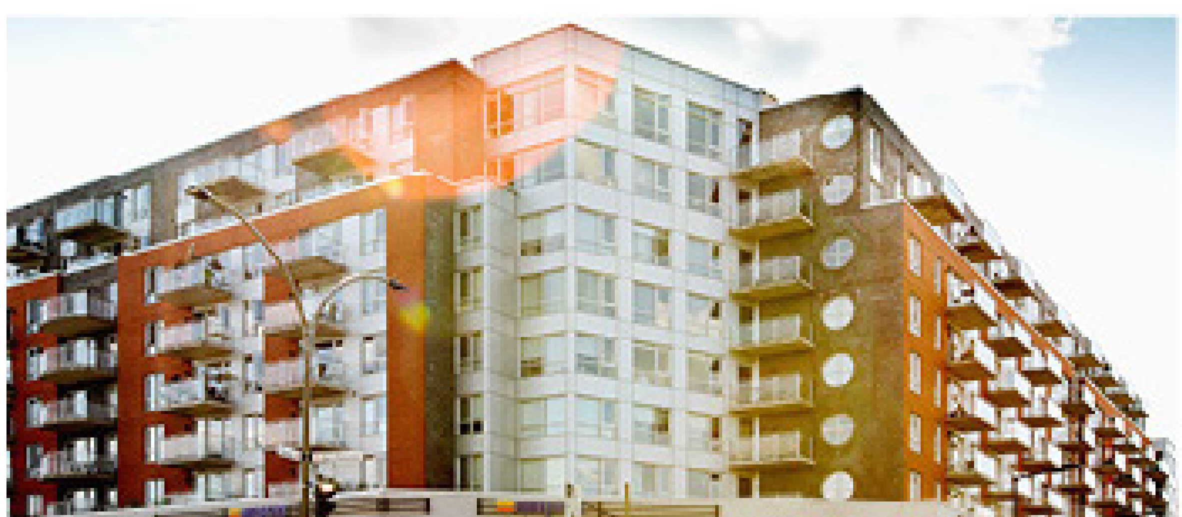
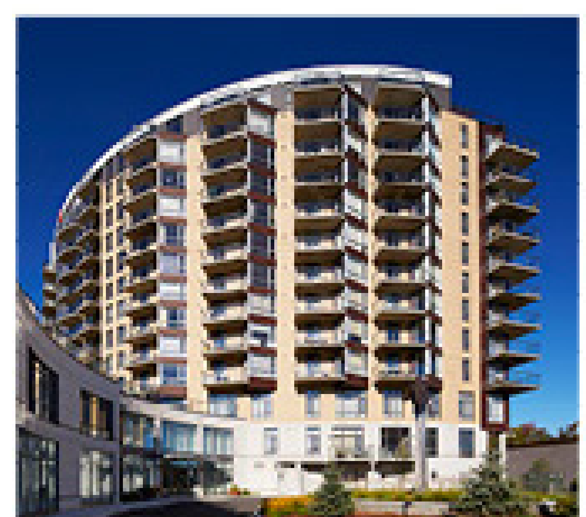
CARP & HAZELDEAN

