



**Ganatchio Gardens Inc.**

## **Official Plan and Zoning By-Law Amendments**

**Shadow Impact Study**

**Southwest Corner of Florence Avenue & Wyandotte Street East  
Windsor, Ontario**

# Table of Contents

<b>1.0</b>	<b>Introduction</b>	<b>1</b>
1.1	Descripon of Site .....	1
1.2	Proposed Development .....	2
<b>2.0</b>	<b>Methodology</b>	<b>3</b>
2.1	Study Test Dates .....	3
2.2	Study Test Times .....	4
2.3	Time Zone .....	4
<b>3.0</b>	<b>Shadow Impact Analysis</b>	<b>5</b>
3.1	March 21 .....	5
3.2	June 21 .....	6
3.3	September 21 .....	7
3.4	December 21 .....	7
<b>4.0</b>	<b>Summary</b>	<b>9</b>
4.1	Design Strategies for Shadow Mitigation .....	9
4.2	Conclusion .....	10
	<b>Appendices</b>	
A	Conceptual Development Plans	
B	Shadow Diagrams: March 21	
C	Shadow Diagrams: June 21	
D	Shadow Diagrams: September	
E	Shadow Diagrams: December 21	

## 1.0

# Introduction

Dillon Consulting Limited (Dillon) has prepared the following Shadow Impact Study, on behalf of our client, Ganatchio Gardens Inc., (“Applicant”), to assess the potential impact of the shadows created by the proposed multiple dwelling and townhome residential development. The property is located southwest of the Wyandotte Street East and the future Florence Avenue extension intersection in the City of Windsor (“Subject Site”).

As per the City of Windsor Official Plan – Chapter 8: Urban Design, Shadow Impact Studies may be required for medium, high, and very high-profile development proposals within the City of Windsor to evaluate the impact of the shadows cast by the development and to determine the appropriate design measures to reduce or mitigate any undesirable shadow conditions (City of Windsor Official Plan, Section 8.6.2.3).

The size, shape, and orientation of new buildings creates shadows at different times of day and year that may limit penetration of direct sunlight into both public and private spaces. By analyzing the existing and proposed shadows of an area together, both incremental and cumulative shadow impacts can be evaluated. The purpose of the Shadow Impact Study is to encourage high-quality development that maintains adequate access to sunlight, for the enjoyment of public and private spaces, within the City of Windsor.

The Shadow Impact Study will consider the impacts of the proposed 16-storey multiple dwelling building with a scenery loft and associated surface and covered parking, as well as the proposed twenty-eight (28) 2 storey townhome dwellings located along the Wyandotte Street East and future Florence Avenue extension (“proposed development”). The proposed development includes a sum total of 303 dwelling units on the Subject Site. Refer to **Appendix A (Conceptual Development Plan)**.

This Shadow Impact Study has been prepared in support of the Official Plan Amendment and Zoning By-law Amendment applications, required to permit the proposed development.

## 1.1

## Description of Site

The Subject Site is located south of Wyandotte Street East and west of the future Florence Avenue extension within the City of Windsor. The property is legally described as Part Lot 138, Concession 1 in the City of Windsor.

The total site area under application is approximately 3.30 ha (8.15 ac) in size, with frontage along Wyandotte Street East (158.3 m / 519.35 ft.) and the future Florence Avenue extension (167.9 m / 550.8 ft.) The Subject Site is undeveloped and currently vacant.

The surrounding area supports a mix and range of residential uses as well as some open space and institutional uses. There are a number of single detached, semi-detached, and townhome dwellings that

make up the residential fabric of the area. Just west of the Subject Site is the Little River Corridor which provides open spaces, natural features, community services, and multi-use trails within the community.

## 1.2 Proposed Development

The proposed development includes the construction of twenty-eight (28) townhome dwellings positioned along the Wyandotte Street East and the future Florence Avenue extension rights-of-ways. The 2-storey townhome dwellings are intended to serve as a buffer and provide the appropriate transition from the low-density residential dwellings to the north and east of the Subject Site. Parking for the townhome dwellings is located at the rear of the units and away from the view of the rights-of-ways. Each townhome dwelling will feature two (2) parking spaces per unit via private driveways, as well as two (2) additional spaces within the attached garages.

The proposed development also includes the construction of one (1) 16-storey multiple dwelling building with a scenery loft. The proposed multiple dwelling building will contain a total of 275 dwelling units. The proposed building has been designed to include various resident amenities including access to a number of outdoor terraces. Four (4) outdoor terraces are provided by stepping back the built form as the height increases. These smaller outdoor terraces are proposed at the fourth and ninth floors. A larger outdoor terrace is proposed at the second floor via an elevated platform above an area of the proposed surface parking. The multiple dwelling building also features a scenery loft, which is an additional enclosed amenity area located above the uppermost storey of the building and is readily available to all future residential occupants.

Included as part of the proposed development is the allocation of 0.39 ha (0.97 ac) of dedicated parkland. The dedicated parkland is located along the southern boundary of the Subject Site, with a small strip of parkland running along the western boundary. Just west of the Subject Site is the Little River Corridor, a naturalized path providing linkages among various neighbourhoods and amenities. The dedicated parkland abuts the Little River Corridor and will serve as a buffer between the naturalized area and the proposed development.

Also included as part of the proposed development is the conveyance of 0.32 ha (0.79 ac) of land to the City of Windsor for the future extension of the Florence Avenue right-of-way north to provide connection to Wyandotte Street East.

Refer to **Appendix A (Conceptual Development Plan)**.



## 2.0

## Methodology

The Shadow Impact Study was prepared in accordance with the following methodology:

- Utilization of Google Sketch Up for the shadow simulations;
- Generation of the surrounding massing data from municipal Land Fabric data and by using municipal aerial imagery;
- Preparation of the preliminary massing of the proposed development using Google Sketch Up;
- Surrounding context building heights and proposed building heights were determined through standardized floor to floor heights:
  - Single storey: 4.5 metres;
  - Two storeys: 7.5 metres; and
  - Each storey of multiple dwelling building: 3.0m.

The shadow diagrams include the following features:

- The Subject Site identified in a red outline;
- Surrounding existing and approved building footprints;
- Underlying parcel fabric;
- Shadows from the proposed development are colour coded in a grey hue;
- Shadows from existing and approved buildings are colour coded in a blue hue; and
- All streets, blocks, open spaces, and existing building structures are shown to a distance that shows the shadow impacts during the study test times.

The shadow analysis and impact assessment are based on the following criteria:

- Impact on surrounding residential properties and the duration of shadows;
- Impact on the public realm;
- Impact on any parks and open spaces; and
- Impact on outdoor amenity areas of the proposed development.

## 2.1

### Study Test Dates

The shadow impacts of the proposed residential development have been evaluated at the following dates:

- March 21<sup>st</sup> (vernal equinox);
- June 21<sup>st</sup> (summer solstice);
- September 21<sup>st</sup> (autumnal equinox); and
- December 21<sup>st</sup> (winter solstice).

The study test dates were selected to reflect the variety of shadow impacts that may occur within the year. The solstices, June 21<sup>st</sup> and December 21<sup>st</sup>, represent the seasonal extremes for each season. June

21<sup>st</sup> is the longest day of the year when the sun is at its highest and the shadows are the shortest, while December 21<sup>st</sup> is the shortest day of the year when the sun angle is at its lowest and the shadows are the longest.

## 2.2 Study Test Times

---

The shadow impacts of the proposed residential development have been evaluated at the following test times:

- 8:00 am
- 9:00 am
- 10:00 am
- 11:00 am
- 12:00 pm
- 2:00 pm
- 3:00 pm
- 4:00 pm
- 4:30 pm
- 5:00 pm
- 6:00 pm
- 7:00 pm

Study test times may vary depending on the study test date. The study test times have been appropriately selected to evaluate the relevant shadow impacts at the selected time of year.

## 2.3 Time Zone

---

The Shadow Impact Study was prepared using the following time zone standards:

- Eastern Time Zone;
- Standard Time: Universal Time minus 5 hours (Winter Solstice – December 21<sup>st</sup>); and
- Daylight Saving Time: Universal Time minus 4 hours (Summer Solstice – June 21<sup>st</sup>, Autumnal Equinox – September 21<sup>st</sup>, and Vernal Equinox – March 21<sup>st</sup>).

## 3.0 Shadow Impact Analysis

### 3.1 March 21 Analysis

The shadow impacts of the proposed development on the surrounding area have been evaluated on March 21<sup>st</sup> using the study test time intervals of 8:00 am through and up until 6:00 pm.

During the morning hours of March 21<sup>st</sup>, there are no shadow impacts to the surrounding residential area from either the proposed multiple dwelling building or the townhome dwellings. The shadow impacts between the hours of 7:00 am – 11:00 am are largely contained to the Subject Site. The shadow impacts to the Subject Site occur primarily to the surface parking area, although there are minor impacts to the townhome dwelling front yards and the outdoor terraces provided as amenity areas to future residential occupants of the multiple dwelling building.

It is noted that during the morning hours there are some shadow impacts to the adjacent Little River Corridor. Shadow coverage occurs to portions of the paved and unpaved pedestrian multi-use trails, as well as to the stormwater pond. The shadow coverage along the multi-use trails is limited in duration.

Throughout the evening hours of 3:00 pm – 5:00 pm all proposed shadow impacts are contained to the Subject Site. Again, these impacts primarily affect the surface parking area of the development with some impacts to the proposed outdoor terraces that are provided as part of the multiple dwelling building. At 6:00 pm, the shadow impacts encroach into the surrounding public realm and residential area. The shadow at this time extends across a section of the future Florence Avenue right-of-way and into the rear yards of the residential properties known as 837, 843, and 851 Elinor Street. These impacts are minor in nature, given that they are not sustained throughout the daytime hours.

In summary, the shadow impacts as a result of the proposed development on March 21<sup>st</sup> are anticipated for the longest duration during the morning hours with the most significant impact being to the adjacent Little River Corridor open space. These shadow impacts to the pedestrian multi-use trails are not anticipated to have any negative affect to either the function or the experience of the trails. Throughout the daytime hours, adequate sunlight access is available for the adjacent open space area. During the late evening hours, there are minor shadow impacts to the residential properties east of the Subject Site. The residential properties known as 837, 843, and 851 Elinor Street experience some shadow coverage within their rear yards. These impacts are not sustained in duration and the affected rear yards will maintain adequate sunlight access. At this hour, potential shadow impacts affect the future Florence Avenue right-of-way. The shadow extends across the right-of-way and will cause shadow coverage to occur along the pedestrian sidewalk(s). These impacts are anticipated to occur for a short period of time, with any affected pedestrian sidewalk(s) experiencing 50% or greater sunlight exposure throughout the daytime hours. The proposed shadows are not expected to negatively affect the quality of life of future or existing residents of the area provided that adequate sunlight access will be maintained within the public realm, open spaces, existing residential properties, and proposed residential amenity areas.

Refer to **Appendix C (Shadow Diagrams – March 21)**.

## 3.2 June 21 Analysis

The shadow impacts of the proposed development on the surrounding area have been evaluated on June 21<sup>st</sup> using the study time intervals of 8:00 am through and up until 7:00 pm.

At 8:00 am, there are potential shadow impacts as a result of the proposed development to the adjacent open space area to the west known as the Little River Corridor. The impacts to the open space area include shadow coverage to the unpaved pedestrian multi-use trails and the stormwater pond. These shadow impacts continue throughout the morning hours until approximately 11:00 am. Although occurring over an extended period of time, the area affected by the shadow coverage diminishes with time. During these hours all other shadow impacts are contained to the Subject Site, affecting the proposed surface parking area and briefly impacting a portion of the proposed outdoor terraces which are provided as amenity areas to future residential occupants.

In the evening hours from 4:00 pm – 6:00 pm the shadow impacts are wholly contained to the Subject Site. The most significant impacts during these hours occur to the proposed outdoor terraces of the east – west wing of the multiple dwelling building. While these areas experience almost total shadow coverage, there is sufficient outdoor amenity area available along the north – south wing of the building. During this time, the proposed shadow is a result of the multiple dwelling building shadow extending into the dedicated parkland area.

At 7:00 pm, the shadow impact encroaches into the public realm as it creates shadow coverage portions of the future Florence Avenue right-of-way and to the open space area south of the Subject Site. These shadow impacts will briefly affect the pedestrian sidewalk(s) along the right-of-way. At this time, the proposed shadow causes minor impacts to the rear yards of the residential properties known as 878 and 883 Elinor Street.

In summary, the shadow impacts as a result of the proposed development on June 21<sup>st</sup> are mostly contained to the Subject Site. The shadow impacts to the Subject Site are minor in nature and should not have any negative affect on the quality of life for future residential occupants. The shadow impacts to the adjacent Little River Corridor are not expected to negatively affect the use of the open space or the multi-use trails as sunlight access will be maintained during 50% or more of the daytime hours. While the public realm experiences some shadow coverage during the late evening hours, the anticipated impacts are not sustained and the pedestrian sidewalk(s) will maintain sufficient sunlight exposure throughout the daytime hours. The shadow impacts to the rear yard of the residential properties east of the Subject Site are not expected to occur for more than two (2) hours in duration. Appropriate sunlight access is maintained for these properties during almost all daytime hours. The shadow impacts are anticipated to have limited impact on the surrounding area provided that the impacts to the public realm, open spaces, and existing residential areas are minor in nature and not sustained for any prolonged periods of time.

Refer to **Appendix D (Shadow Diagrams – June 21)**.

### 3.3 September 21 Analysis

The shadow impacts of the proposed development on the surrounding area have been evaluated on September 21<sup>st</sup> using the study time intervals of 8:00 am through and up until 6:00 pm.

