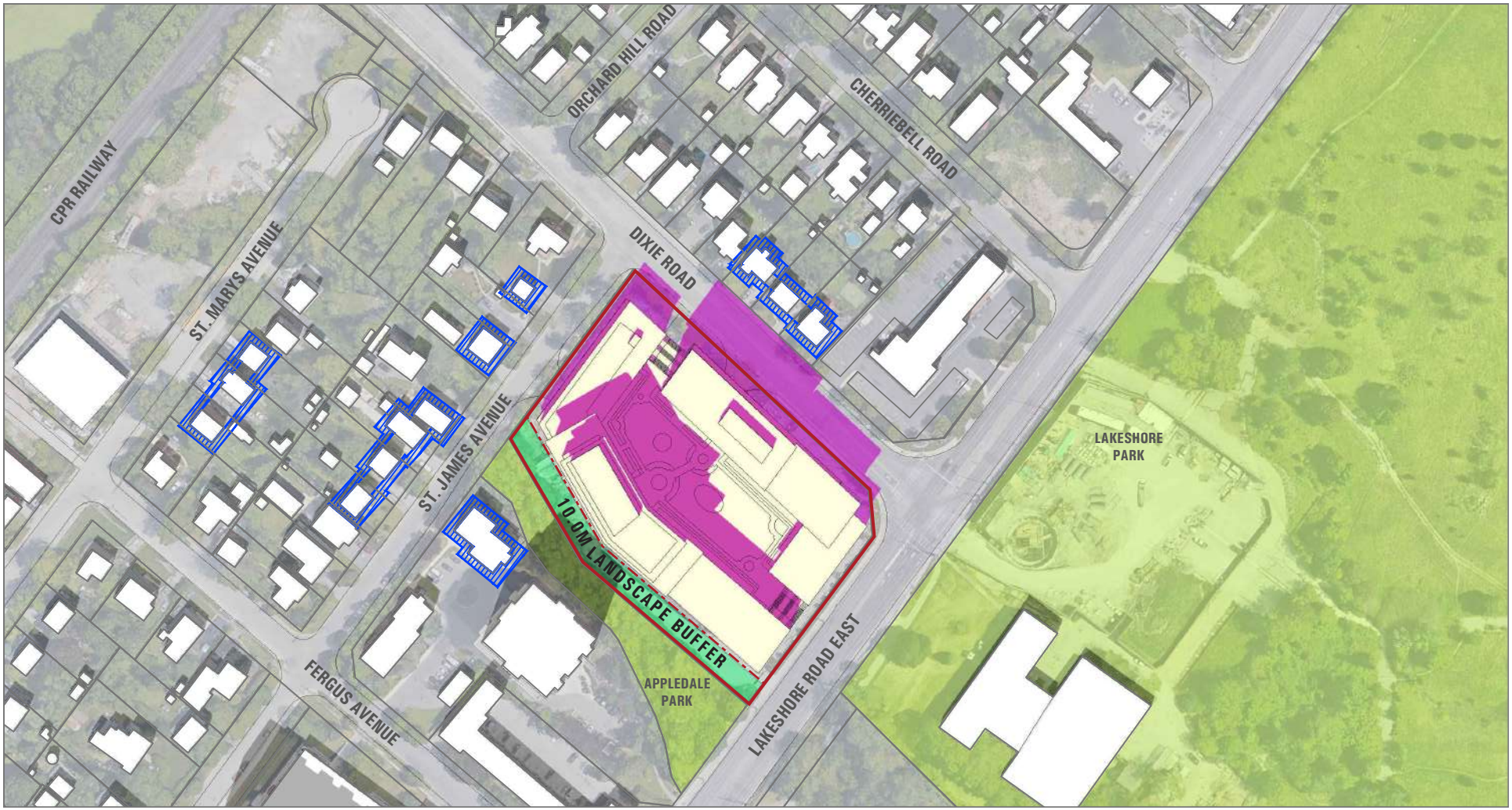


Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Building faces to allow for possibility of using solar energy

September 21st - 1:12 pm

Subject Site
Existing Buildings
Proposed Development
Shadow Cast by Proposed Development
Shadow Cast by existing buildings
Existing Park
10.0m Landscape Buffer
Building faces to allow for possibility of using solar energy

September 21st - 2:12 pm



Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Building faces to allow for possibility of using solar energy

September 21st - 3:12 pm

Subject Site
Existing Buildings
Proposed Development
Shadow Cast by Proposed Development
Shadow Cast by existing buildings
Existing Park
10.0m Landscape Buffer
Building faces to allow for possibility of using solar energy

September 21st - 4:12 pm

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Building faces to allow for possibility of using solar energy

September 21st - 5:12 pm

Subject Site
Existing Buildings
Proposed Development
Shadow Cast by Proposed Development
Shadow Cast by existing buildings
Existing Park
10.0m Landscape Buffer
Building faces to allow for possibility of using solar energy

September 21st - 5:48 pm

Subject Site | Existing Buildings | Proposed Development | Shadow Cast by Proposed Development | Shadow Cast by existing buildings | Existing Park | 10.0m Landscape Buffer | Building faces to allow for possibility of using solar energy

7.0 CONCLUSIONS

Based on this analysis, it is our opinion that the proposed development will create minimal and acceptable shadowing impacts on adjacent low-rise neighbourhoods, private amenity areas, and public parks in accordance with Policy 9.2.2.3 and Policy 9.5.3.9 of the Mississauga Official Plan.

8.0 CALCULATIONS

3.2) Communal Outdoor Amenity Area = 3,400.0m²

June	area in sunshine (As)
707	928.8
720	949.0
820	1251.0
920	1978.2
1020	2607.8
1120	2981.1
1220	2997.1
120	2899.9
210	2499.8
320	2052.5
420	1537.5
520	1254.2
620	1239.0
720	1172.1
733	1154.8
Average of Areas in Sunshine (As(ave))	***1833.5***
Sun Access Factor	***0.54***

September	area in sunshine (As)
835	868.7
912	1610.0
1012	2832.6
1112	2811.4
1212	2512.7
112	1931.0
212	1515.0
312	1358.9
412	1197.3
512	596.9
548	912.3
Average of Areas in Sunshine (As(ave))	***1649.7***
Sun Access Factor	***0.50***

Dec	area in sunshine (As)
919	2132.1
1017	1832.9
1117	1149.4
1217	654.6
117	545.9
217	1340.1
315	2025.7
Average of Areas in Sunshine (As(ave))	***1382.9***
Sun Access Factor	***0.41***

3.3) Public Open Spaces, Parks and Plazas

Appledale Park & Lakeshore Park = 56,112.7m²

September	area in sunshine (As)
835	54922.2
912	55290.1
1012	55894.9
1112	56112.7
1212	55943.2
112	55651.4
212	55615.9
312	55663.8
412	55526.0
512	55223.7
548	53854.7
Average of Areas in Sunshine (As(ave))	***55427.1***
Sun Access Factor	***0.99***

Appledale Park Only = 2,609.0m²

September	area in sunshine (As)
835	1418.5
912	1786.5
1012	2391.3
1112	2609.0
1212	2439.5
112	2147.8
212	2112.2
312	2160.2
412	2022.4
512	1720.0
548	1408.8
Average of Areas in Sunshine (As(ave))	***2019.6***
Sun Access Factor	***0.77***

BOUSFIELDS INC.