1174 CARP ROAD, OTTAWA, ON | **URBAN DESIGN BRIEF** | MARCH 28, 2025

Portfolio of Projects

LE **GROUPE MAURICE**





211 Centrum Blvd.

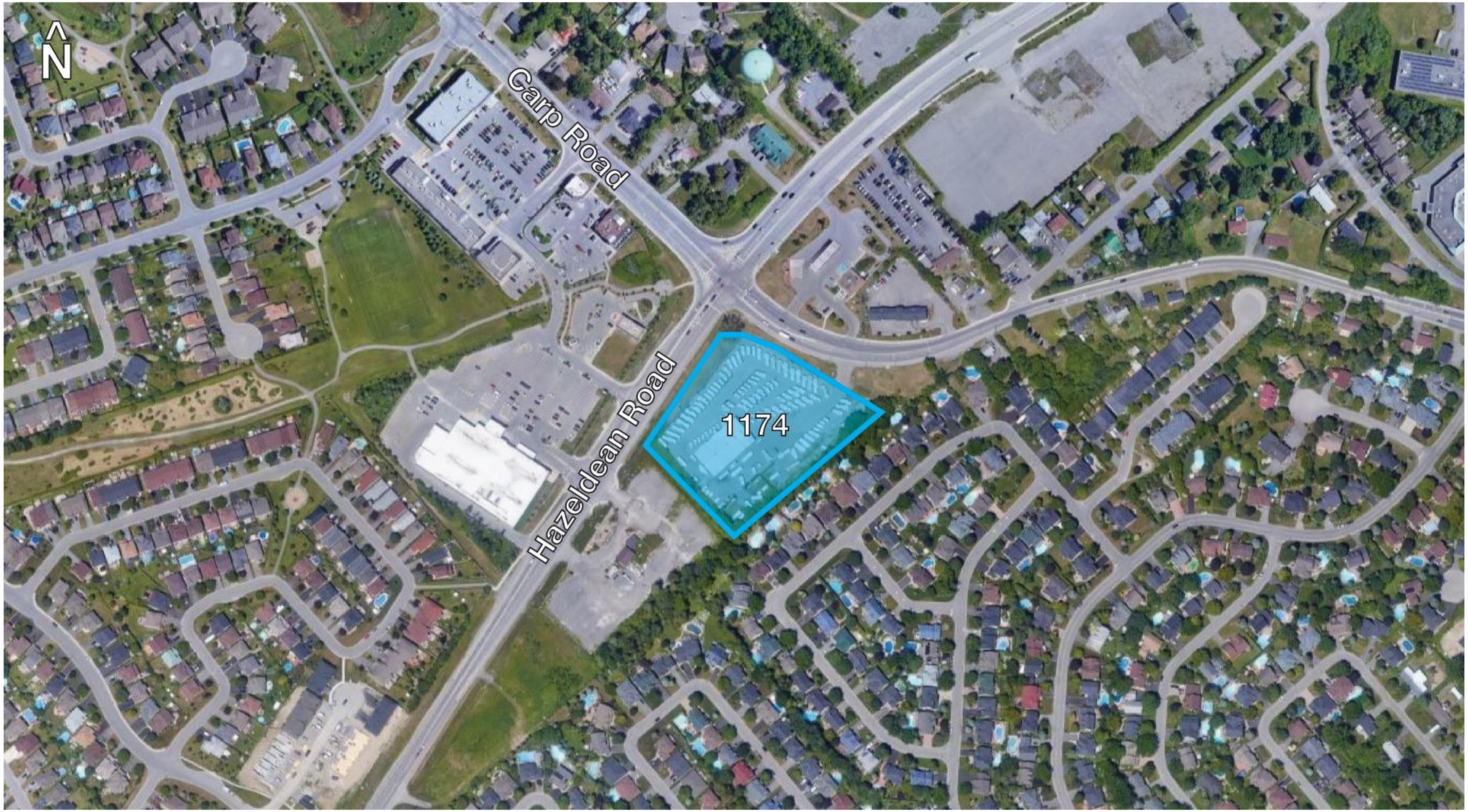
LE GROUPE MAURICE

LE GROUPE MAURICE
LES RETRAITÉS NOUS HABITENT

FOTENN
Planning + Design

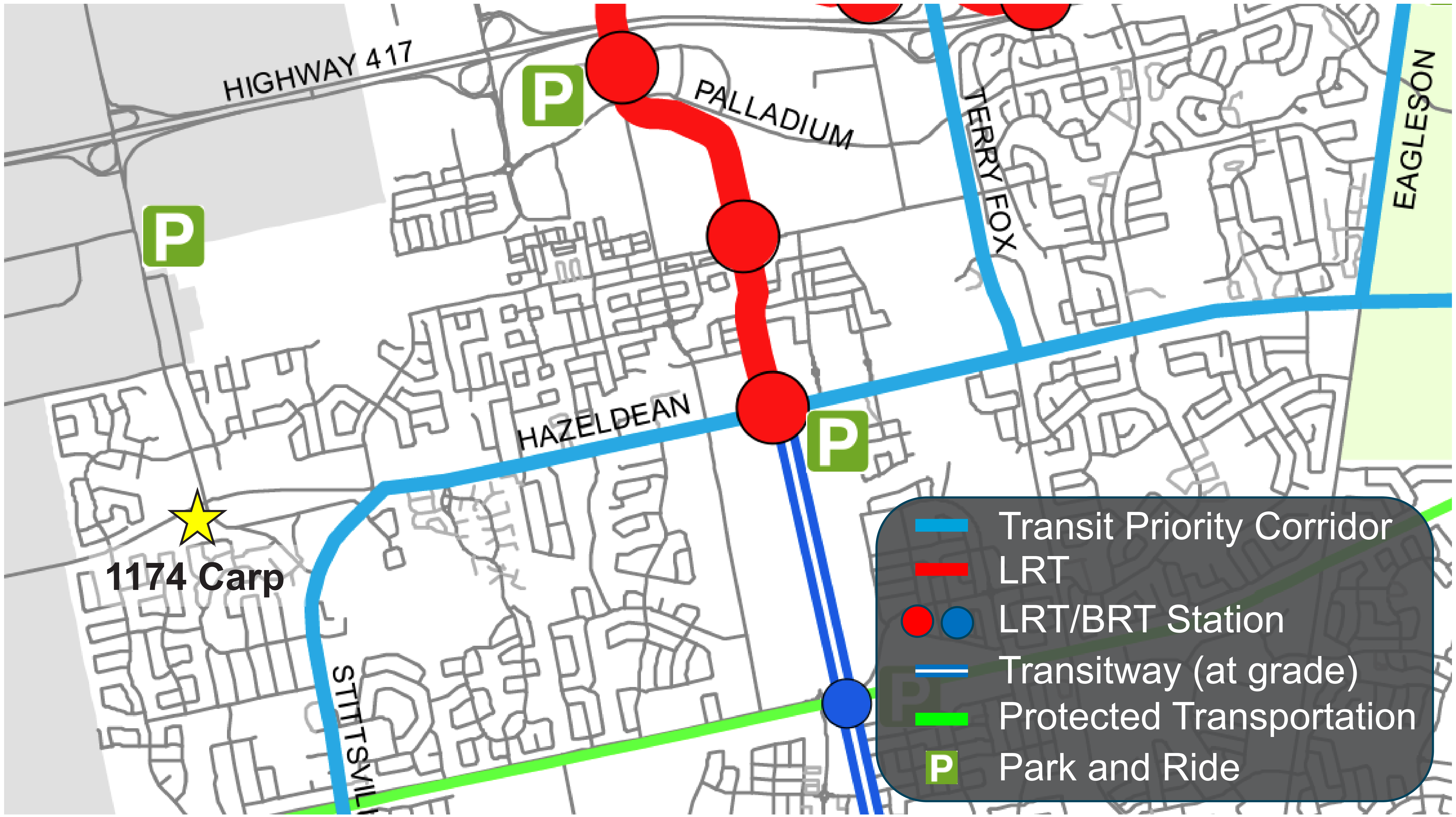
HOBIN
ARCHITECTURE

Subject Property



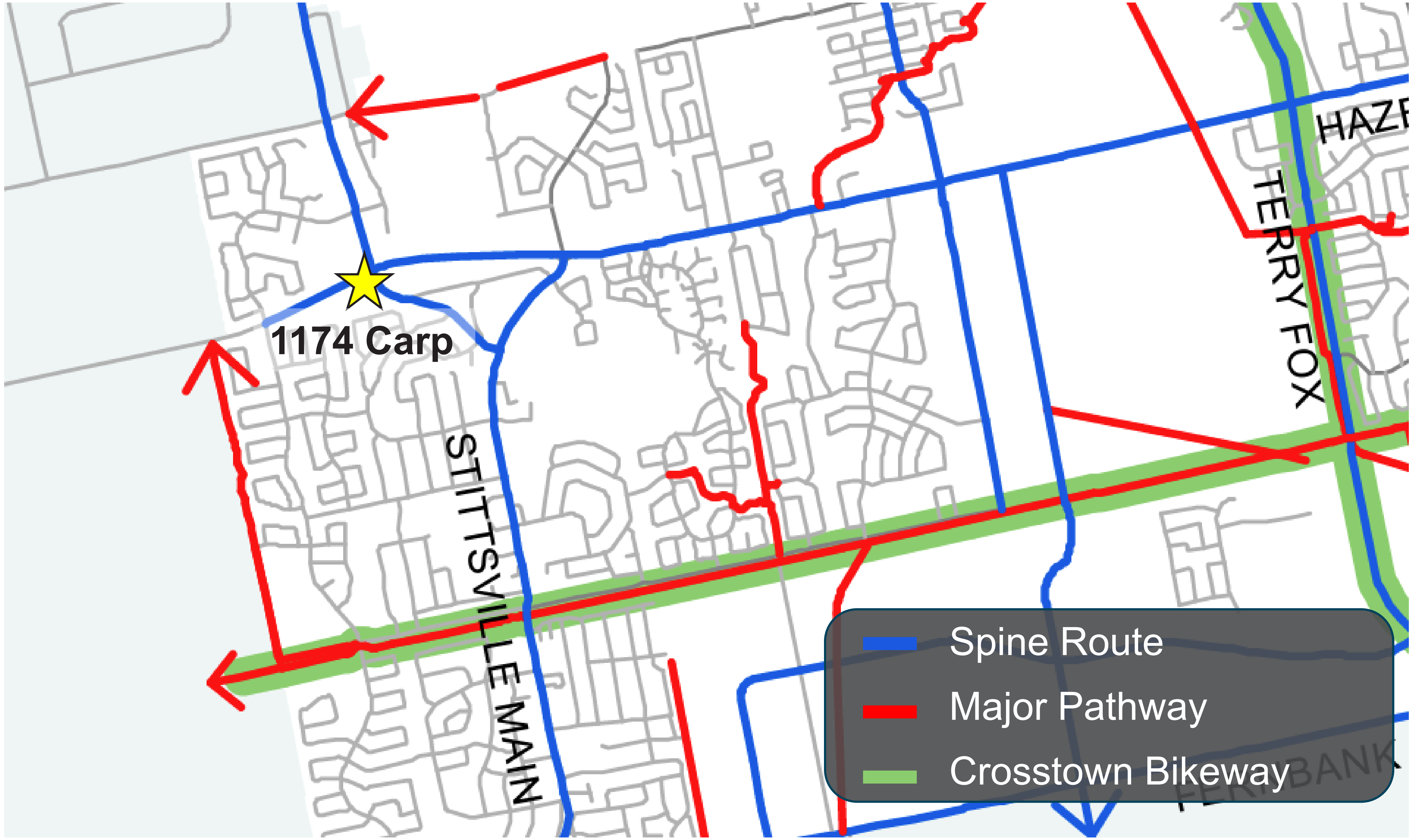
Site Photos

Site Analysis: Transit Network



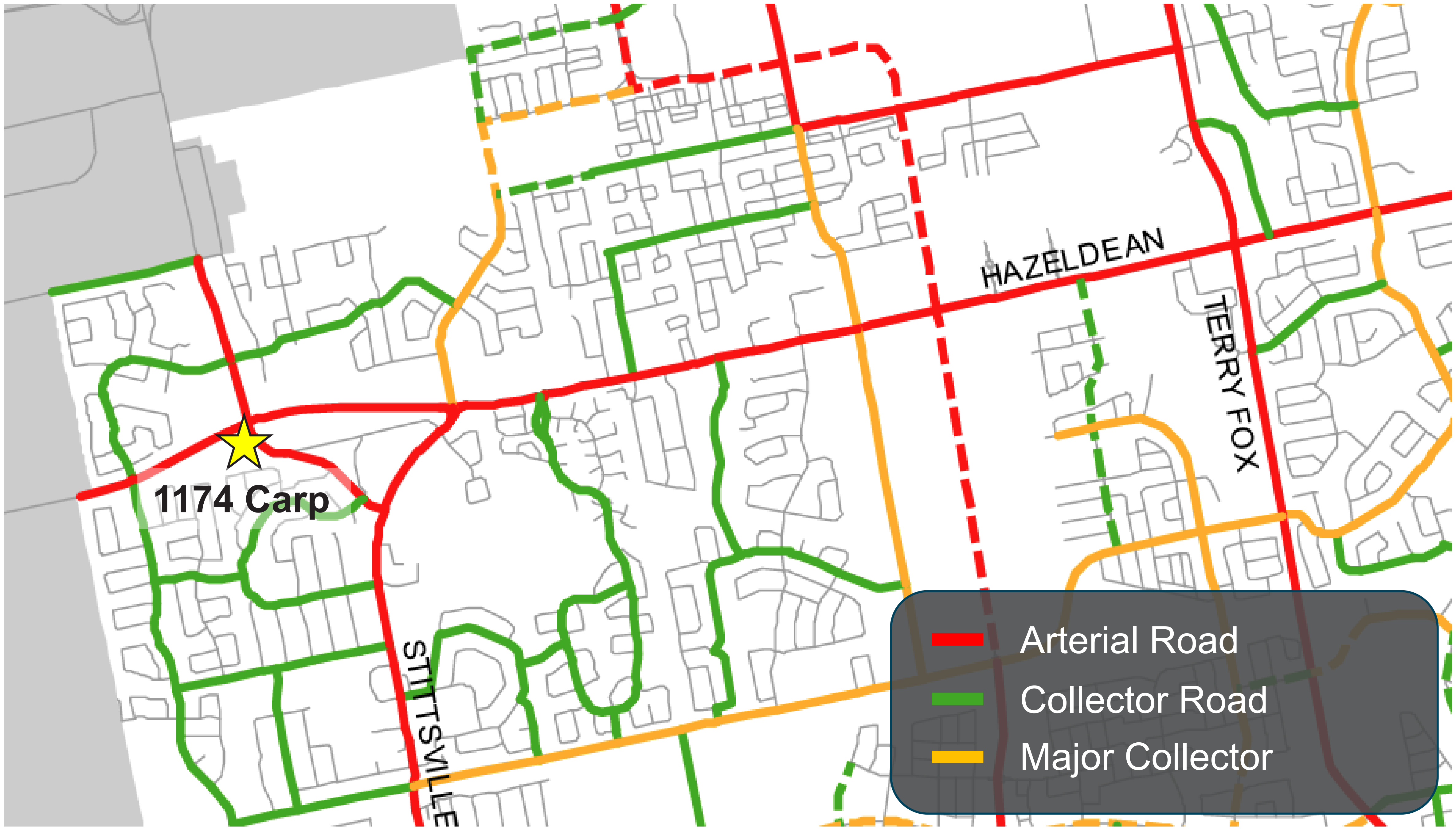
Official Plan
Schedule C2
Transit Network (Ultimate)

Site Analysis: Active Transportation



Transportation Master Plan Map 1
Cycling Network
(Primary Urban)

Site Analysis: Road Network



Official Plan
Schedule C5
Urban Road Network

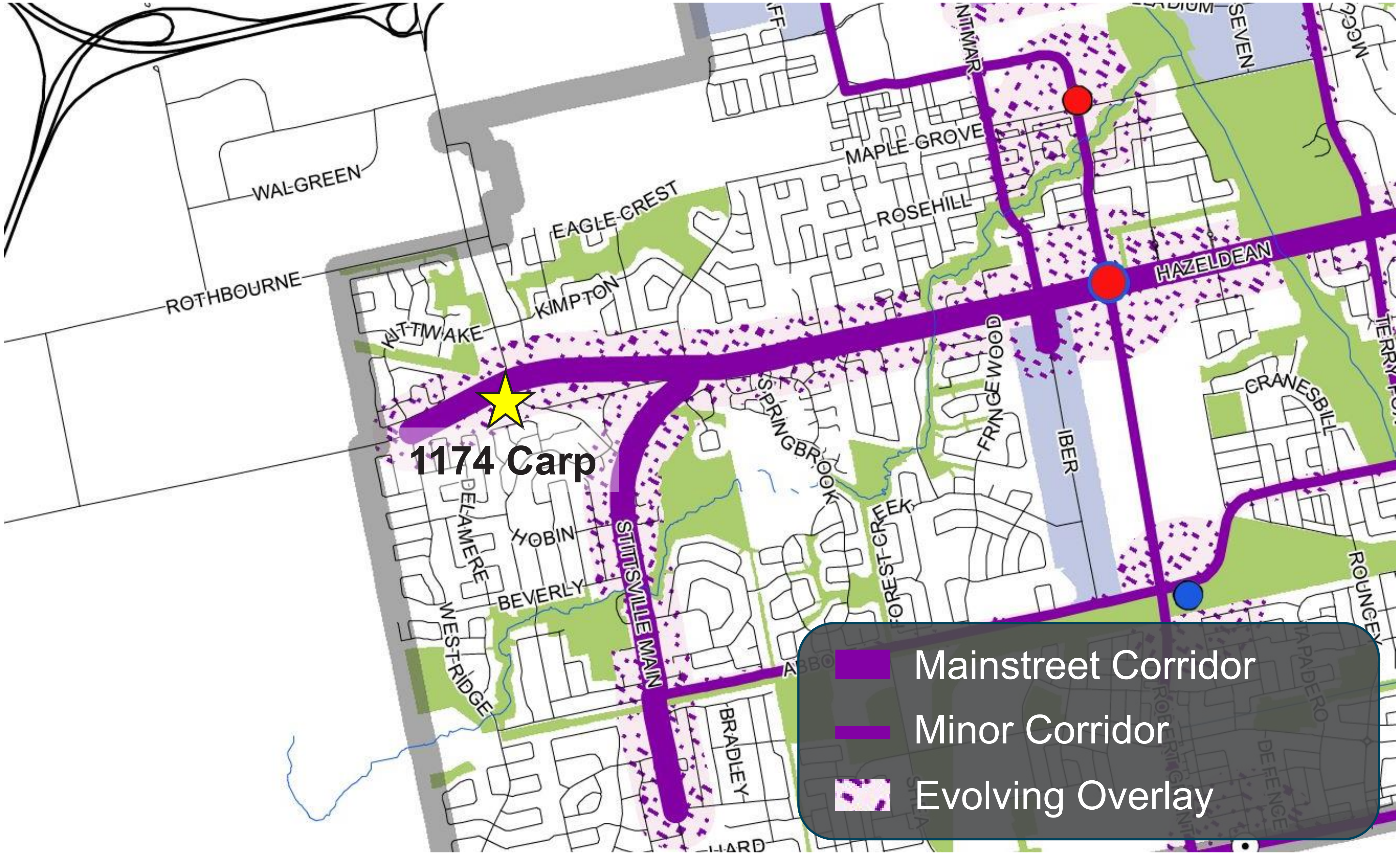
Development Applications: ZBLA & SPC

Zoning By-law Amendment
To permit a maximum building height of 45.1 m, whereas a maximum building height of 15 metres is permitted in the Arterial Mainstreet, Subzone 9 Zone (AM9).

A new site-specific exception [xxxx] is proposed, and may include other amendments following review

Site Plan Control
The development proposal is subject to Site Plan Control.

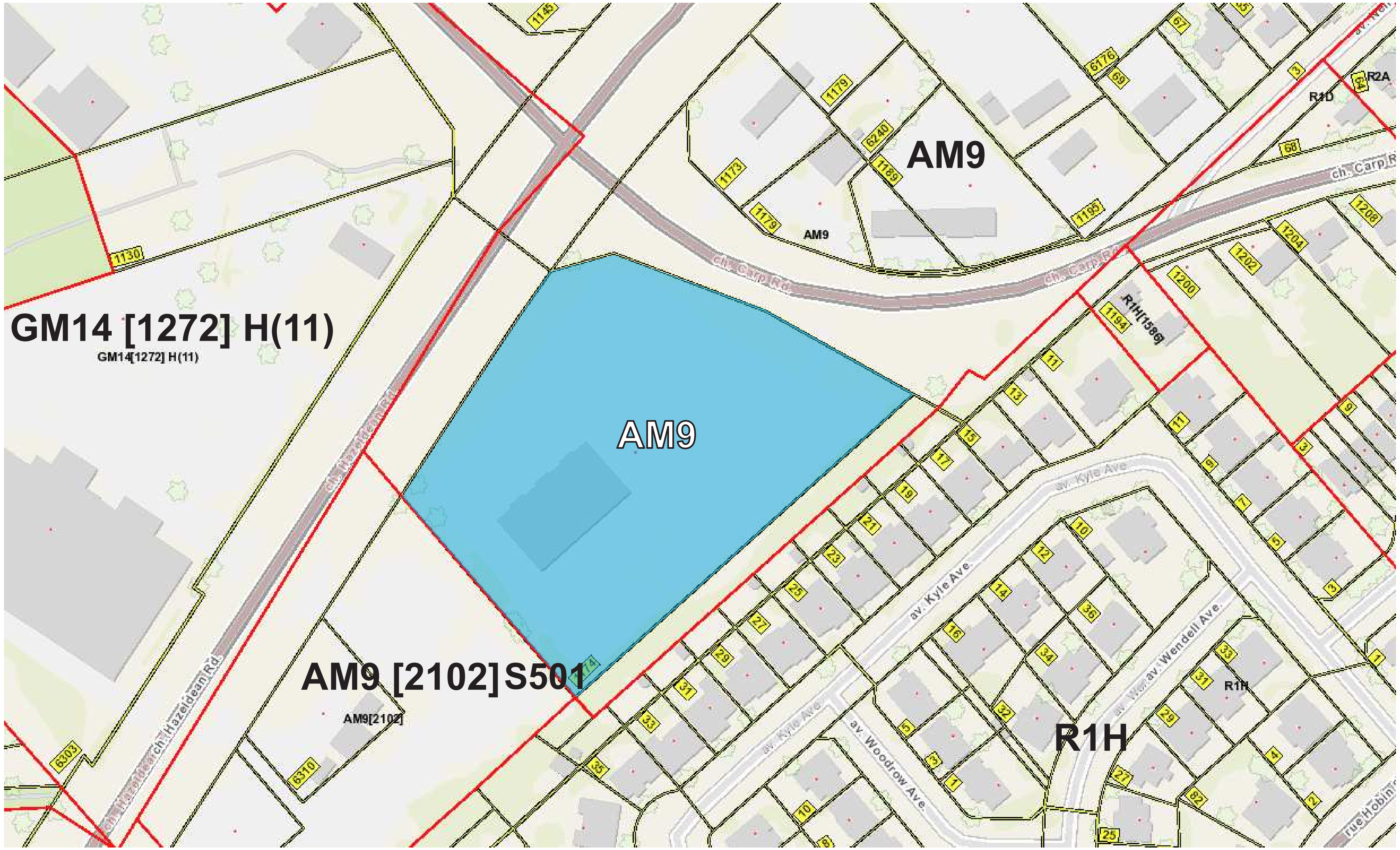
Policy Context: Official Plan Designation



Official Plan Schedule B5
West Suburban Transect

The subject site is located in the Suburban Transect and is designated Mainstreet Corridor. Corridors apply to bands of land along specified streets whose planned function combines a higher density of development, a greater degree of mixed uses, and a higher level of transit service than abutting Neighbourhoods.

Regulatory Context: Existing Zoning

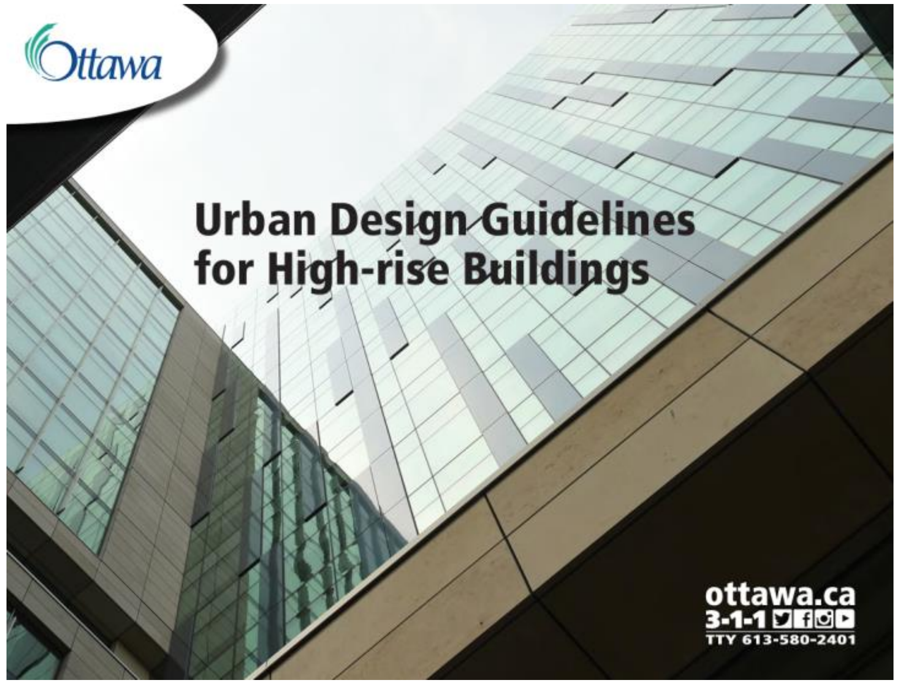


Zoning
AM9
Arterial Mainstreet, Subzone 9

Permitted uses include the proposed use of **retirement home**.