At 8:00 am, the proposed shadow extends across the adjacent Little River Corridor open space area. The shadow coverage affects the pedestrian multi-use trails and the stormwater pond. These impacts are sustained throughout the morning hours into the afternoon, although with diminishing affects. During these hours there are also shadow impacts to the proposed surface parking area and proposed outdoor terraces which are provided as outdoor amenity areas for future residential occupants.

At 3:00 pm and through until 4:00 pm, the shadow impacts to the proposed development continue. Although occurring over an extended period of time, these impacts to the surface parking area and outdoor terraces shift with the sun allowing for sufficient sunlight exposure throughout the daytime hours. While the outdoor terraces of the multiple dwelling building and the front yards of the townhome dwellings experience shifting with prolonged shadow coverage. The outdoor amenity area in the form of the dedicated parkland is available to future residential occupants. The dedicated parkland area maintains extended sunlight access throughout the daytime hours.

Beginning at 5:00 pm, the proposed shadow extends into the future Florence Avenue right-of-way causing shadow coverage along the pedestrian sidewalk(s). During the late evening hours, there are potential shadow impacts to the residential properties east of the Subject Site. The rear yards of the residential properties known as 837, 843, and 851 Elinor Street are anticipated to experience some shadow coverage. There are a number of accessory structures located on these properties that will be affected by the shadow coverage. At this time, the noted shadow impacts to the Subject Site are sustained.

In summary, the shadow impacts as a result of the proposed development on September 21<sup>st</sup> are mostly contained to the Subject Site with limited impacts to the surrounding area. The most significant impacts to the surrounding area are to Little River Corridor and the future Florence Avenue right-of-way as these areas experience impacts sustained for two (2) hours or longer. Although these impacts occur over an extended period of time, they shift with the sun and are diminishing in nature which allows for adequate sunlight exposure at any given location throughout the daytime hours. Any affected pedestrian multi-use trail and/or sidewalk(s) will maintain 50% or greater sunlight exposure with no anticipated negative impacts to the quality of experience within the public realm.

Refer to **Appendix E (Shadow Diagrams – September 21)**.

### 3.4 December 21 Analysis

The shadow impacts of the proposed development on the surrounding area have been evaluated on December 21<sup>st</sup> using the study time intervals of 9:00 am through and up until 4:30 pm.

At 9:00 am, the proposed shadow extends northwest across the Wyandotte Street East right-of-way, causing shadow coverage to two (2) residential properties and the pedestrian sidewalk(s) and bicycle lanes along the right-of-way. The proposed shadow also extends across a portion of the Little River Corridor open space area. At this time, there are shadow impacts to areas of the Subject Site including the proposed surface parking area, the townhome dwelling front yards, and the outdoor terraces of the multiple dwelling building. These shadow impacts are sustained throughout the morning hours, although diminishing in size and impact with time.

By 12:00 pm, the majority of the above noted shadow impacts are resolved. There remain some impacts to the Wyandotte Street East right-of-way and the existing pedestrian facilities along the south side of the right-of-way. Outside of this affect to the public realm, the proposed shadow is largely contained to the Subject Site. These shadow conditions continue 2:00 pm.

Beginning at 3:00 pm, the proposed shadow coverage occurs to a number of residential properties along Florence Avenue and Elinor Street with various levels of impact. At 3:00 pm, there is minor shadow coverage occurring to the residential property known as 595 Florence Avenue. The significant impacts at this time affect the Wyandotte Street East and future Florence Avenue rights-of-ways. At 4:00 pm, the proposed shadow extends across the noted rights-of-ways and begins to affect a number of residential properties along Elinor Street, north of Wyandotte Street East. These conditions continue to affect more residential dwellings until sunset at approximately 5:00 pm.

In summary, the shadow impacts as a result of the proposed development on December 21<sup>st</sup> are anticipated for the longest duration and significance during the evening hours. The proposed shadow impacts a number of the surrounding residential properties and the Wyandotte Street East and future Florence Avenue rights-of-ways during this time. The prolonged impacts at this time of year are largely due to the low angle of the sun throughout the winter. The sunlight exposure experienced within the public realm and at each residential property remains at an acceptable level. No negative impacts to the usability or to the experience of the public realm, open spaces, existing residential properties, and proposed residential amenity areas are anticipated as a result of the proposed development.

Refer to **Appendix F (Shadow Diagrams – December 21)**.

## 4.0

## Summary

In summary, it is our opinion that shadow impacts from the proposed development are limited overall. Any shadow impacts occurring for extended periods of time on adjacent properties remains at an acceptable level. Access to sunlight during the daytime hours has been maintained in relation to the public realm, open space, existing residential properties, and proposed residential amenity areas.

## 4.1

### Design Strategies for Shadow Mitigation

In an effort to reduce any potential negative shadow impacts, certain design strategies have been included such as:

- **Building massing.** Adjustments to the multiple dwelling building in the form of building setbacks. As the built form increases in height, the building provides horizontal cut outs in the massing. These setbacks allow for the proposed outdoor terraces at the second, fourth, and ninth floor which will be available to future residential occupants. The setbacks significantly reduce the shadow impacts to the surrounding area;
- **Building placement.** The placement of the multiple dwelling building on the Subject Site has been designed to ensure that the high profile development is as far away as possible from the existing surrounding low profile residential dwellings. The proposed multiple dwelling building is located in the southwest corner of the Subject Site, adjacent to the Little River Corridor open space area; and
- **Building orientation.** The proposed multiple dwelling building is orientated in a manner that reduces the shadow impacts to the residential dwellings located north and east of the Subject Site by stepping back the built form to limit the impacts during the evening hours as the sun sets. The highest point of the multiple dwelling building is setback as far as possible from surrounding residential dwellings.

Other design strategies may be considered at the Site Plan Control stage including, but not limited to, the following:

- Providing high quality landscape treatment such as decorative fencing, trees, and grassed areas to mitigate the perceived massing impacts of the built form;
- Breaking up the mass horizontally and vertically through the creative incorporation of changes in materials and architectural features; and
- Incorporating windows and balconies on all elevations with creative balcony and floor plate design which includes strategically located unit/amenity area locations.

## Conclusion

In conclusion, it is our opinion that the shadow impacts from the proposed residential development are overall minor in effect and short in duration. The proposed shadows have a limited level of impact for the following reasons:

- The majority of cumulative shadowing impacts are moderate and shorter in duration, with shadow impact falling primarily away from residential properties and frequently contained to the Subject Site;
- The shadow impacts occurring to the Subject Site largely affect the proposed surface parking area. The shadow coverage occurring to the surface parking area may be beneficial in assisting to mitigate any heat island effect by keeping asphalt temperatures cooler during the daytime hours;
- While there are some prolonged impacts to the proposed outdoor terraces of the multiple dwelling building, these shadows shift with the sun and diminish over time. The nature of these shadows allows for sufficient sunlight exposure to these amenity areas;
- Any loss of sunlight exposure due to the shadow coverage occurring to the front yards of the townhome dwellings may be offset by the availability of the dedicated parkland proposed as part of the development;
- Of the shadowing impacts identified, the majority occur around sunrise or sunset, meaning that the neighbouring residential properties and the Little River Corridor will continue to retain adequate sunlight access for leisure and recreation activities during the daytime hours, and increasingly in the warmer months;
- The shadow impacts to the Little River Corridor open space area are not anticipated to have any negative impact on the natural environmental quality that allows trees and vegetation to thrive; and
- The public realm is anticipated to experience some shadow coverage; however, the shadowing is limited in duration and by time of year. Any affected pedestrian multi-use trails and/or sidewalks maintain 50% or greater sunlight exposure during the daytime hours. As such, it will not cause unreasonably negative impacts for, or deter from, the ability for community members to use the public realm in any affected areas.



# Appendix A

## *Conceptual Development Plans*





**GANATCHIO GARDENS INC.**  
 WYANDOTTE STREET EAST  
 AT FLORENCE AVENUE

**CONCEPTUAL DEVELOPMENT PLAN**  
 FEBRUARY 16, 2023

- SUBJECT AREA  
(± 3.30ha / 8.15ac)
- LAND CONVEYANCE  
(± 0.32ha / 0.79ac)
- PROPOSED TOWNHOME UNITS (28 UNITS)
- PROPOSED PARKLAND
- PROPOSED MULTI-UNIT RESIDENTIAL BUILDING (275 UNITS)
- PROPOSED LANDSCAPING
- PROPOSED ELEVATED TERRACE
- PROPOSED SIDEWALK

<b>UNIT COUNT</b>		<b>PARKING DETAILS:</b>	
MULTI- UNIT RESIDENTIAL:	275 units	PARKING/UNIT RATIO (MULTI-UNIT)	: 1.57 SPACES / UNIT
TOWNHOME:	28 units	PARKING/UNIT RATIO (TOWNHOME)	: 4 SPACES / UNIT
TOTAL:	303 units	(GARAGE + SURFACE PARKING)	
		LOADING SPACES	: 4 SPACES
		ACCESSIBLE SPACES PROVIDED	: 12 SPACES
		(TYPE A/TYPE B)	
<b>PARKING COUNT:</b>			
PARKING MULTI-UNIT:	: 432 SPACES		
TOWNHOME (GARAGE, 2 / UNIT)	: 56 SPACES		
TOWNHOME (SURFACE, 2 / UNIT)	: 56 SPACES		
TOTAL	: 544 SPACES		

File Location:  
 c:\pw working directory\projects 2021\dillon\_32mru\dms20930\21-1691 - ganatchio gardens - concept plan - feb 2023.dwg  
 February, 16, 2023 3:08 PM

MAP/DRAWING INFORMATION  
 THIS DRAWING IS FOR INFORMATION PURPOSES ONLY. ALL DIMENSIONS AND BOUNDARY INFORMATION SHOULD BE VERIFIED BY AN O.L.S PRIOR TO CONSTRUCTION.  
 CREATED BY: MRU  
 CHECKED BY: MAM  
 DESIGNED BY: MRU

SCALE: 1:1500 (11x17)



