

# SHADOW STUDY

2570 - 2590 ARGYLE RD, MISSISSAUGA, ONTARIO

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## 1. INTRODUCTION

This report presents a Shadow Study Analysis of a planned in-fill residential rental development comprising of a new 14 storey building located at 2570 - 2590 Argyle Rd in the City of Mississauga.

This report has been prepared by Arcadis Architects on behalf of the applicant, Bousfields Inc.

The report addresses the specific criteria contained in the City of Mississauga Planning and Building Department's Standards for Shadow Studies (Feb 2023) and demonstrates that the proposed development will not cause undue impacts with respect to shade.

### 1.1. Proposed Development

The proposed application is for a 14 storey rental apartment building (identified as building C) contained on a 2.15 ha site with 2 existing 12 storey rental apartment buildings (identified as building A and building B).

The site is located south of Dundas Street West within RA4-18 Apartment Zone Area. It is bounded by residential apartment buildings to the south, single detached dwellings buildings to the east (R3 Zone) and Green land to the west. CIMT college - Mississauga campus, KC auto repair and Auto 8000 wholesaler is located north of the site.

The existing rental apartment buildings A and B are oriented in an east-west direction and are located on the east side of the site facing Argyle Rd. The proposed rental apartment building C is to be located at the south west side of the site. The proposed development will contain combined indoor and outdoor amenity for all buildings. Outdoor amenity will be located at grade between existing building A and B, along the Argyle Road frontage, and on the 5th floor of building C.

## 2. STANDARD REQUIREMENTS AND DATA USED

### 2.1. Dates

Shadow Studies and Analyses in Appendix A are conducted for the following dates:

- ◆ June 21
- ◆ September 21 - In accordance with the City of Mississauga's Standards for Shadow Studies, February 2023, the shadow impacts for September 21st are similar to March 21st, and therefore the conclusions for September 21st are deemed to apply for March 21st.
- ◆ December 21

### 2.2. Times

Shadow Studies and Analyses in Appendix A are conducted for the following times:

- ◆ Solar Noon (SN)
- ◆ Hourly intervals before and after Solar Noon (SN), up to and including 1.5 hours after sunrise and 1.5 hours before sunset

### 2.3. Sun Angles

Sun Angles used in the Shadow Studies and Analyses in Appendix A are based on the latitude and longitude of Mississauga Civic Centre at 300 City Centre Drive, Mississauga ON. L5B 3C1 Based on City of Mississauga Shadow Study Standard Requirements.

- ◆ Latitude: 43 degrees 35' 20" N
- ◆ Longitude: -79 degrees 38' 40" W

### 2.4. Time Zone

Time Zone: Eastern

Standard Time: UT- 5 hours was used for December study times (EDT)

Daylight Time: UT- 4 hours was used for June and September study times (EST)

### 2.5. Astronomic North

Astronomic north was based on topographical survey of 2570 – 2590 Argyle Rd, Lot 1, Registered Plan 775, City of Mississauga, Regional Municipality of Peel prepared by Speight, Van Nostrand & Gibson Ltd., Ontario Land Surveyors, dated May 21, 2019

### 2.6. Origin / Source of Base Plan

AutoCAD file for base map 3D massing and terrain was downloaded from the City of Mississauga Open Data website:

<https://mississauga.maps.arcgis.com/apps/webappviewer/index.html?id=499cc2269aa544049f47d222a11274e8>

### 2.7. Coverage Area

The base mapping includes a coverage area of 748m x 473m. Whereas the proposed building height from established grade is 47m the coverage area is at least 4.0 times the building height to the north, east and west and 1.5 times the building height to the south.

Shadows were generated using Autodesk Revit 2020

### 3. CRITERIA

#### 3.1. Residential Private Outdoor Amenity Spaces

##### **This criterion is met.**

The proposed building C has no shadow impact for more than two consecutive hourly test times within the exterior amenity space (such as private rear yards, decks, patios and pools) of the surrounding low rise residential dwellings on each of the following dates June 21 and September 21, meeting this criterion.

The line of "No Impact Zone" is shown as a line 7.5 m from the front rear wall or other appropriate exterior building wall of the dwelling that abuts the private amenity space.

#### 3.2. Communal Outdoor Amenity Areas

##### a) Outdoor Amenity At Grade

##### **This criterion is in part met.**

There are no existing neighboring Communal Outdoor Amenity Areas that are impacted (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), meeting this criteria. The pool area on the adjacent apartment site is minorly impacted from 7:20 p.m. onward on June 21, however this private pool does not fit the definition of Communal Outdoor Amenity Area. It is important to note the majority of shadow is a result of the existing buildings. Common at grade outdoor amenity area that is part of the proposed development has a Sun Access Factor of:

- ◆ June 21 – 53%
- ◆ September 21 – 38%
- ◆ December 21 – 8%

Majority of the shadow cast on the outdoor amenity is due to the existing buildings. (June 21 - Only 10% of shadow is due to the proposed building C; September 21 - only 25% of shadow is due to the proposed building C; December 21 - only 30% of shadow is due to the proposed building C; the remaining shadow is due to the existing buildings).

##### b) Outdoor Amenity At Building C Rooftop

##### **This criterion is met.**

The proposed building C allows more than 50% sun coverage on the Communal Rooftop Outdoor Amenity Areas on the Fifth floor on each of the following dates June 21, September 21 and December 21.

- ◆ June 21 – 54%
- ◆ September 21 – 65%
- ◆ December 21 – 80%

#### 3.3. Public Realm

##### **This criterion is met.**

*Low and Medium Density Residential Streets:* Argyle Rd. and Privet Ct.

The proposed development casts a minor amount of shadowing at 5:48 p.m. on September 21 on the east and west sides of Argyle Road, meeting this criterion.

*Mixed Use, Commercial, Employment and High Density Residential Street:* Dundas Street West.

The proposed development has minimum shadowing impact on Dundas Street West at 9:12 a.m. on September 21st and it moves fully off this area by 10:12 am, meeting this criterion.

#### Public Open Spaces, Parks and Plazas

Parkerhill Park is located to the north west of the proposed development. The proposed development casts no incremental shadowing on the park, meeting this criterion.

Not to be named park and greenland zone is located southwest of the proposed development, south of Dundas Street West. The Existing shadow along with the shadow of the proposed building C allows for more than 50% sun coverage on the not to be named park and greenland zone on each of the following dates June 21, September 21 and December 21.

- ◆ June 21 – 85%
- ◆ September 21 – 94%
- ◆ December 21 – 92%

#### 3.4. Turf and flower gardens in Public Parks

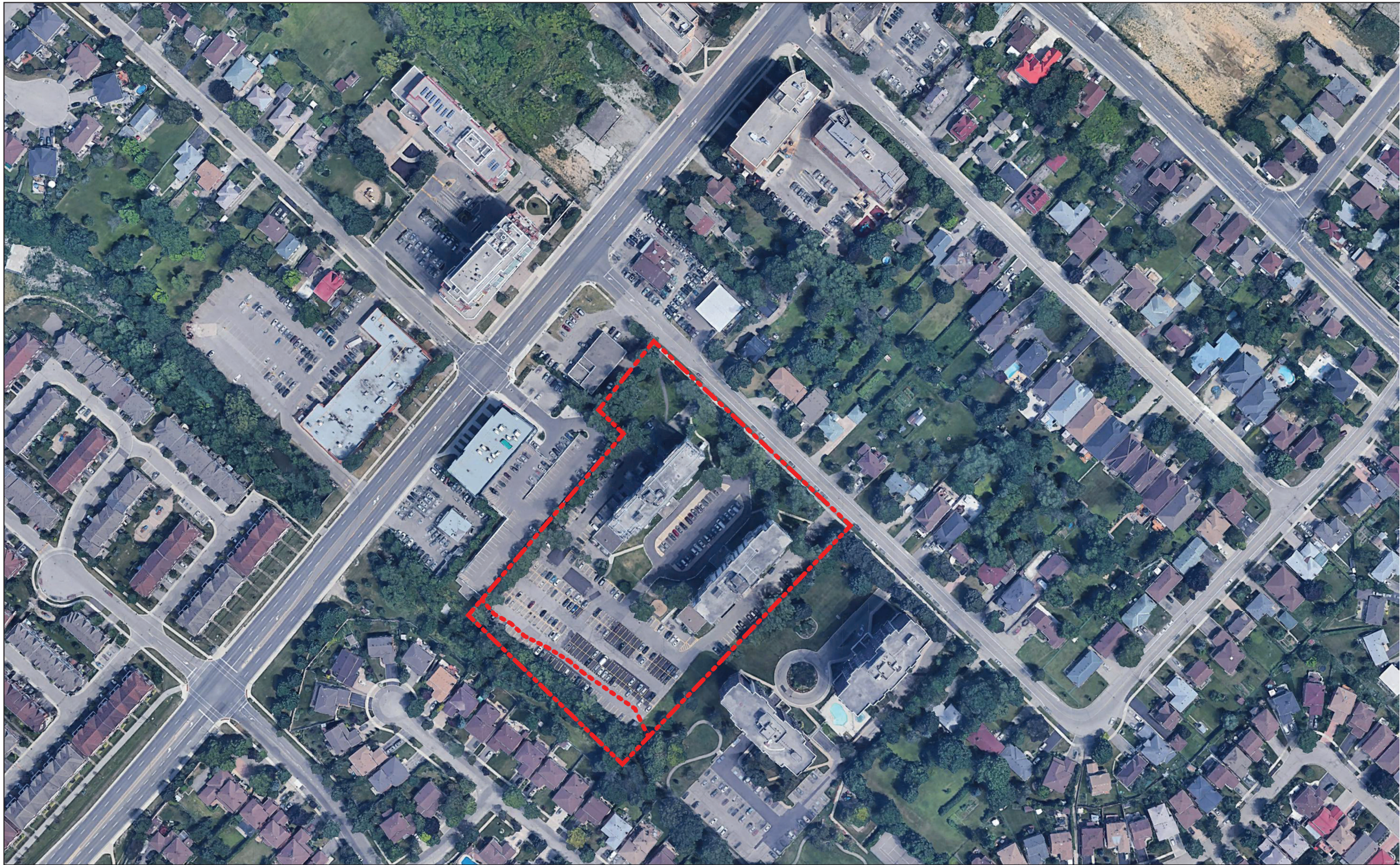
##### **This criterion is met.**

No existing neighboring public open spaces, parks and plazas. The greenland buffer located at the rear of the proposed development (G1 and G2 area) is considered a waterway for stormwater management.

#### 3.5. Building faces to allow for the possibility of using solar energy

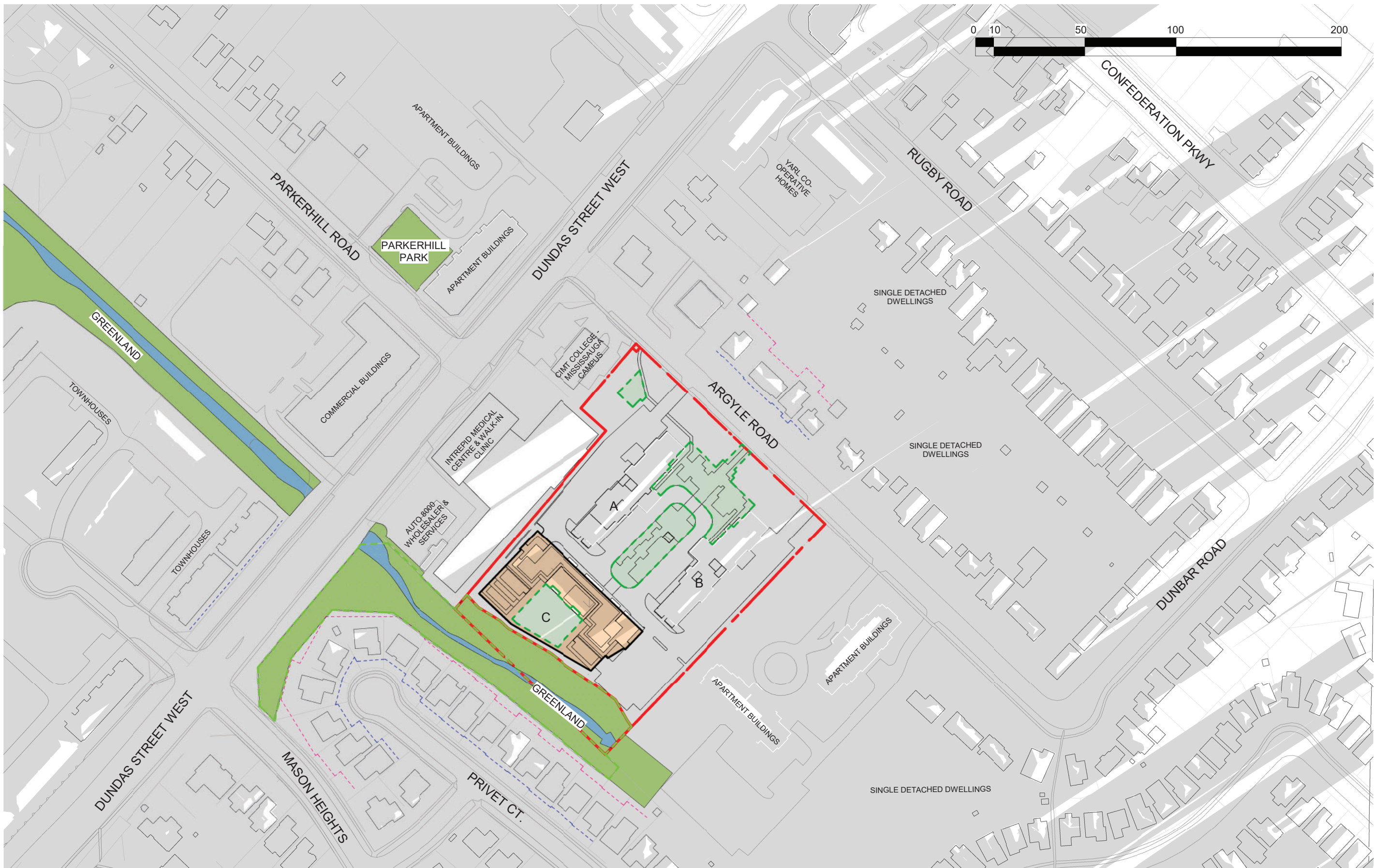
##### **This criterion is met.**

On September 21st at 8:35 a.m, the new building has minimum impact on the townhouses located across the Dundas Street West and it moves fully off this area by 9:12 am. Incremental shadows from the new building does not fall on any other properties containing low-rise residential buildings including townhouses, detached and semi-detached dwellings, meeting this criterion.



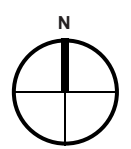
**APPENDIX A**

NAME	PAGE
<i>June 21</i>	
<b>5.37 am EDT</b> Sunrise	04
<b>7.07 am EDT</b> Sunrise + 1.5h	05
<b>7.20 am EDT</b> Solar Noon - 6h	06
<b>8.20 am EDT</b> Solar Noon - 5h	07
<b>9.20 am EDT</b> Solar Noon - 4h	08
<b>10.20 am EDT</b> Solar Noon - 3h	09
<b>11.20 am EDT</b> Solar Noon - 2h	10
<b>12.20 pm EDT</b> Solar Noon - 1h	11
<b>1.20 pm EDT</b> Solar Noon	12
<b>2.20 pm EDT</b> Solar Noon + 1h	13
<b>3.20 pm EDT</b> Solar Noon + 2h	14
<b>4.20 pm EDT</b> Solar Noon + 3h	15
<b>5.20 pm EDT</b> Solar Noon + 4h	16
<b>6.20 pm EDT</b> Solar Noon + 5h	17
<b>7.20 pm EDT</b> Solar Noon + 6h	18
<b>7.33 pm EDT</b> Sunset - 1.5h	19
<b>9.03 pm EDT</b> Sunset	20
<i>September 21</i>	
<b>7.05 am EDT</b> Sunrise	21
<b>8.35 am EDT</b> Sunrise + 1.5h	22
<b>9.12 am EDT</b> Solar Noon - 4h	23
<b>10.12 am EDT</b> Solar Noon - 3h	24
<b>11.12 am EDT</b> Solar Noon - 2h	25
<b>12.12 pm EDT</b> Solar Noon - 1h	26
<b>1.12 pm EDT</b> Solar Noon	27
<b>2.12 pm EDT</b> Solar Noon + 1h	28
<b>3.12 pm EDT</b> Solar Noon + 2h	29
<b>4.12 pm EDT</b> Solar Noon + 3h	30
<b>5.12 pm EDT</b> Solar Noon + 4h	31
<b>5.48 pm EDT</b> Sunset - 1.5h	32
<b>7.18 pm EDT</b> Sunset	33
<i>December 21</i>	
<b>7.49 am EST</b> Sunrise	34
<b>9.19 am EST</b> Sunrise + 1.5h	35
<b>10.17 am EST</b> Solar Noon - 2h	36
<b>11.17 am EST</b> Solar Noon - 1h	37
<b>12.17 pm EST</b> Solar Noon	38
<b>1.17 pm EST</b> Solar Noon + 1h	39
<b>2.17 pm EST</b> Solar Noon + 2h	40
<b>3.15 pm EST</b> Sunset - 1.5h	41
<b>4.45 pm EST</b> Sunset	42

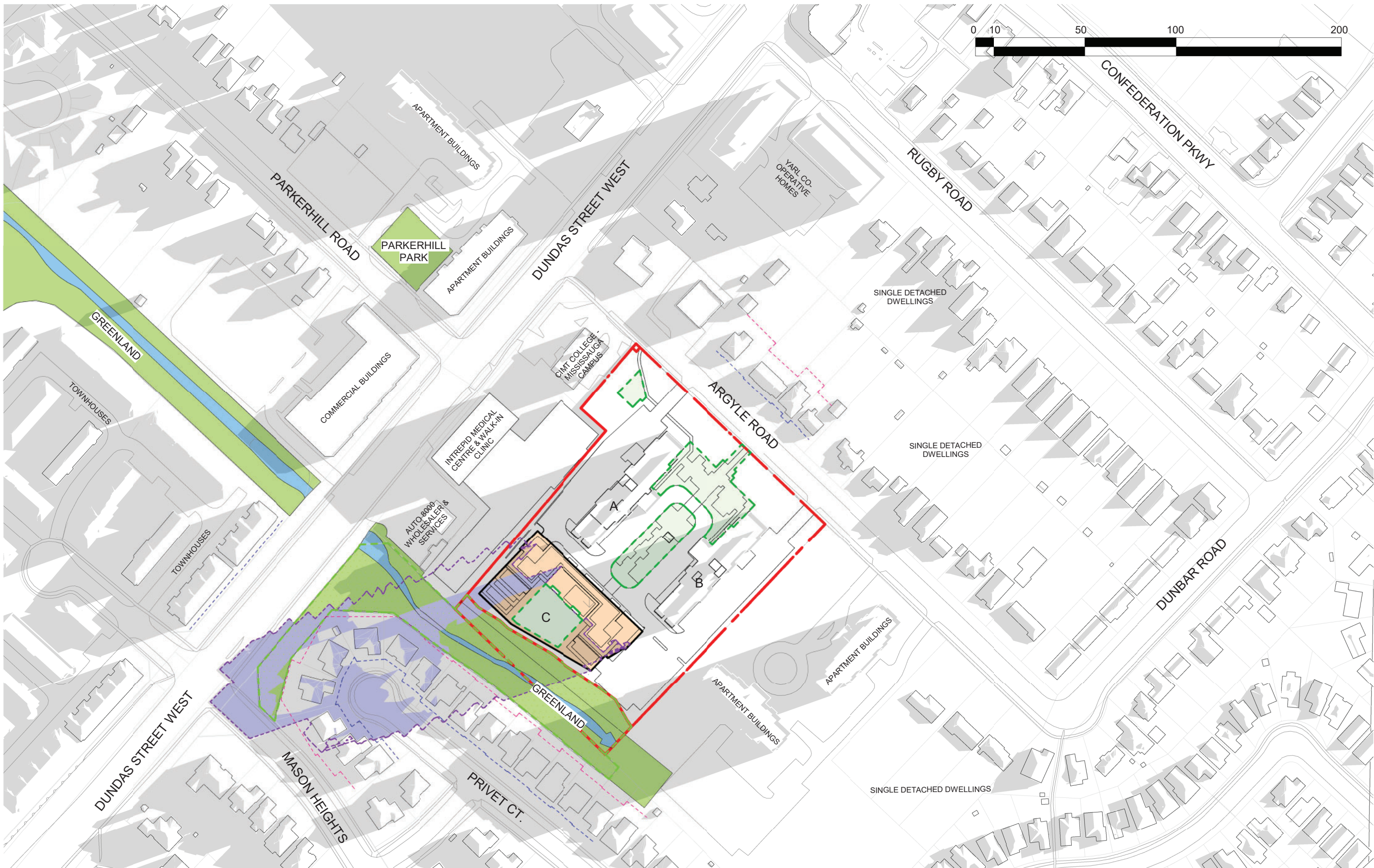


**LEGEND**

- SHADOWS**
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  - EXISTING
- CONTEXT**
  - GROUND
  - PARK/OPEN SPACE
  - WATER
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  - GREENLAND AREA WITH-IN SITE BOUNDARIES
- SUBJECT SITE**
- RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE**
- BUILDING FACES TO ALLOW FOR THE POSSIBILITY OF USING SOLAR ENERGY**