Maximum **building height** is **15 metres**, and 11 metres within 20 metres of a residential zone.

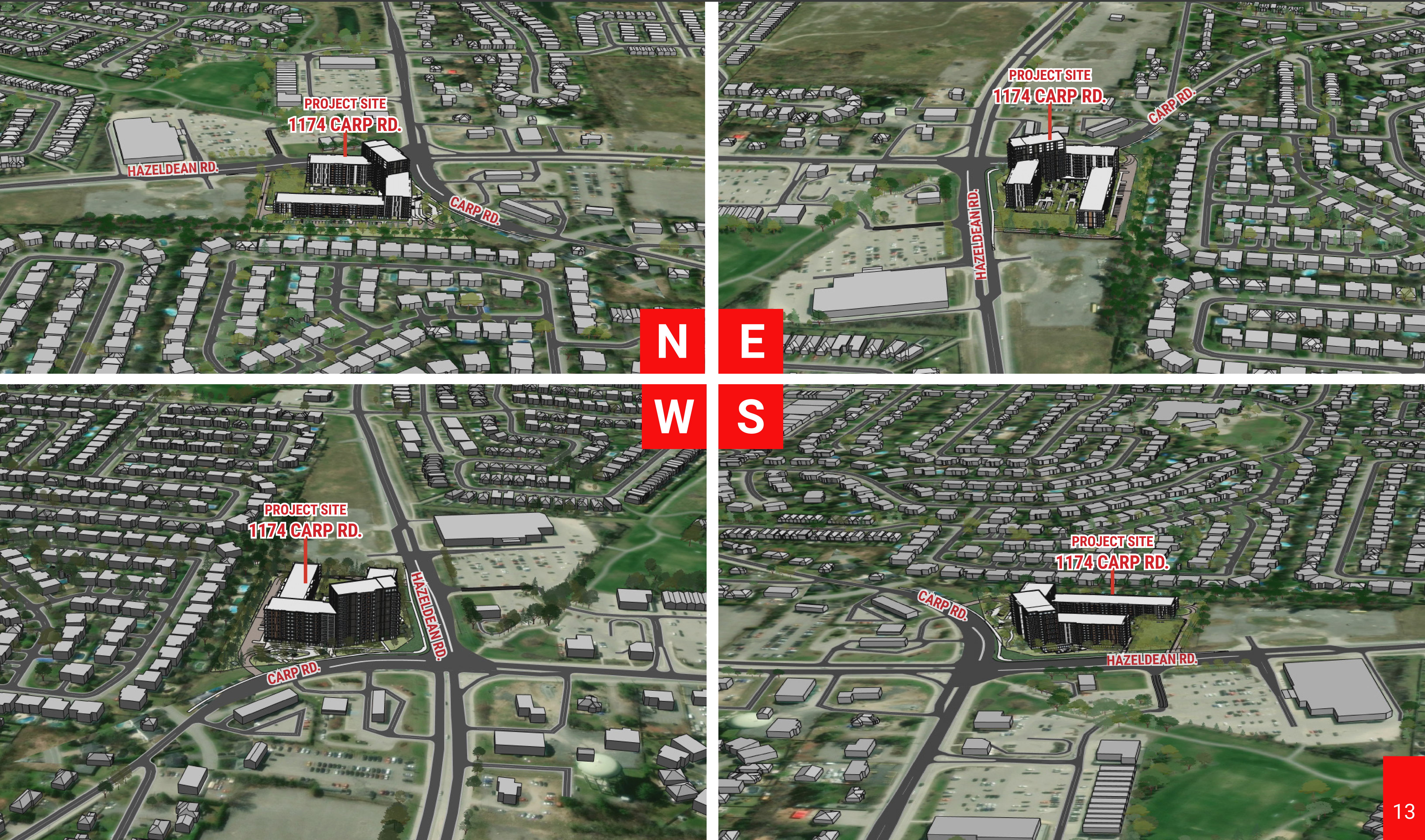
Urban Design Guidelines



- / Building is located to provide a continuous street edge, while also allowing for pedestrian movement and landscaping opportunities (1-5)
- / Building height is proportionate to the right-of-way and emphasizes the corner and public realm (8-9, 13)
- / Transition to lower density neighborhood (14)
- / Accesses oriented to minimize vehicular/pedestrian interference, and surface parking at side/rear of building (20, 27, 28)

- / 45º angular plane and 30m setback provides built form transition and separation to residential subdivision (1.10,1.13,1.17b, 2.8)
- / Bar building (12/9/5) follows a base/middle/top approach where the middle is proportionate to the right-of-way, and the building is placed to frame the street and public open spaces (2.4, 2.6, 2.7, 2.8, 2.9)
- / Top steps back from middle to break up massing (2.11, 2.12)

CONTEXT MAP


PROJECT SITE
1174 CARP RD.
HAZELDEAN RD.
CARP RD.
N
PROJECT SITE
1174 CARP RD.
CARP RD.
HAZELDEAN RD.
E
W
PROJECT SITE
1174 CARP RD.
HAZELDEAN RD.
CARP RD.
S
PROJECT SITE
1174 CARP RD.
CARP RD.
HAZELDEAN RD.

CONTEXT MAP

Low-rise Residential
Low-rise Residential
HAZELDEAN RD.
Hazeldean Gardens
Grocery
Goodlife Fitness
Retail
Retail
Retail
CARP RD.
Farmboy
PROJECT SITE
1174 CARP RD.
6310 Hazeldean Rd. Future Development
Low-rise Residential
Open Space
Retail

THE PROPOSED DEVELOPMENT aims to provide a economically, socially, and environmentally sustainable place for future residents to live.

In addition to the site's proximity to walkable surrounding local retail amenities and various bus stations encouraging sustainable methods of transit, the project team is exploring design and construction methods to conserve energy, reduce greenhouse gas emissions, and provide an accessible, safe and inviting environment for residents and surrounding community.

SITE NARRATIVES

1 BUILDING FORM

2 BUILDING SETBACKS & SEPARATION

3 10% PARKLAND DEDICATION

4 LANDSCAPE INTERFACES

5 SITE ACCESS & LOADING

6 ENTRANCE EXPERIENCE

7 HAZELDEAN RD ANIMATION

8 PRIVATE COURTYARD

9 PUBLIC PARKLAND

10 EXTERIOR MATERIALS

MASSING STUDY OPTIONS

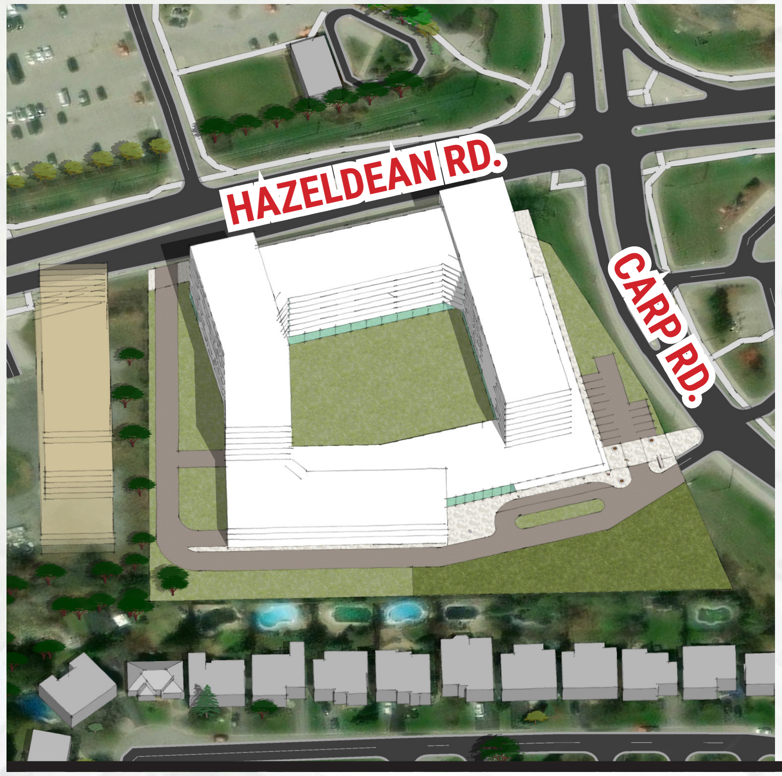
2023 - Past Option 2
Building Heights:
9 floors + 8 floors + 3 floors.

2024 - Past Option 4
Building Heights:
12 floors + 9 floors + 5 floors.

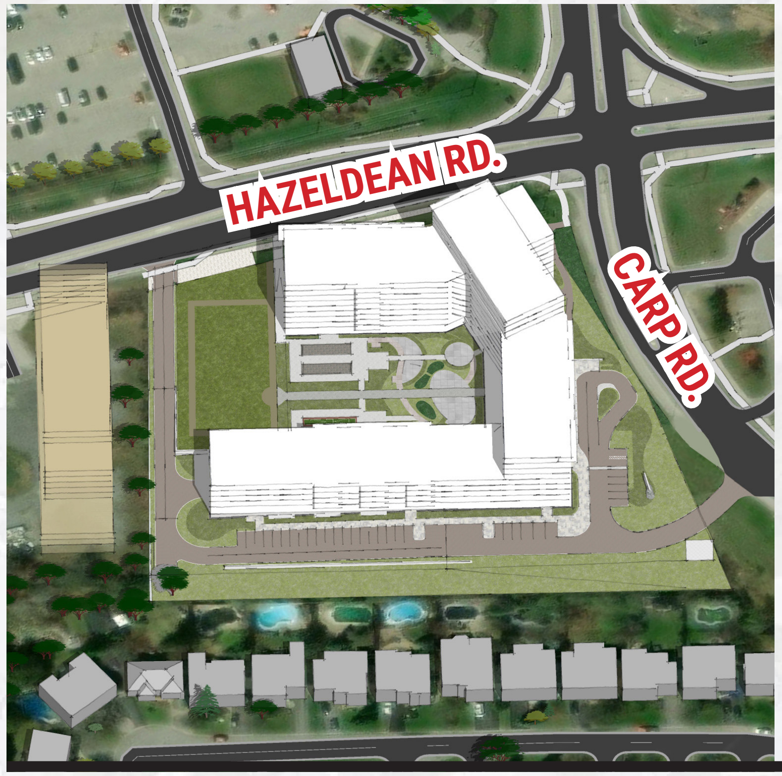
2023 - Past Option 3
Building Heights:
12 floors + 9 floors + 6 floors.

2025 - Current Proposal
Building Heights:
14 floors + 9 floors + 5 floors.

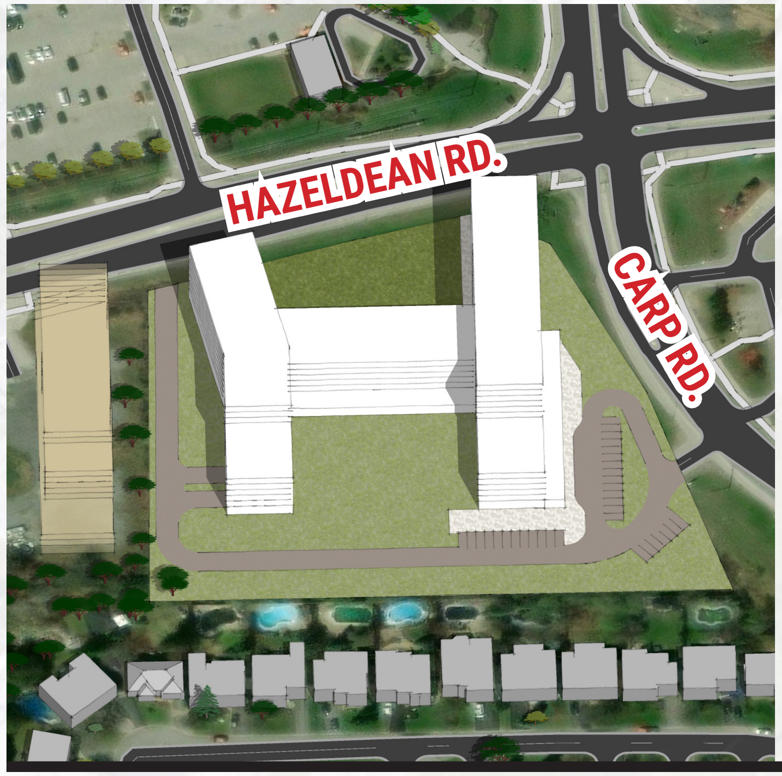
MASSING STUDY OPTIONS



2023 - Past Option 2
Building Heights:
9 floors + 8 floors + 3 floors.



2024 - Past Option 4
Building Heights:
12 floors + 9 floors + 5 floors.



2023 - Past Option 3
Building Heights:
12 floors + 9 floors + 6 floors.

2025 - Current Proposal
Building Heights:
14 floors + 9 floors + 5 floors.