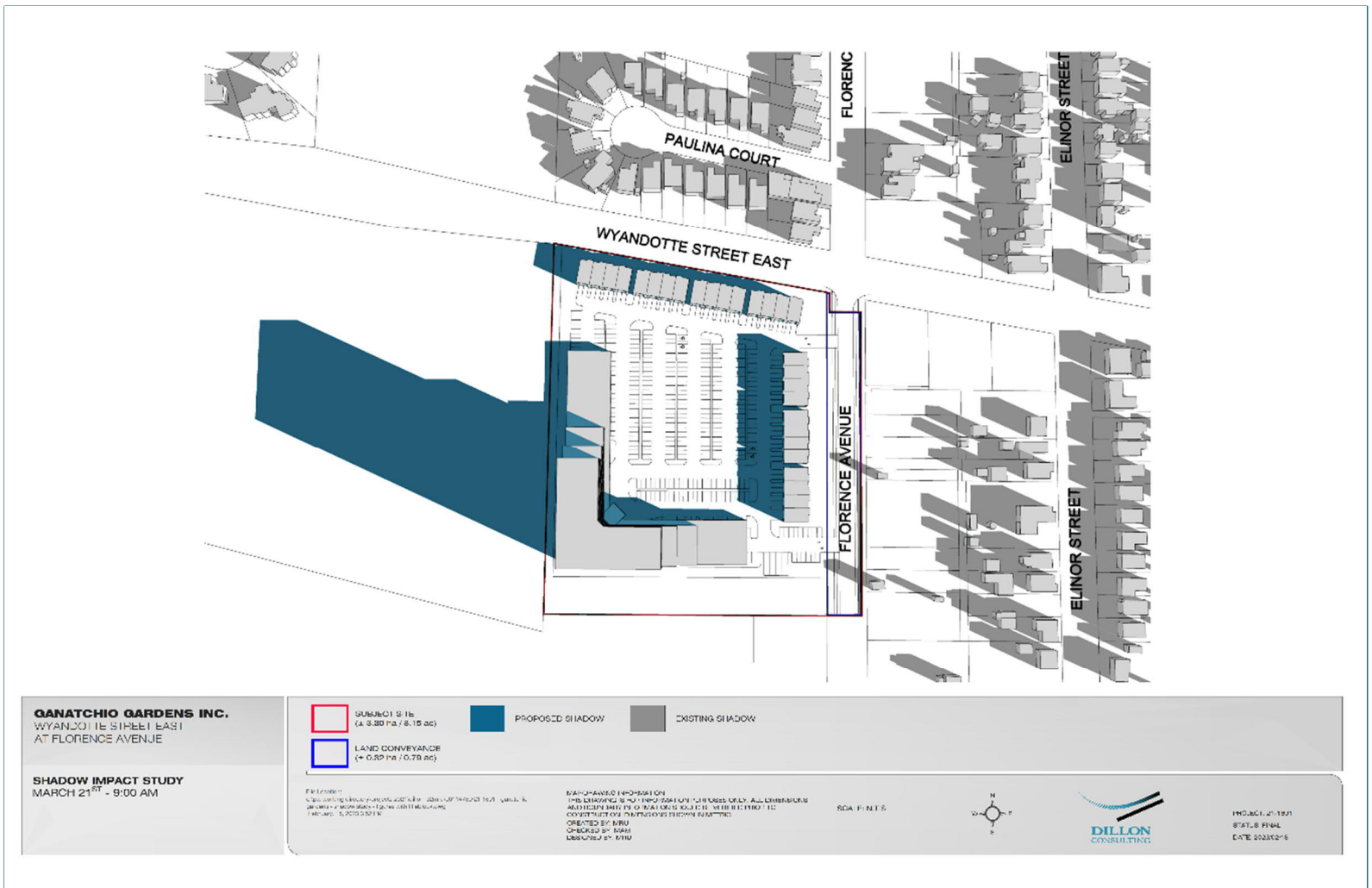
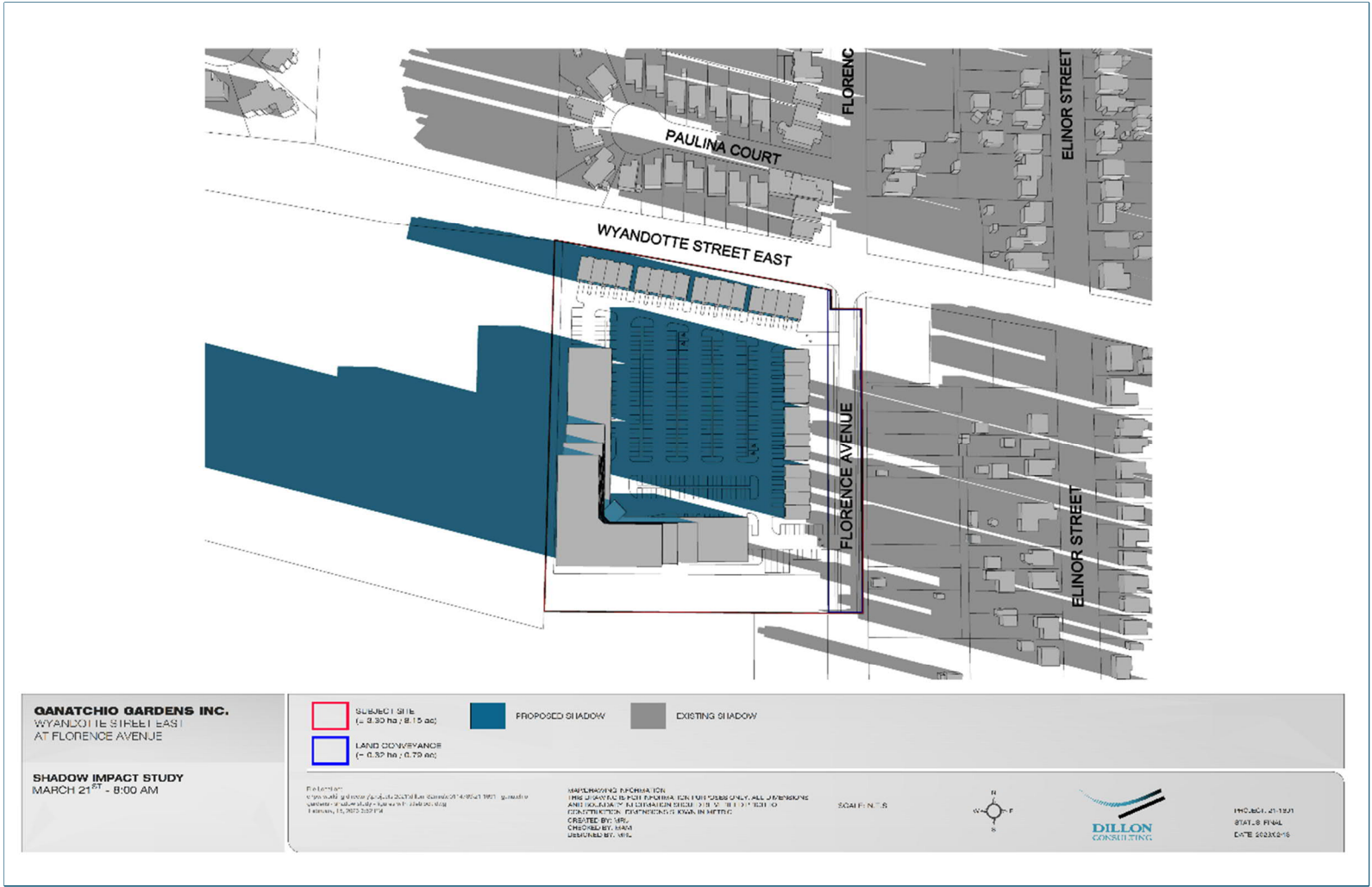
PROJECT: 21-1691  
 STATUS: DRAFT  
 DATE: 2023/02/10

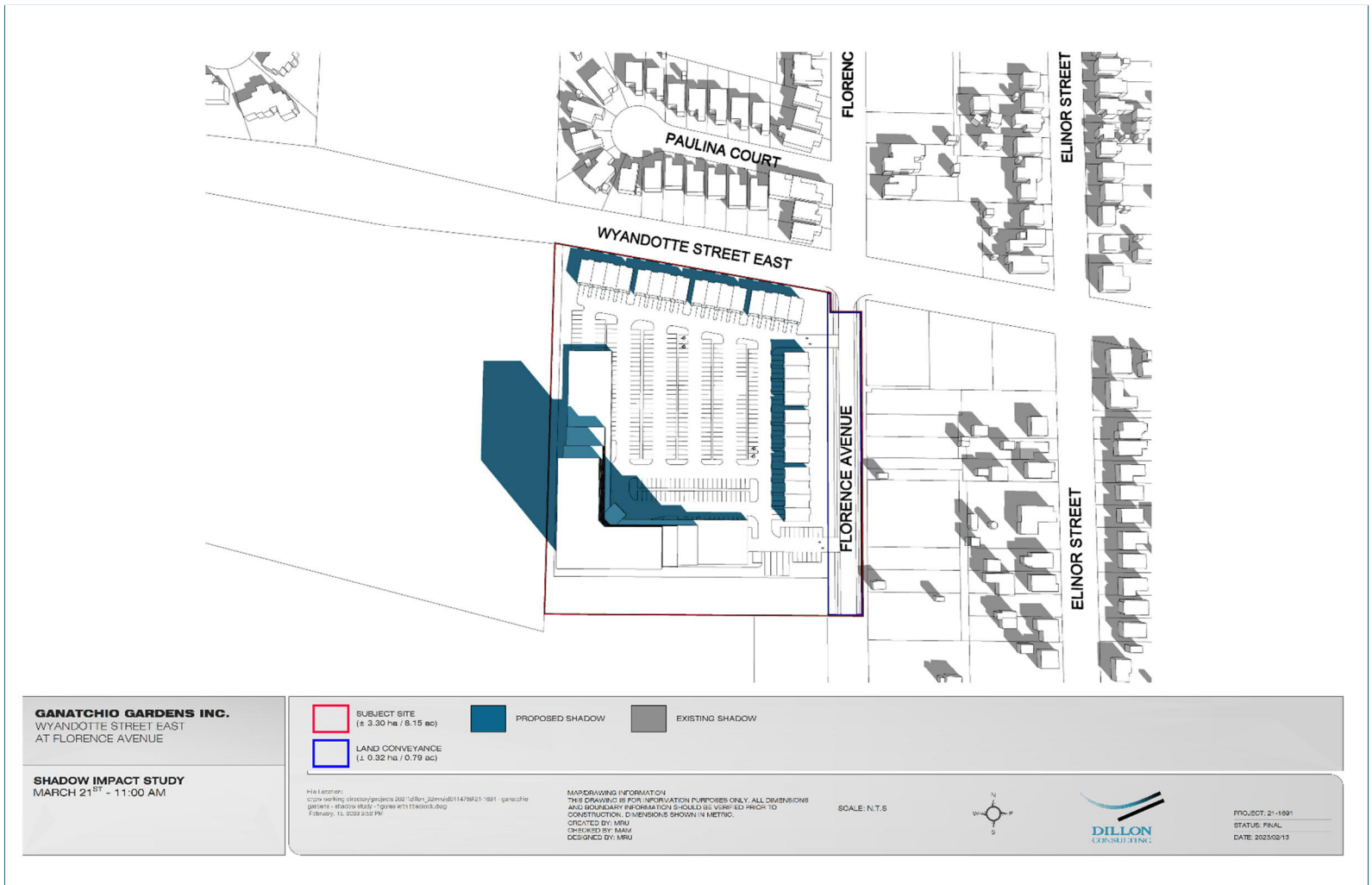
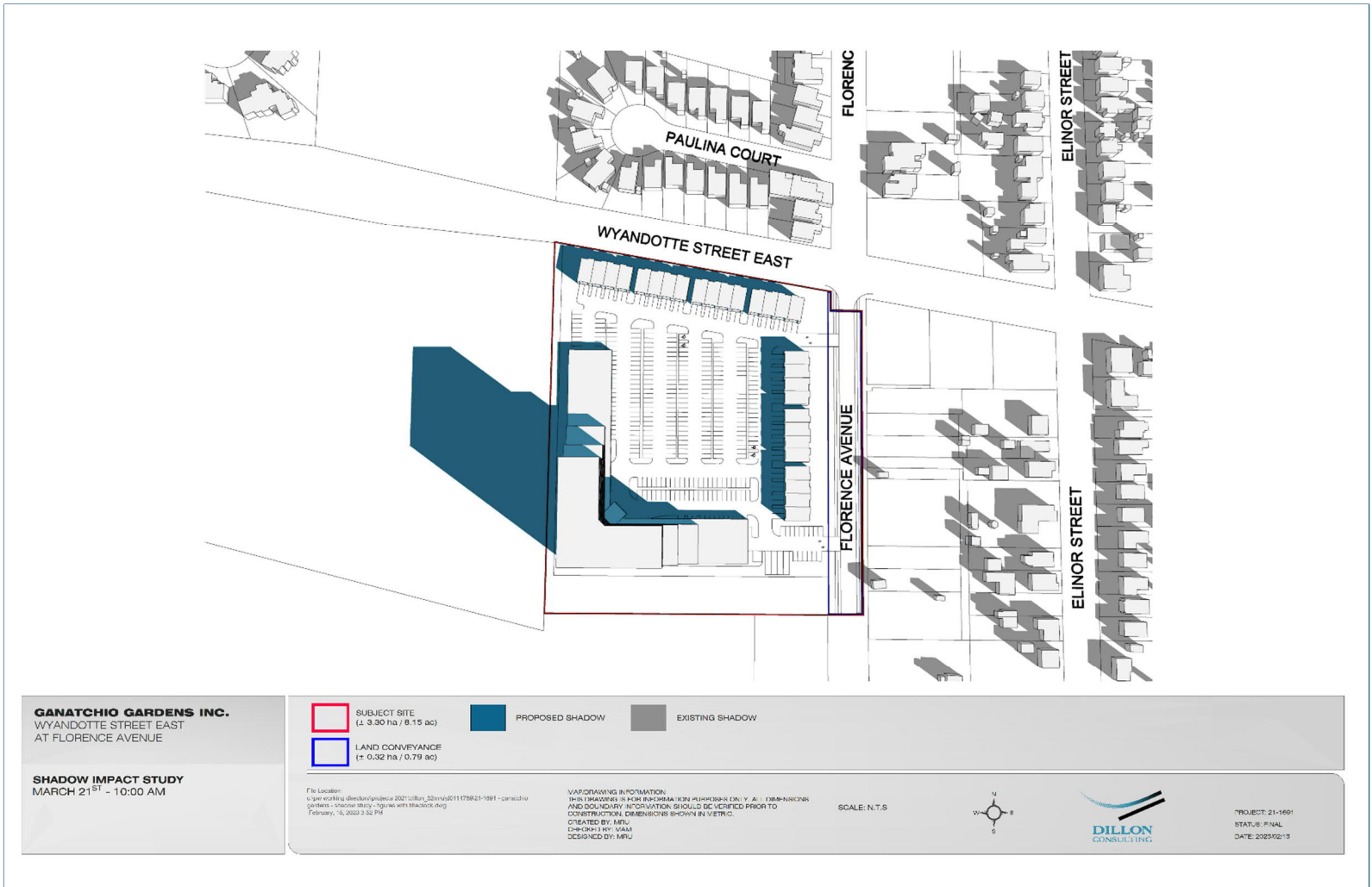
SOURCE: THE COUNTY OF ESSEX INTERACTIVE MAPPING (2019)