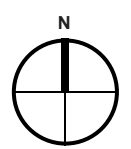


June 21 - 5.37 am EDT Sunrise

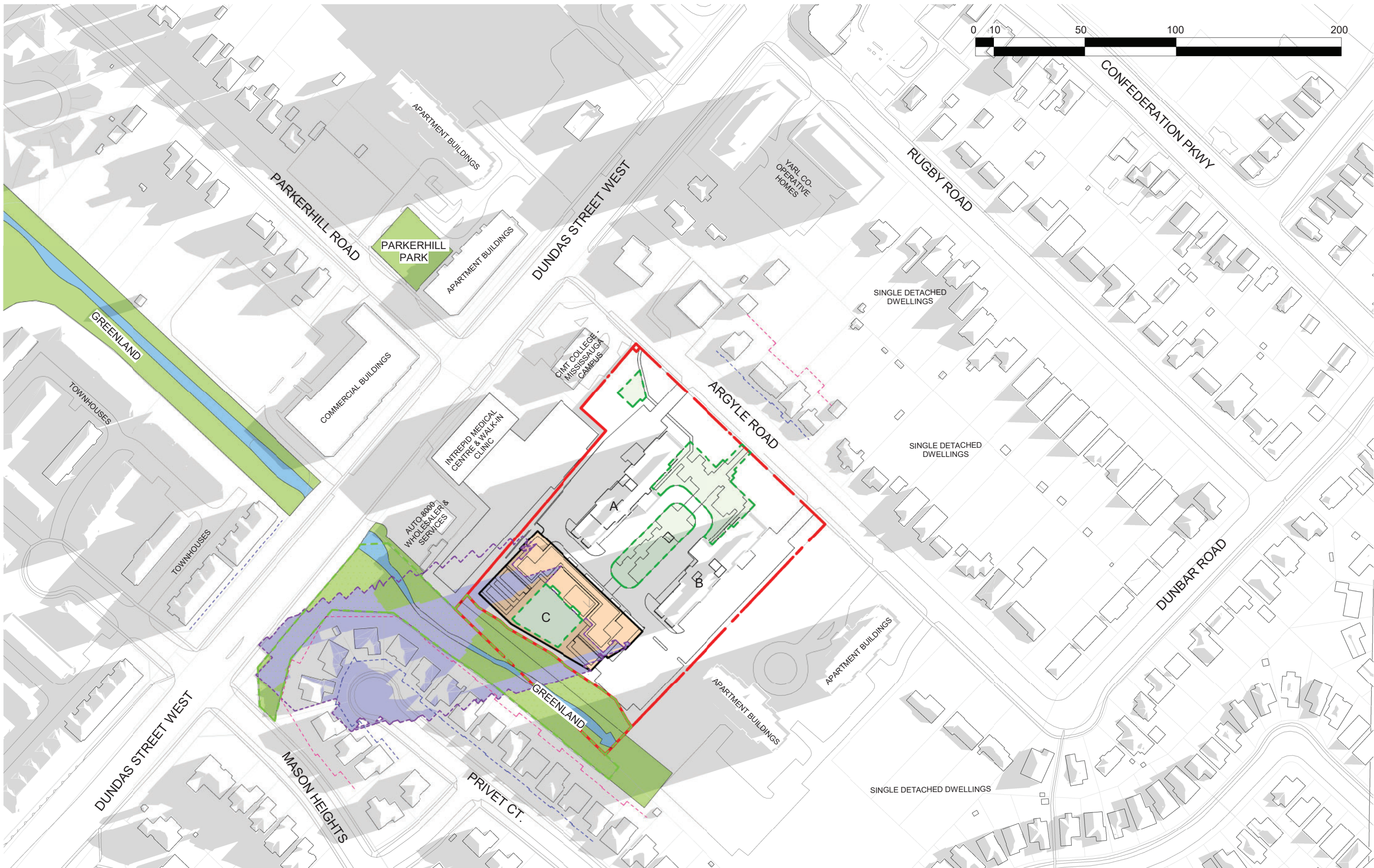


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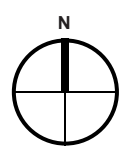
June 21 - 7.07 am EDT Sunrise + 1.5

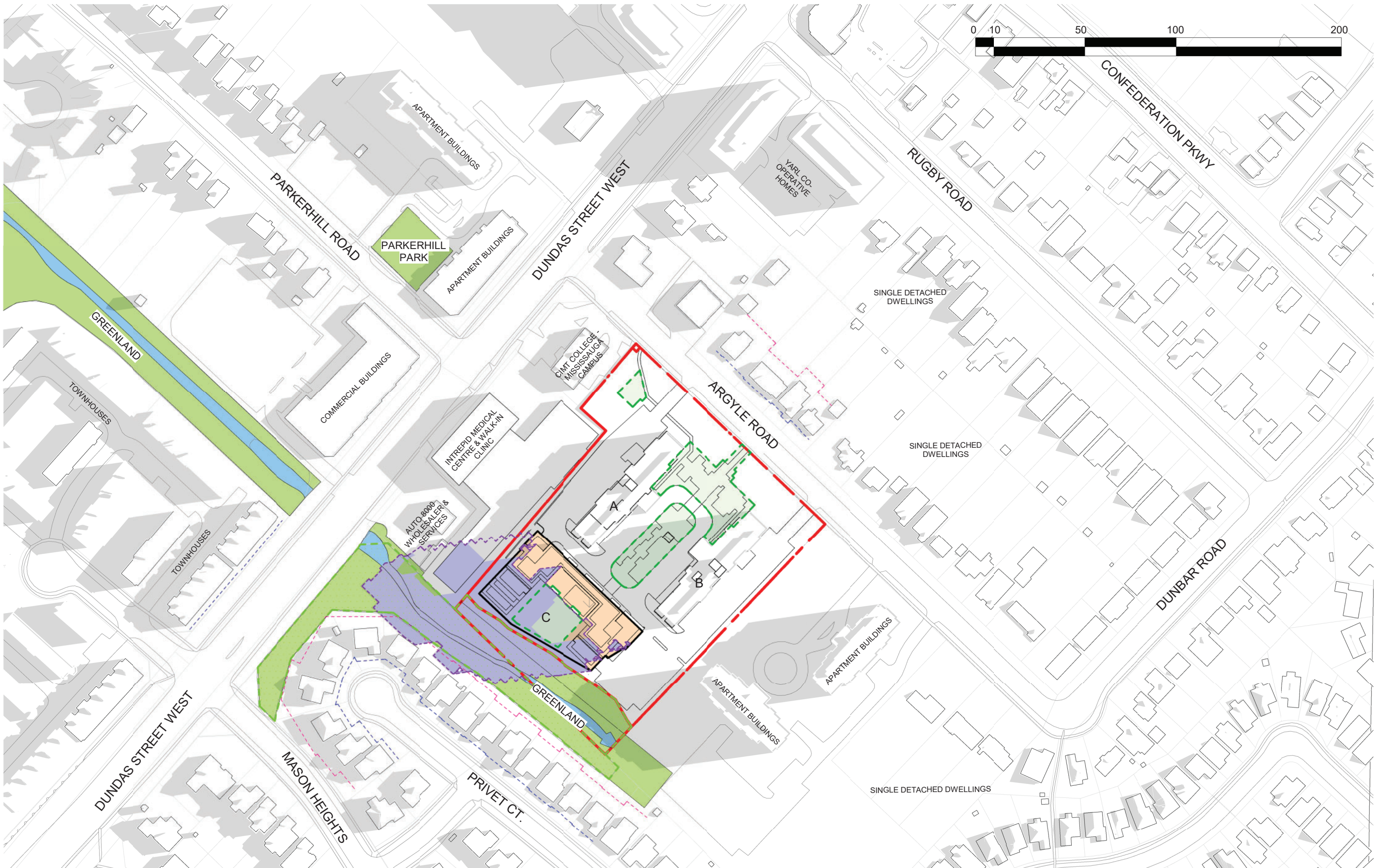


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June 21 - 7.20 am EDT Solar Noon - 6h

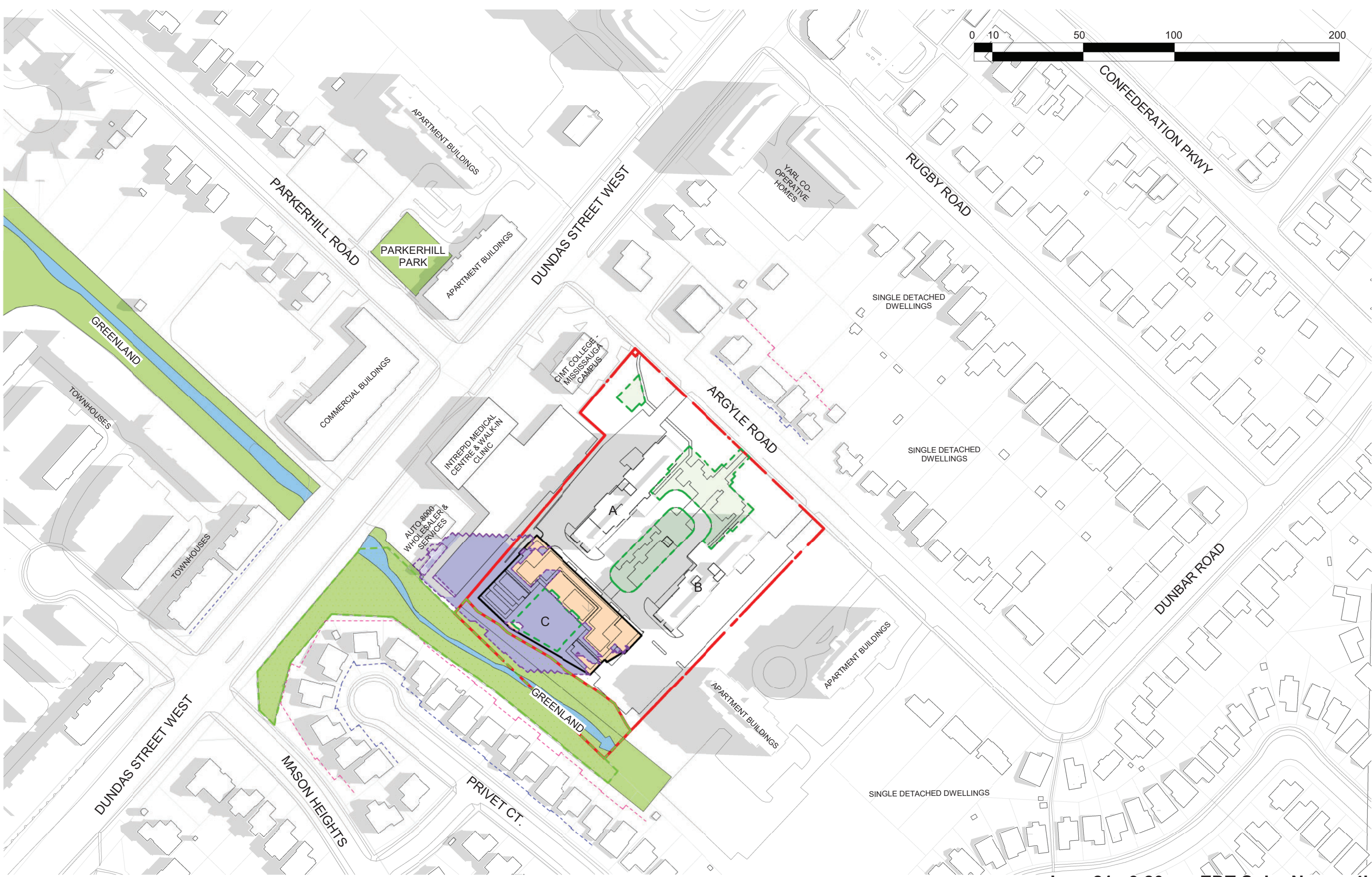




June 21 - 8.20 am EDT Solar Noon - 5h

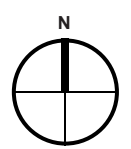
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- SHADOWS**
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    - EXISTING (solid grey line)
  - BUILDINGS**
    - PROPOSED (orange fill)
    - EXISTING (white fill)
  - CONTEXT**
    - GROUND (white fill)
    - PARK/OPEN SPACE (green fill)
    - WATER (blue fill)
    - PROPOSED OUTDOOR AMENITY AREA (dashed green line)
    - GREENLAND AREA WITH-IN SITE BOUNDARIES (dashed green line)
  - SUBJECT SITE** (dashed red line)
  - RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE** (dashed pink line)
  - BUILDING FACES TO ALLOW FOR THE POSSIBILITY OF USING SOLAR ENERGY** (dashed blue line)



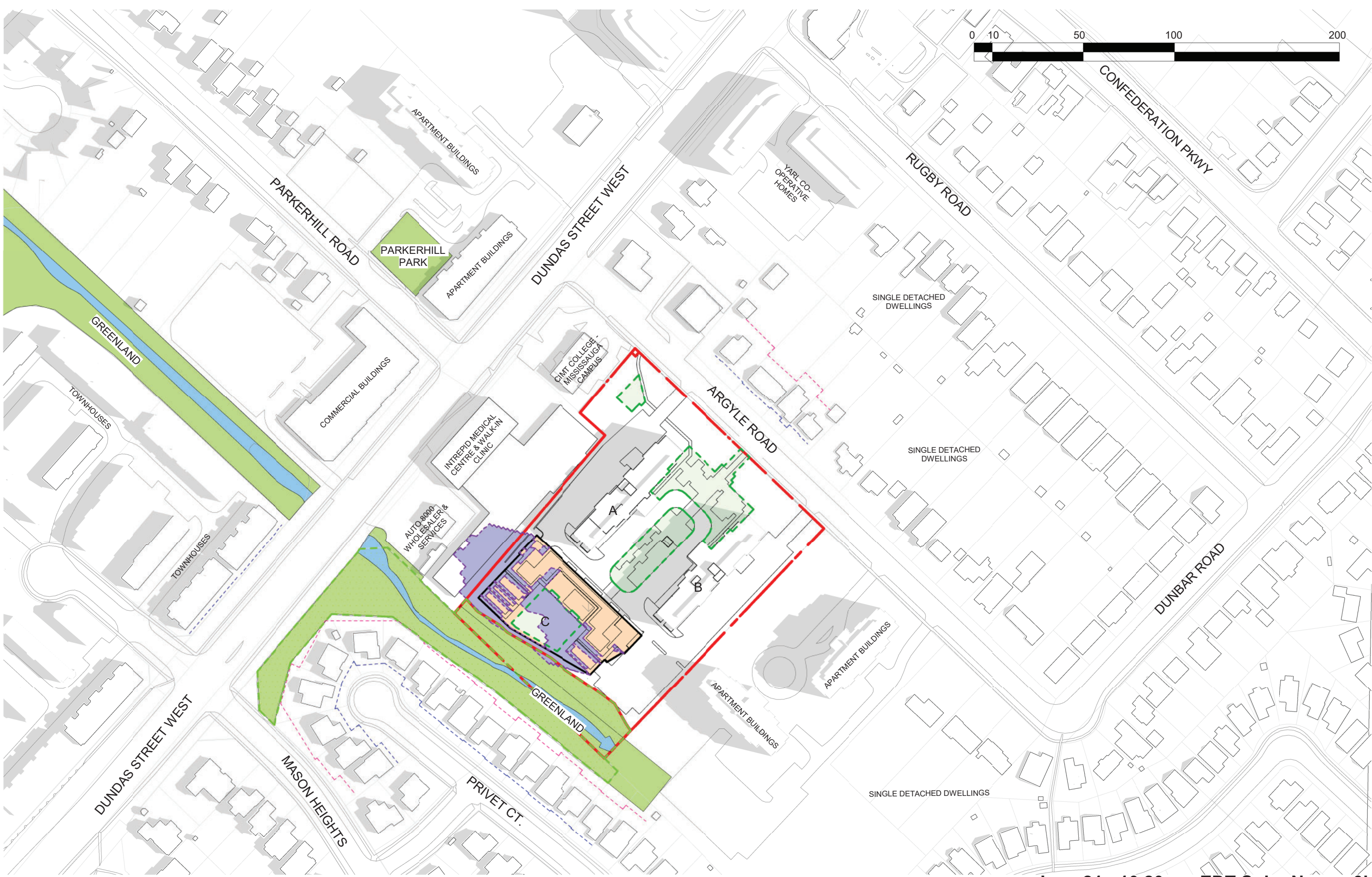


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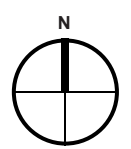
June 21 - 9.20 am EDT Solar Noon - 4h

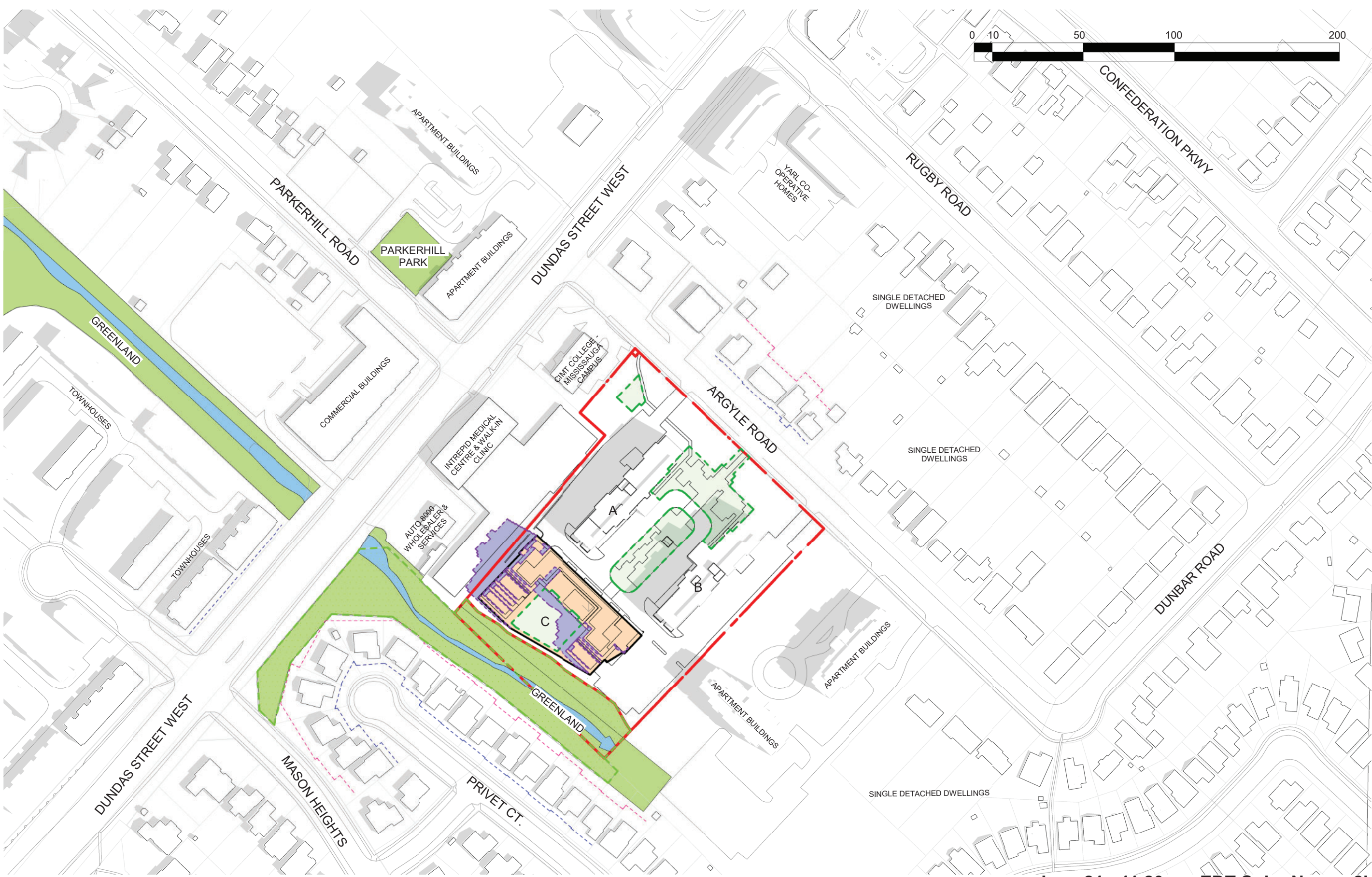


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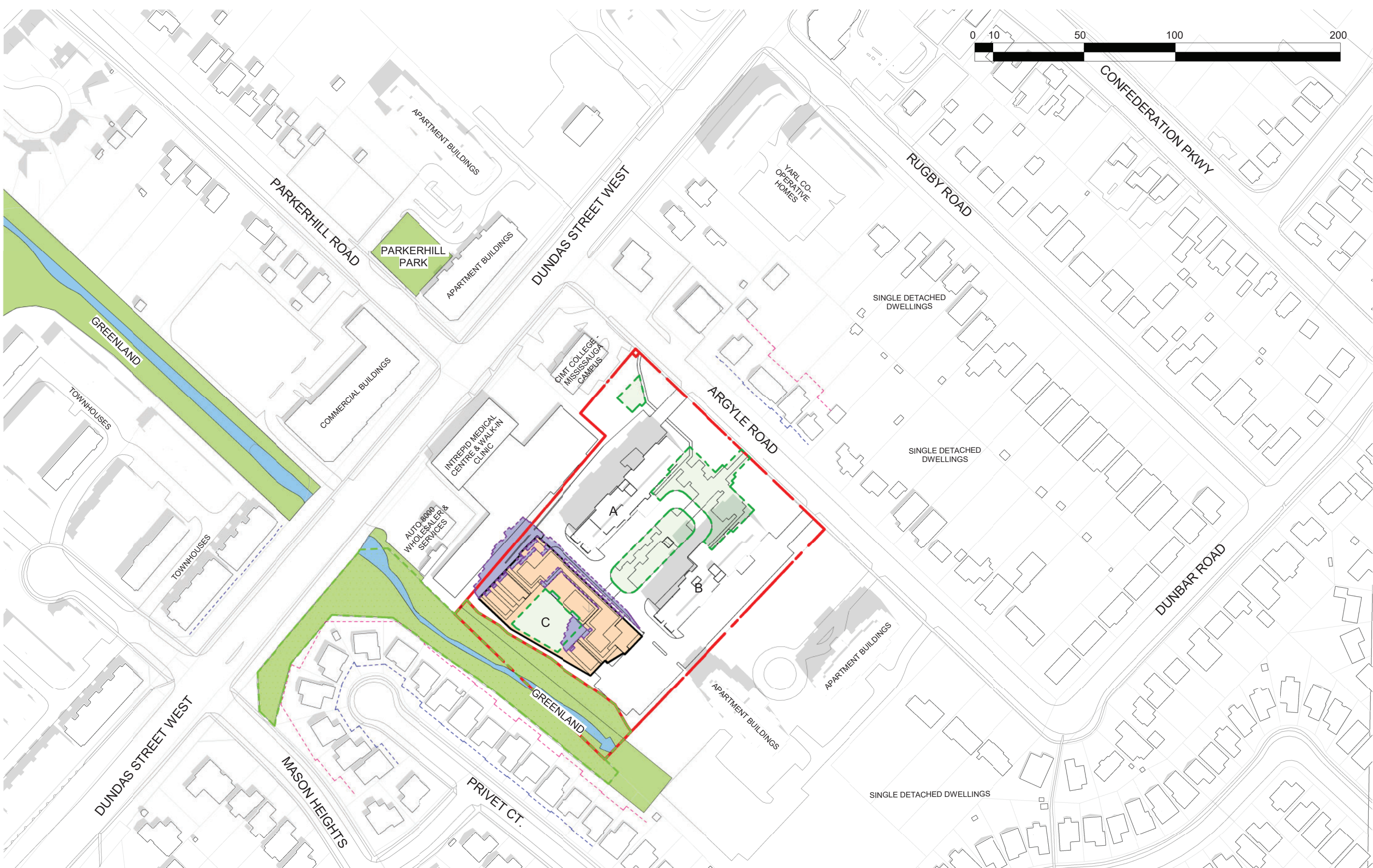
June 21 - 10.20 am EDT Solar Noon - 3h