BLDG HEIGHTS - NE AERIAL VIEW

BLDG HEIGHTS - N AERIAL VIEW

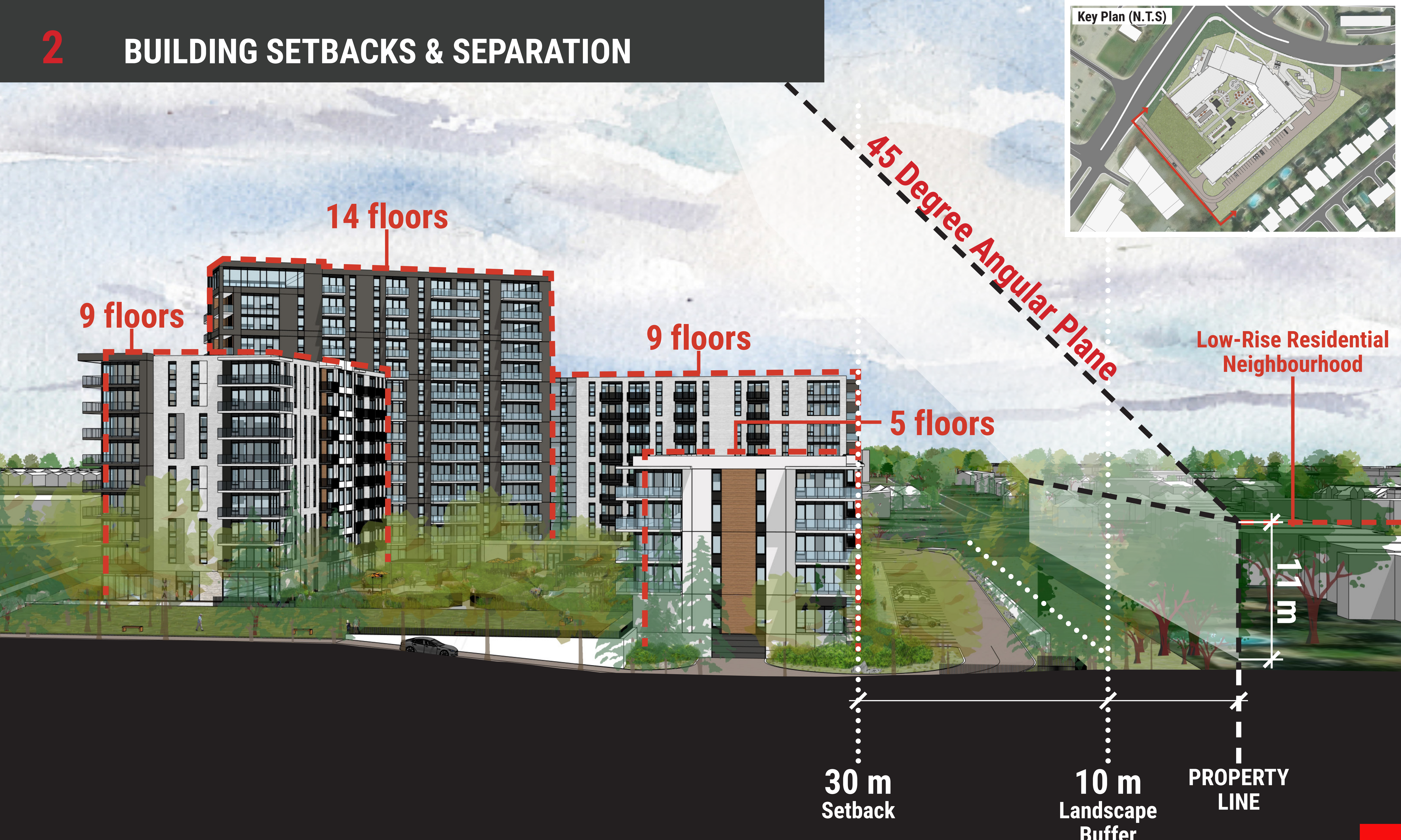
Bldg Heights - Hazeldean & Carp

Bar building designed with heights of 14 floors and 9 floors along Hazeldean and Carp Rd.

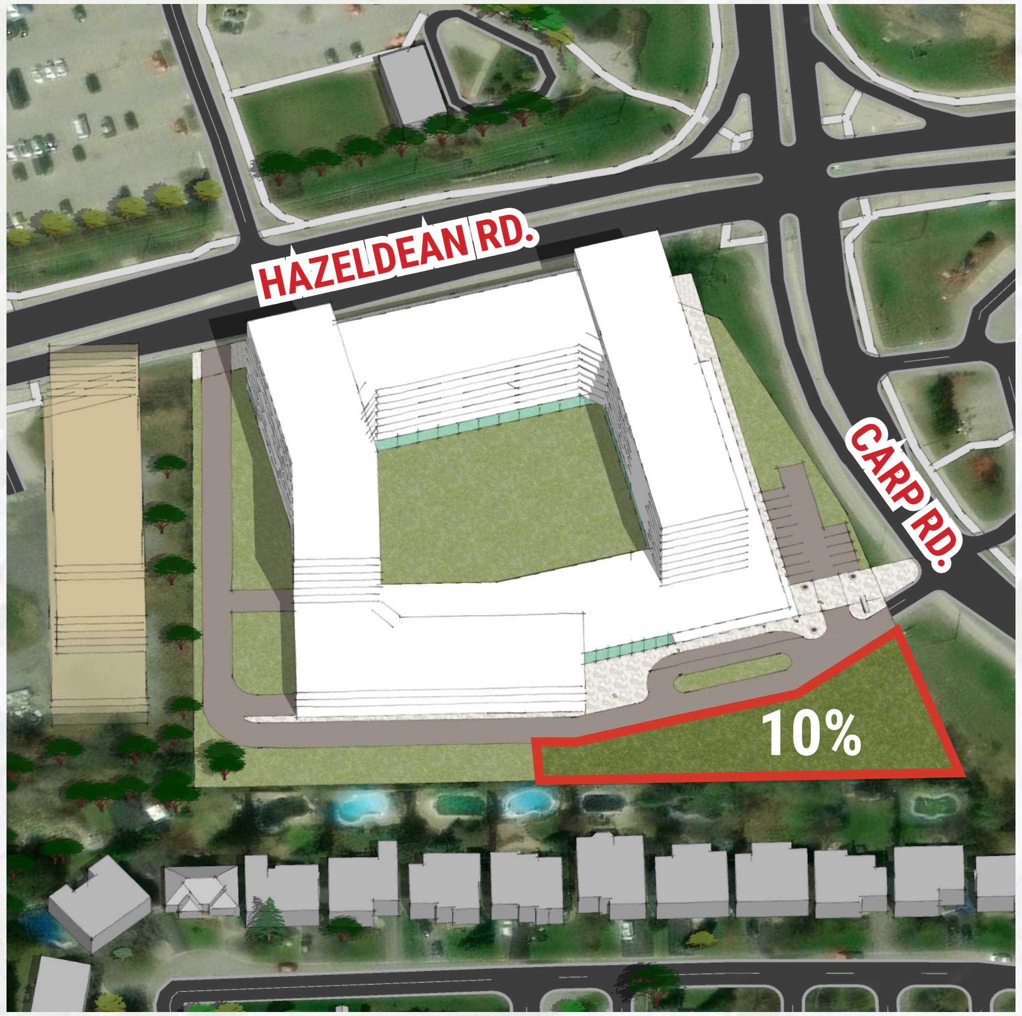
Bldg Heights - South View

Building height transition from 14 floors stepping down to 5 floors towards the South property line next to low-rise residential neighbourhood.

2 BUILDING SETBACKS & SEPARATION

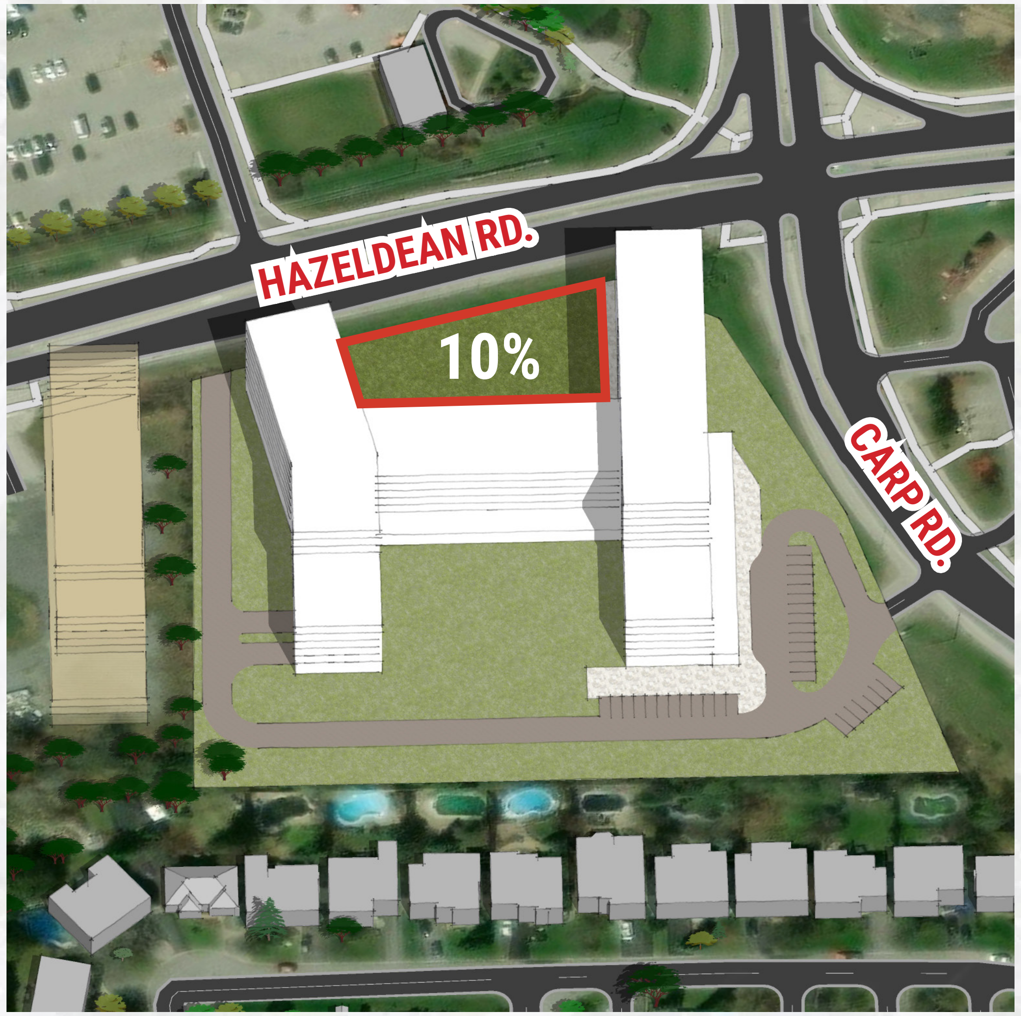


2 BUILDING SETBACKS & SEPARATION



2023 - Past Option 2

10% Parkland located at the South-East corner of the property, fronting on to Carp Rd.



2023 - Past Option 3

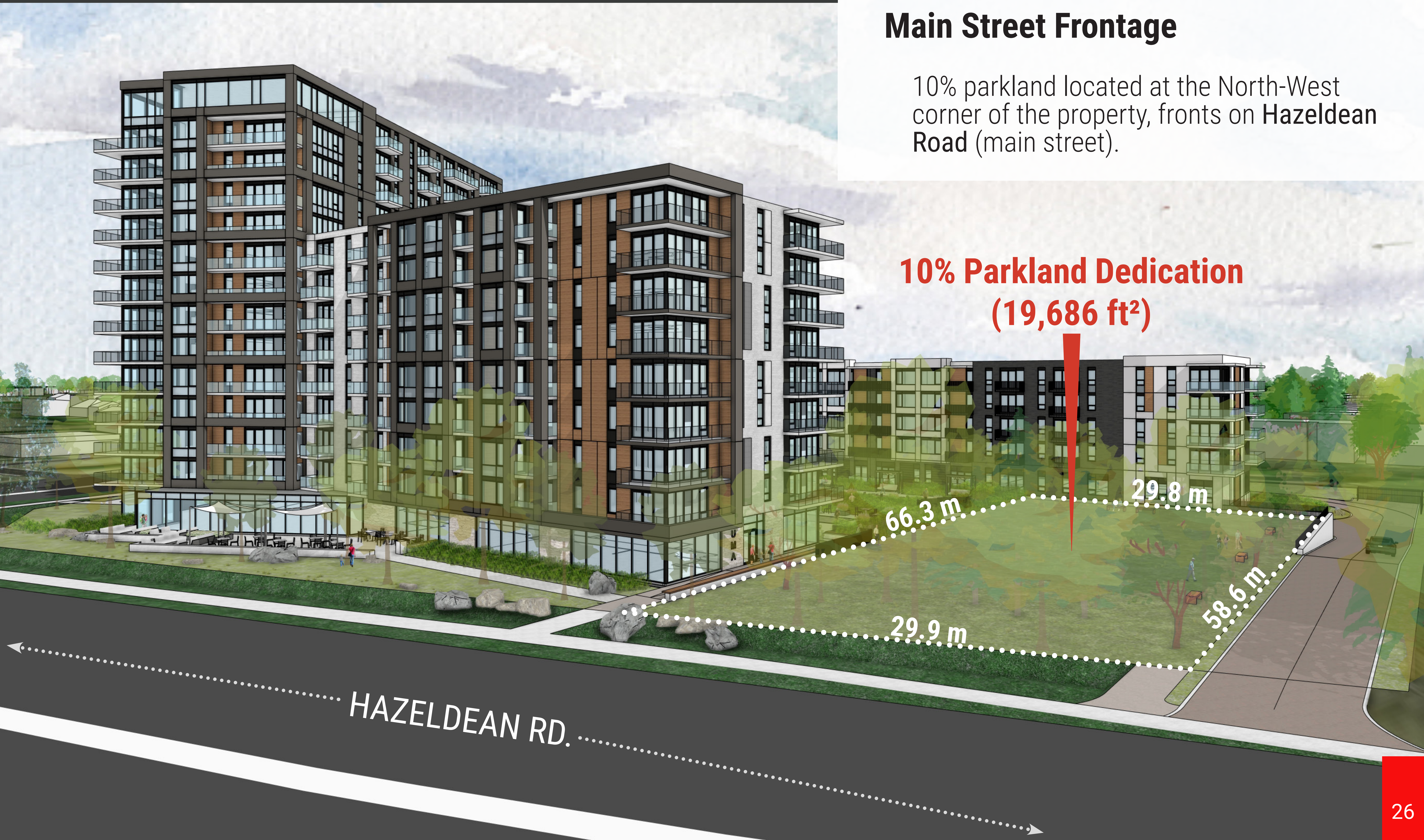
10% Parkland located North of the property, fronting onto Hazeldean Rd.