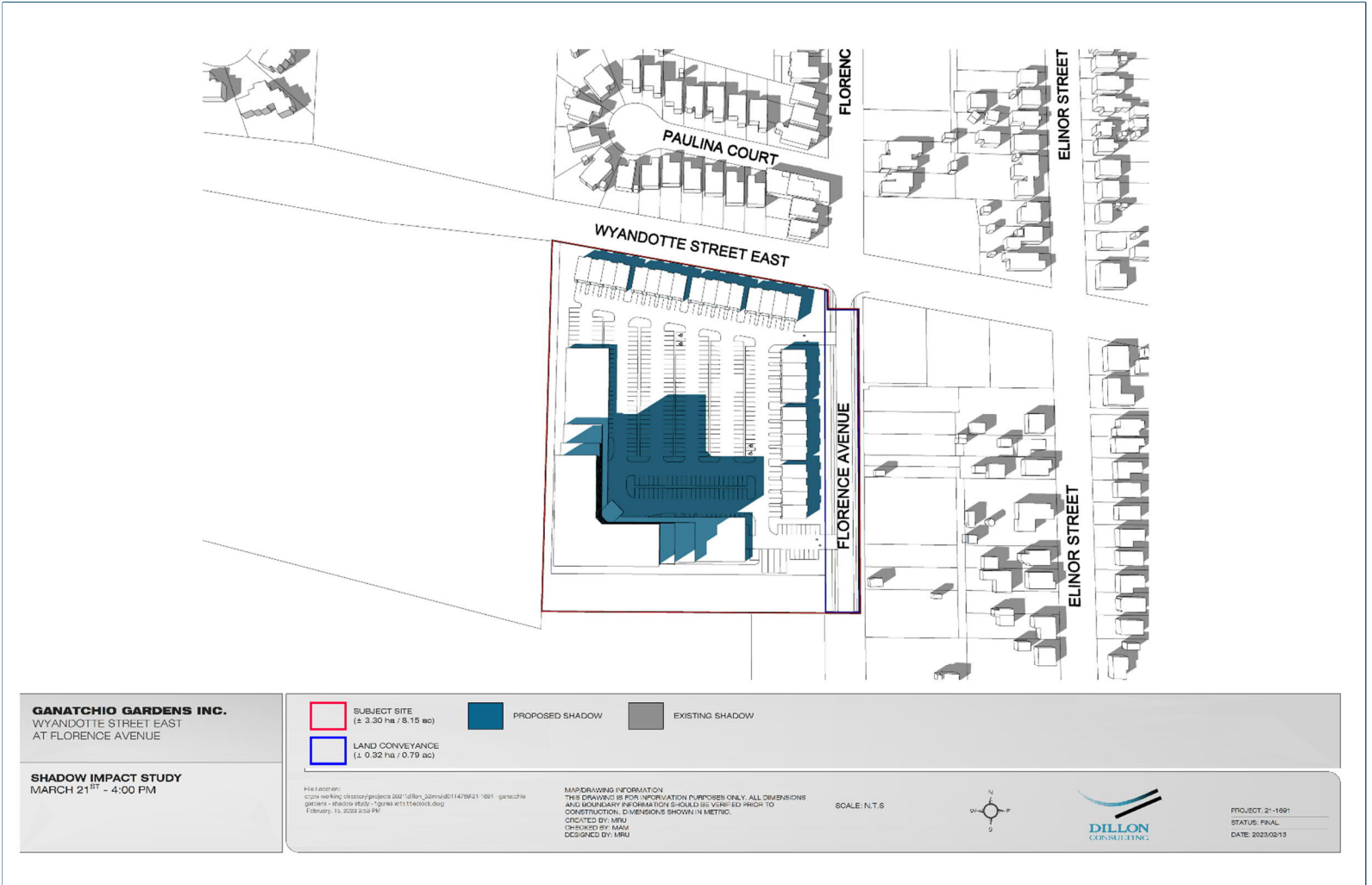
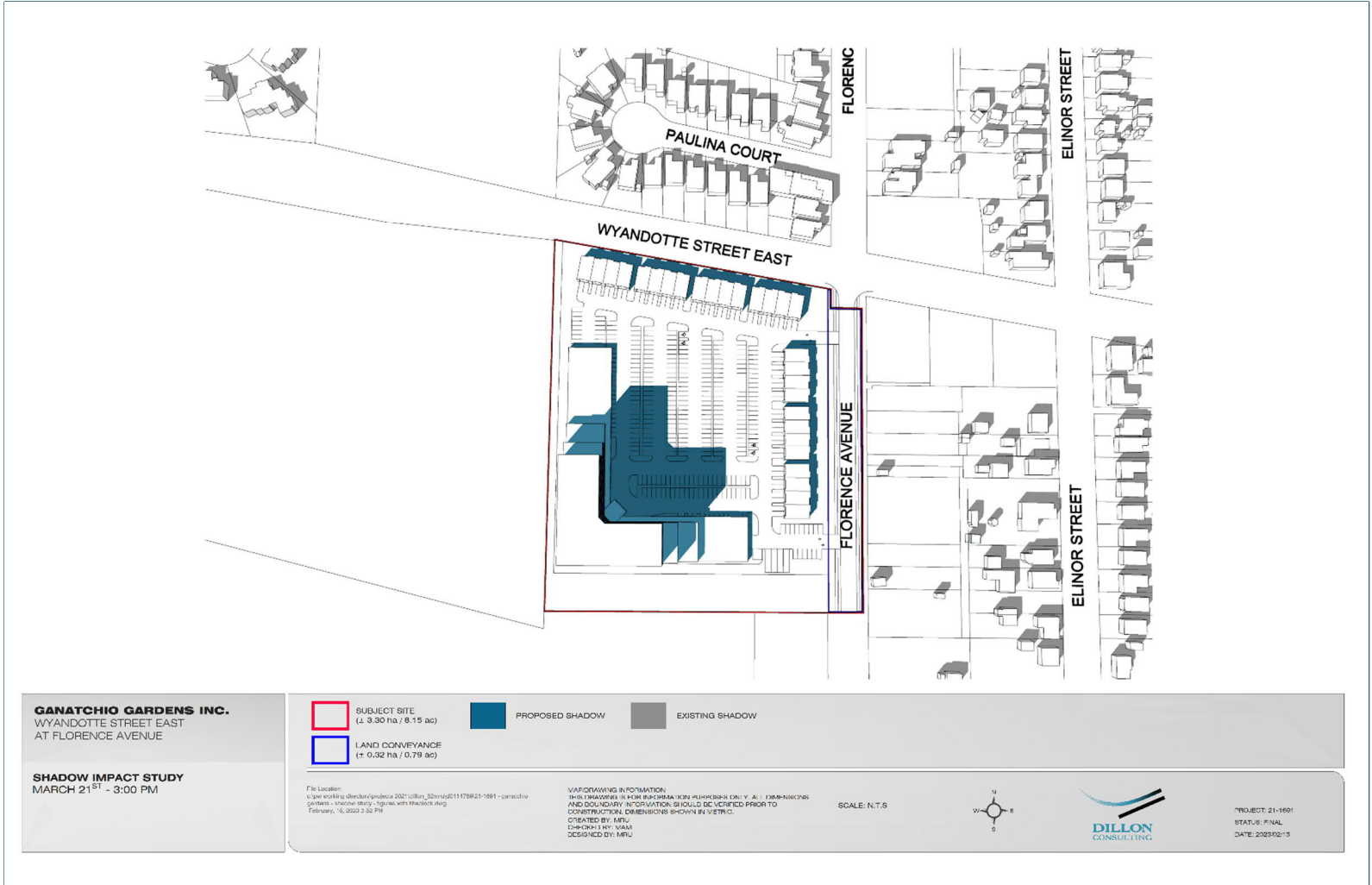


## Appendix B

### *Shadow Diagrams: March 21*







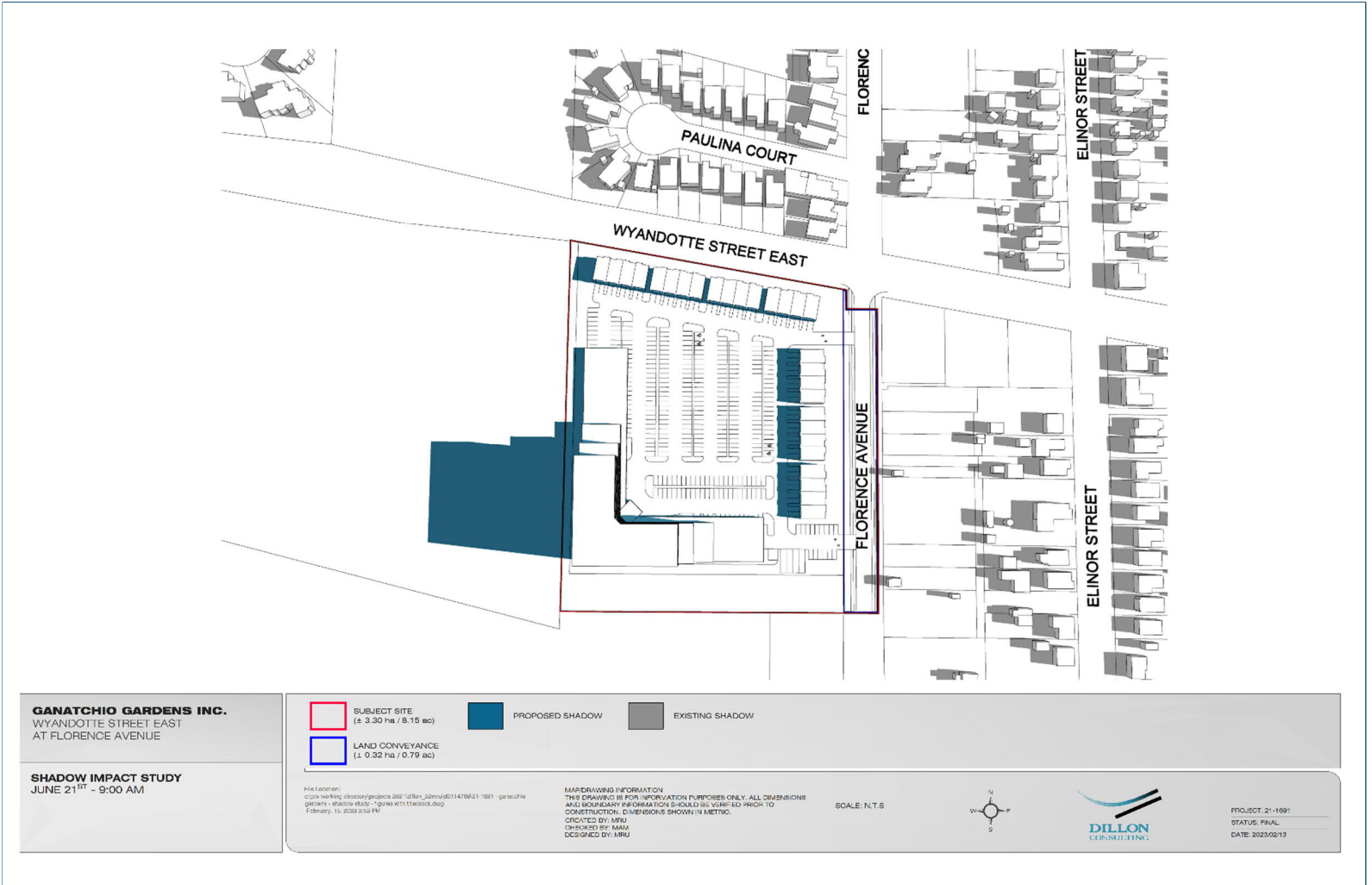
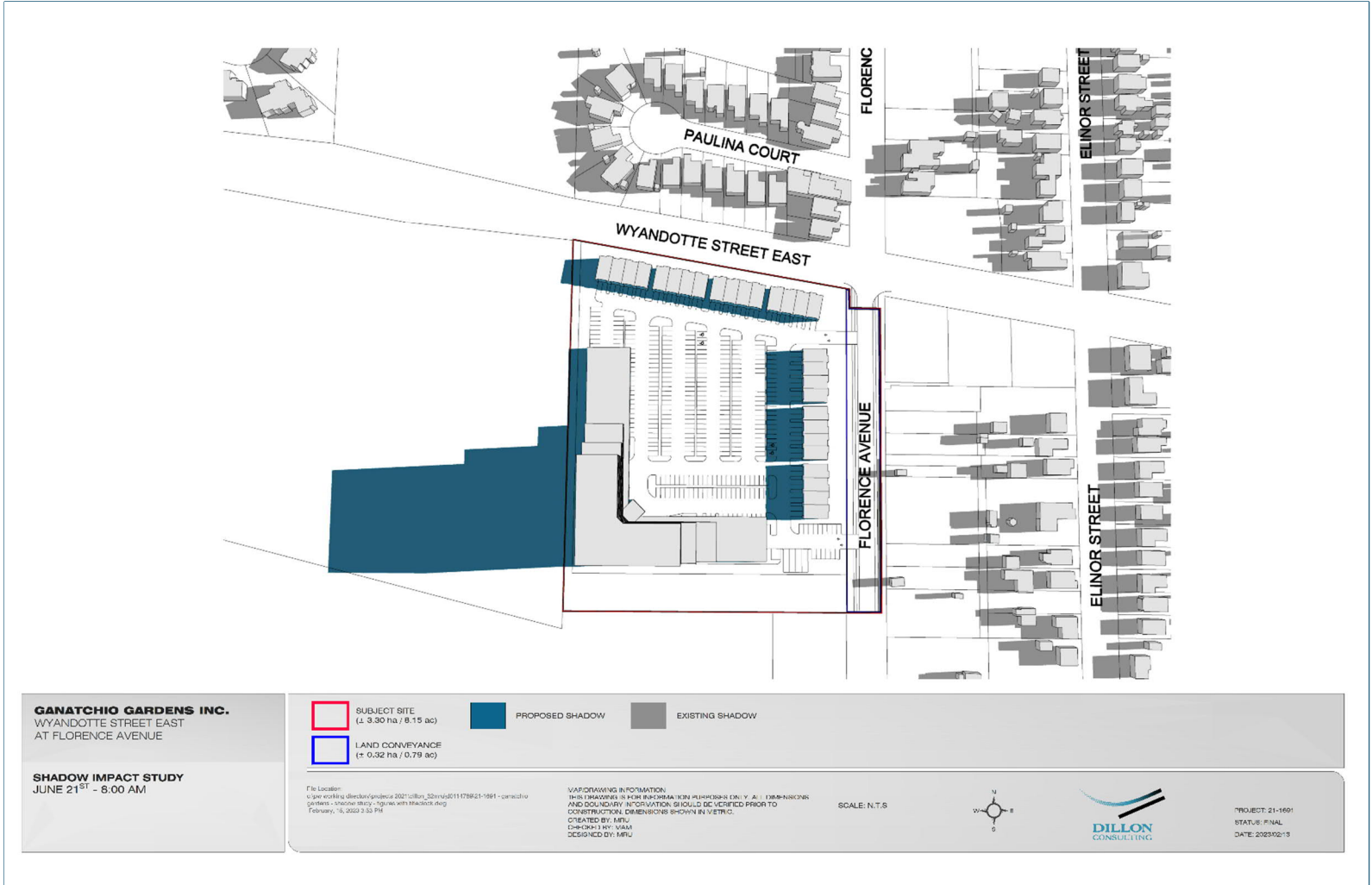