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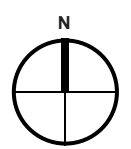
June 21 - 11.20 am EDT Solar Noon - 2h

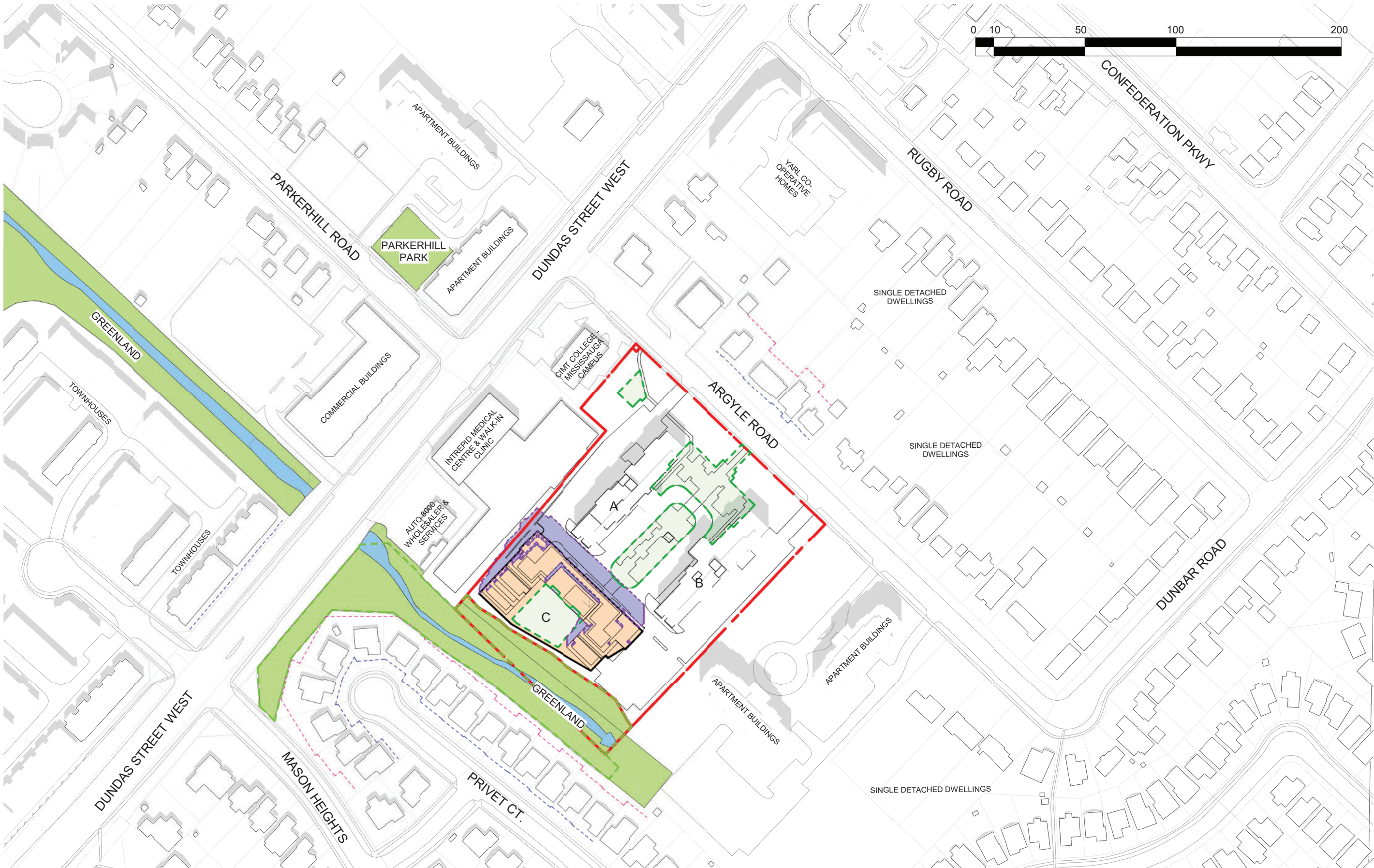


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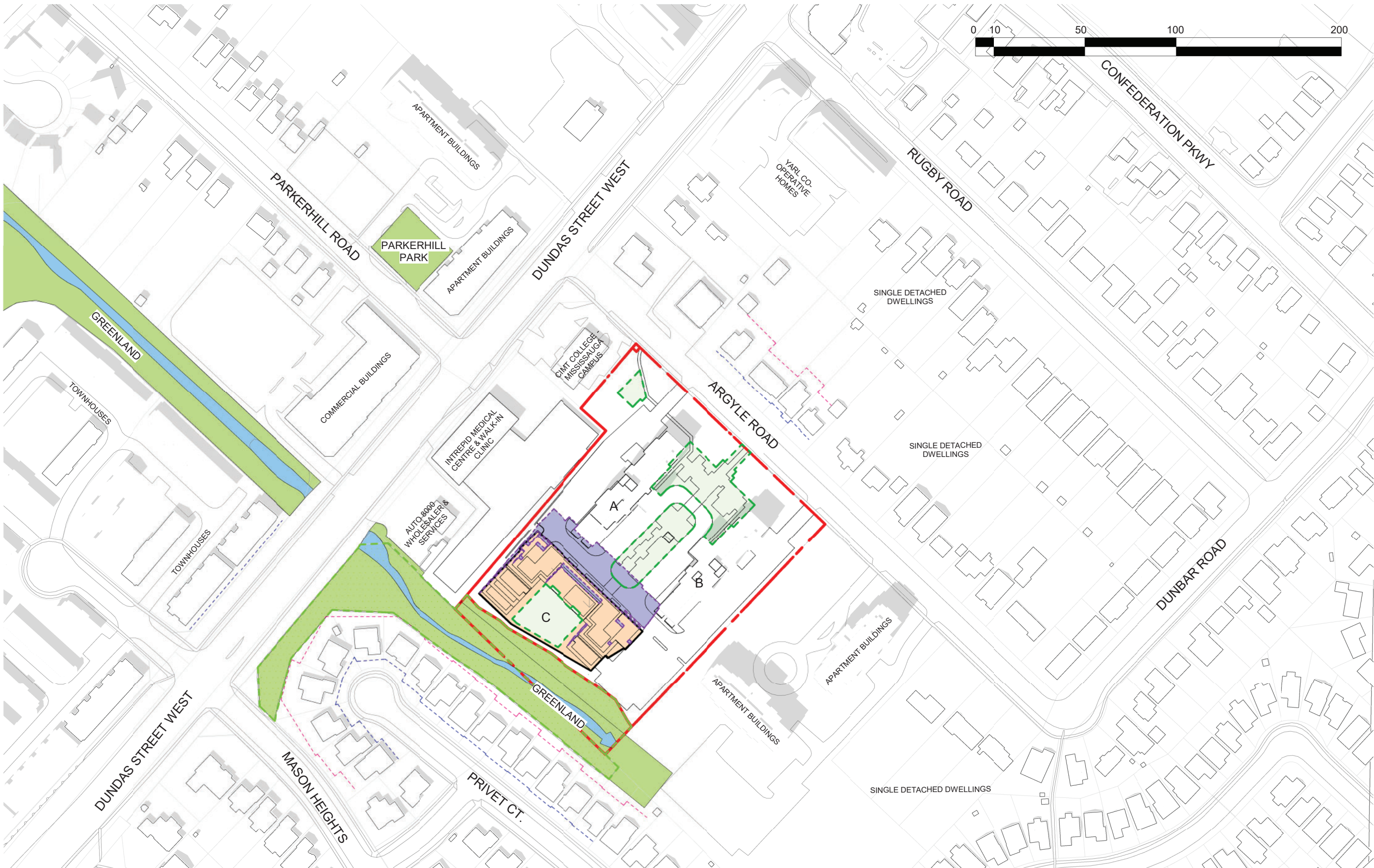
June 21 - 12.20 pm EDT Solar Noon - 1h





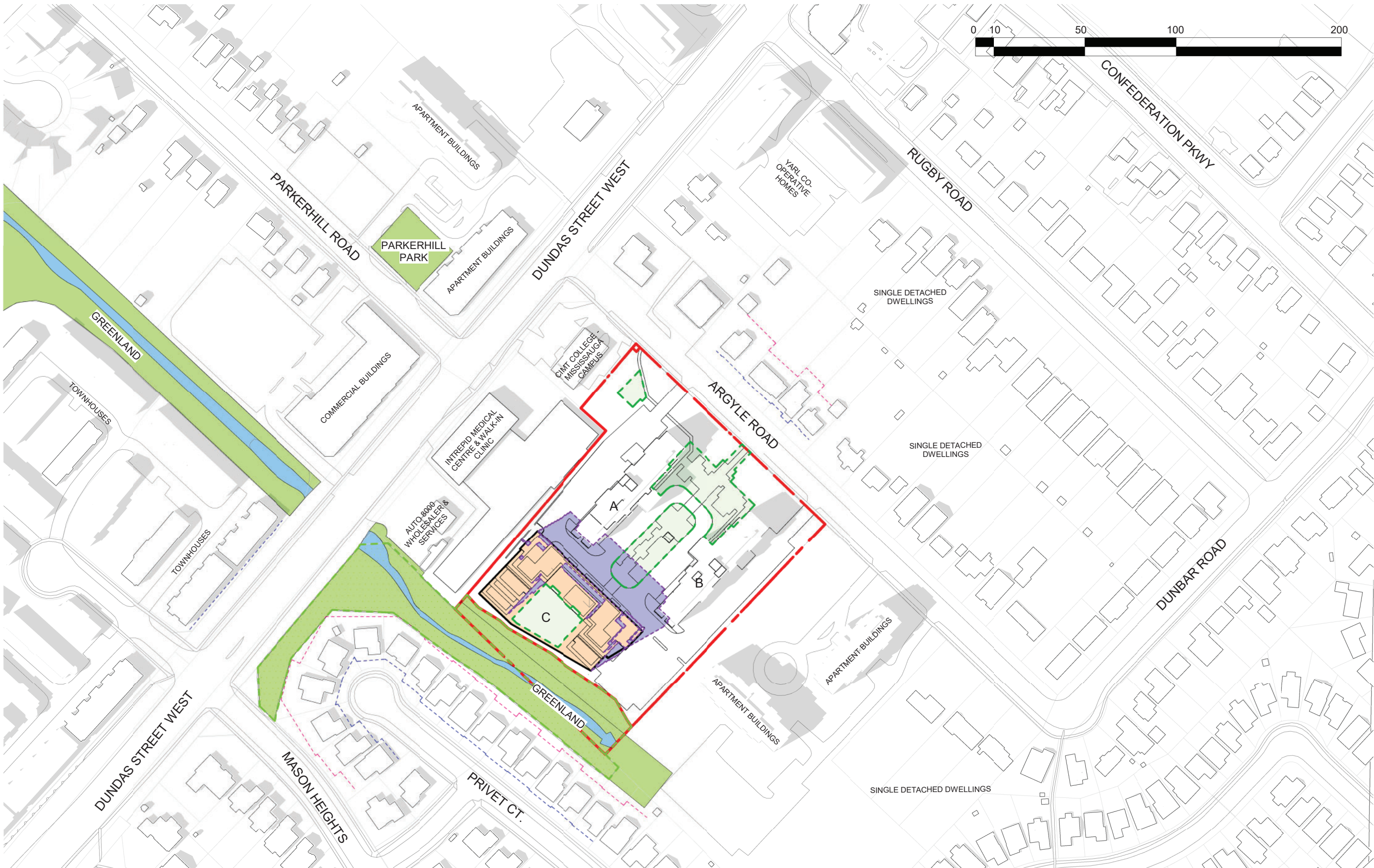
- LEGEND**
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June 21 - 1.20 pm EDT Solar Noon



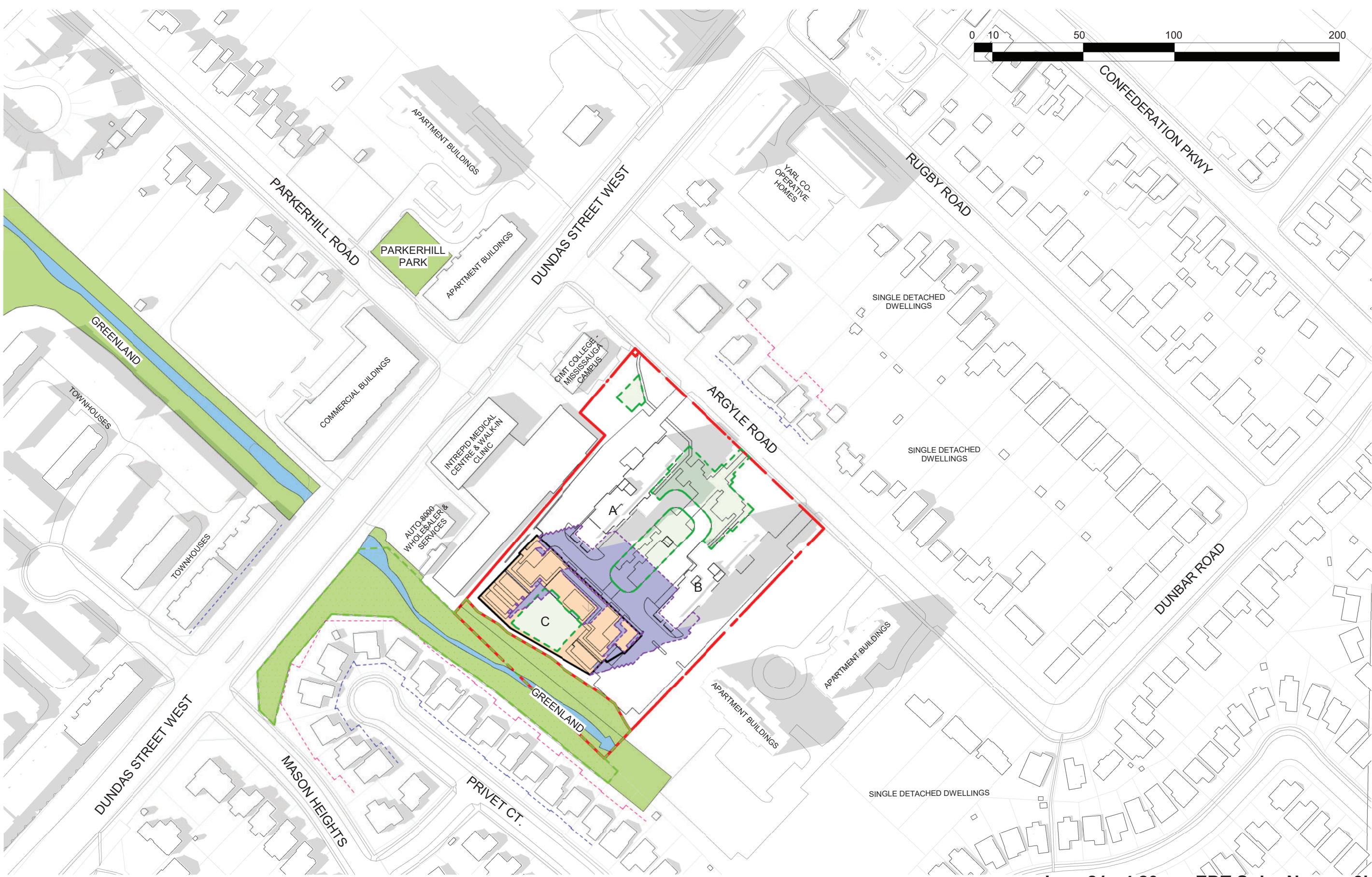
June 21 - 2.20 pm EDT Solar Noon + 1h

- LEGEND**
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June 21 - 3.20 pm EDT Solar Noon + 2h

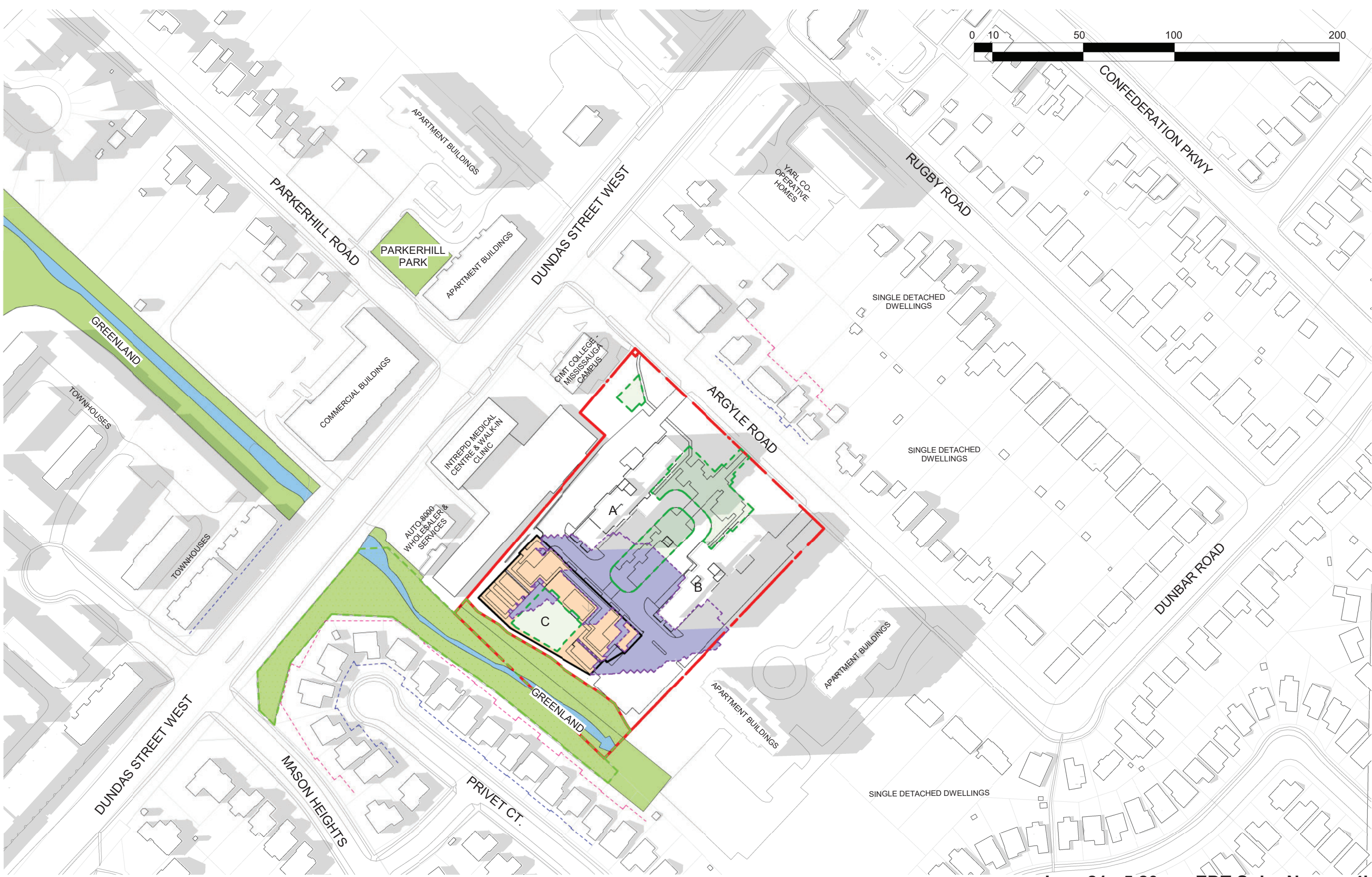
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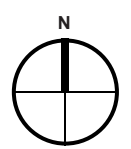
June 21 - 4.20 pm EDT Solar Noon + 3h