2025 - Current Proposal

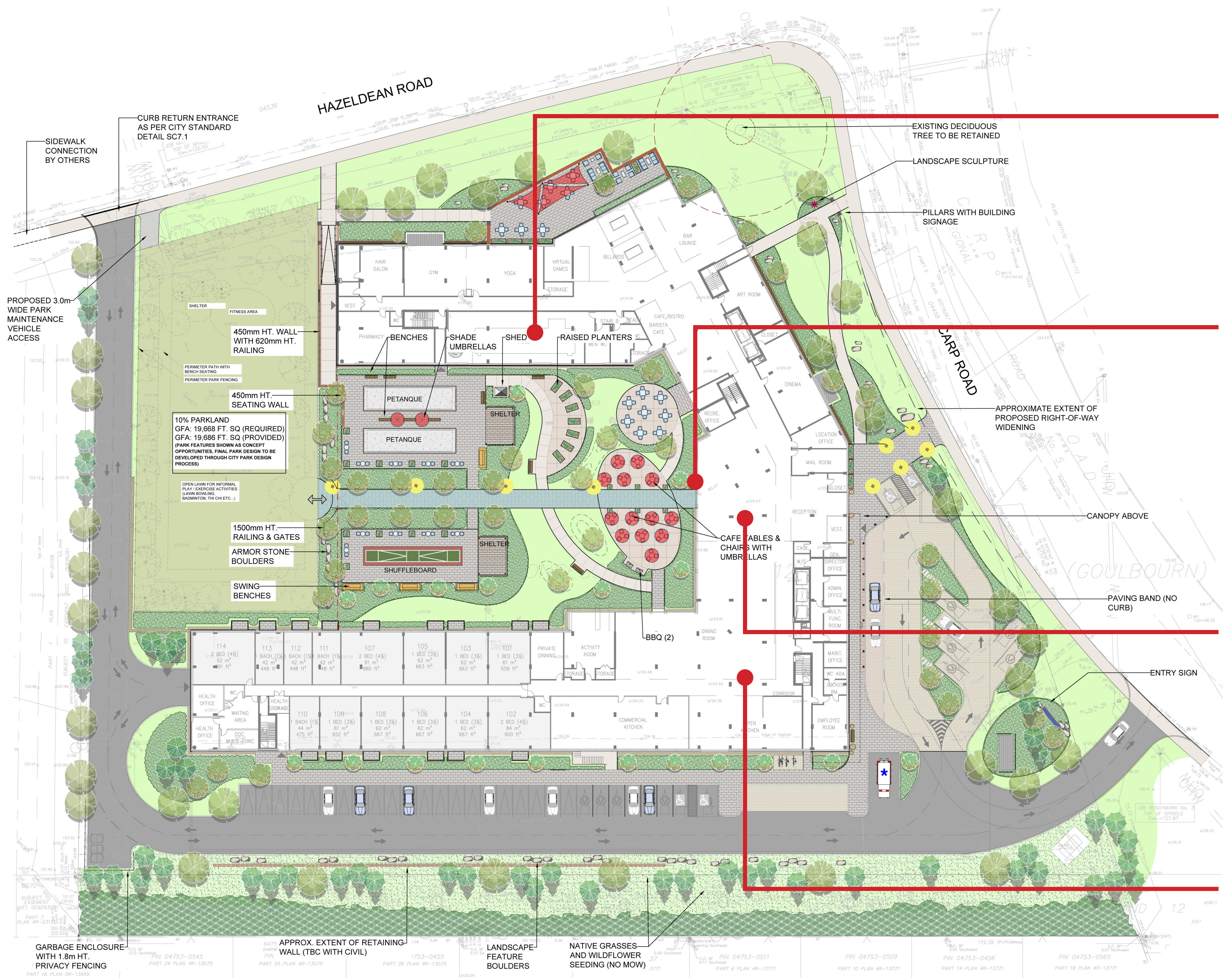
10% Parkland located at the North-West corner of the property, fronting onto Hazeldean Rd.

Main Street Frontage

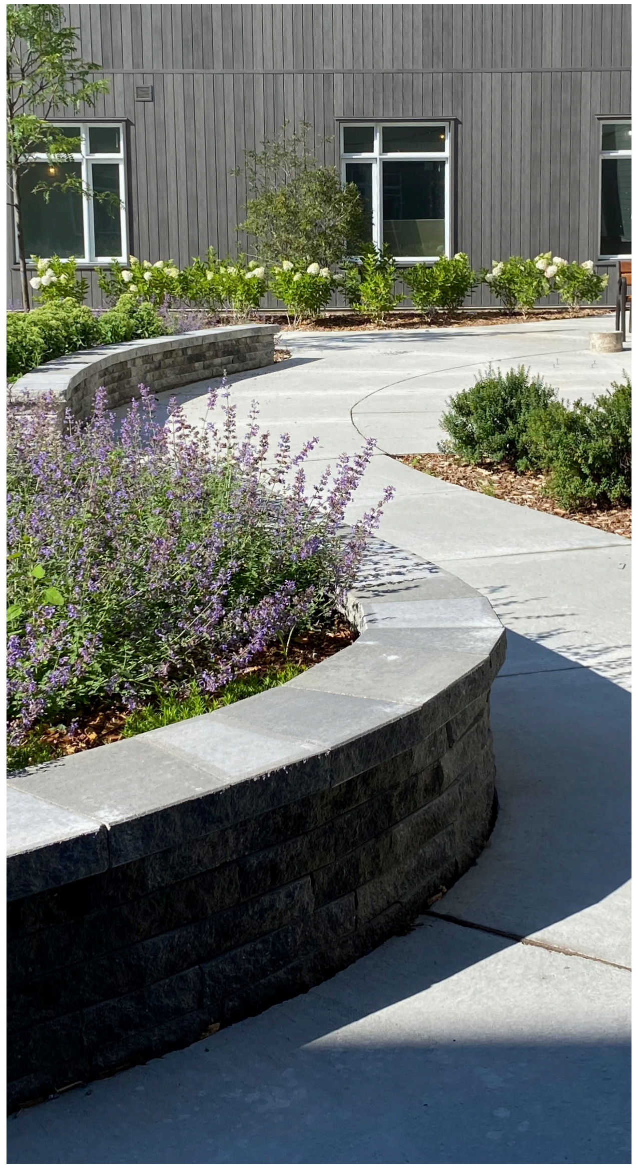
10% parkland located at the North-West corner of the property, fronts on **Hazeldean Road** (main street).



EXAMPLES OF INDOOR/OUTDOOR AMENITY PROGRAMS

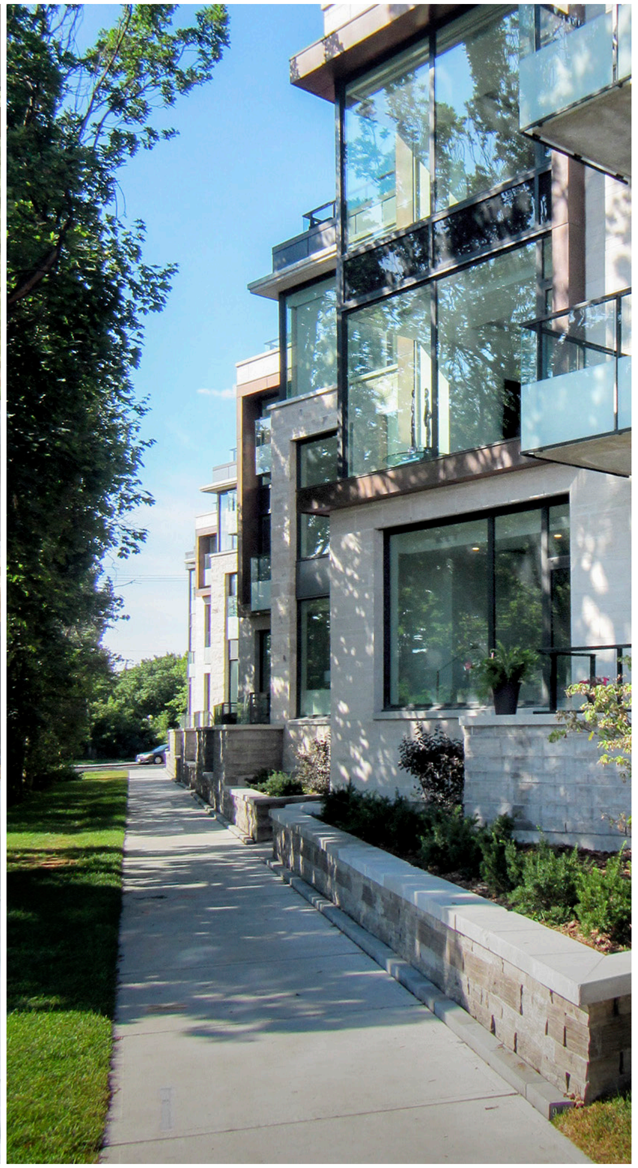


HARD LANDSCAPING MATERIAL

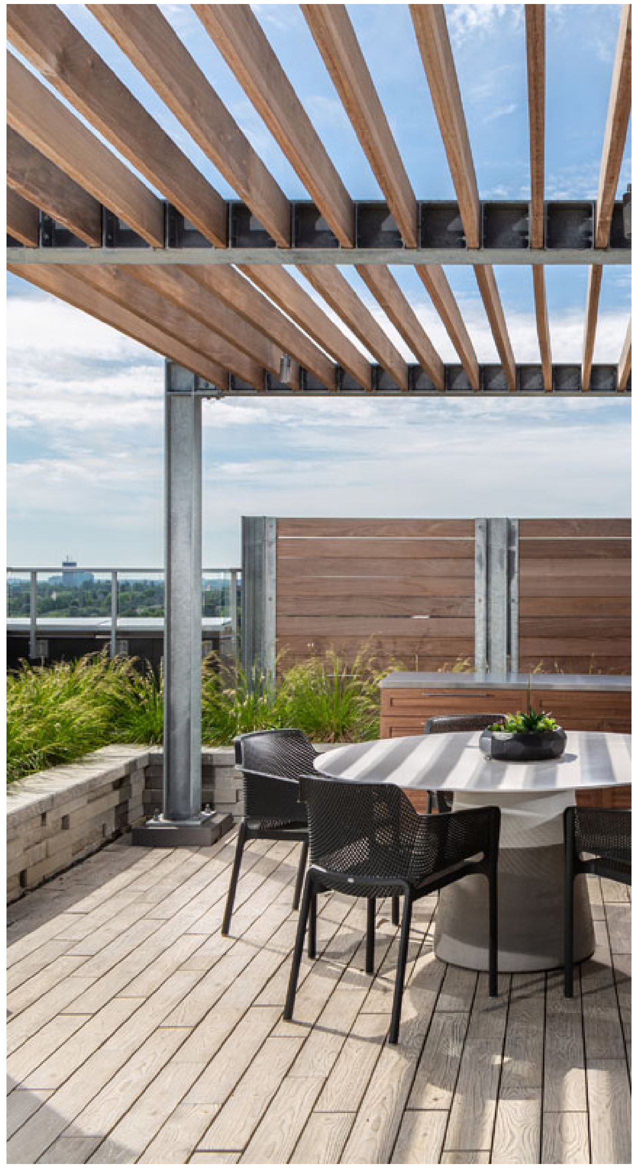


Concrete pathways with pre-cast concrete seating walls and planters.

Large format paving slabs for courtyard and terrace areas.



Stone terrace walls and pillars.

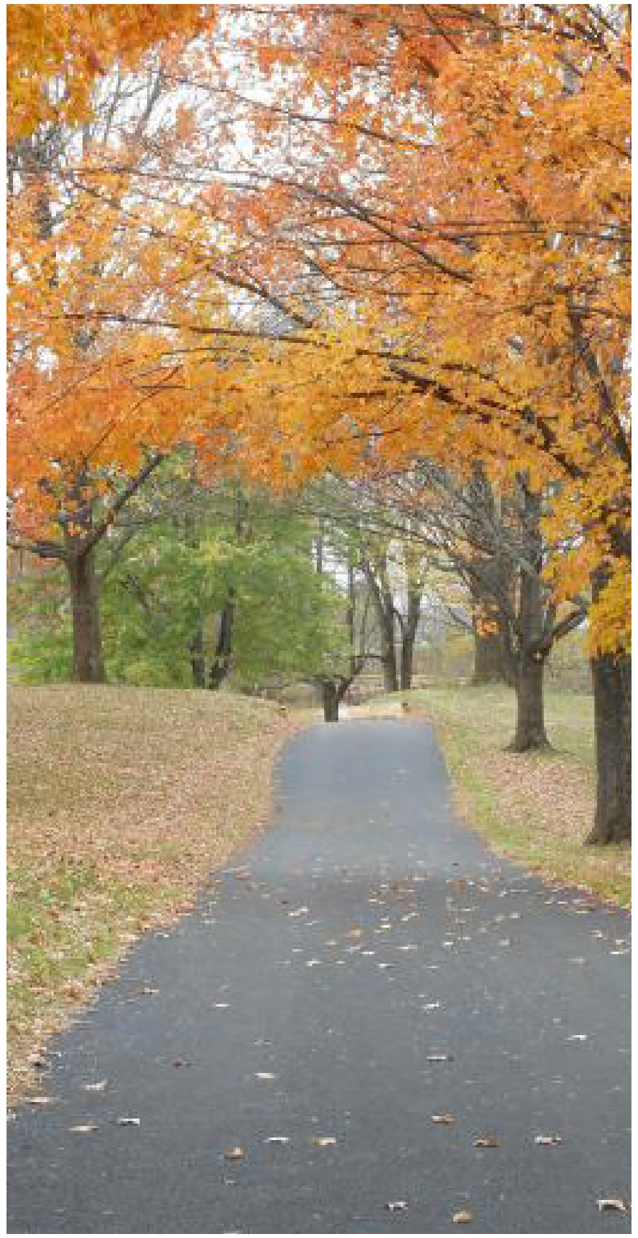


Outdoor lounge / terrace furniture.

Proposed landscape design provides a Park like setting around the perimeter of the site with tree lined pathways linking the buildings ground level amenity spaces with an outdoor bistro terrace fronting onto Hazeldean.