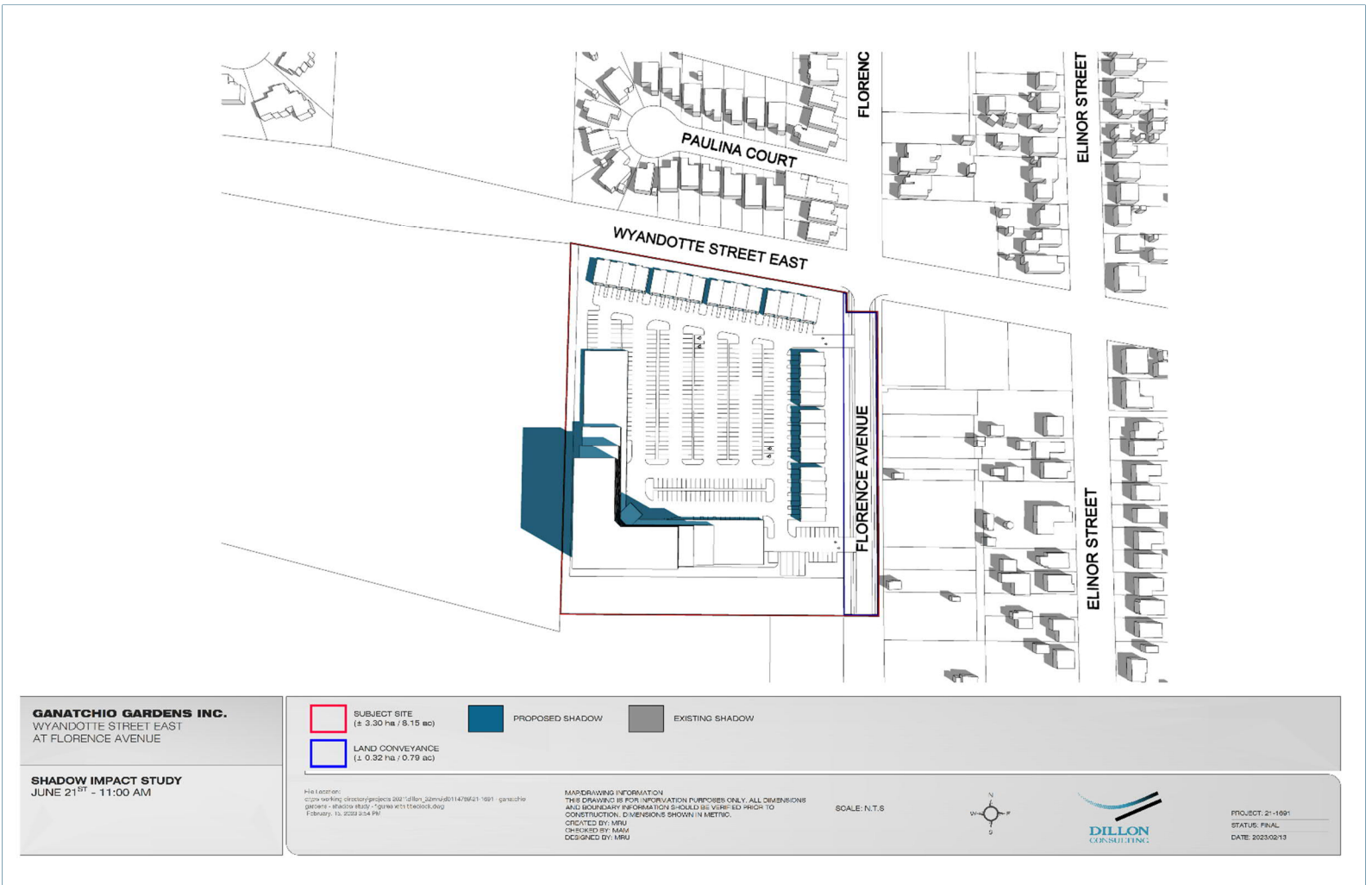
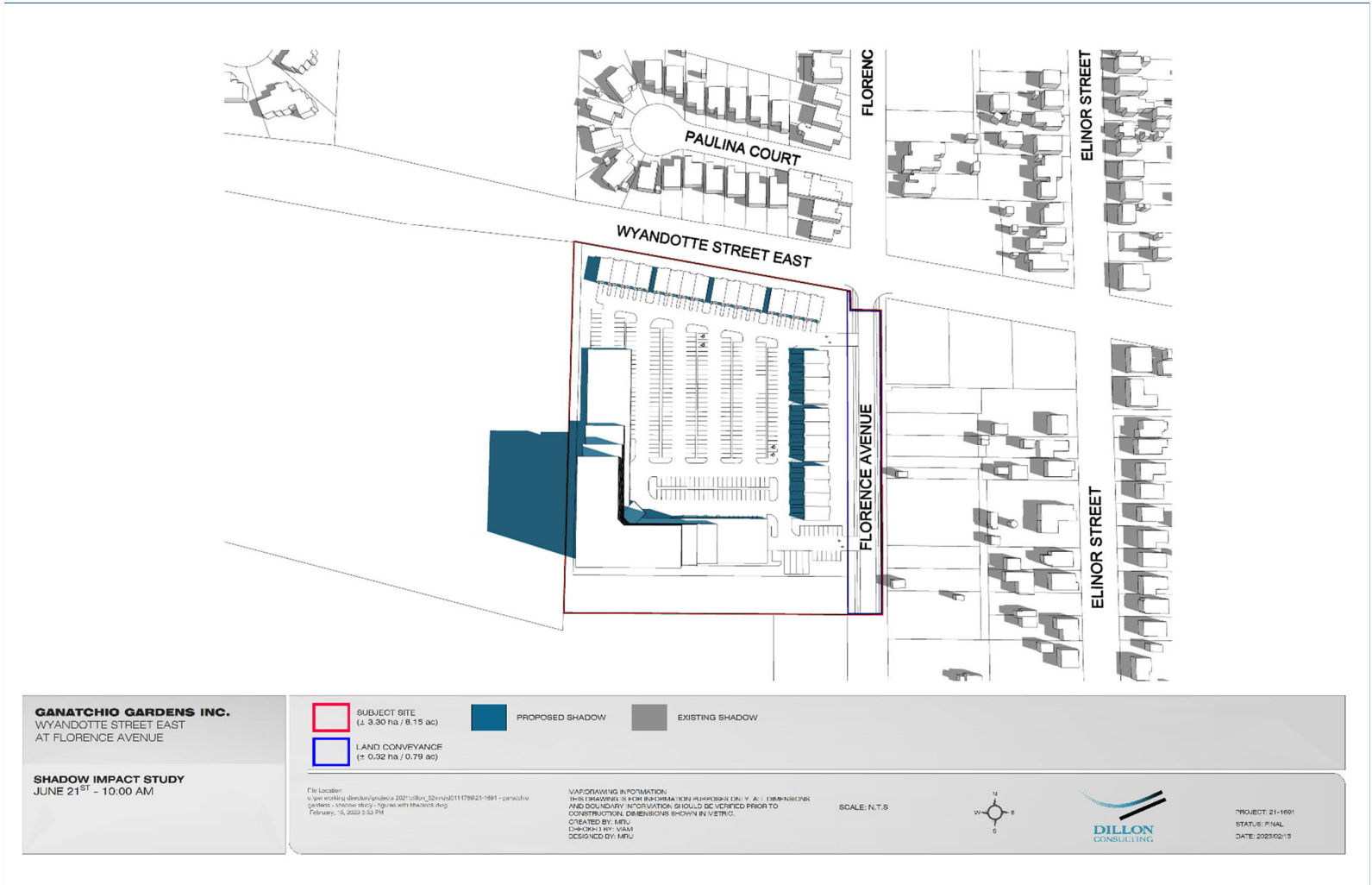


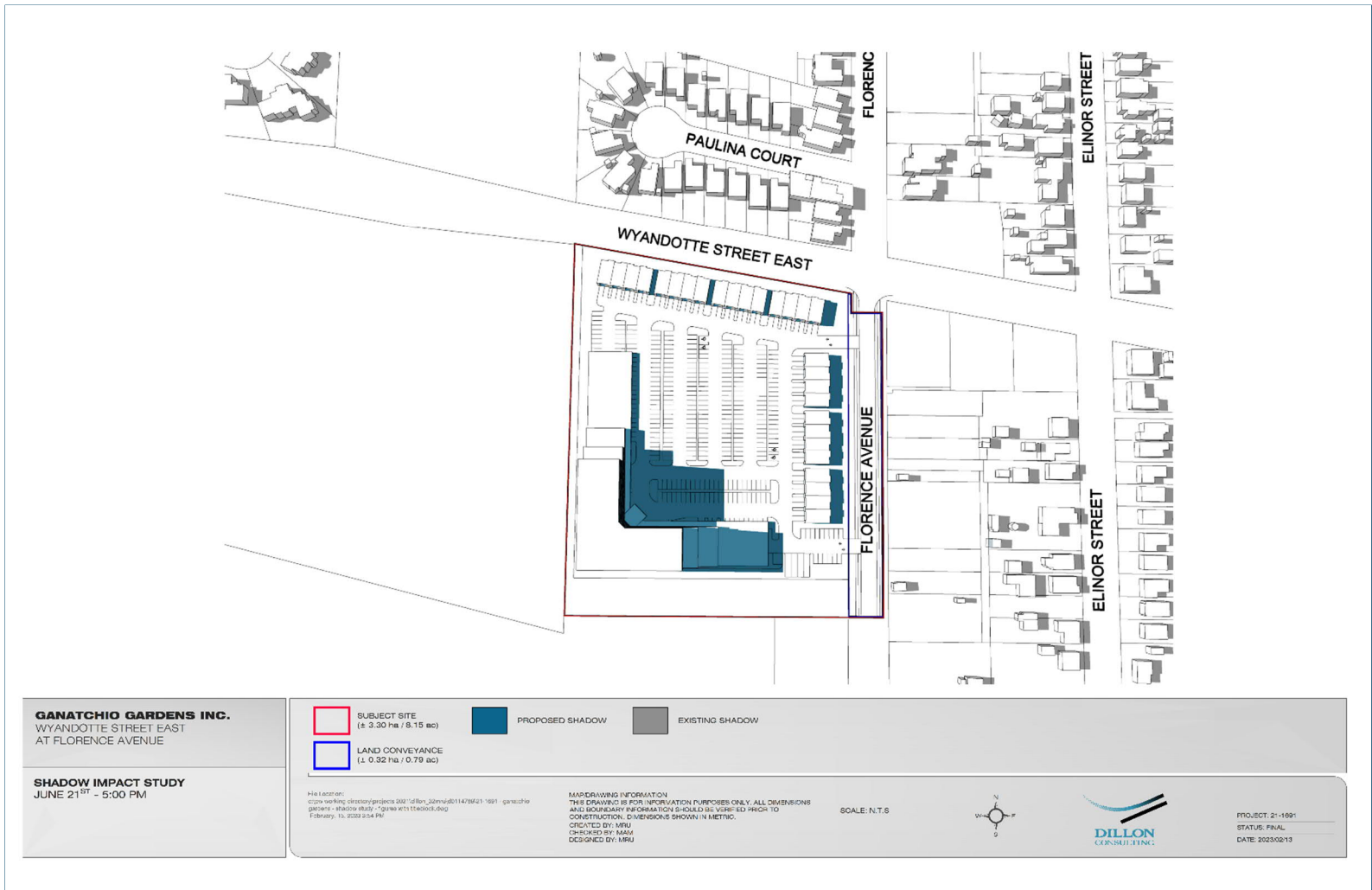
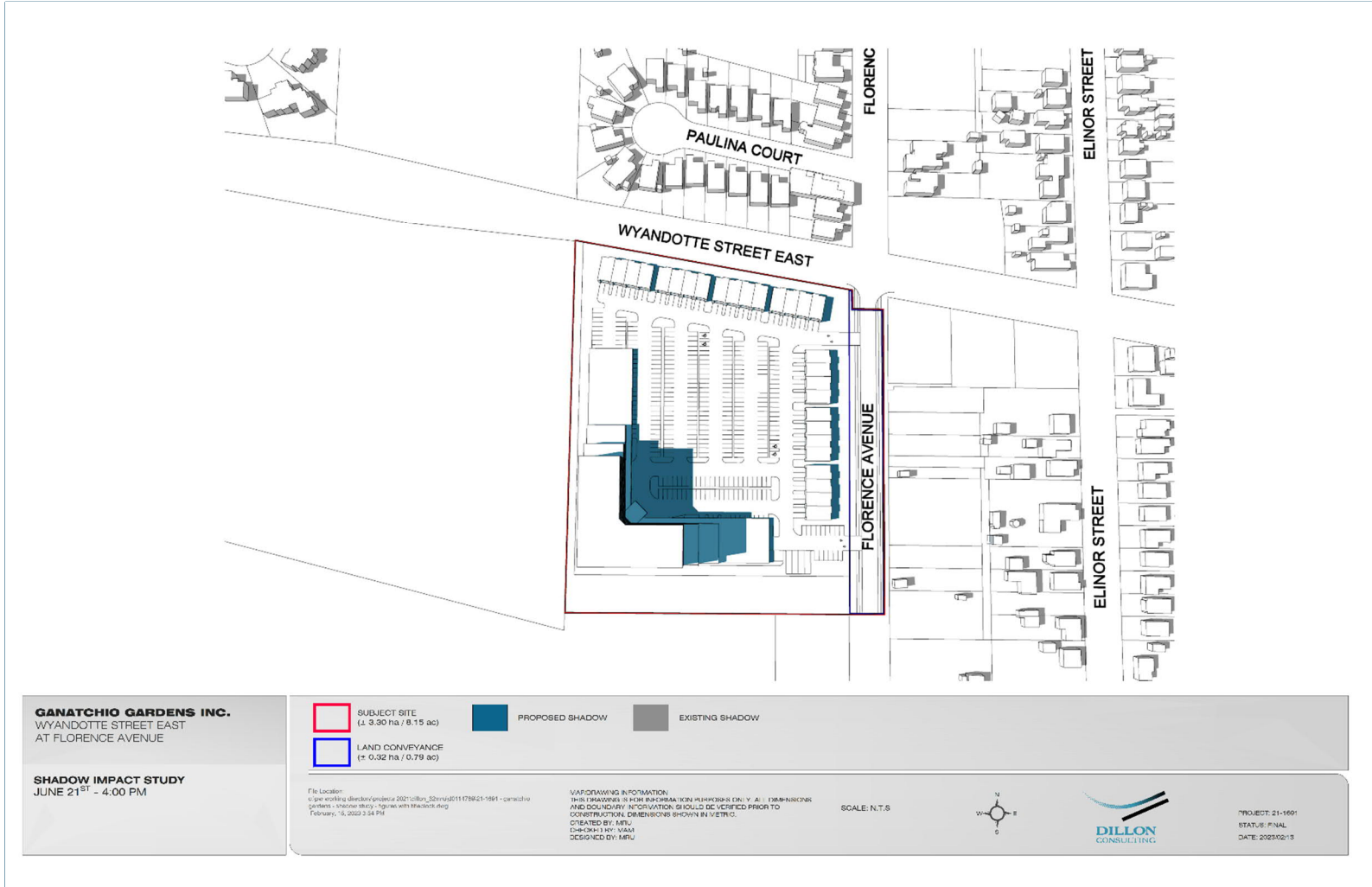
## Appendix C