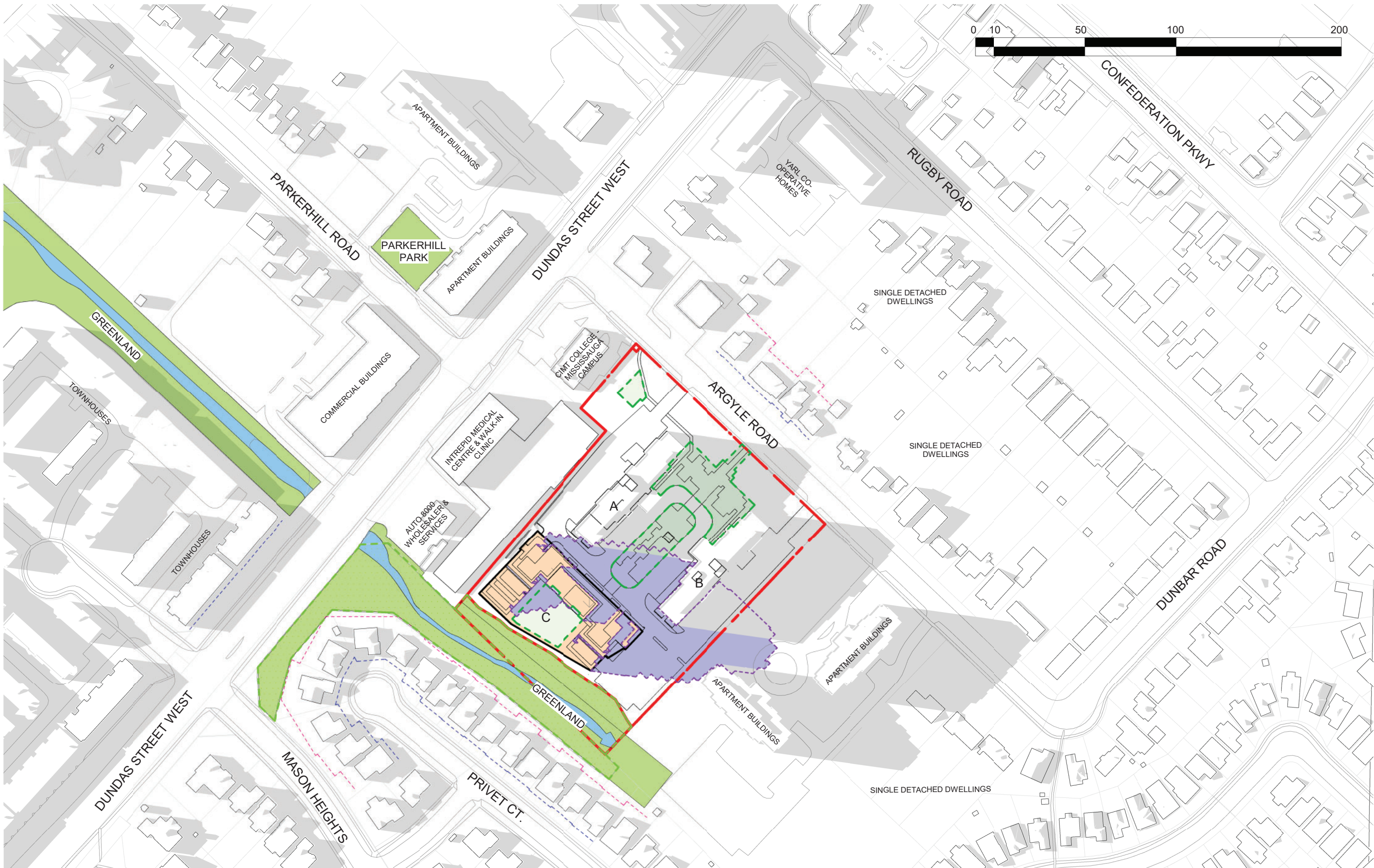


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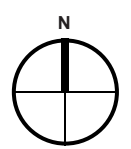


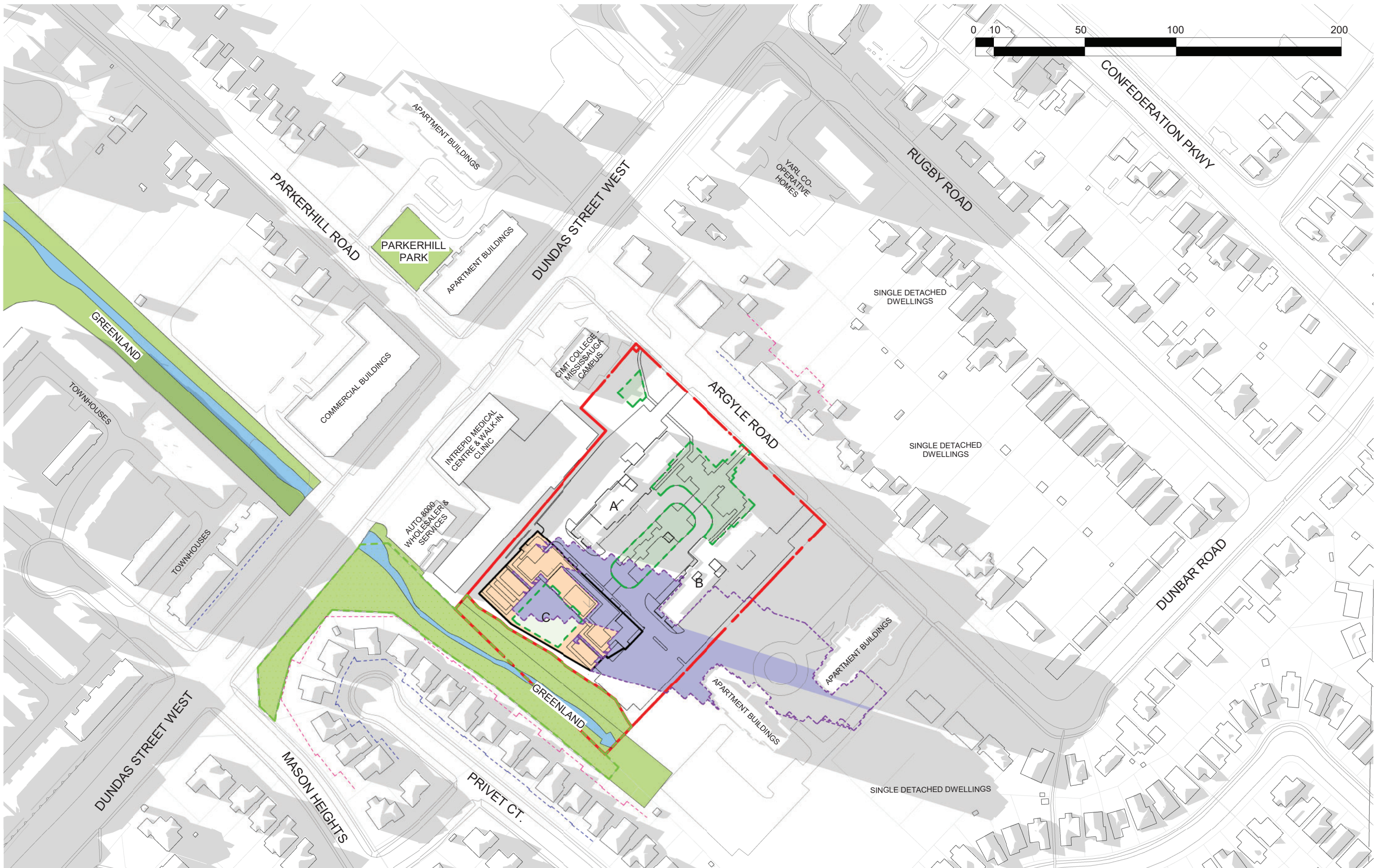
June 21 - 5.20 pm EDT Solar Noon + 4h



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June 21 - 6.20 pm EDT Solar Noon + 5h

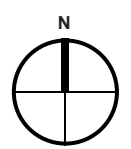


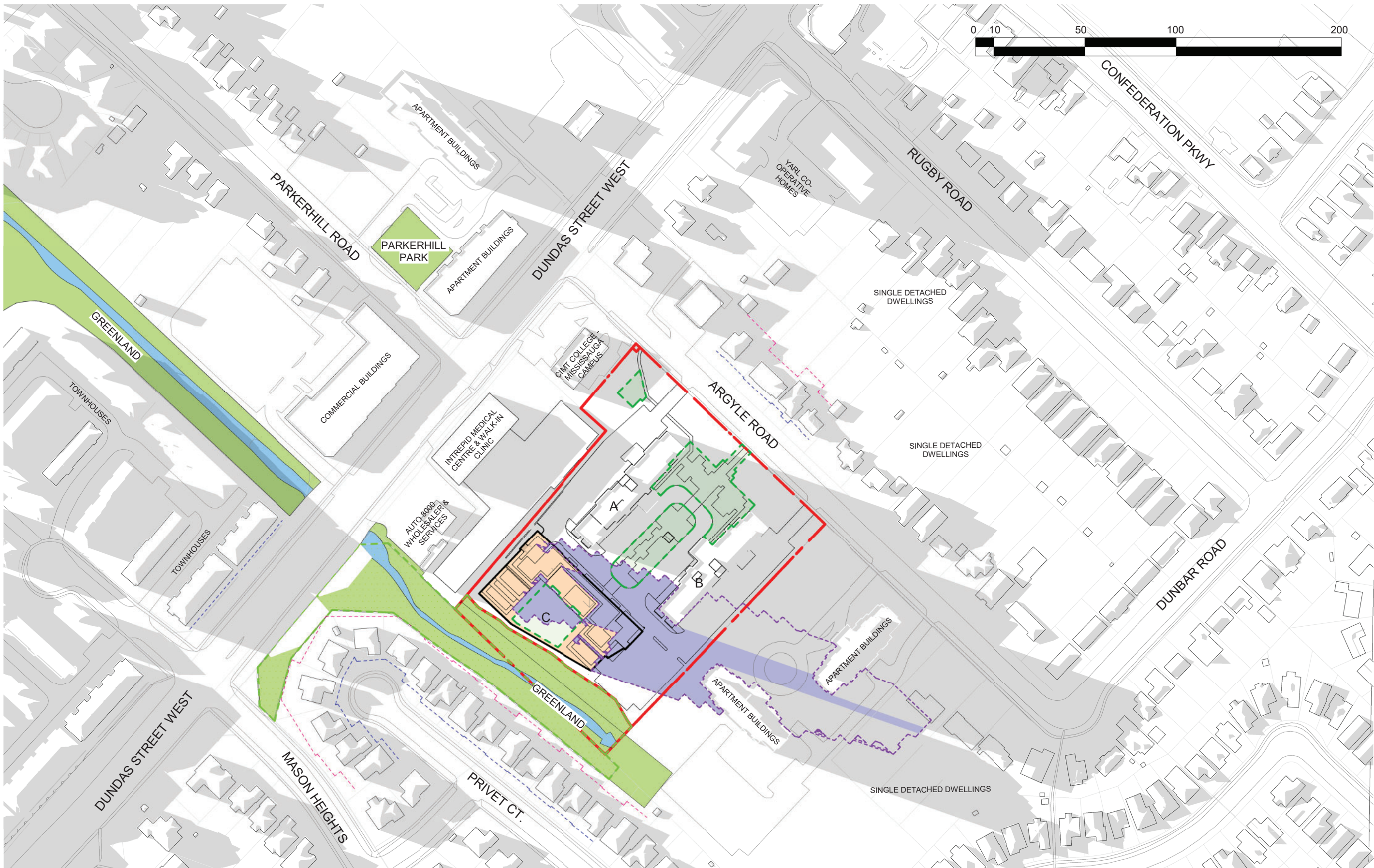


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June 21 - 7.20 pm EDT Solar Noon + 6h

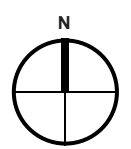


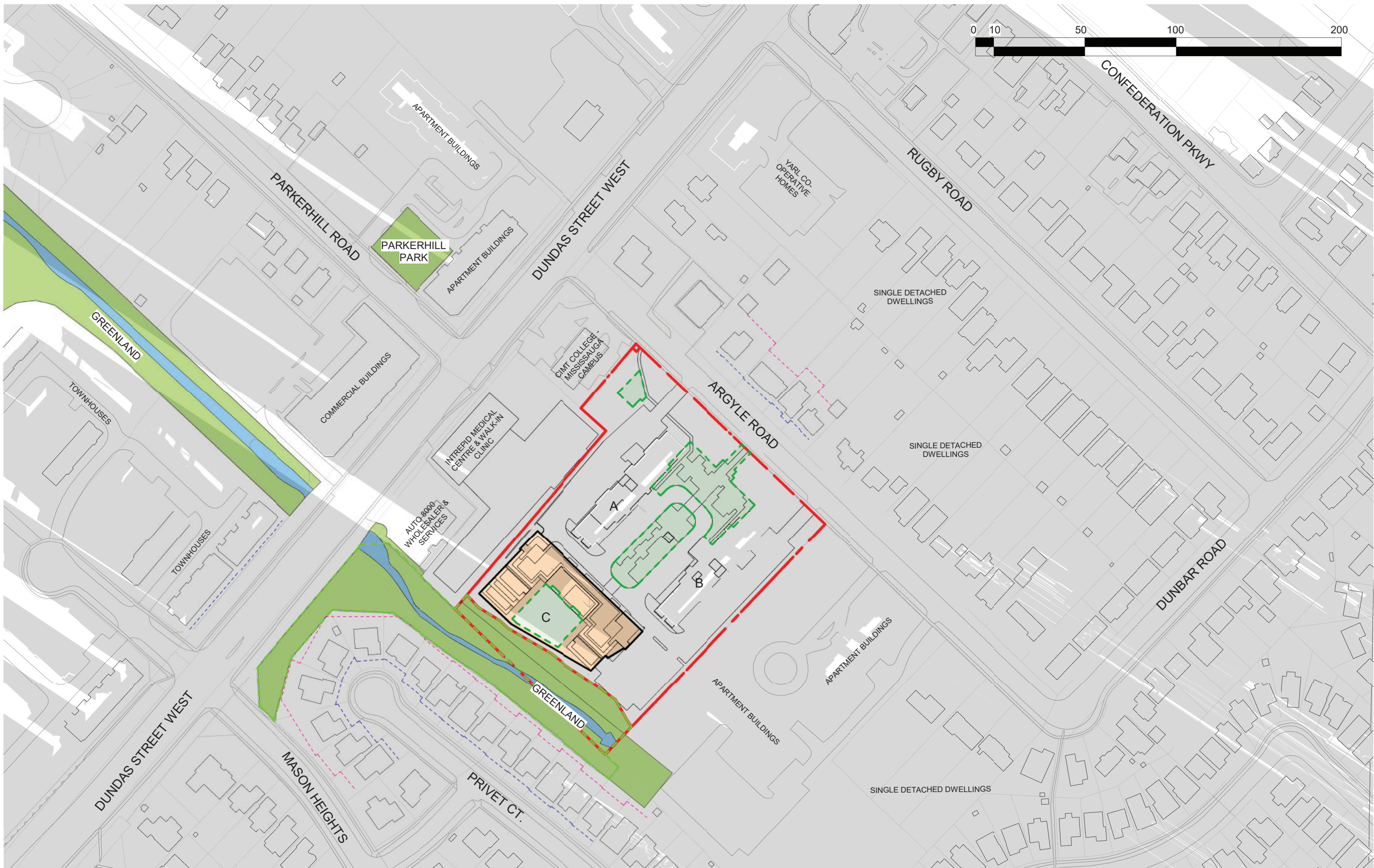


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June 21 - 7.33 pm EDT Sunset - 1.5h

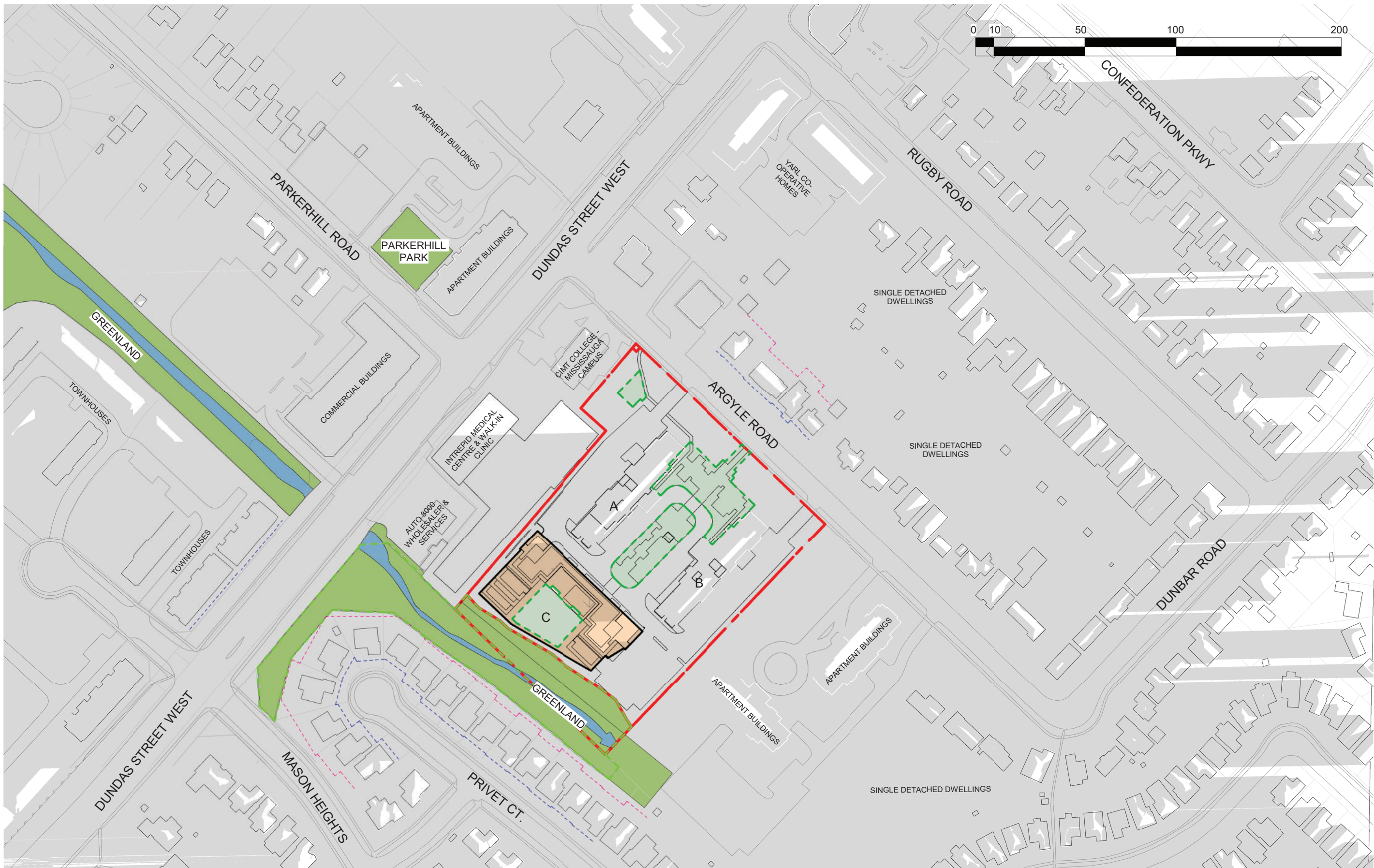




**LEGEND**

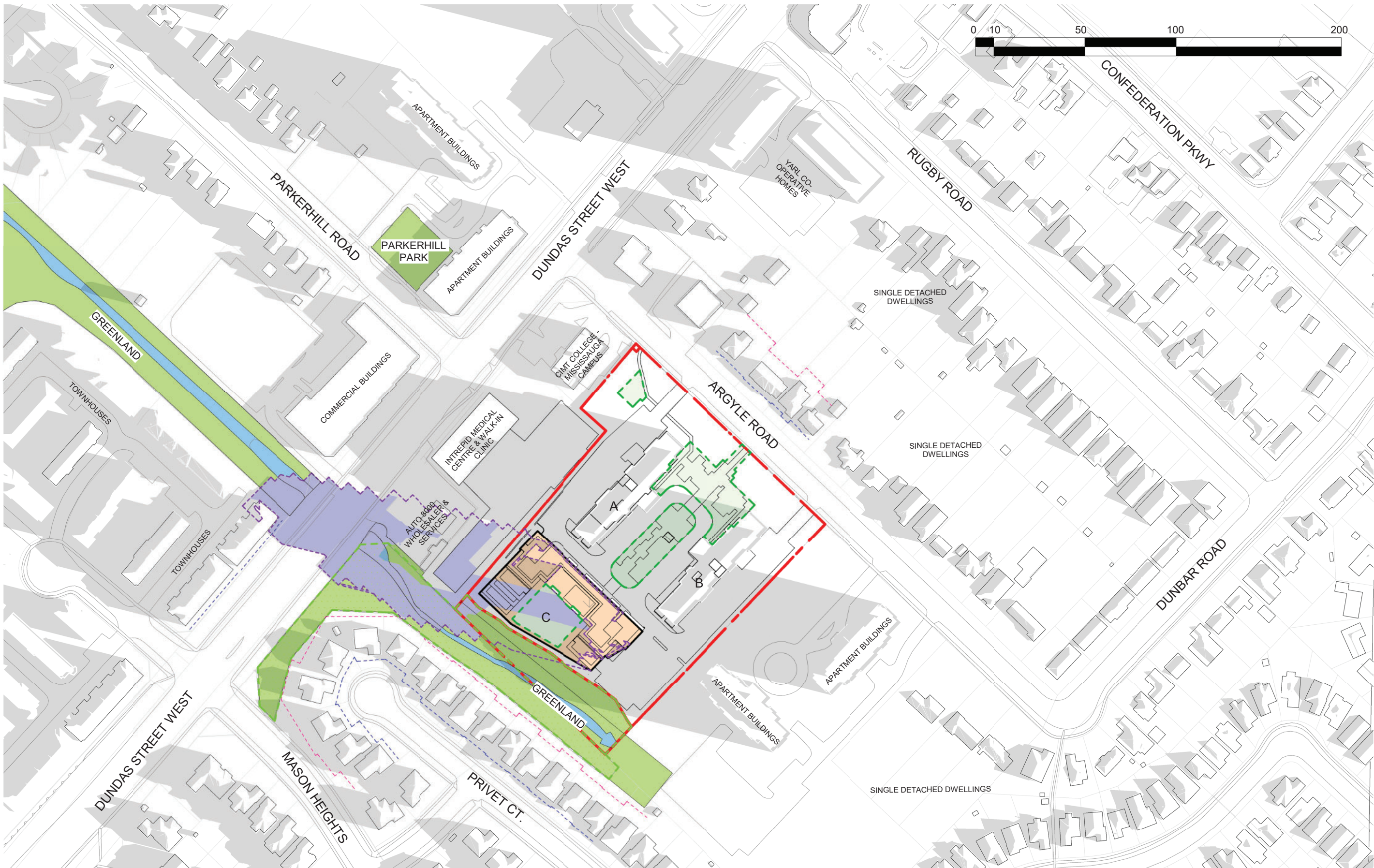
- SHADOWS**
- PROPOSED
- EXISTING
- BUILDINGS**
- PROPOSED
- EXISTING
- CONTEXT**
- GROUND
- PARK/OPEN SPACE
- WATER
- PROPOSED OUTDOOR AMENITY AREA
- GREENLAND AREA WITH-IN SITE BOUNDARIES
- SUBJECT SITE**
- RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE
- BUILDING FACES TO ALLOW FOR THE POSSIBILITY OF USING SOLAR ENERGY