The internal courtyard space is slightly elevated above the adjacent City Park, providing both a visual and physical connection between the two spaces while maintaining some privacy and security for residents.

SOFT LANDSCAPING MATERIAL



Large deciduous tree planting along Hazeldean and Carp.

Mixed coniferous tree planting to enhance landscape buffer to the South.

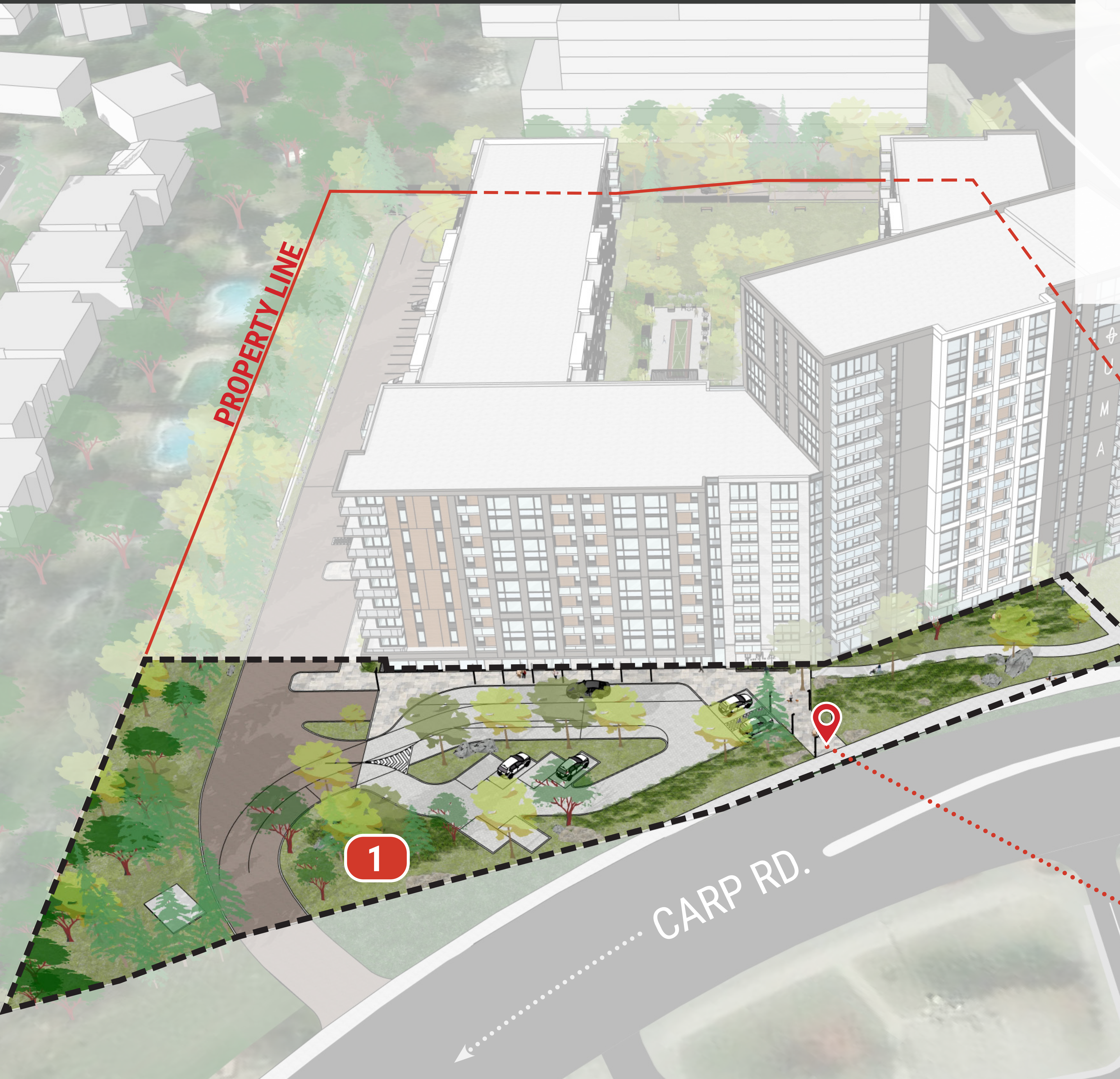
Four season planting design.

Landscape planting provides a park like setting for the proposed development with large, deciduous tree planting, mixed coniferous landscape buffer to the South and four-season planting design to enhance building setting and courtyard landscape.

4 LANDSCAPE INTERFACE

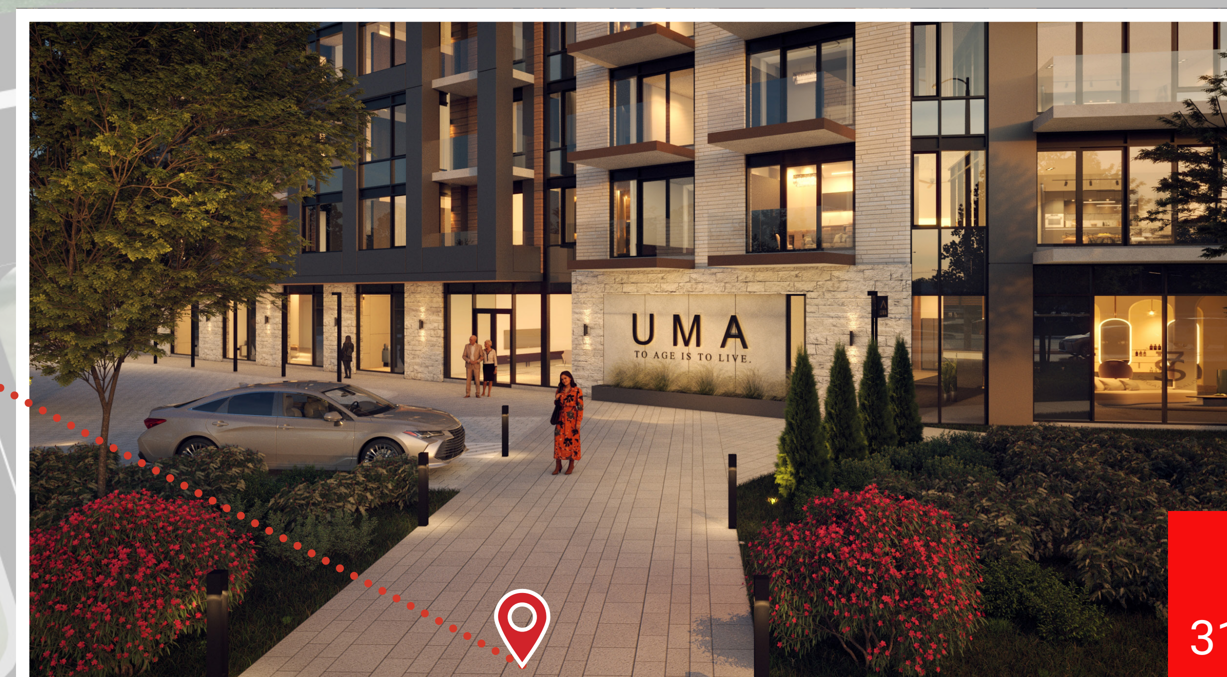
Strategic Landscape Buffer

(1) Carp Rd
(2) Hazeldean Rd
(3) West Lot
(4) South Lot



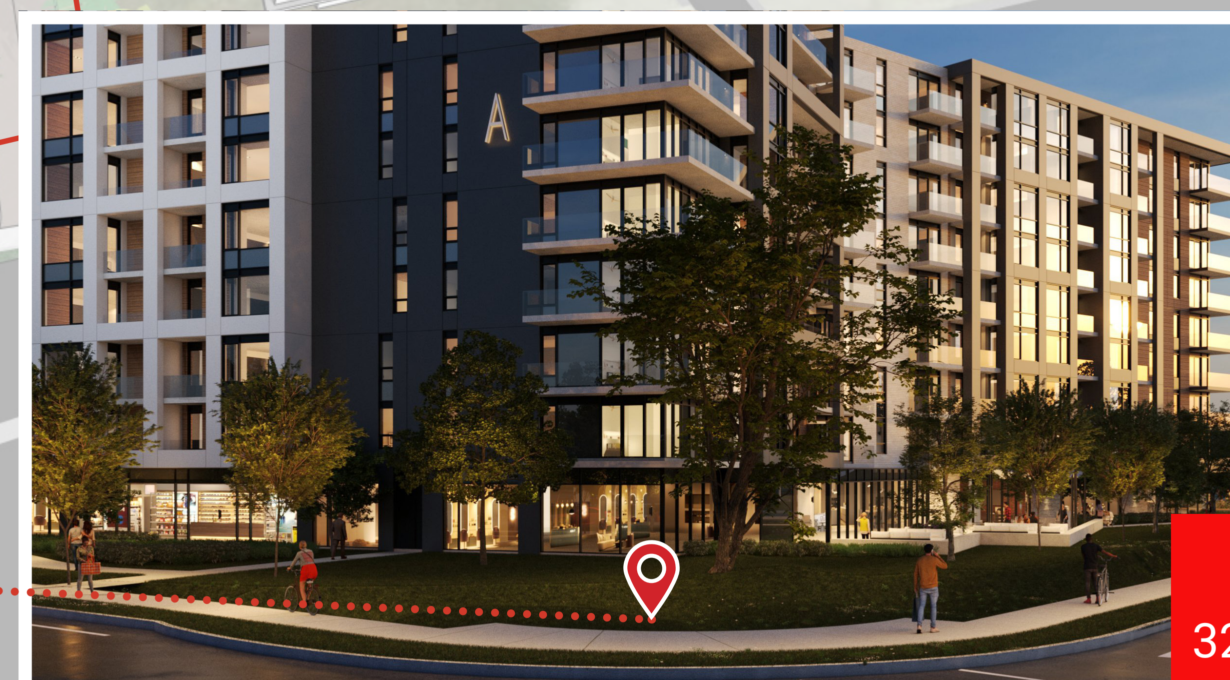
(1) Carp Rd.

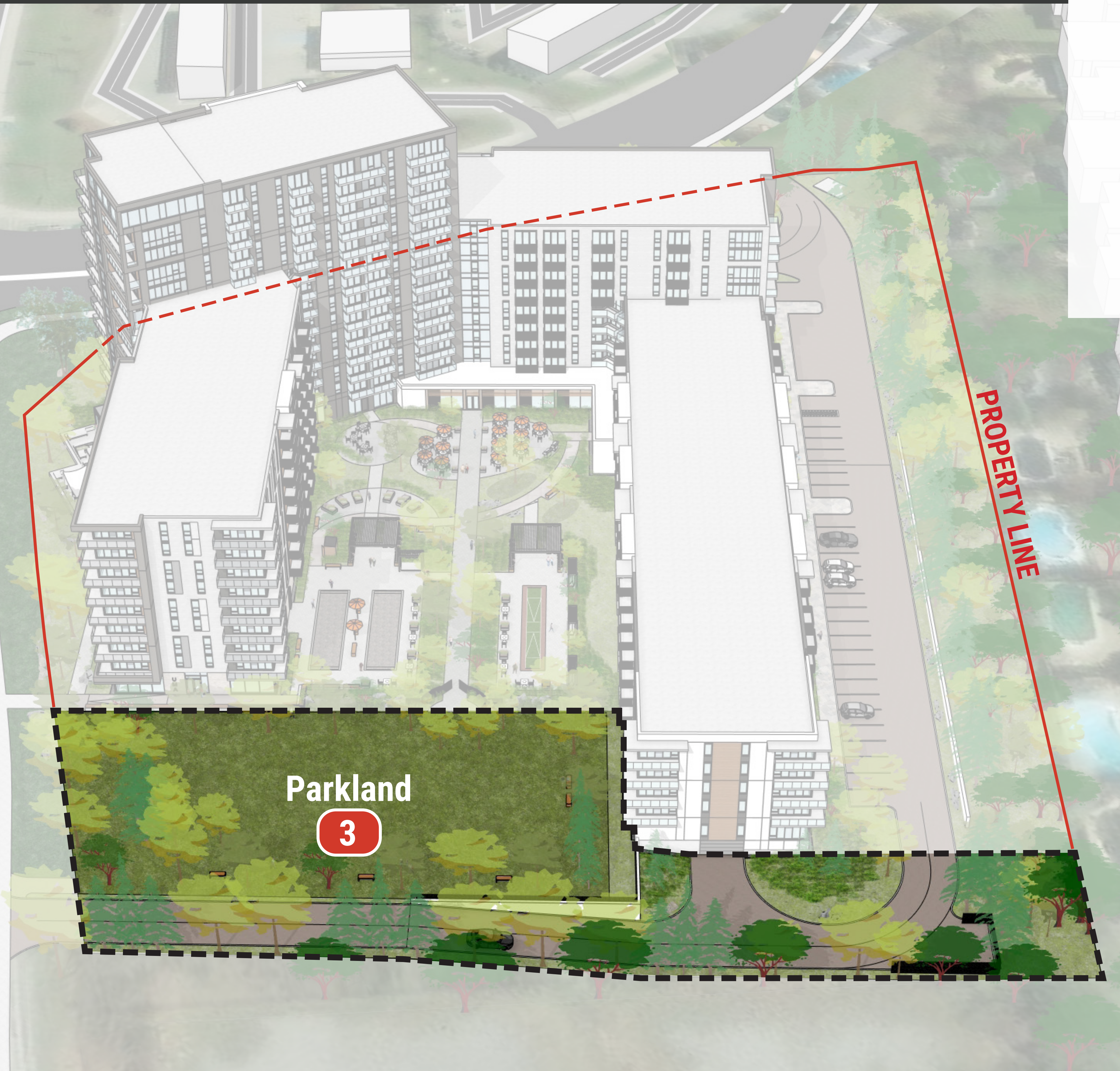
This landscape interface includes the primary vehicular and pedestrian site access and organizes convenient drop-off for main entrance, visitor surface parking and access to below grade parking.



(2) Hazeldean Rd.