### *Shadow Diagrams: June 21*

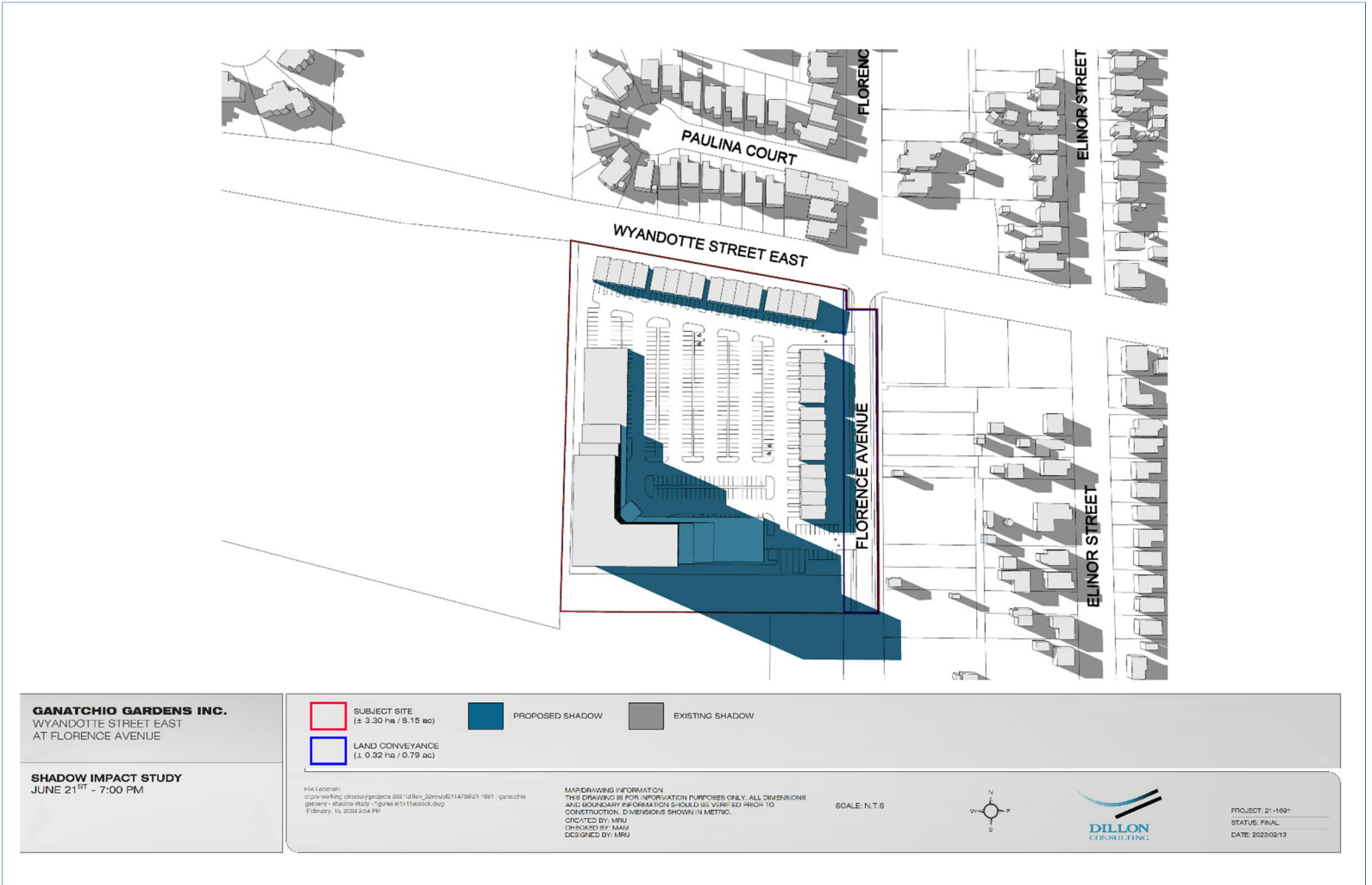
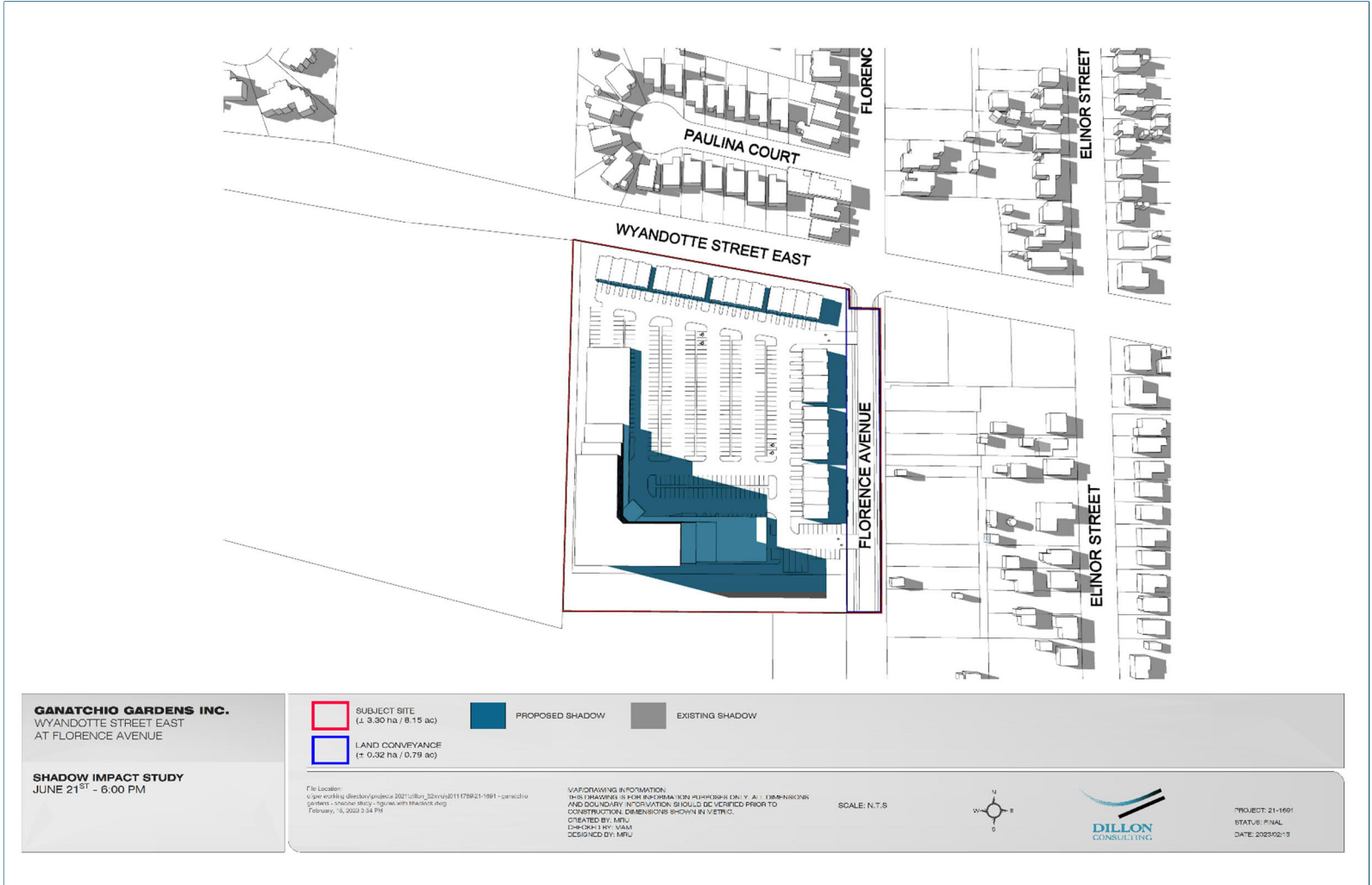