June 21 - 9.03 pm EDT Sunset



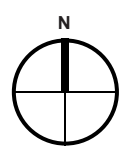
September 21 - 7.05 am EDT Sunrise

- LEGEND**
- SHADOWS**
    - PROPOSED (dashed purple line)
    - EXISTING (solid grey line)
  - BUILDINGS**
    - PROPOSED (orange fill)
    - EXISTING (white fill)
  - CONTEXT**
    - GROUND (white fill)
    - PARK/OPEN SPACE (green fill)
    - WATER (blue fill)
    - PROPOSED OUTDOOR AMENITY AREA (dashed green line)
    - GREENLAND AREA WITH-IN SITE BOUNDARIES (dashed green line)
  - SUBJECT SITE** (red dashed line)
  - RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE** (dashed pink line)
  - BUILDING FACES TO ALLOW FOR THE POSSIBILITY OF USING SOLAR ENERGY** (dashed blue line)

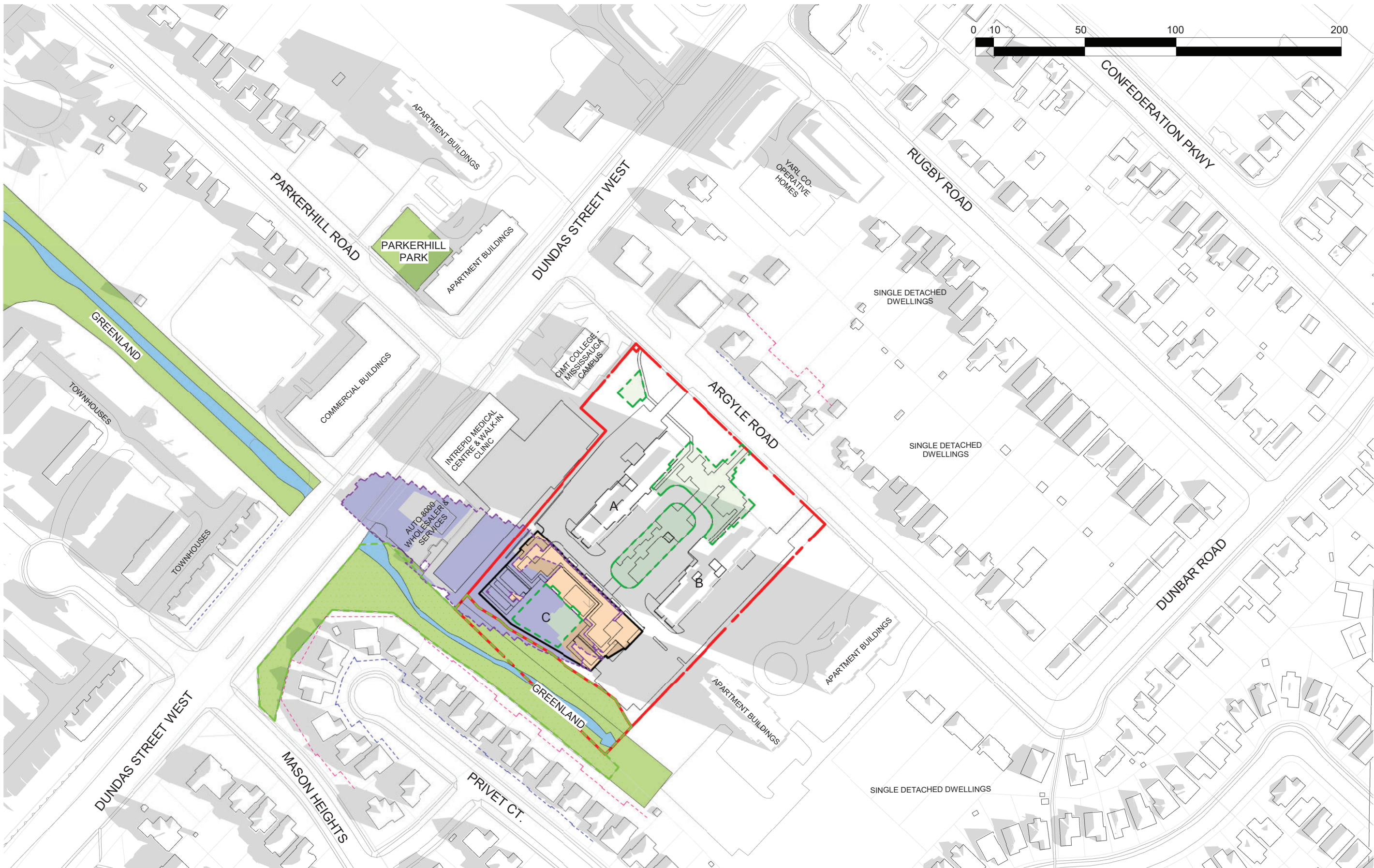


**LEGEND**

- SHADOWS**
- PROPOSED
- EXISTING
- BUILDINGS**
- PROPOSED
- EXISTING
- CONTEXT**
- GROUND
- PARK/OPEN SPACE
- WATER
- PROPOSED OUTDOOR AMENITY AREA
- GREENLAND AREA WITH-IN SITE BOUNDARIES
- SUBJECT SITE
- RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE
- BUILDING FACES TO ALLOW FOR THE POSSIBILITY OF USING SOLAR ENERGY

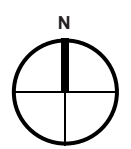


September 21 - 8.35 am EDT Sunrise + 1.5h



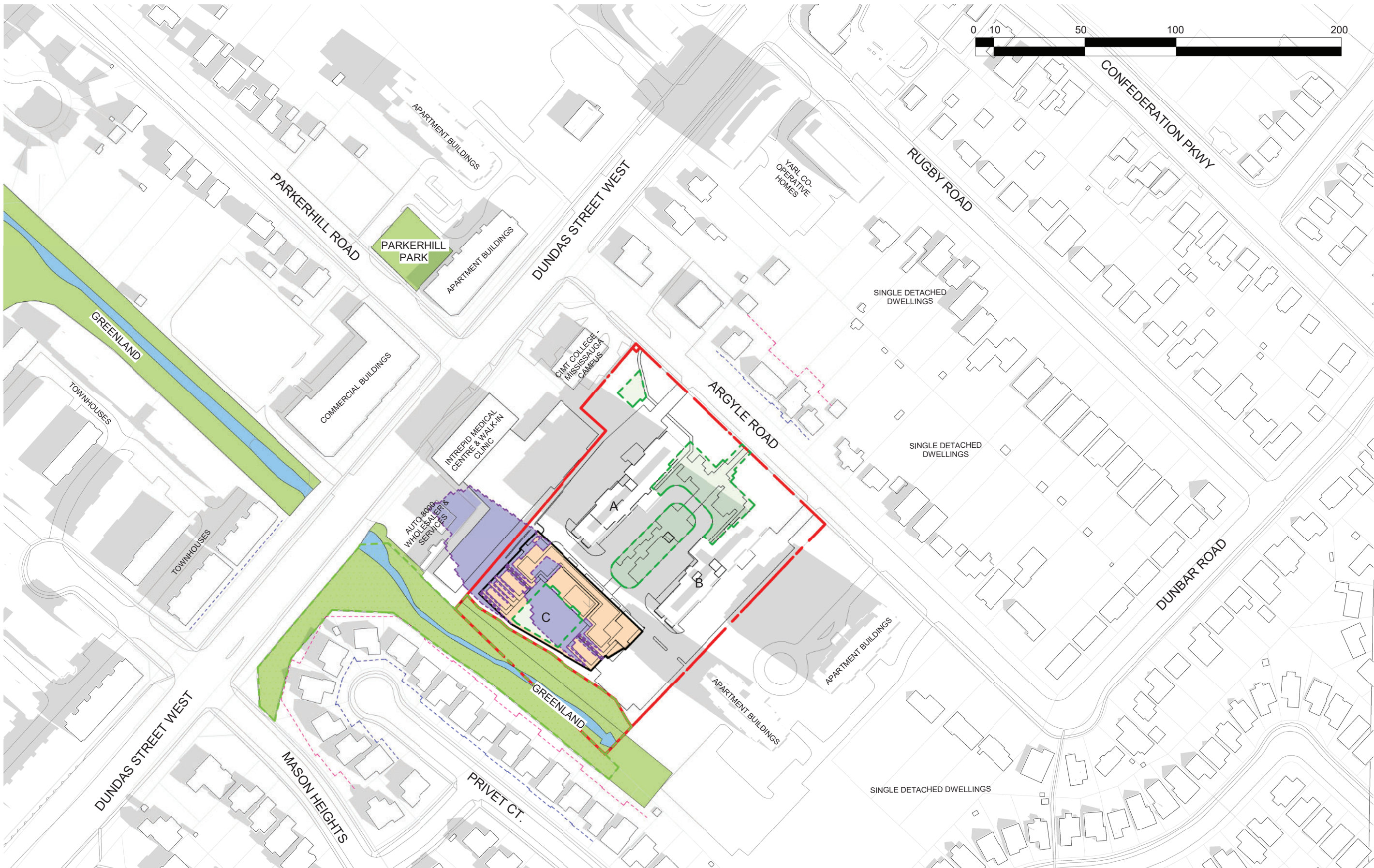
**LEGEND**

- SHADOWS**
- PROPOSED
- EXISTING
- BUILDINGS**
- PROPOSED
- EXISTING
- CONTEXT**
- GROUND
- PARK/OPEN SPACE
- WATER
- PROPOSED OUTDOOR AMENITY AREA
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- RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE
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September 21 - 9.12 am EDT Solar Noon - 4h

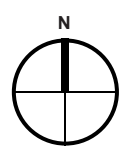


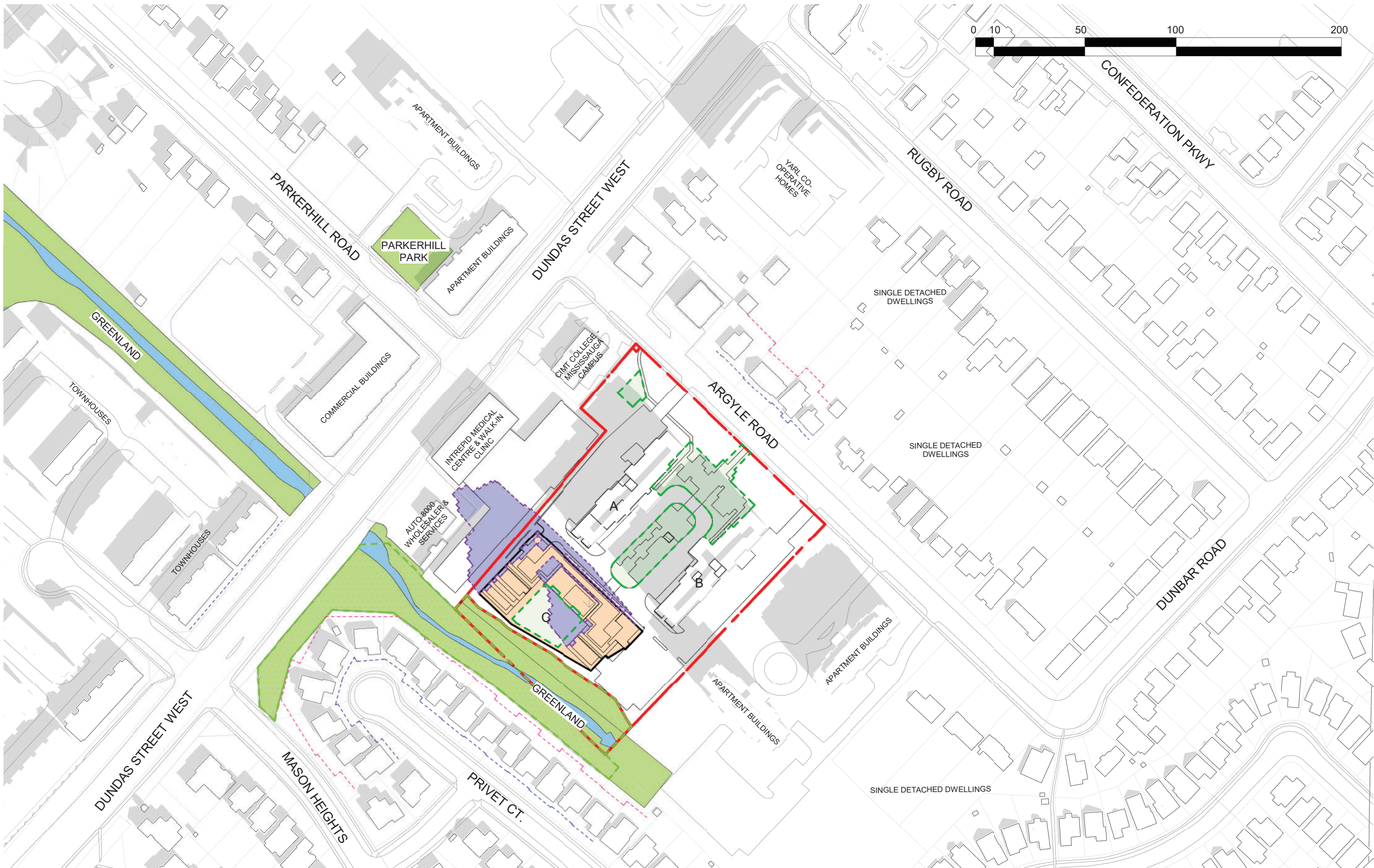


**LEGEND**

- SHADOWS**
- PROPOSED
- EXISTING
- BUILDINGS**
- PROPOSED
- EXISTING
- CONTEXT**
- GROUND
- PARK/OPEN SPACE
- WATER
- PROPOSED OUTDOOR AMENITY AREA
- GREENLAND AREA WITH-IN SITE BOUNDARIES
- SUBJECT SITE
- RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE
- BUILDING FACES TO ALLOW FOR THE POSSIBILITY OF USING SOLAR ENERGY

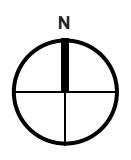
September 21 - 10.12 am EDT Solar Noon - 3h



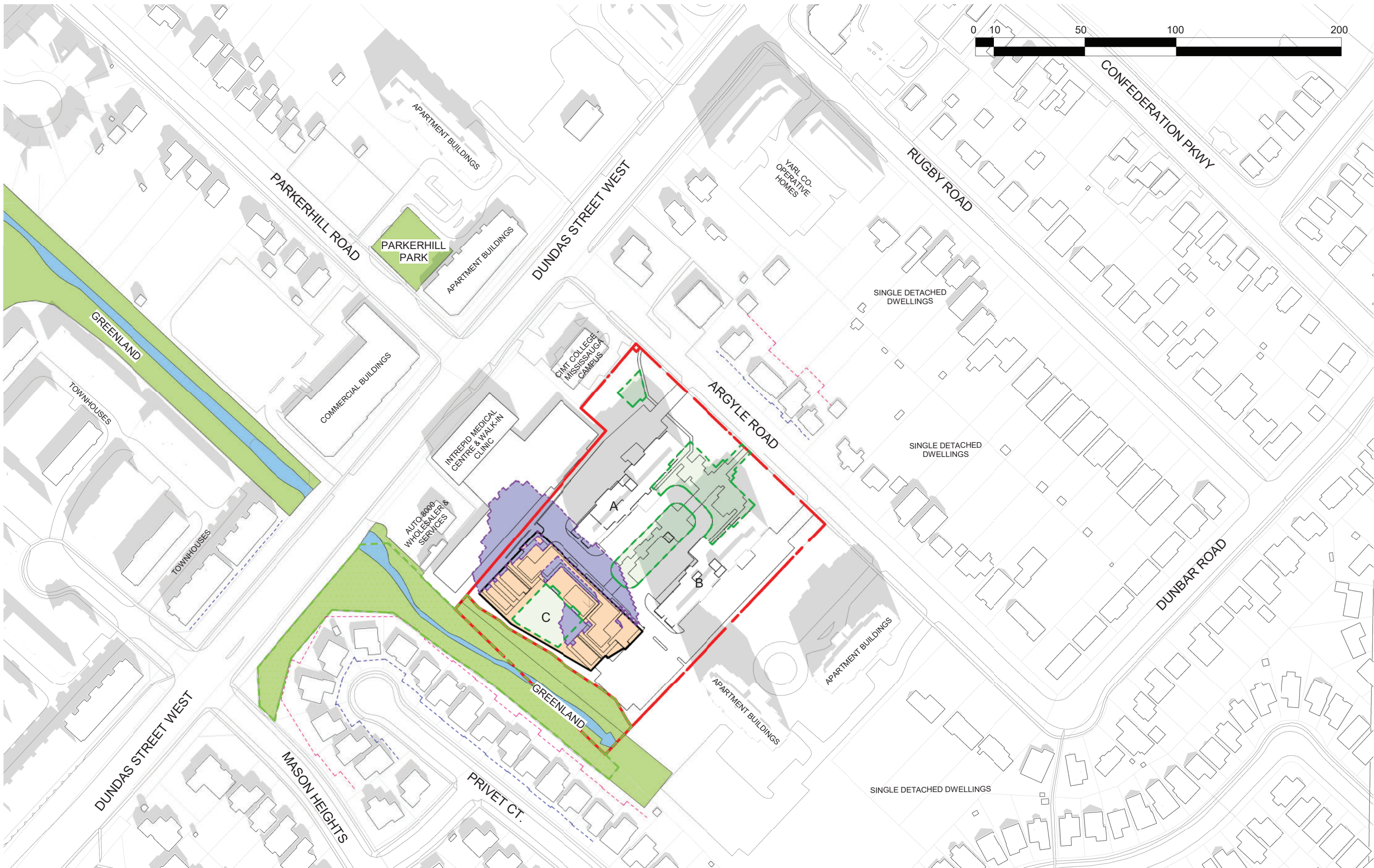


**LEGEND**

- SHADOWS**
- PROPOSED
- EXISTING
- BUILDINGS**
- PROPOSED
- EXISTING
- CONTEXT**
- GROUND
- PARK/OPEN SPACE
- WATER
- PROPOSED OUTDOOR AMENITY AREA
- GREENLAND AREA WITH-IN SITE BOUNDARIES
- SUBJECT SITE**
- SUBJECT SITE
- RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE
- BUILDING FACES TO ALLOW FOR THE POSSIBILITY OF USING SOLAR ENERGY

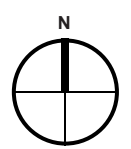


September 21 - 11.12 am EDT Solar Noon - 2h

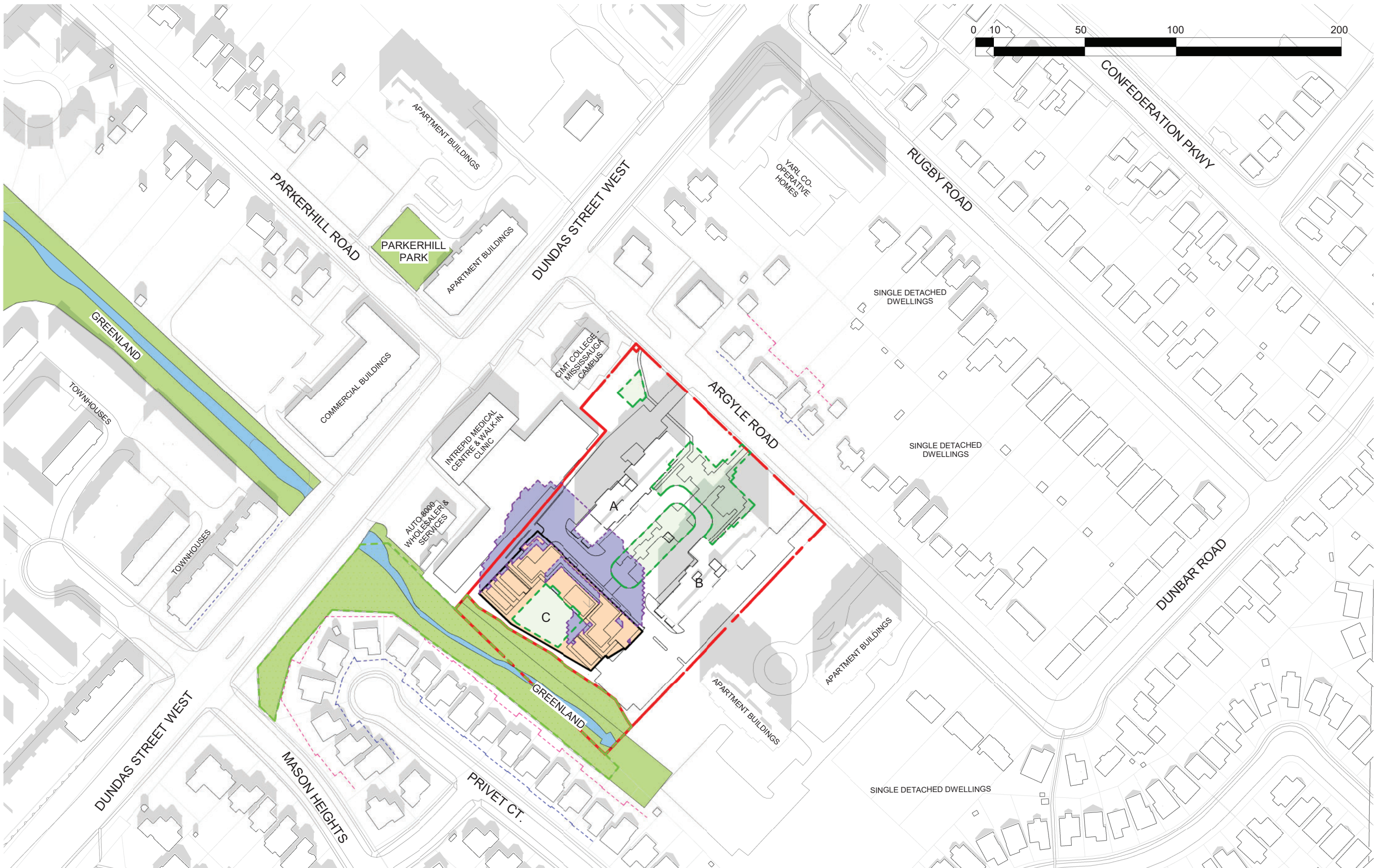


**LEGEND**

- SHADOWS**
- PROPOSED
- EXISTING
- BUILDINGS**
- PROPOSED
- EXISTING
- CONTEXT**
- GROUND
- PARK/OPEN SPACE
- WATER
- PROPOSED OUTDOOR AMENITY AREA
- GREENLAND AREA WITH-IN SITE BOUNDARIES
- SUBJECT SITE
- RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE
- BUILDING FACES TO ALLOW FOR THE POSSIBILITY OF USING SOLAR ENERGY