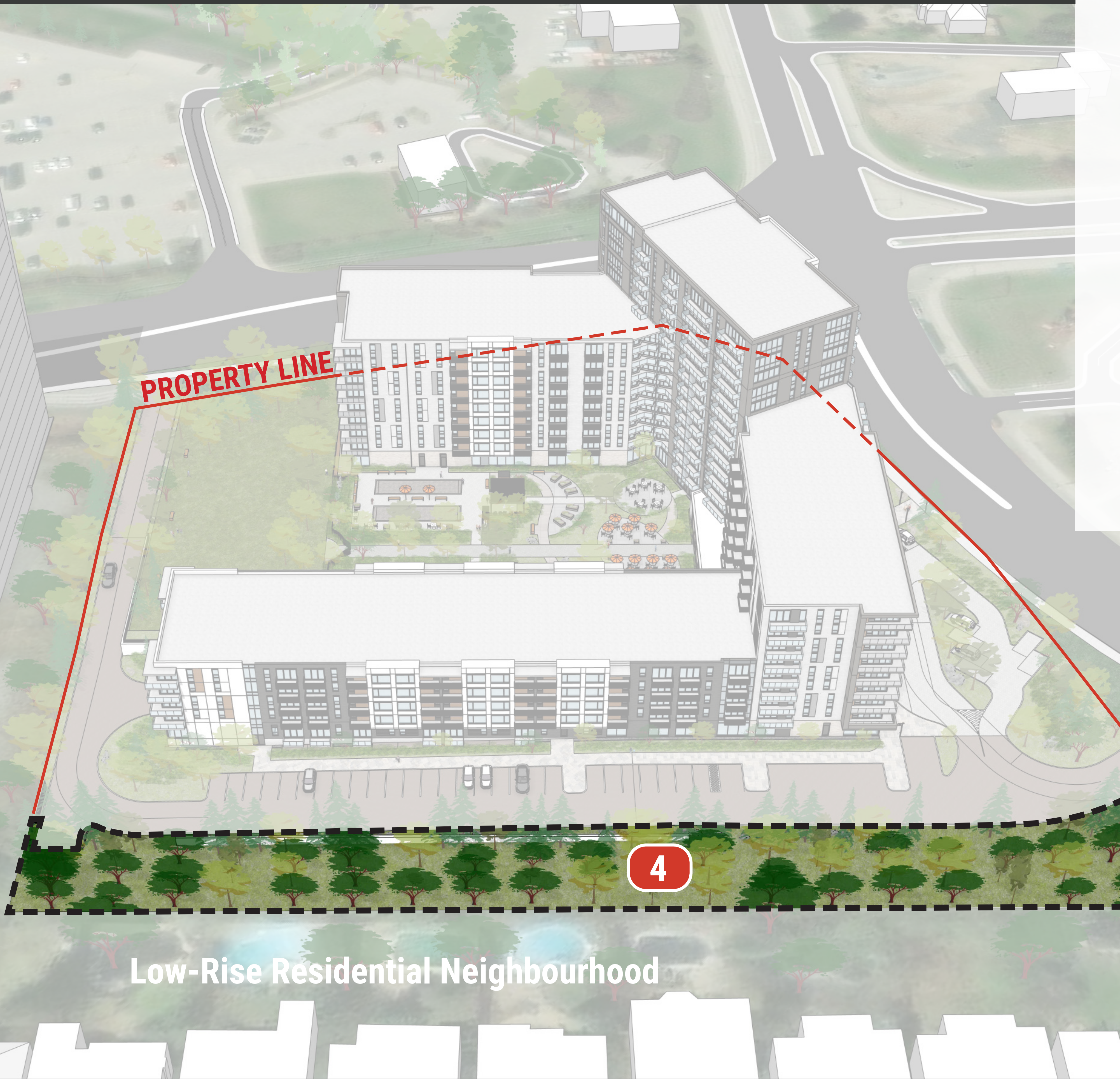
Public sidewalk and private pathways are proposed along the frontage of the property from East to West to provide safe and accessible passage. The private pathway is integrated within the animated ground floor frontage and promotes interaction/overlap with the private outdoor amenity spaces.





(3) West Lot

Parkland is strategically located along the Western property line to front on Hazeldean and provide a landscape buffer between our project and the proposed future development at 6310 Hazeldean Rd.



(4) South Lot

Retention of existing trees within the 10m landscape buffer along the Southern property boundary and the woodlot will be enhanced with a mix of large deciduous and coniferous tree planting providing and generous landscape buffer between our project and neighbouring community to the South.

5 SITE ACCESS & LOADING

Site Access - Carp Rd.

Primary site access organizes convenient drop-off for main entrance, visitor surface parking and access to below grade parking.

Site Access - Hazeldean Rd.

Secondary driveway organizes service/loading functions and promotes optional site egress route for surface and underground parking.

6 ENTRANCE EXPERIENCE

Main Entrance - Carp Rd.

Main entrance is visually connected to Carp Rd to promote accessibility and convenient drop-off for residents.

7 HAZELDEAN RD ANIMATION

Ground Level Activation

This proposal provides an animated frontage along Hazeldean Rd with ground floor amenity visually connected to the main street with continuous/full height glazing.

Private Outdoor Space

This proposal is designed around a open courtyard theme which organizes all private indoor/outdoor amenity programs, promoting health and wellness with dynamic activity spaces that interconnect with the public realm.

Public Outdoor Space

The parkland is designed adjacent to the outdoor courtyard to connect public and private realms with open outdoor spaces that promote generous tree canopies and soft landscaping for the site.

PROPOSED EXTERIOR MATERIALS

The concept for the proposed exterior elevations are comprised of 2 contrasting materials and colours to articulate the main building mass into clusters of smaller interconnected building forms.

A complimentary siding material is proposed as an accent colour to highlight some of the recessed elements of the facade.

This warm accent texture in combination with strategic outdoor lighting will provide a welcoming focal point for the main entrance.

10 EXTERIOR MATERIALS

PROPOSED EXTERIOR MATERIALS

1. Brick Masonry
2. Architectural Aluminum Panel
3. Metal Siding
4. Aluminum Windows
5. Glass and Aluminum Guardrails

EXAMPLE MATERIAL
HOBIN PROJECT: THE REVALIE, 770 BROOKFIELD RD.

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HOBIN PROJECT: THE REVALIE, 770 BROOKFIELD RD.

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Thank You :)
LE GROUPE MAURICE
LES RETRAITÉS NOUS HABITENT
FOTENN
Planning+Design
HOBIN
ARCHITECTURE

HOBIN
ARCHITECTURE

CARP & HAZELDEAN

1174 Carp Rd, Ottawa, ON

3D RENDER

N ELEVATION - HAZELDEAN RD

December 12, 2024

HOBIN
ARCHITECTURE

CARP & HAZELDEAN

1174 Carp Rd, Ottawa, ON

3D RENDER

NE ELEVATION - HAZELDEAN AND CARP RD

December 12, 2024

HOBIN
ARCHITECTURE

CARP & HAZELDEAN

1174 Carp Rd, Ottawa, ON

3D RENDER

NE ELEVATION CORNER - HAZELDEAN AND CARP RD

December 12, 2024

HOBIN
ARCHITECTURE

CARP & HAZELDEAN

1174 Carp Rd, Ottawa, ON

3D RENDER

NW ELEVATION - HAZELDEAN RD

December 12, 2024

HOBIN ARCHITECTURE

CARP & HAZELDEAN

1174 Carp Rd, Ottawa, ON

3D RENDER
EAST ELEVATION

December 12, 2024

HOBIN ARCHITECTURE

CARP & HAZELDEAN

1174 Carp Rd, Ottawa, ON

3D RENDER

ENTRANCE FROM CARP

December 12, 2024

CARP & HAZELDEAN

1174 Carp Rd, Ottawa, ON

HOBIN
ARCHITECTURE

3D RENDER
SW ELEVATION

December 12, 2024

HOBIN ARCHITECTURE

CARP & HAZELDEAN

1174 Carp Rd, Ottawa, ON

3D RENDER
PRIVATE COURTYARD

December 12, 2024

HOBIN
ARCHITECTURE

CARP & HAZELDEAN

1174 Carp Rd, Ottawa, ON

3D RENDER
PRIVATE COURTYARD

December 12, 2024

HOBIN ARCHITECTURE

CARP & HAZELDEAN

1174 Carp Rd, Ottawa, ON

3D RENDER

PRIVATE COURTYARD

December 12, 2024

ZONING GFA SUMMARY

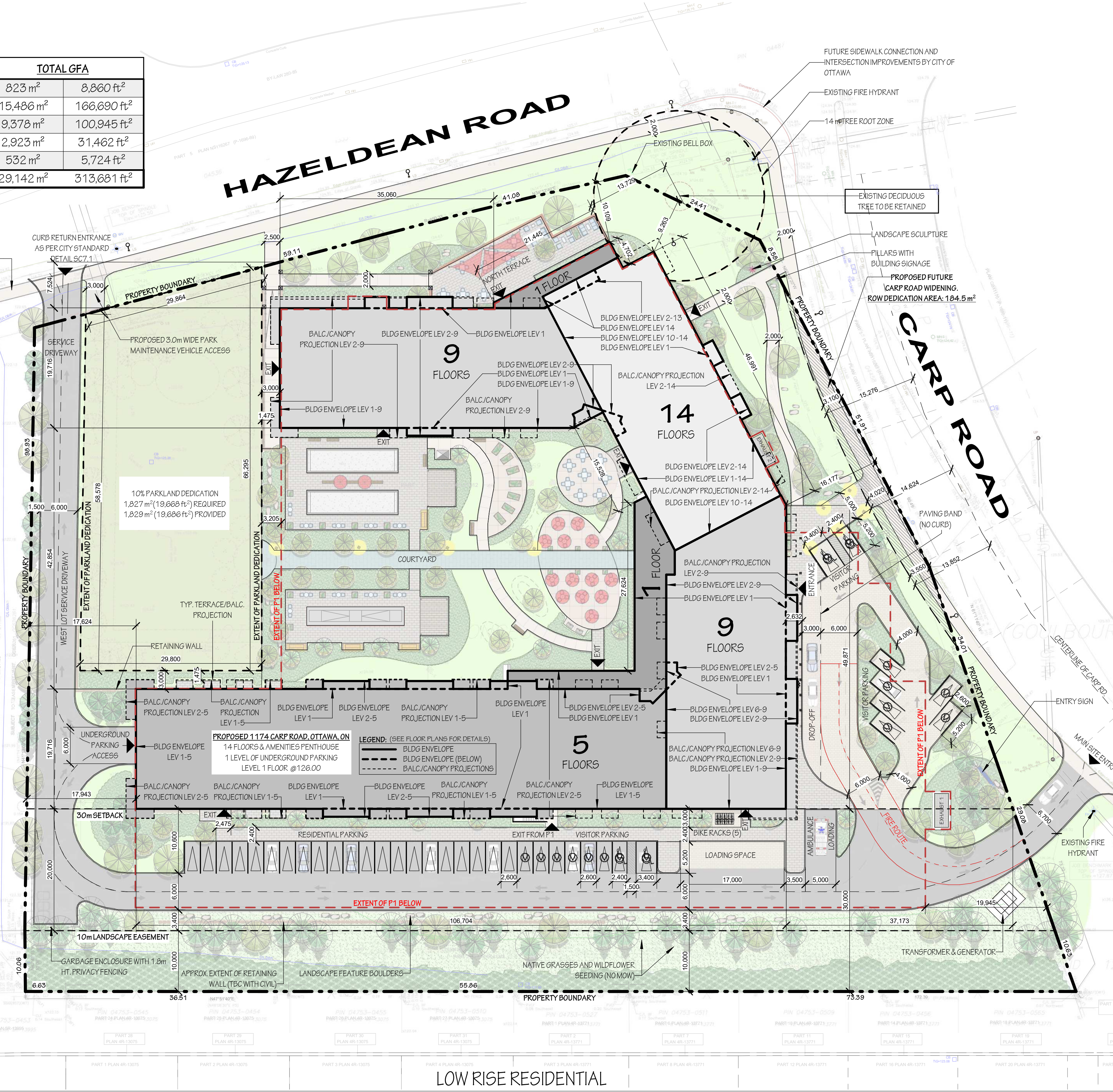
	GFA PER FLOOR		# OF FLOORS	TOTAL GFA	
LEVEL 1	823 m^2	8,860 ft^2	1	823 m^2	8,860 ft^2
LEVEL 2-5	3,872 m^2	41,673 ft^2	4	15,486 m^2	166,690 ft^2
LEVEL 6-9	2,345 m^2	25,236 ft^2	4	9,378 m^2	100,945 ft^2
LEVEL 10-13	731 m^2	7,865 ft^2	4	2,923 m^2	31,462 ft^2
LEVEL 14	532 m^2	5,724 ft^2	1	532 m^2	5,724 ft^2
ZONING GFA TOTAL				29,142 m^2	313,681 ft^2

*AS PER SECTION 54 (DEFINITIONS-GROSS FLOOR AREA) CITY OF OTTAWA ZONING BY-LAW

SURVEY/LEGAL DESCRIPTION

The property boundaries are taken from the survey submitted with the application, and dated as per the below:

Part of Lot 23, Concession 12
Part Of Road Allowance Between Concessions 11 And 12 (Closed By By-Law 39-95, INST. N731789)
Geographic Township of Goulbourn
City Of Ottawa
Designated as Parts 1, 2 and 3 Plan 4R-21312
Being All of PIN's 04753-0269 and 0561
Surveyed By Annis, O'Sullivan, Vollebekk Ltd.