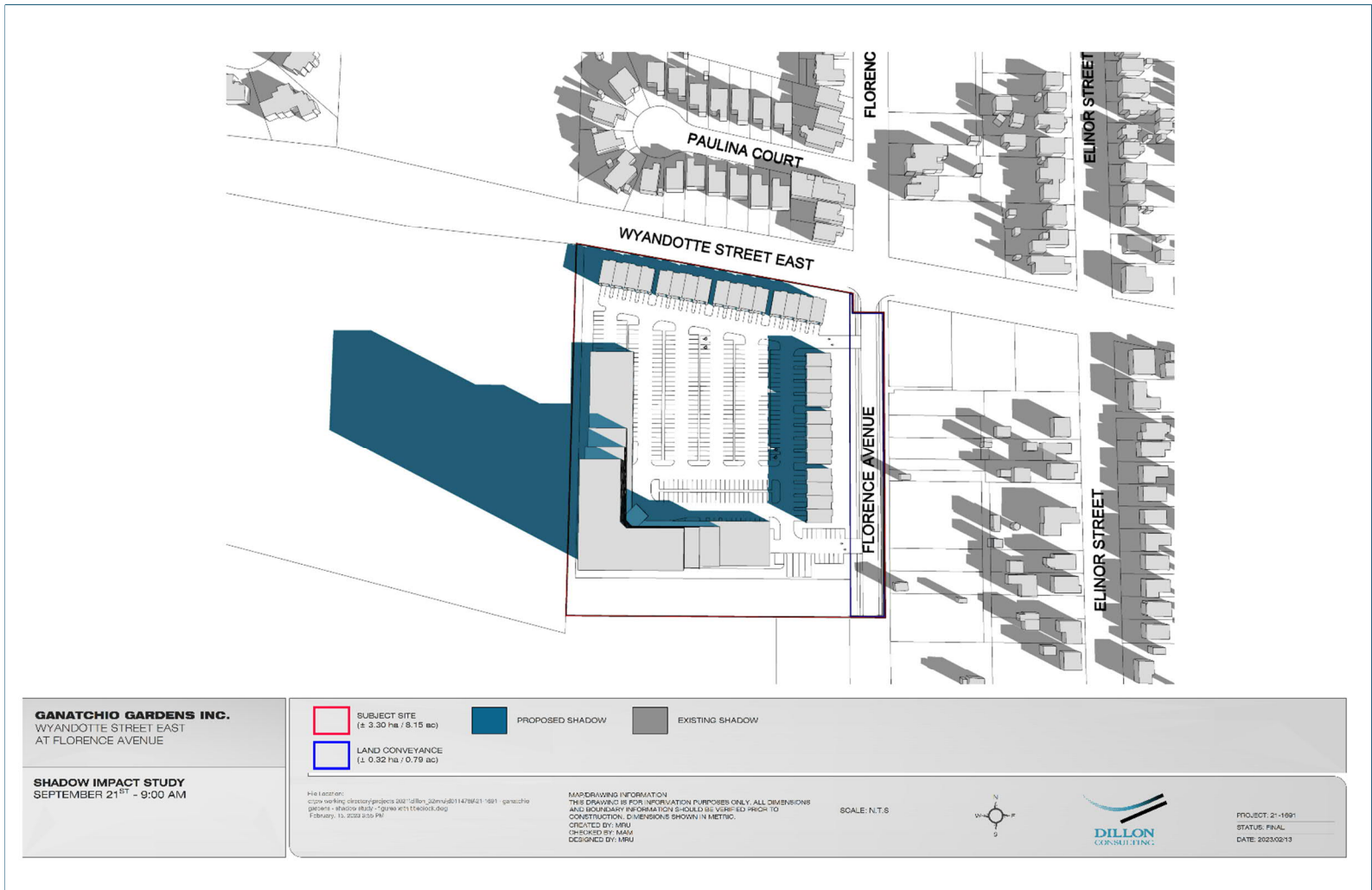
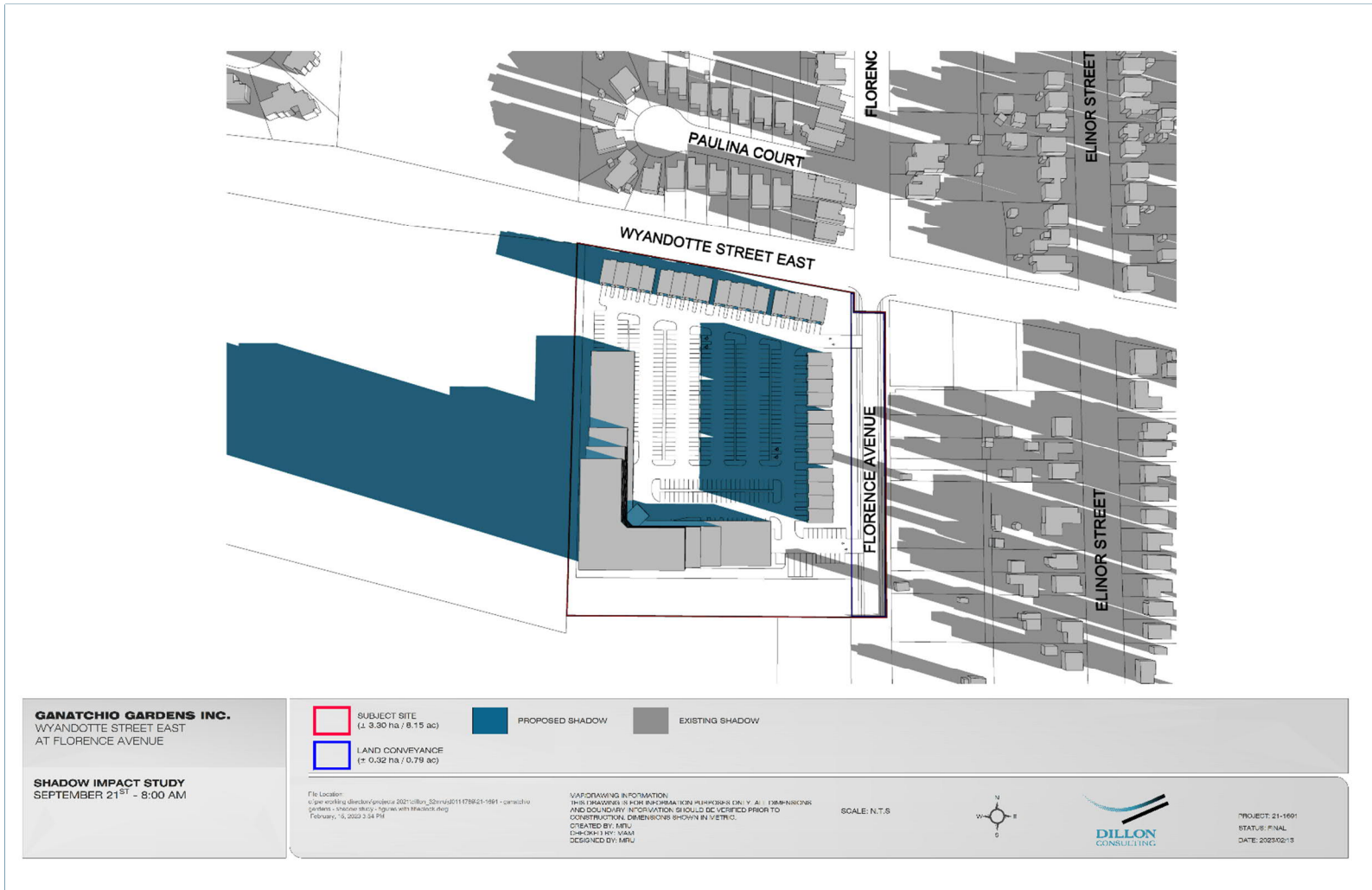


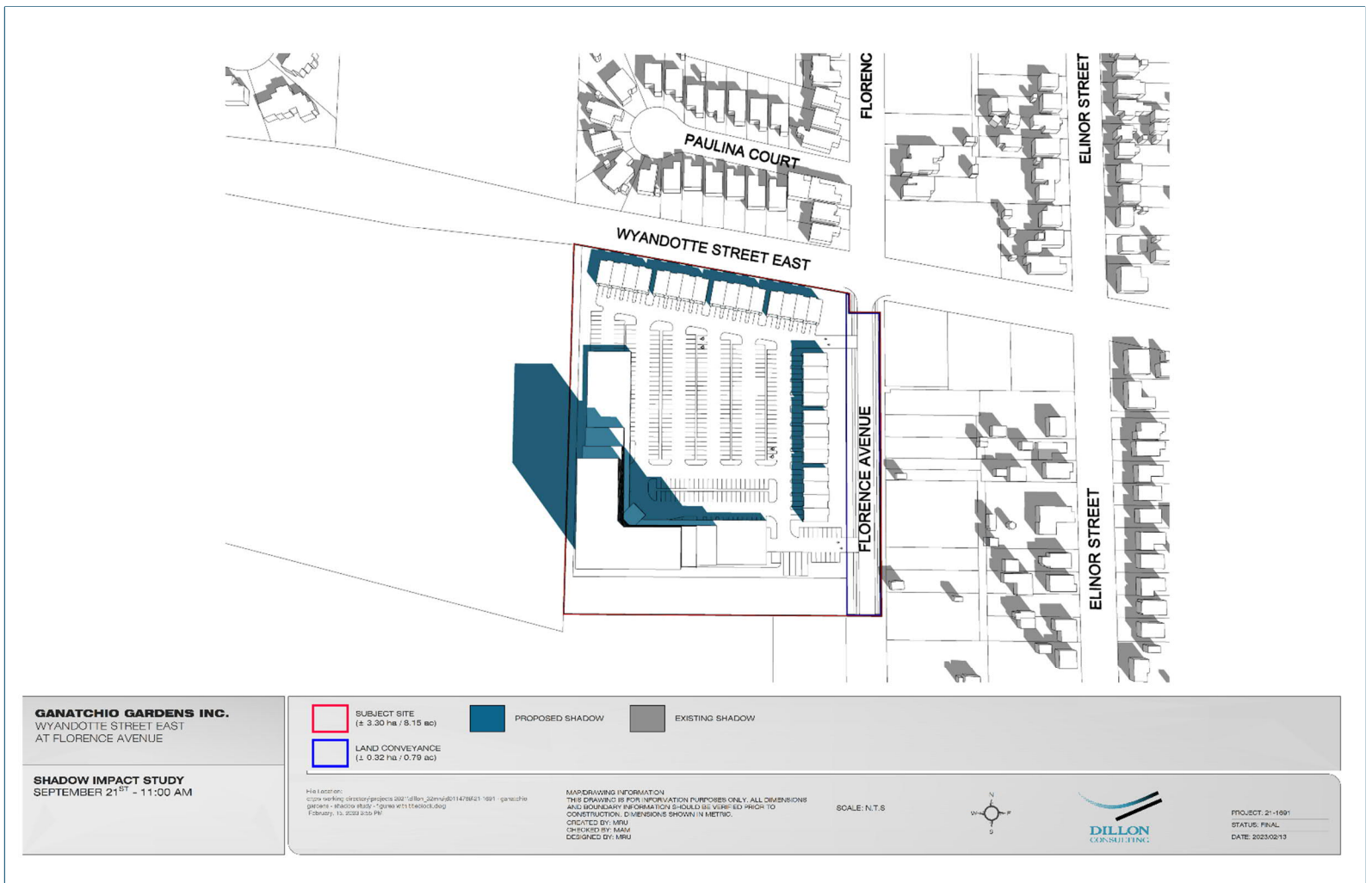
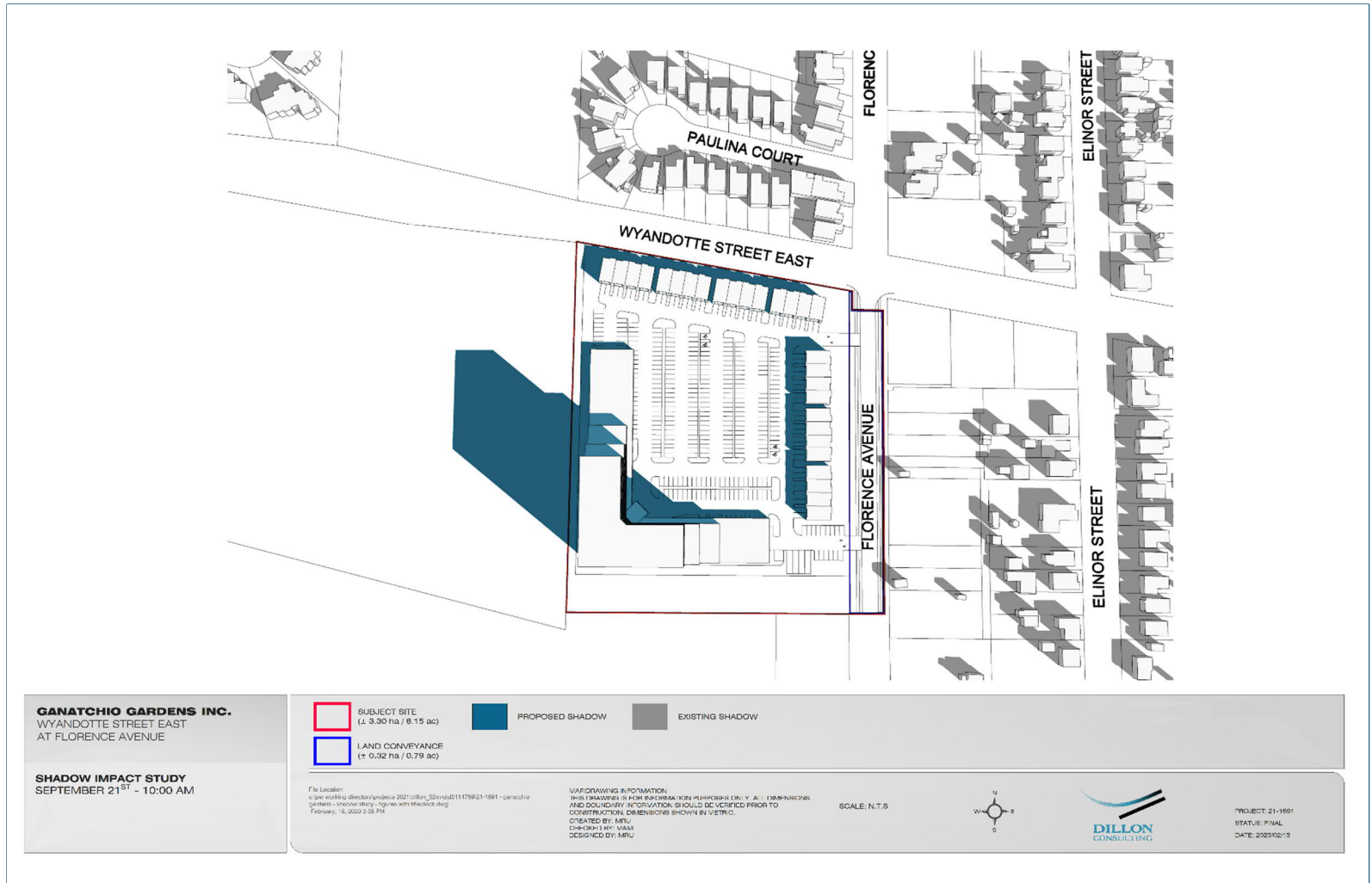