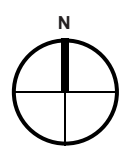


September 21 - 12.12 pm EDT Solar Noon - 1h

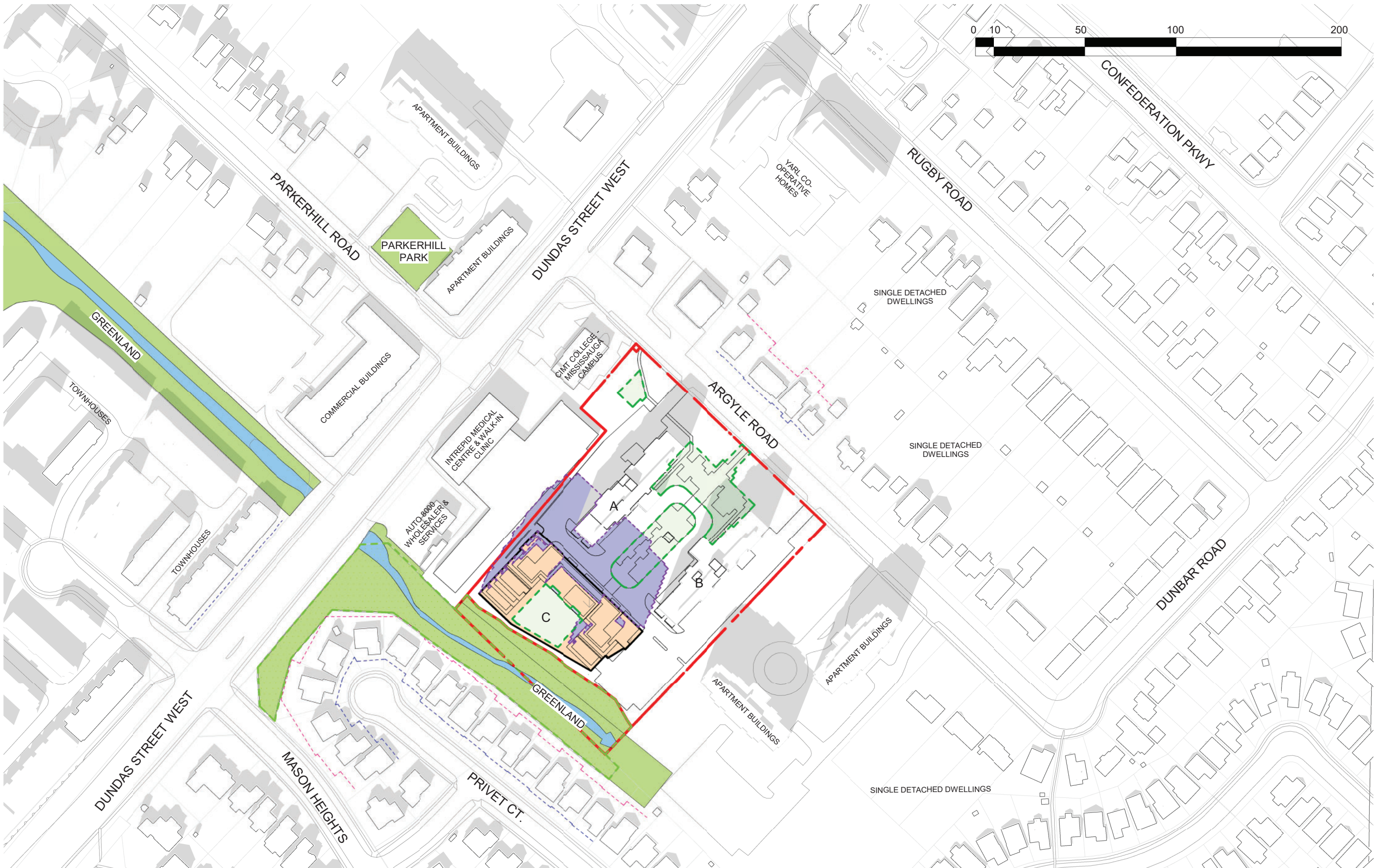


**LEGEND**

- SHADOWS**
- PROPOSED
- EXISTING
- BUILDINGS**
- PROPOSED
- EXISTING
- CONTEXT**
- GROUND
- PARK/OPEN SPACE
- WATER
- PROPOSED OUTDOOR AMENITY AREA
- GREENLAND AREA WITH-IN SITE BOUNDARIES
- SUBJECT SITE
- RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE
- BUILDING FACES TO ALLOW FOR THE POSSIBILITY OF USING SOLAR ENERGY

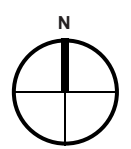


September 21 - 1.12 pm EDT Solar Noon

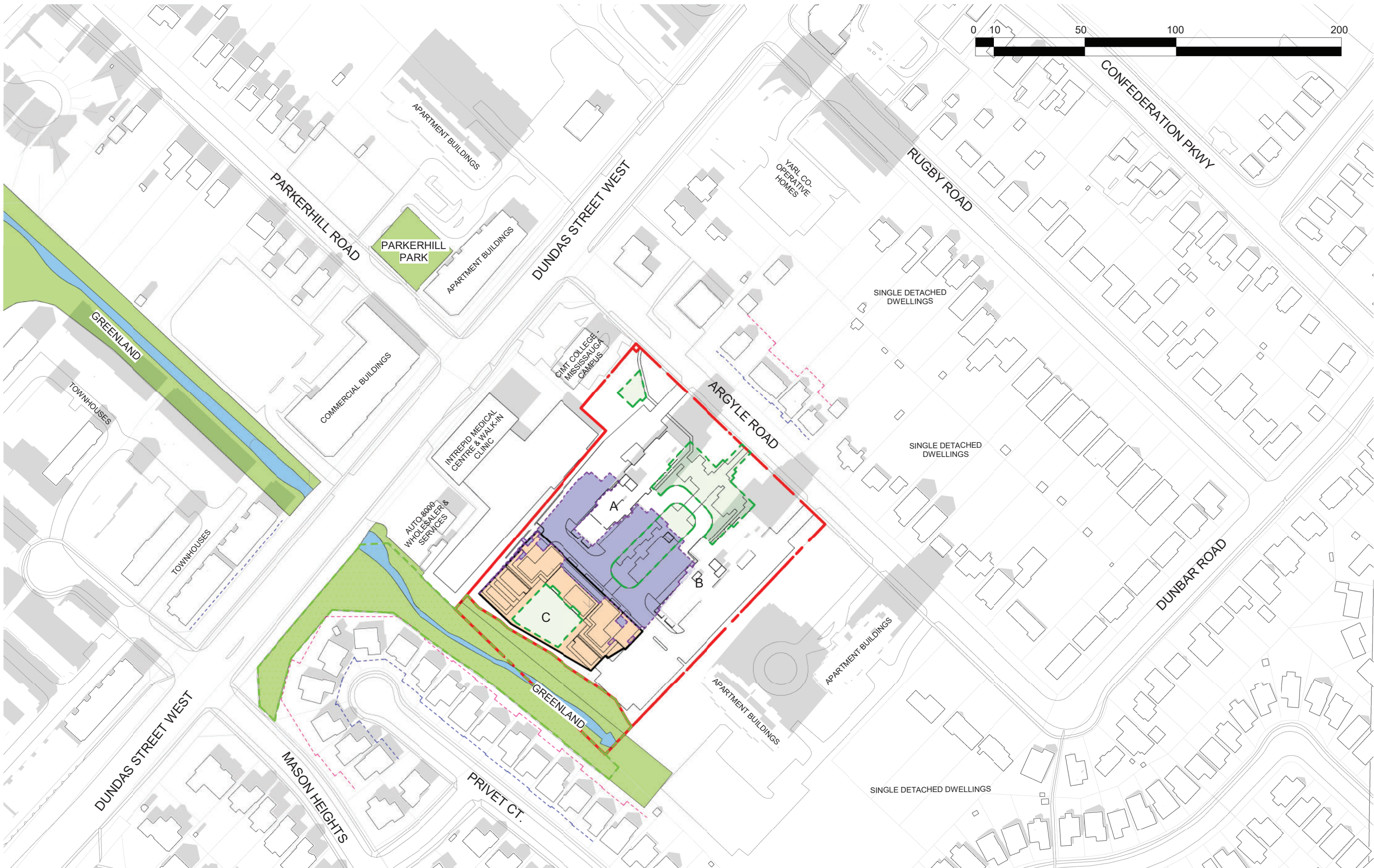


**LEGEND**

- SHADOWS**
- PROPOSED
- EXISTING
- BUILDINGS**
- PROPOSED
- EXISTING
- CONTEXT**
- GROUND
- PARK/OPEN SPACE
- WATER
- PROPOSED OUTDOOR AMENITY AREA
- GREENLAND AREA WITH-IN SITE BOUNDARIES
- SUBJECT SITE
- RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE
- BUILDING FACES TO ALLOW FOR THE POSSIBILITY OF USING SOLAR ENERGY

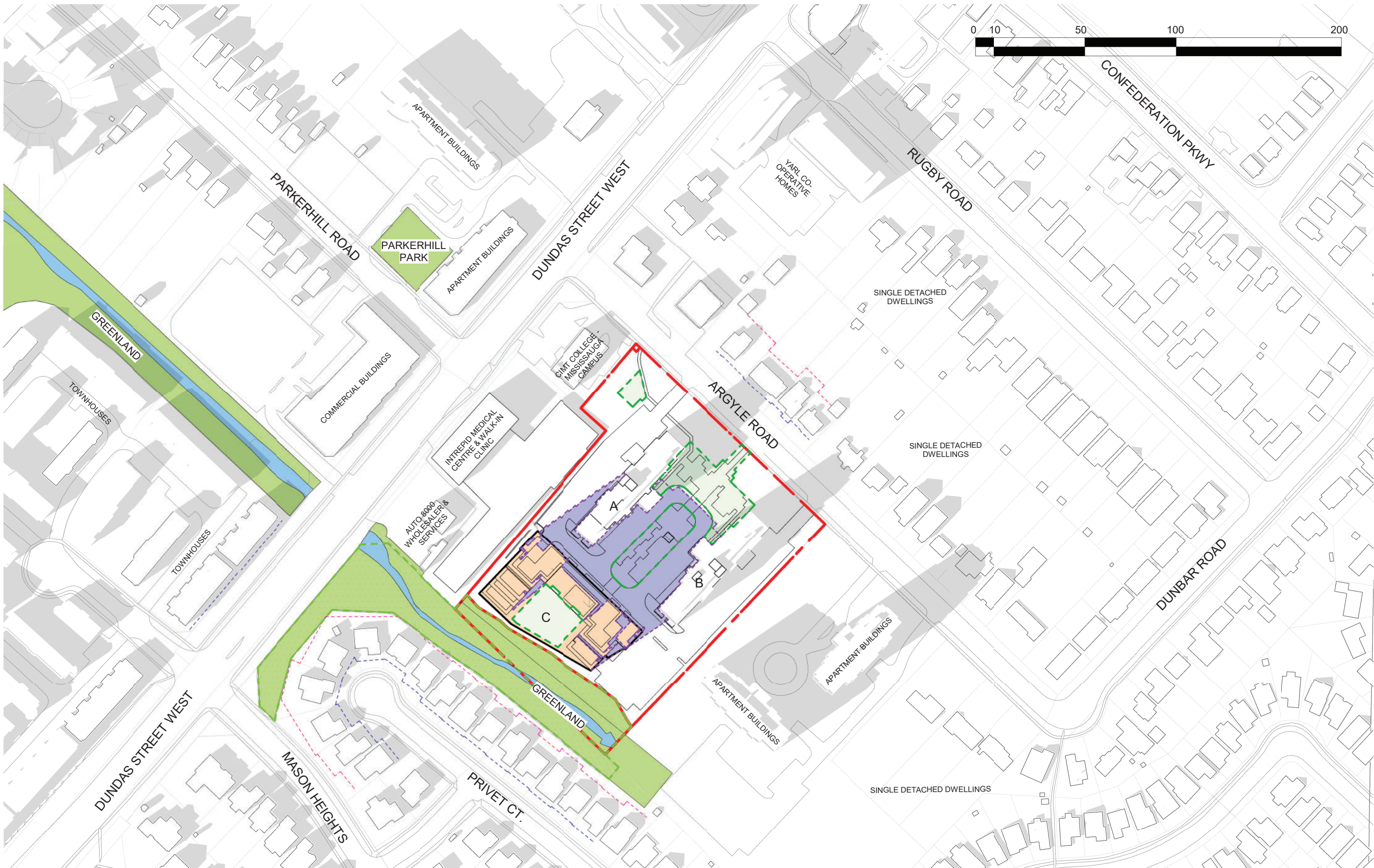


September 21 - 2.12 pm EDT Solar Noon + 1h



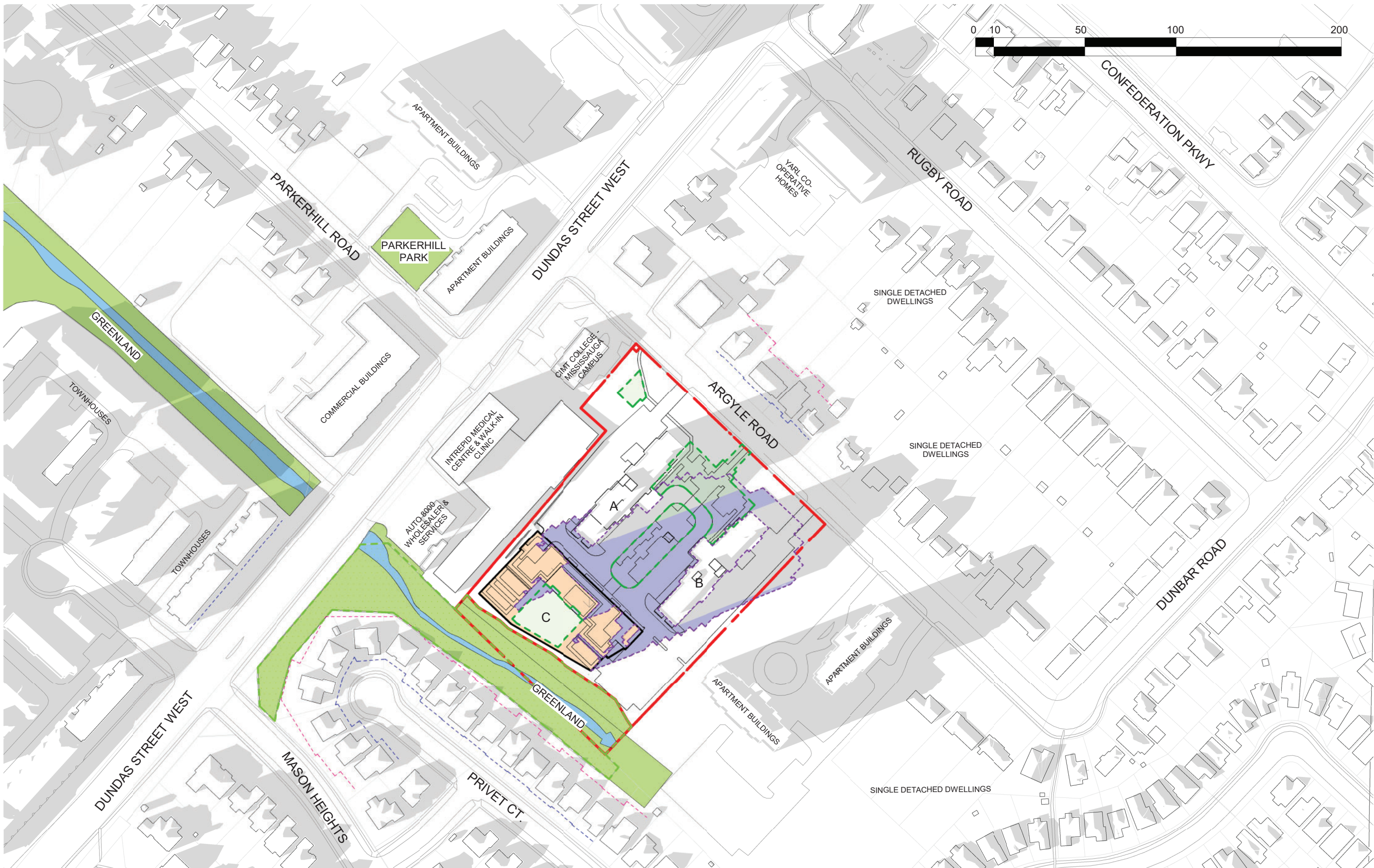
September 21 - 3.12 pm EDT Solar Noon + 2h

- LEGEND**
- SHADOWS**
- PROPOSED
  - EXISTING
- BUILDINGS**
- PROPOSED
  - EXISTING
- CONTEXT**
- GROUND
  - PARK/OPEN SPACE
  - WATER
  - PROPOSED OUTDOOR AMENITY AREA
  - GREENLAND AREA WITH- IN SITE BOUNDARIES
- SUBJECT SITE**
- RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE
  - BUILDING FACES TO ALLOW FOR THE POSSIBILITY OF USING SOLAR ENERGY



- LEGEND**
- SHADOWS**
- PROPOSED
  - EXISTING
- BUILDINGS**
- PROPOSED
  - EXISTING
- CONTEXT**
- GROUND
  - PARK/OPEN SPACE
  - WATER
  - PROPOSED OUTDOOR AMENITY AREA
  - GREENLAND AREA WITH-IN SITE BOUNDARIES
- SUBJECT SITE**
- RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE**
- BUILDING FACES TO ALLOW FOR THE POSSIBILITY OF USING SOLAR ENERGY**

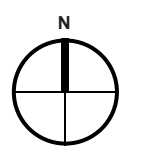
September 21 - 4.12 pm EDT Solar Noon + 3h



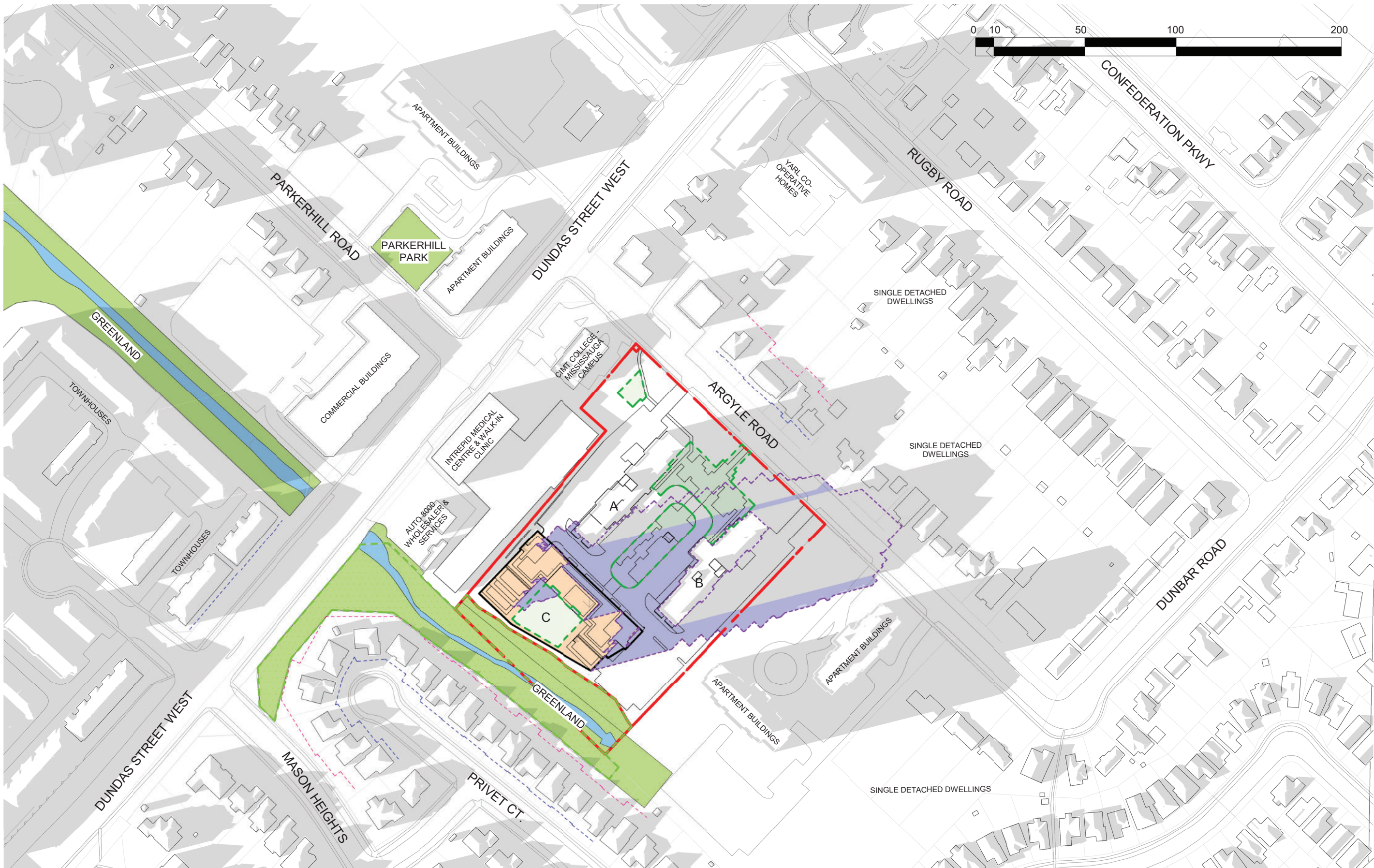
**LEGEND**

- SHADOWS**
  - PROPOSED
  - EXISTING
- BUILDINGS**
  - PROPOSED
  - EXISTING
- CONTEXT**
  - GROUND
  - PARK/OPEN SPACE
  - WATER
  - PROPOSED OUTDOOR AMENITY AREA
  - GREENLAND AREA WITH-IN SITE BOUNDARIES
- SUBJECT SITE**
- RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE**
- BUILDING FACES TO ALLOW FOR THE POSSIBILITY OF USING SOLAR ENERGY**

September 21 - 5.12 pm EDT Solar Noon + 4h

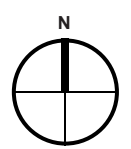




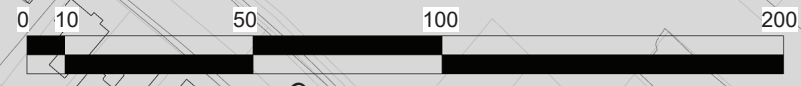
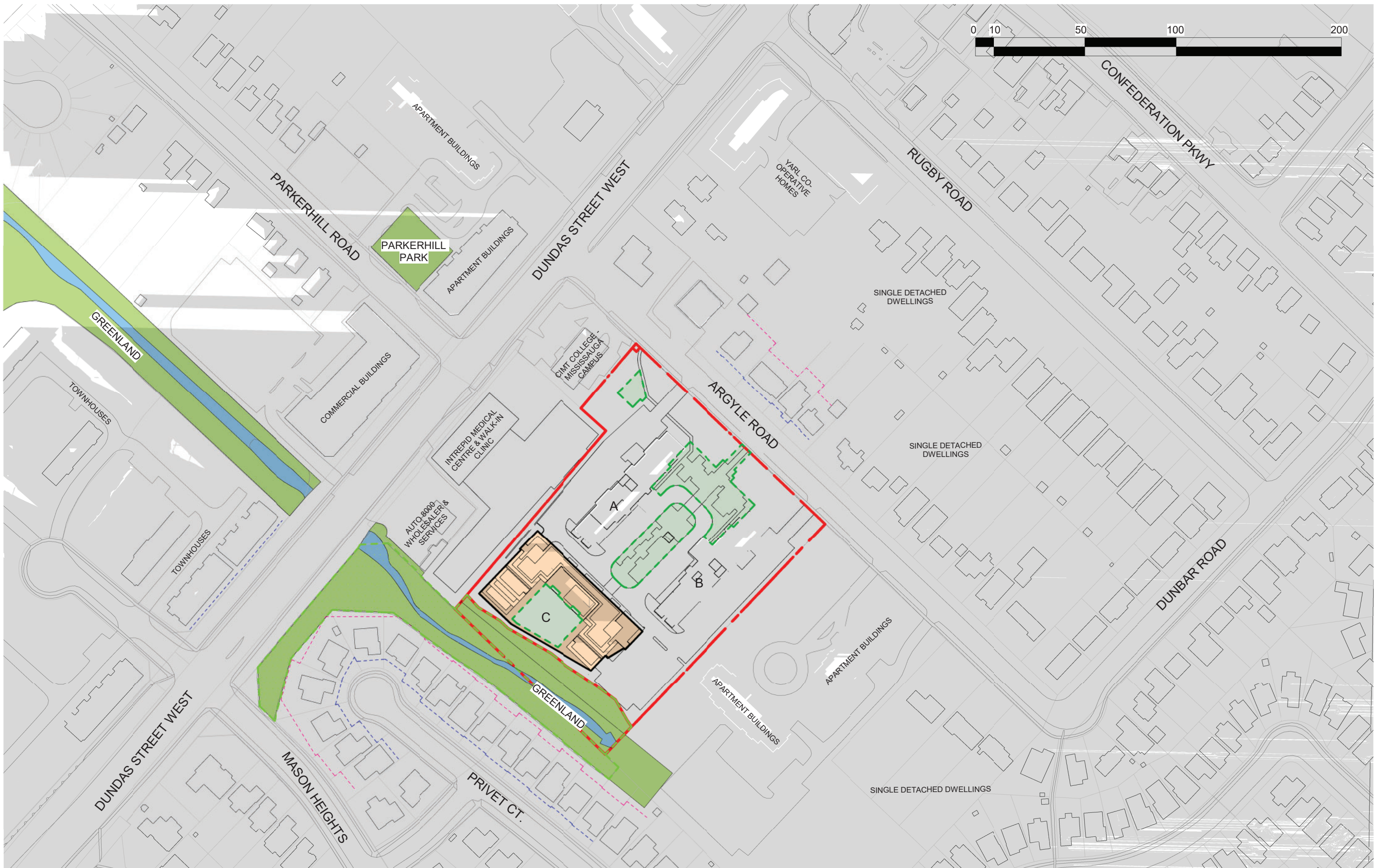


**LEGEND**

- SHADOWS**
- PROPOSED
- EXISTING
- BUILDINGS**
- PROPOSED
- EXISTING
- CONTEXT**
- GROUND
- PARK/OPEN SPACE
- WATER
- PROPOSED OUTDOOR AMENITY AREA
- GREENLAND AREA WITH-IN SITE BOUNDARIES
- SUBJECT SITE**
- RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE
- BUILDING FACES TO ALLOW FOR THE POSSIBILITY OF USING SOLAR ENERGY

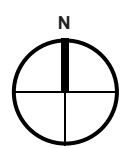


September 21 - 5.48 pm EDT Sunset - 1.5h

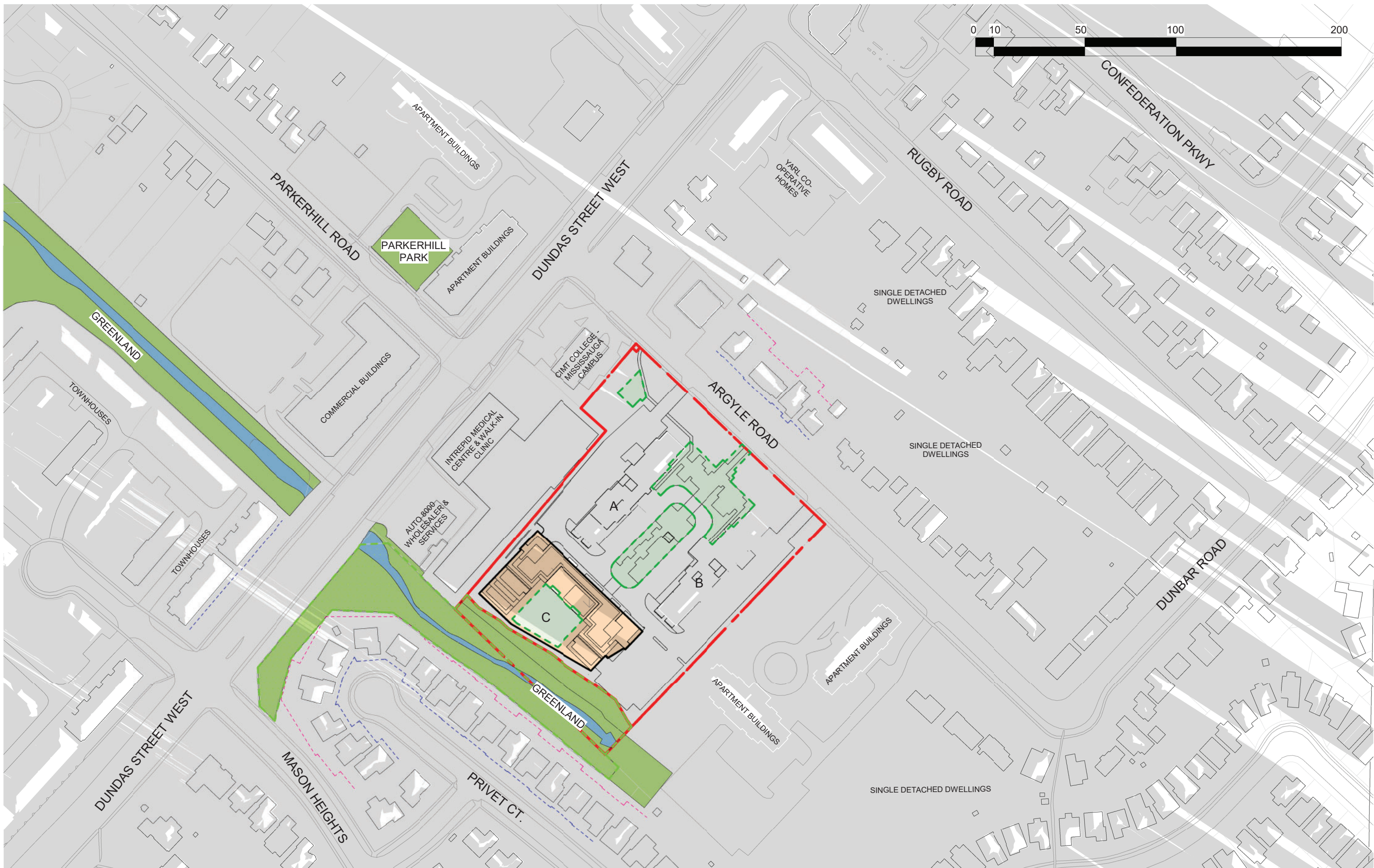


**LEGEND**

- SHADOWS**
- PROPOSED
- EXISTING
- BUILDINGS**
- PROPOSED
- EXISTING
- CONTEXT**
- GROUND
- PARK/OPEN SPACE
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- SUBJECT SITE**
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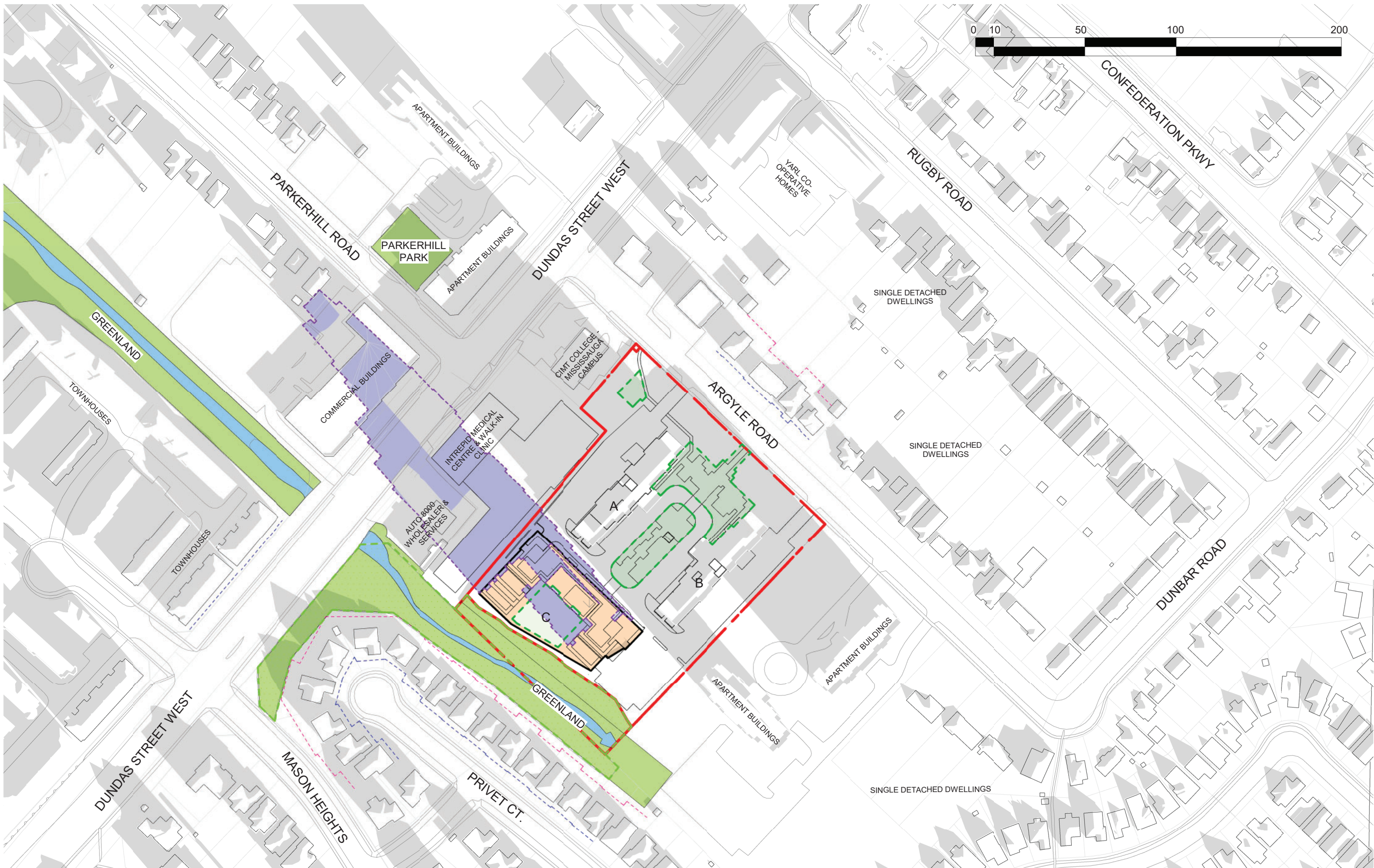
September 21 - 7.18 pm EDT Sunset



**LEGEND**

- SHADOWS**
- PROPOSED
- EXISTING
- BUILDINGS**
- PROPOSED
- EXISTING
- CONTEXT**
- GROUND
- PARK/OPEN SPACE
- WATER
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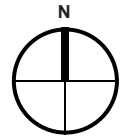
December 21 - 7.49 am EST Sunrise

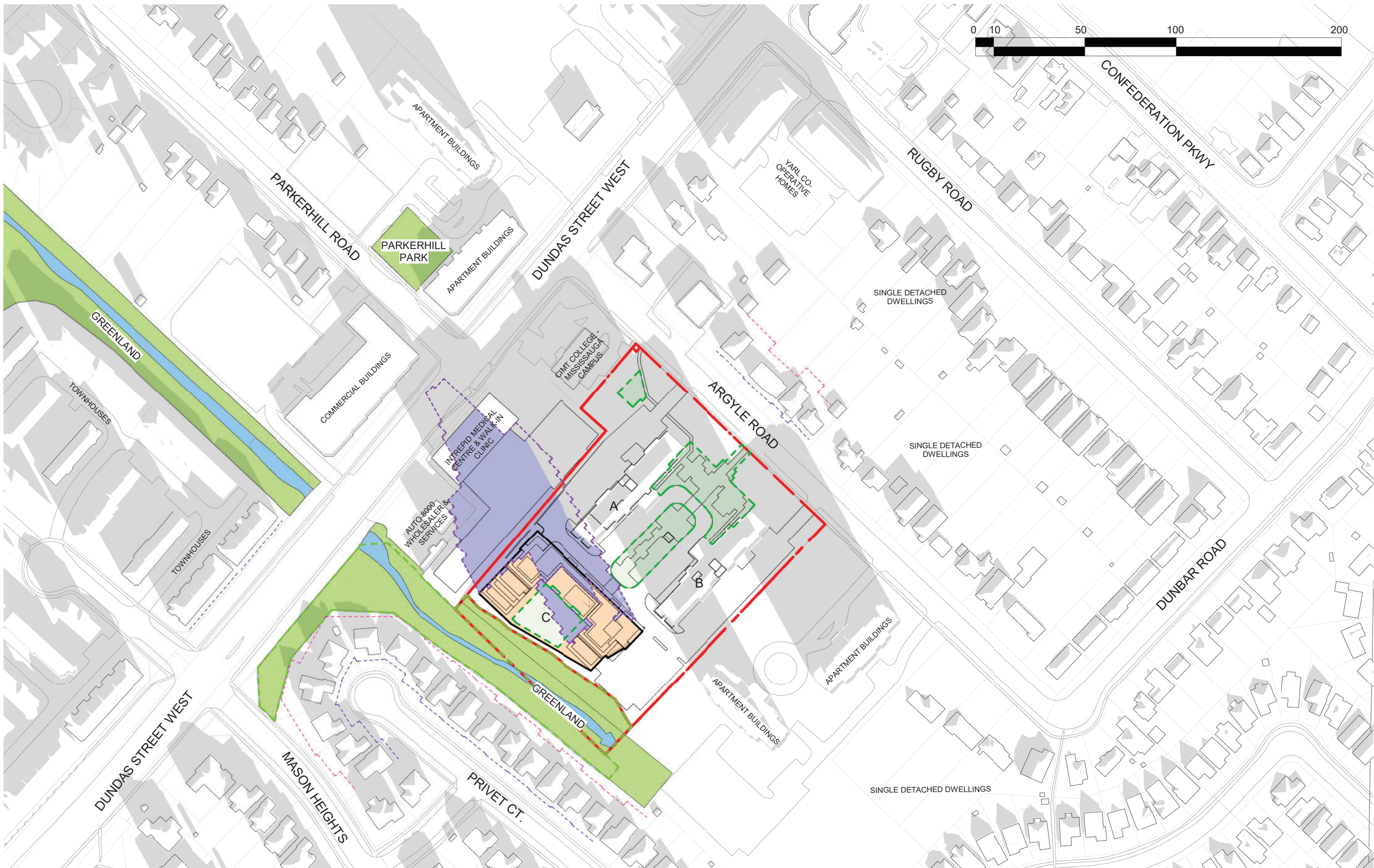


**LEGEND**

- SHADOWS**
  - PROPOSED
  - EXISTING
- BUILDINGS**
  - PROPOSED
  - EXISTING
- CONTEXT**
  - GROUND
  - PARK/OPEN SPACE
  - WATER
  - PROPOSED OUTDOOR AMENITY AREA
  - GREENLAND AREA WITH-IN SITE BOUNDARIES
- SUBJECT SITE**
- RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE**
- BUILDING FACES TO ALLOW FOR THE POSSIBILITY OF USING SOLAR ENERGY**

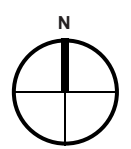
December 21 - 9.19 am EST Sunrise + 1.5h



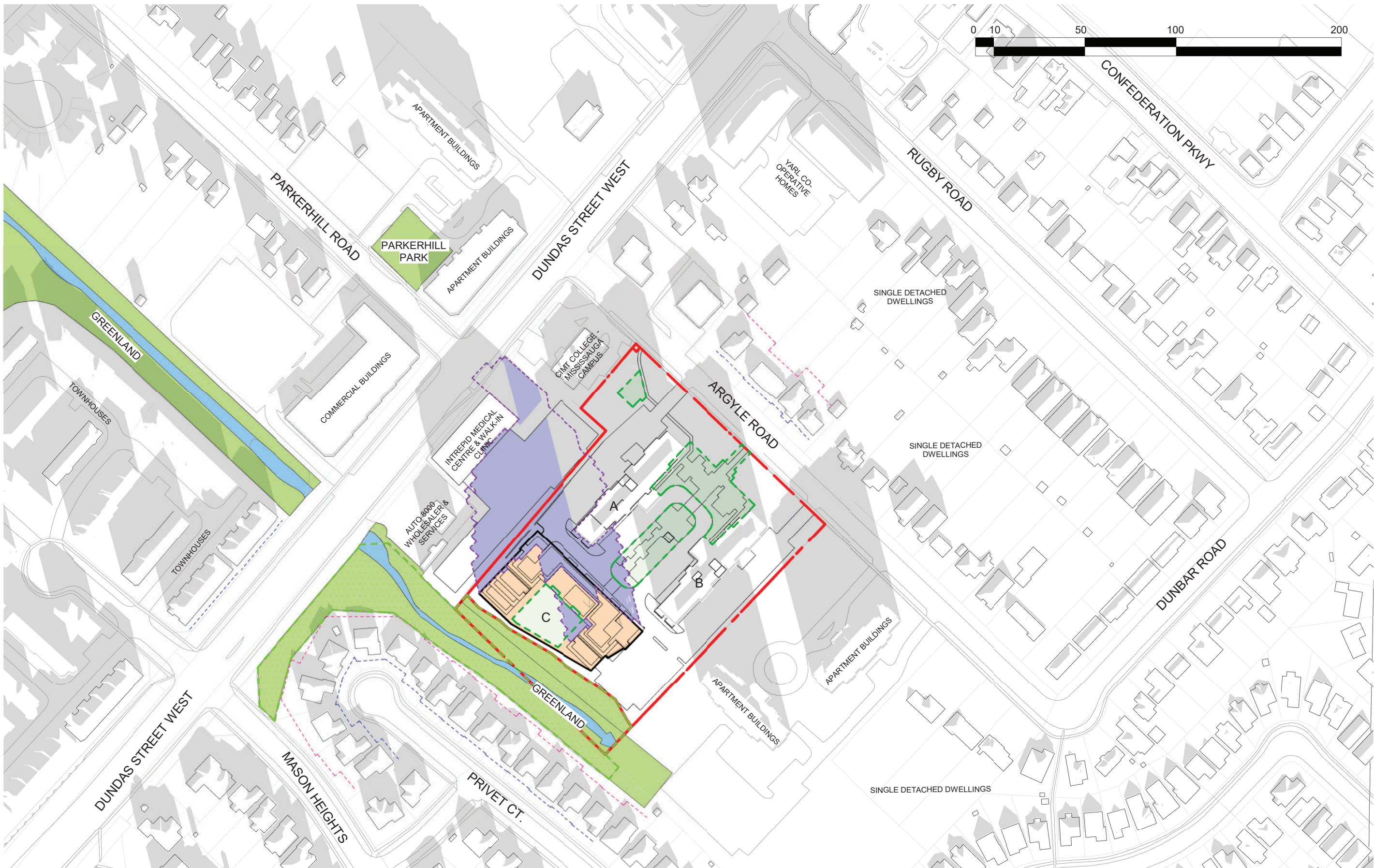


**LEGEND**

- SHADOWS**
- PROPOSED
- EXISTING
- BUILDINGS**
- PROPOSED
- EXISTING
- CONTEXT**
- GROUND
- PARK/OPEN SPACE
- WATER
- PROPOSED OUTDOOR AMENITY AREA
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- SUBJECT SITE
- RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE
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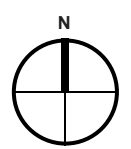