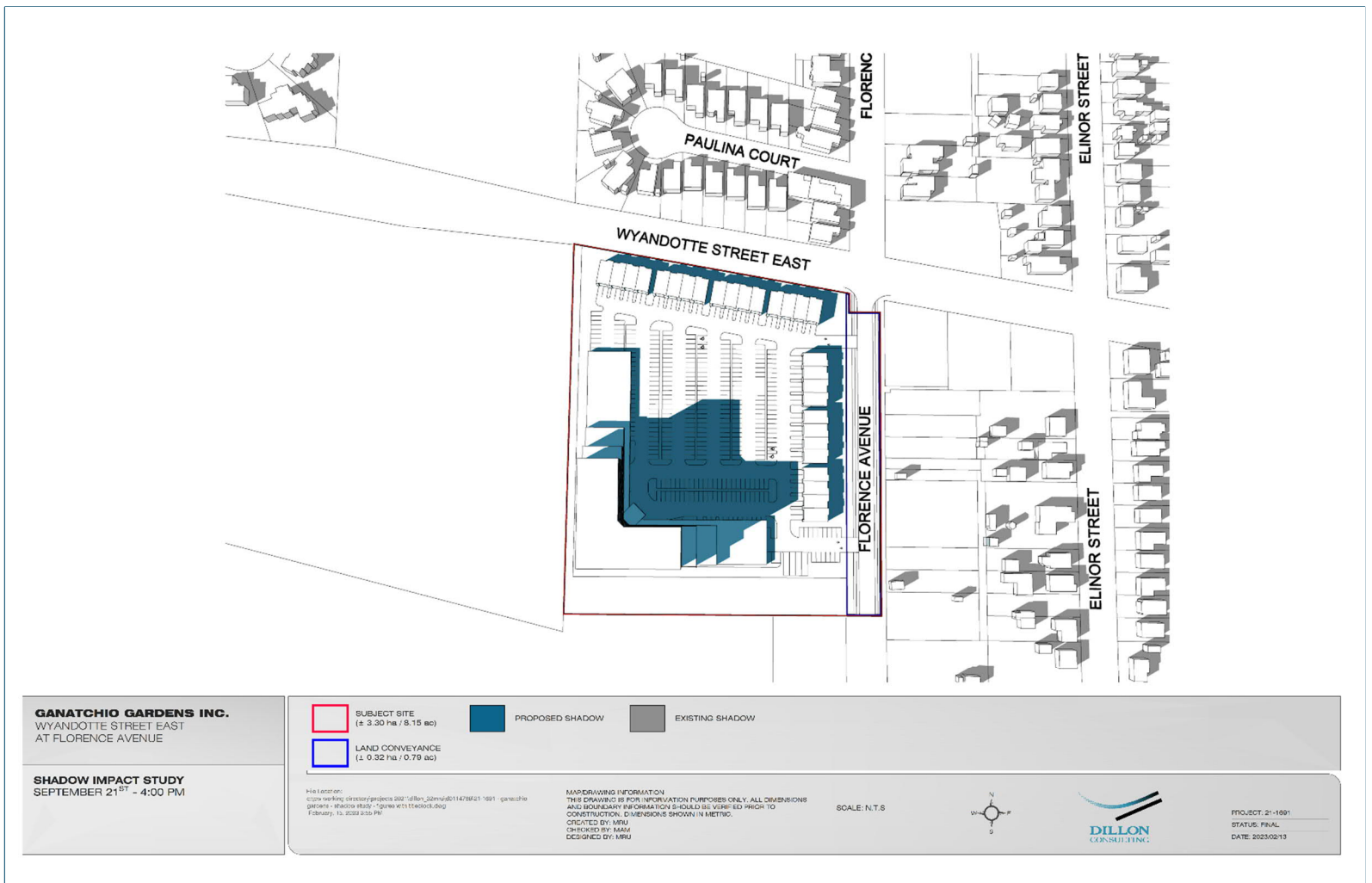
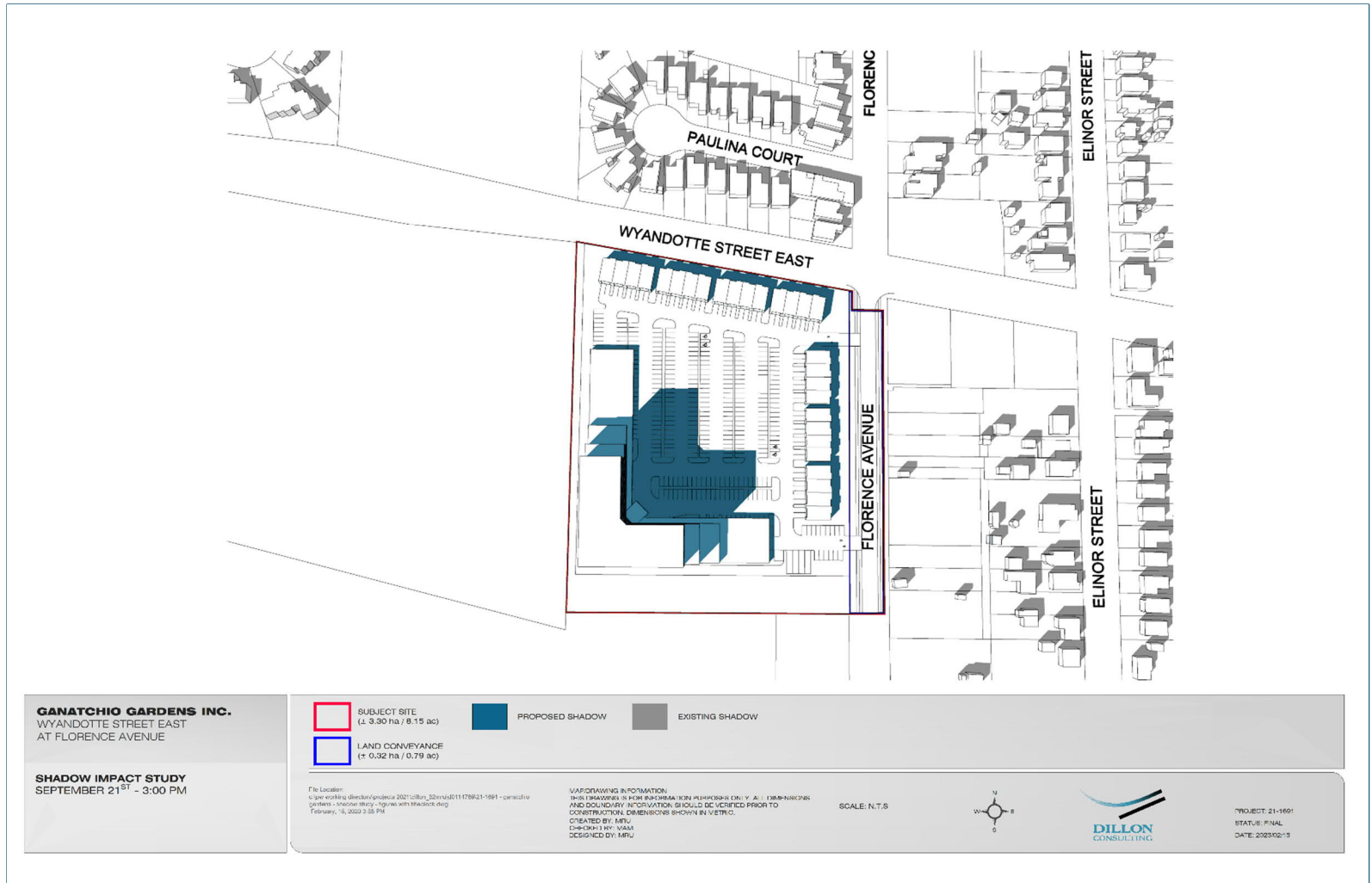
## Appendix D

### *Shadow Diagrams: September*

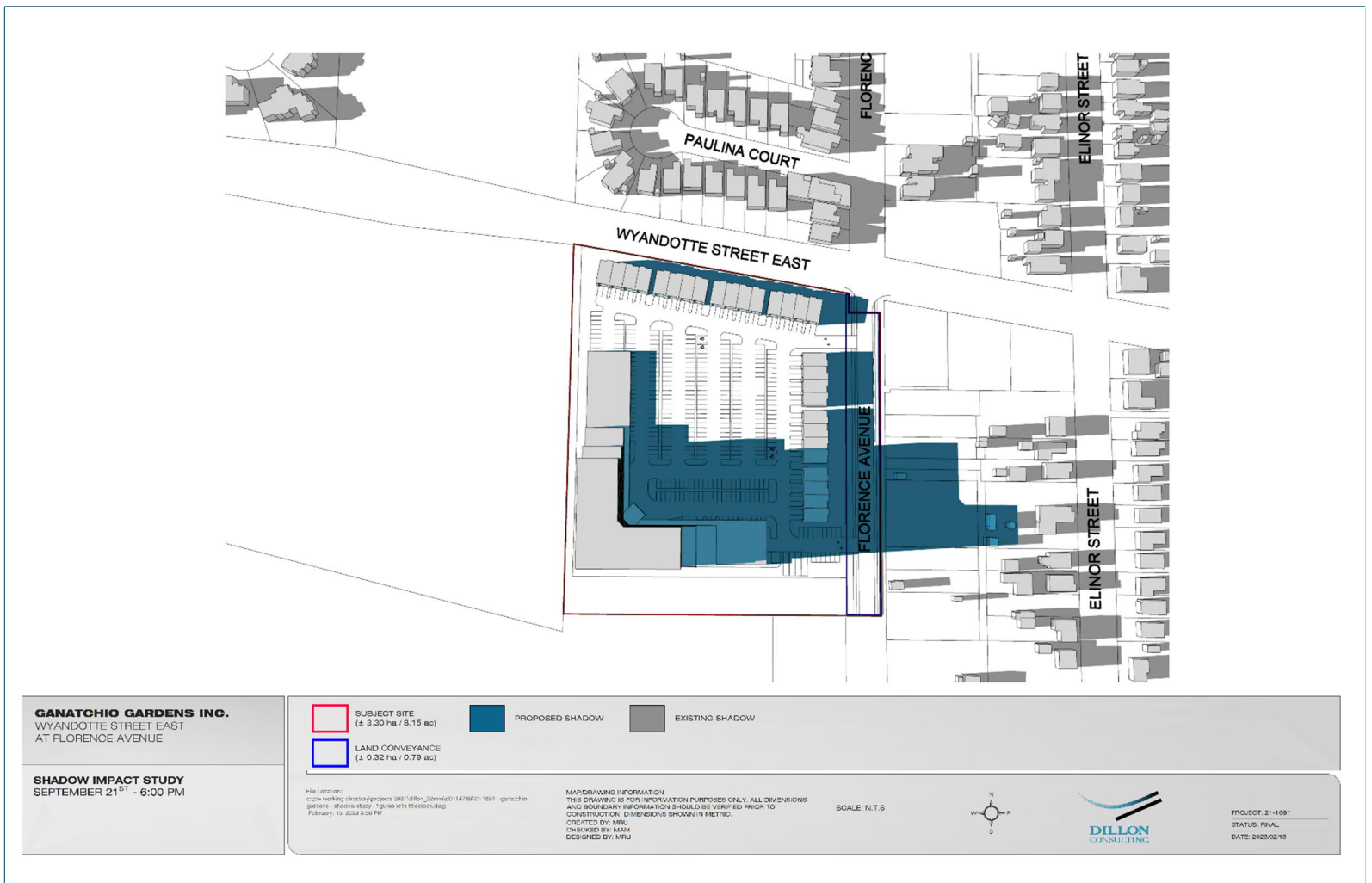
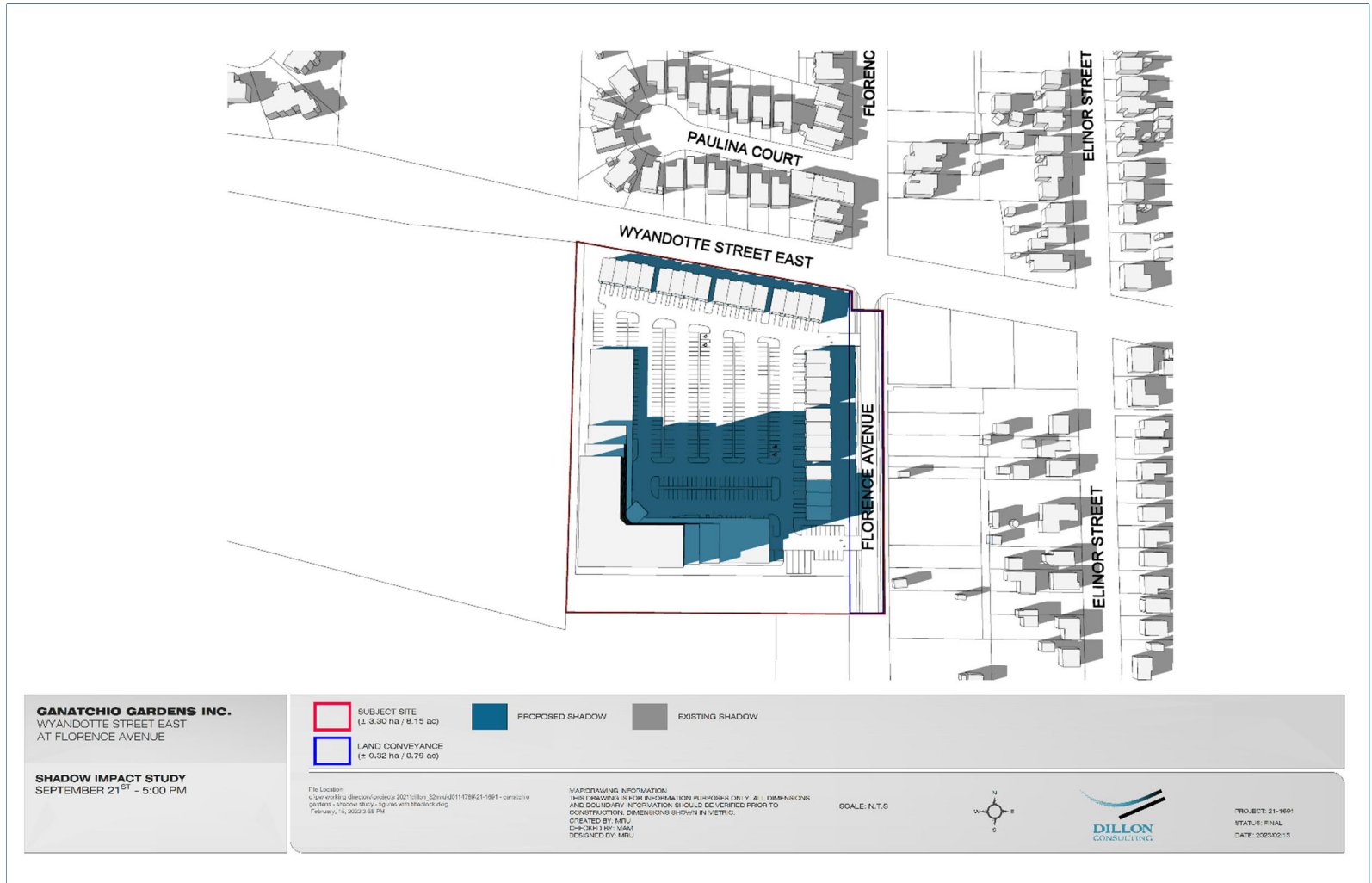












## Appendix E

### *Shadow Diagrams: December 21*