December 21 - 10.17 am EST Solar Noon - 2h

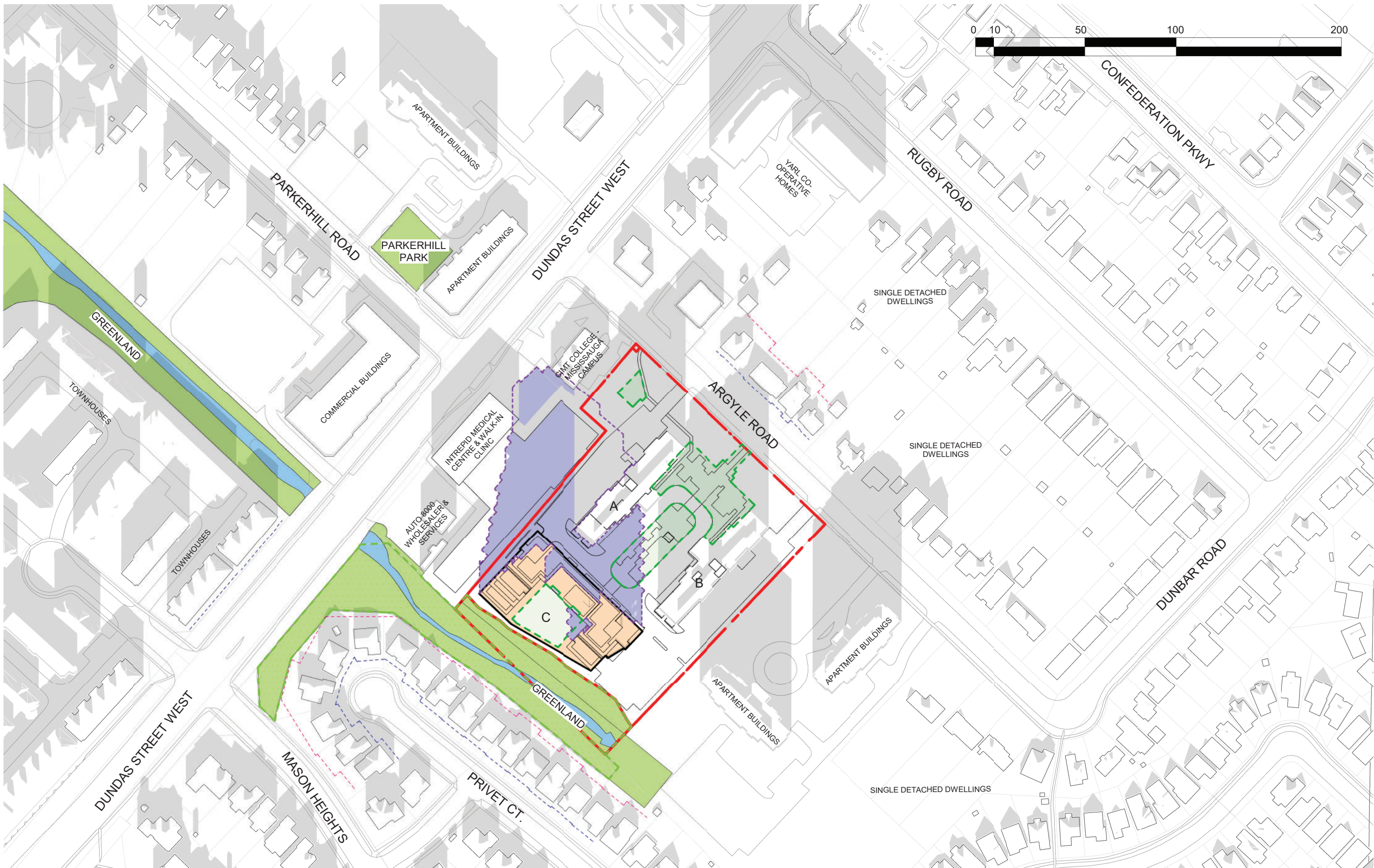


**LEGEND**

- SHADOWS**
- PROPOSED
- EXISTING
- BUILDINGS**
- PROPOSED
- EXISTING
- CONTEXT**
- GROUND
- PARK/OPEN SPACE
- WATER
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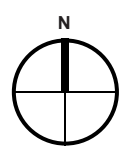
December 21 - 11.17 am EST Solar Noon - 1h

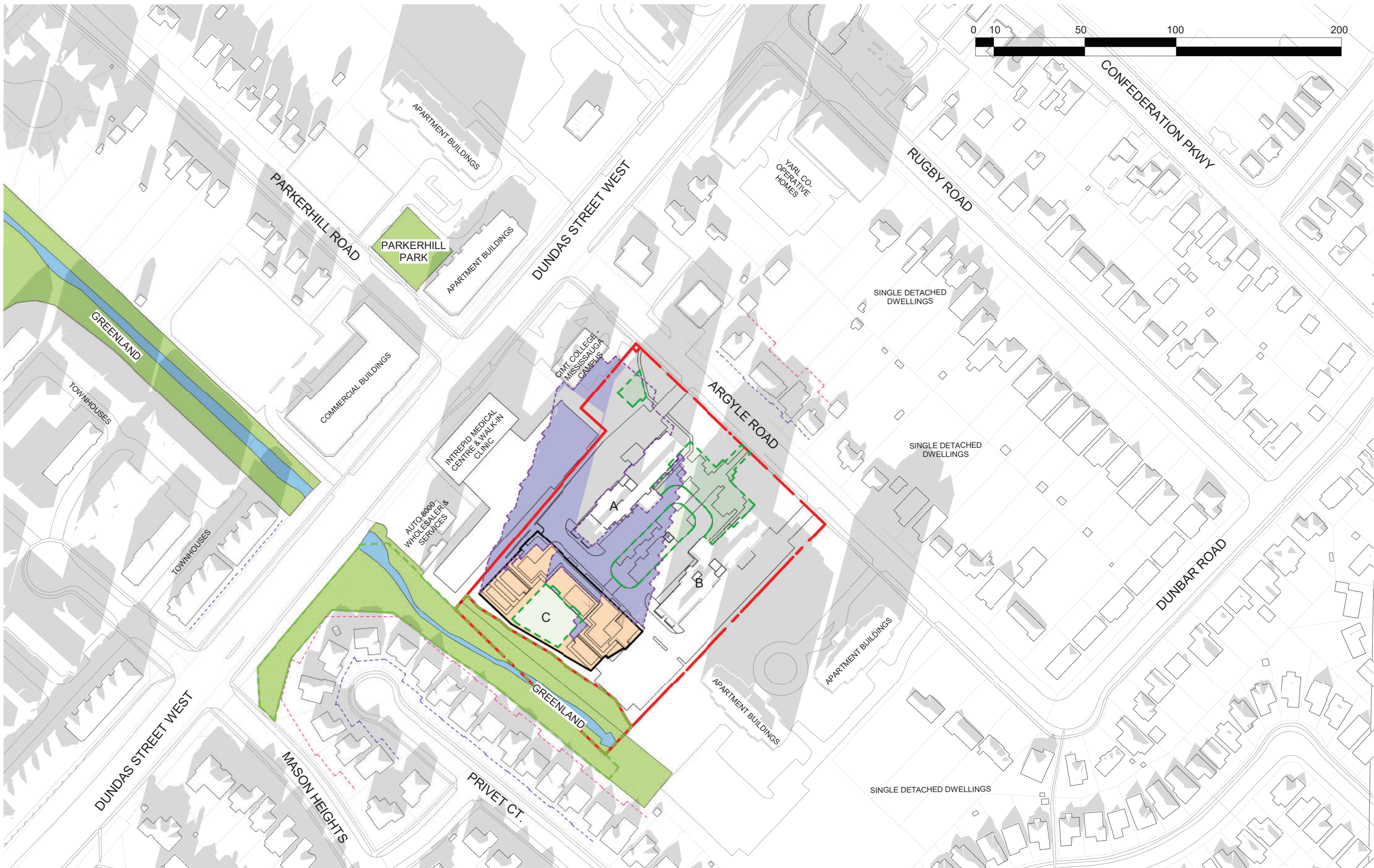


**LEGEND**

- SHADOWS**
  - PROPOSED
  - EXISTING
- BUILDINGS**
  - PROPOSED
  - EXISTING
- CONTEXT**
  - GROUND
  - PARK/OPEN SPACE
  - WATER
  - PROPOSED OUTDOOR AMENITY AREA
  - GREENLAND AREA WITH-IN SITE BOUNDARIES
- SUBJECT SITE**
- RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE**
- BUILDING FACES TO ALLOW FOR THE POSSIBILITY OF USING SOLAR ENERGY**

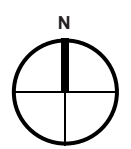
December 21 - 12.17 pm EST Solar Noon





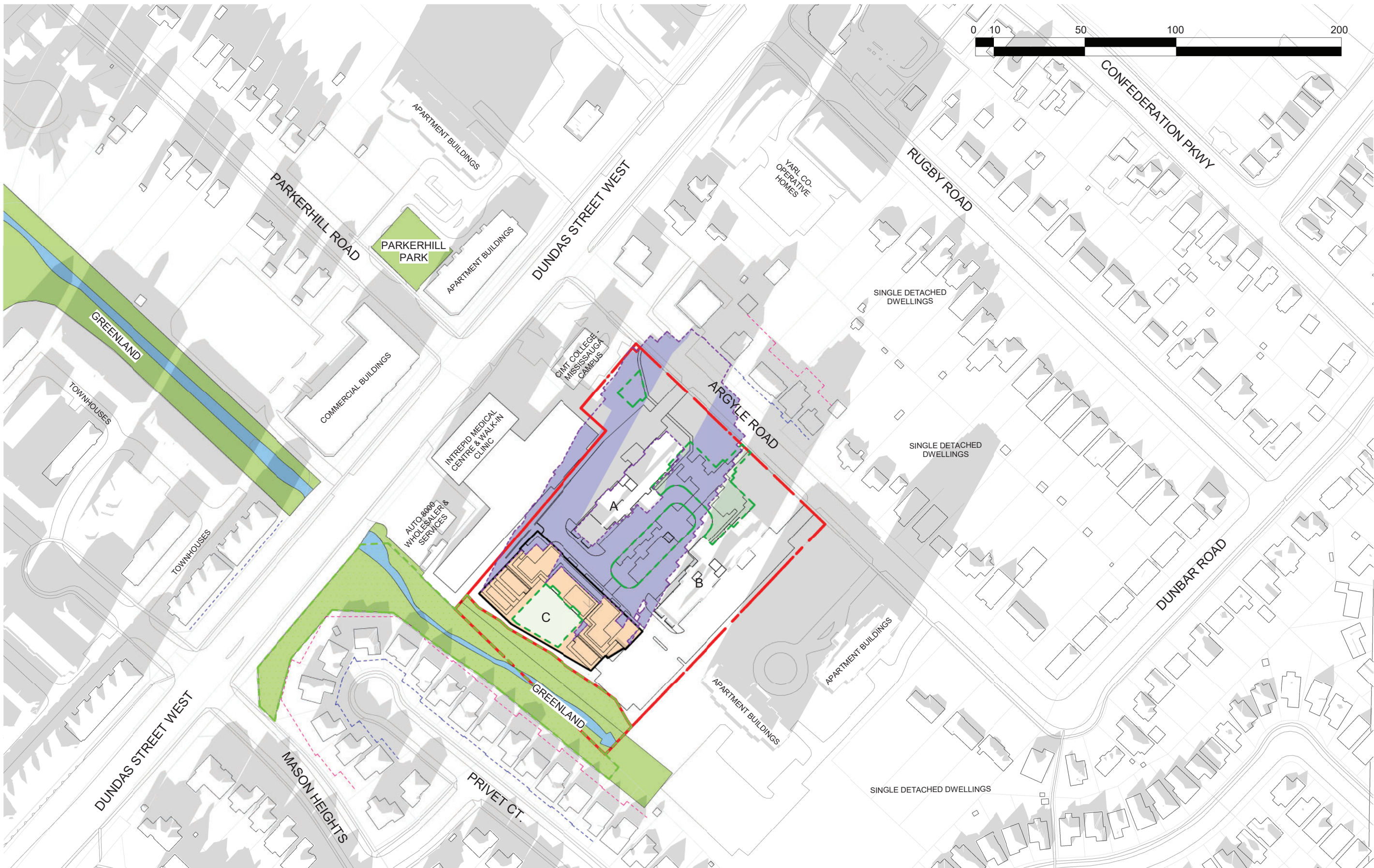
**LEGEND**

- SHADOWS**
- PROPOSED
- EXISTING
- BUILDINGS**
- PROPOSED
- EXISTING
- CONTEXT**
- GROUND
- PARK/OPEN SPACE
- WATER
- PROPOSED OUTDOOR AMENITY AREA
- GREENLAND AREA WITH-IN SITE BOUNDARIES
- SUBJECT SITE
- RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE
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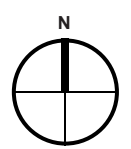
**December 21 - 1.17 pm EST Solar Noon + 1h**



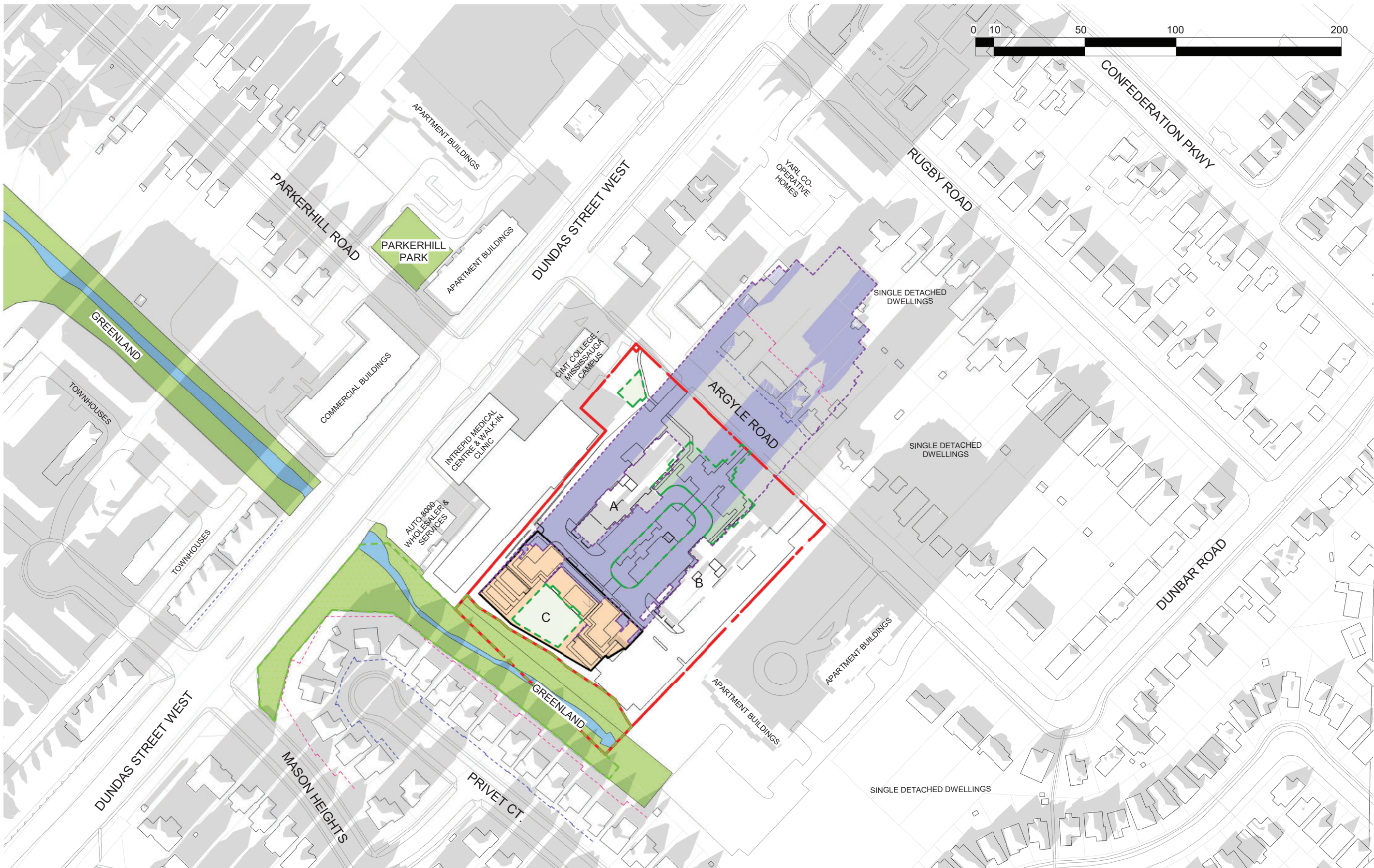


**LEGEND**

- SHADOWS**
- PROPOSED
- EXISTING
- BUILDINGS**
- PROPOSED
- EXISTING
- CONTEXT**
- GROUND
- PARK/OPEN SPACE
- WATER
- PROPOSED OUTDOOR AMENITY AREA
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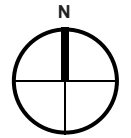


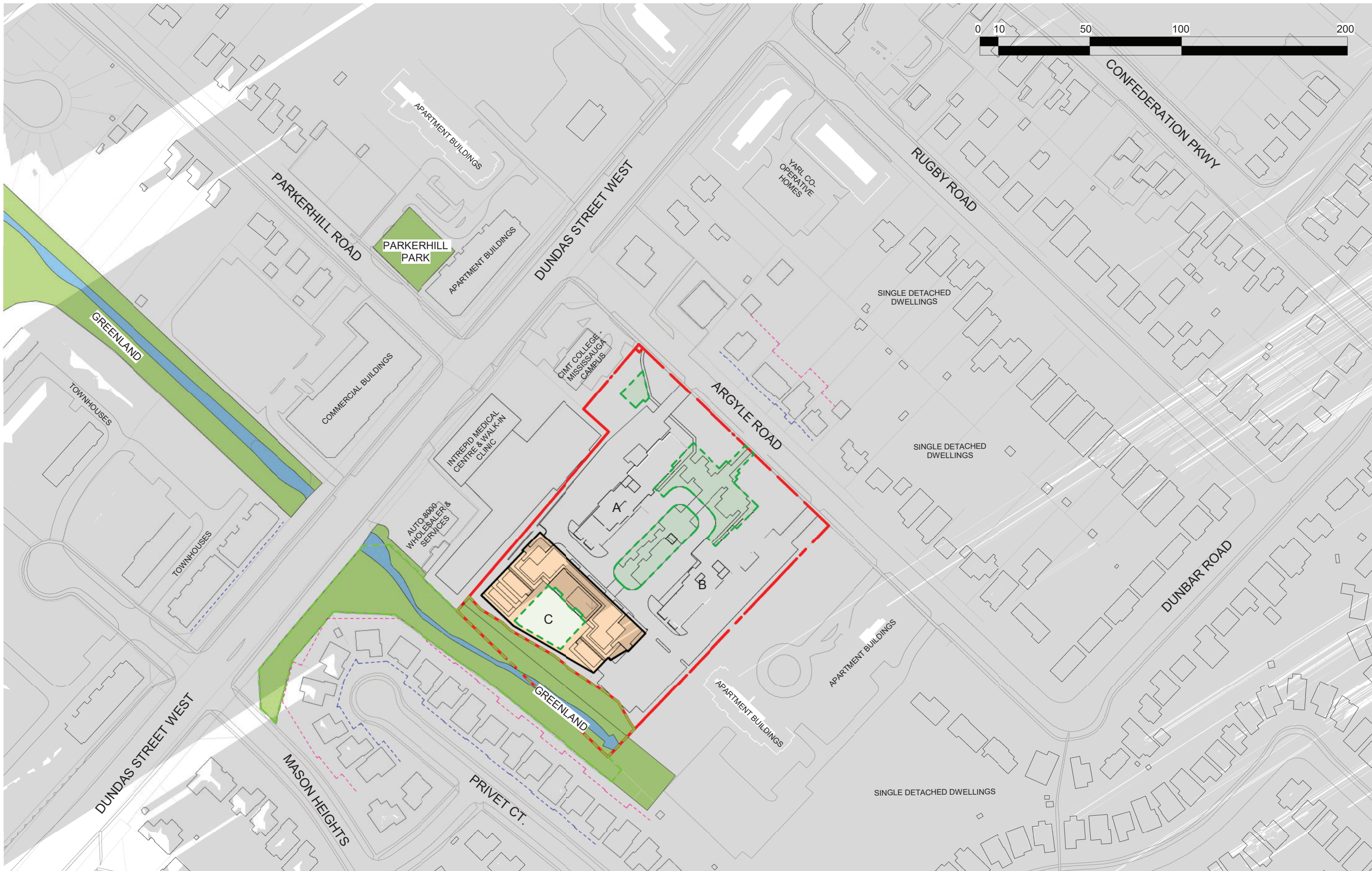
**December 21 - 2.17 pm EST Solar Noon + 2h**



- LEGEND**
- SHADOWS**
- PROPOSED
  - EXISTING
- BUILDINGS**
- PROPOSED
  - EXISTING
- CONTEXT**
- GROUND
  - PARK/OPEN SPACE
  - WATER
  - PROPOSED OUTDOOR AMENITY AREA
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December 21 - 3.15 pm EST Sunset - 1.5h







December 21 - 4.45 pm EST Sunset

**LEGEND**






**SHADOWS**

-  PROPOSED
-  EXISTING

**BUILDINGS**

-  PROPOSED
-  EXISTING

**CONTEXT**

-  GROUND
-  PARK/OPEN SPACE
-  WATER
-  PROPOSED OUTDOOR AMENITY AREA
-  GREENLAND AREA WITH-IN SITE BOUNDARIES

**SUBJECT SITE**

-  SUBJECT SITE
-  RESIDENTIAL PRIVATE OUTDOOR AMENITY SPACE

-  BUILDING FACES TO ALLOW FOR THE POSSIBILITY OF USING SOLAR ENERGY