PROJECT STATISTICS

SITE AREA	= 196,682 ft^2 (18,272 m^2)	FOOTPRINT AREA	= 4,785 m^2
10% PARKLAND PROVIDED	= 19,686 ft^2 (1,829 m^2)	LOT COVERAGE	= 26.2 %
TOTAL UNITS	= 413	OPEN SPACE	= 73.8 %

GFA SUMMARY (NOT INCLUDING PARKING)

	GFA PER FLOOR		# OF FLOORS	TOTAL GFA	
LEVEL 1	4,785 m^2	51,510 ft^2	1	4,785 m^2	51,510 ft^2
LEVEL 2-5	4,574 m^2	49,229 ft^2	4	18,294 m^2	196,918 ft^2
LEVEL 6-9	2,816 m^2	30,310 ft^2	4	11,263 m^2	121,239 ft^2
LEVEL 10-13	905 m^2	9,740 ft^2	4	3,619 m^2	38,958 ft^2
LEVEL 14	905 m^2	9,740 ft^2	1	905 m^2	9,740 ft^2
TOTAL GFA				38,867 m^2	418,364 ft^2

GFA SUMMARY - PARKING (UNDERGROUND)

	# OF FLOORS	TOTAL GFA	
P1 PARKING	1	10,187 m^2	109,656 ft^2

NET RES AREA SUMMARY

	NET RES AREA PER FLOOR		# OF FLOORS	TOTAL NET RES AREA		EFF.
LEVEL 1	867 m^2	9,329 ft^2	1	867 m^2	9,329 ft^2	18.11%
LEVEL 2-5	4,044 m^2	43,529 ft^2	4	16,176 m^2	174,115 ft^2	88.42%
LEVEL 6-9	2,458 m^2	26,460 ft^2	4	9,833 m^2	105,842 ft^2	87.30%
LEVEL 10-13	773 m^2	8,322 ft^2	4	3,092 m^2	33,286 ft^2	85.44%
LEVEL 14	561 m^2	6,036 ft^2	1	561 m^2	6,036 ft^2	61.97%
TOTAL NET RES AREA	8,703 m^2	93,676 ft^2		30,529 m^2	328,608 ft^2	

AMENITY AREA SUMMARY (COMMUNAL)

		TOTAL AMENITY AREA	
LEVEL 1	OUTDOOR AMENITY - NORTH TERRACE	223 m^2	2,396 ft^2
LEVEL 1	OUTDOOR AMENITY - COURTYARD	2,549 m^2	27,438 ft^2
LEVEL 1	INDOOR AMENITY - LEVEL 1	3,396 m^2	36,556 ft^2
LEVEL 14	INDOOR AMENITY - SALON PANORAMIQUE	220 m^2	2,364 ft^2
TOTAL AMENITY AREA PROVIDED		6,387 m^2	68,753 ft^2

TOTAL AMENITY AREA REQUIRED = 6 m^2 X 413 UNITS = 2,478 m^2
** 50% OF REQUIRED AMENITY AREA IS COMMUNAL = 1,239 m^2*

PARKING SUMMARY

TOTAL SURFACE LEVEL PARKING		TOTAL UNDERGROUND PARKING (P1)	
VISITOR PARKING 5200x2600	12	RES. PARKING 5200X2400 SMALL	3
BF VISITOR PARKING 5200x2400	2	RES. PARKING 5500X2400 SMALL	13
BF VISITOR PARKING 5200x3400	2	RES. PARKING 5500X2750	259
RES. PARKING 5200X2600	21		275
	37		

TOTAL RESIDENTIAL PARKING = 296 SPACES
TOTAL VISITOR PARKING = 16 SPACES
TOTAL PARKING COUNT = 312
TOTAL ACCESSIBLE PARKING = 4

BICYCLE PARKING SUMMARY

TOTAL SURFACE LEVEL PARKING = 5
TOTAL UNDERGROUND PARKING (P1) = 110
TOTAL BICYCLE PARKING COUNT = 115

SCALE 1:750
0 5 10 15 20 25

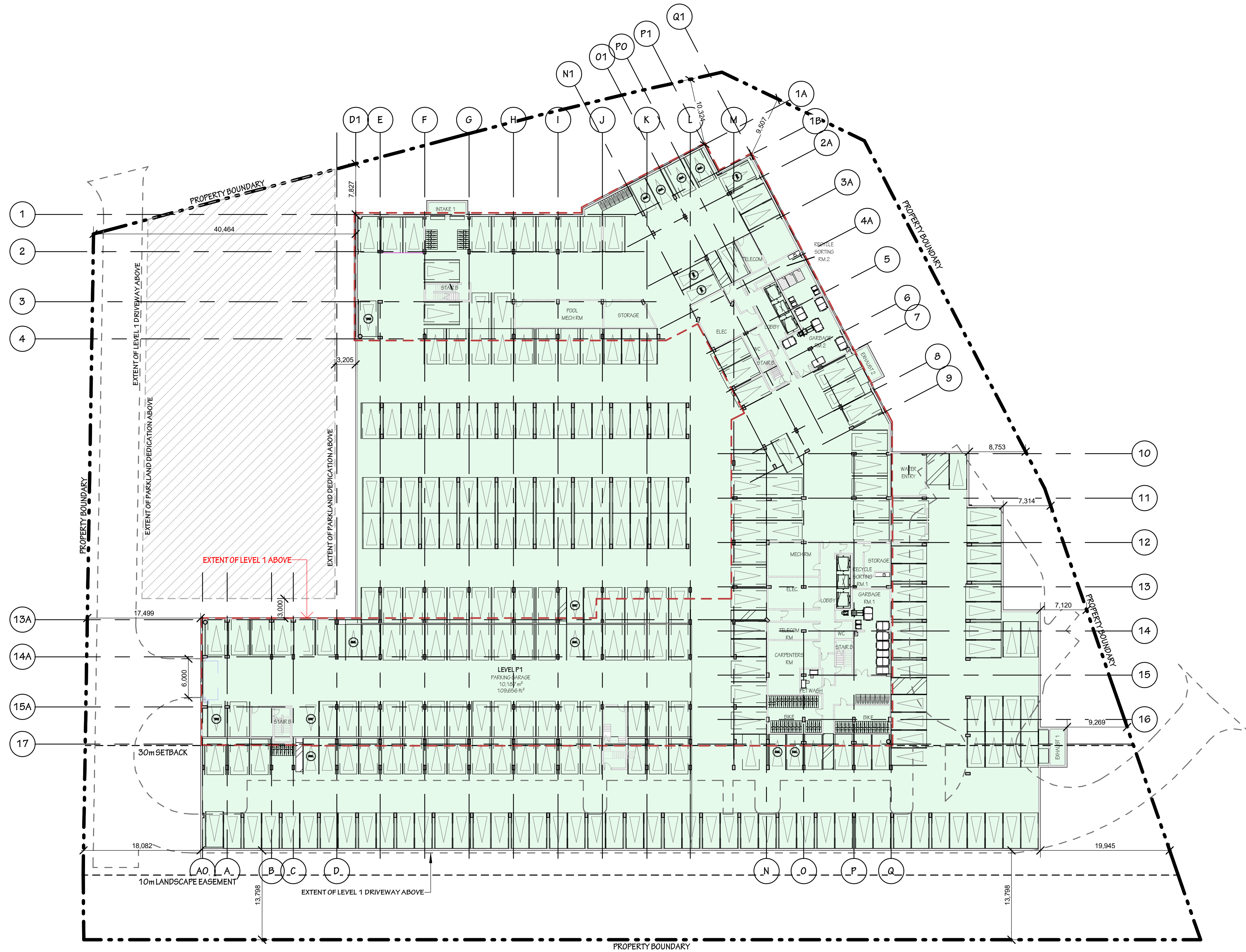
HOBIN ARCHITECTURE

CARP & HAZELDEAN

1174 Carp Rd, Ottawa, ON K2S 1B9

Developer/Owner: LE GROUPE MAURICE, 300 Bd Wilfrid-Lavigne, Gatineau, QC J9H 0K4
Architect: HOBIN ARCHITECTURE INC, 63 Pamilla St, Ottawa, ON K1S 3K4

SITE PLAN
SITE PLAN
SCALE 1 : 750
February 14, 2025



GFA SUMMARY

	GFA PER FLOOR			TOTAL GFA LEVEL 2-5	
	Area m2	Area ft2	# of Floors	Total Area m2	Total Area ft2
PARKING GARAGE P1	10,187 m²	109,656 ft²	1	10,187 m²	109,656 ft²
TOTAL GFA	10,187 m²	109,656 ft²		10,187 m²	109,656 ft²

VEHICLE PARKING SUMMARY

TOTAL UNDERGROUND PARKING (P1)

RES. PARKING 5200X2400 SMALL	3
RES. PARKING 5500X2400 SMALL	13
RES. PARKING 5500X2750	259
	275

BICYCLE PARKING SUMMARY

TOTAL UNDERGROUND PARKING (P1)

FLOOR MOUNTED BIKE 110

SCALE 1:750

0 5 10 15 20 25

HOBIN ARCHITECTURE

CARP & HAZELDEAN

1174 Carp Rd, Ottawa, ON K2S 1B9

Developer/Owner: LE GROUPE MAURICE, 300 Bd Wilfrid-Lavigne, Gatineau, QC J9H 0K4

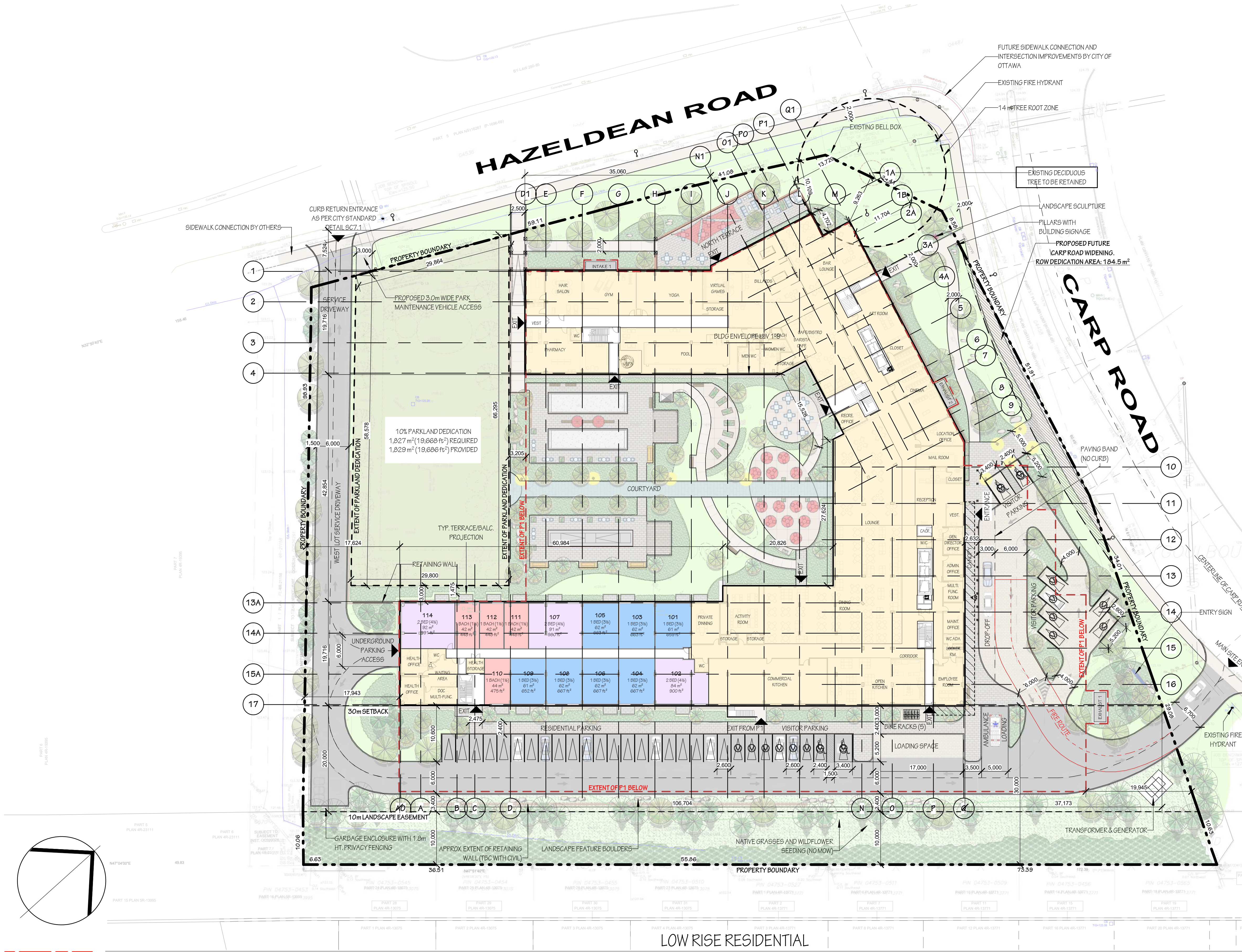
Architect: HOBIN ARCHITECTURE INC, 63 Pamilla St, Ottawa, ON K1S 3K4

FLOOR PLAN

LEVEL P1

SCALE 1 : 750

February 14, 2025



PROJECT STATISTICS

SITE AREA = 196,682 ft² (18,272 m²)
10% PARKLAND PROVIDED = 19,686 ft² (1,829 m²)

GFA SUMMARY

	GFA PER FLOOR			TOTAL GFA LEVEL 1	
	Area m2	Area ft2	# of Floors	Total Area m2	Total Area ft2
NET RES AREA	867 m²	9,329 ft²	1	867 m²	9,329 ft²
INDOOR AMENITY AREA	3,532 m²	38,015 ft²	1	3,532 m²	38,015 ft²
COMMON AREA	387 m²	4,165 ft²	1	387 m²	4,165 ft²
TOTAL GFA	4,785 m²	51,509 ft²		4,785 m²	51,509 ft²
TOTAL GFA *INCLUDING BALCONIES	Area m2	Area ft2	# of Floors	Total Area m2	Total Area ft2
	4,847 m²	52,169 ft²	1	4,847 m²	52,169 ft²

AMENITY AREA SUMMARY

	TOTAL AMENITY AREA LEVEL 1	
	Total Area m2	Total Area ft2
OUTDOOR AMENITY - NORTH TERRACE	223 m²	2,396 ft²
OUTDOOR AMENITY - COURTYARD	2,549 m²	27,438 ft²
INDOOR AMENITY - LEVEL 1	3,396 m²	36,556 ft²
TOTAL AMENITY AREA	6,168 m²	66,389 ft²

UNIT MIX SUMMARY

Unit Type	Units/Floor	# of Floors	Total
1 BACH (1½)	4	1	4
1 BED (3½)	7	1	7
2 BED (4½)	3	1	3
	14		14

PARKING SUMMARY

TOTAL SURFACE LEVEL PARKING	
VISITOR PARKING 5200x2600	12
BF VISITOR PARKING 5200x2400	2
BF VISITOR PARKING 5200x3400	2
RES. PARKING 5200X2600	21
	37

BICYCLE PARKING SUMMARY

TOTAL SURFACE LEVEL PARKING
FLOOR MOUNTED BIKE 5

HOBIN ARCHITECTURE

CARP & HAZELDEAN

1174 Carp Rd, Ottawa, ON K2S 1B9

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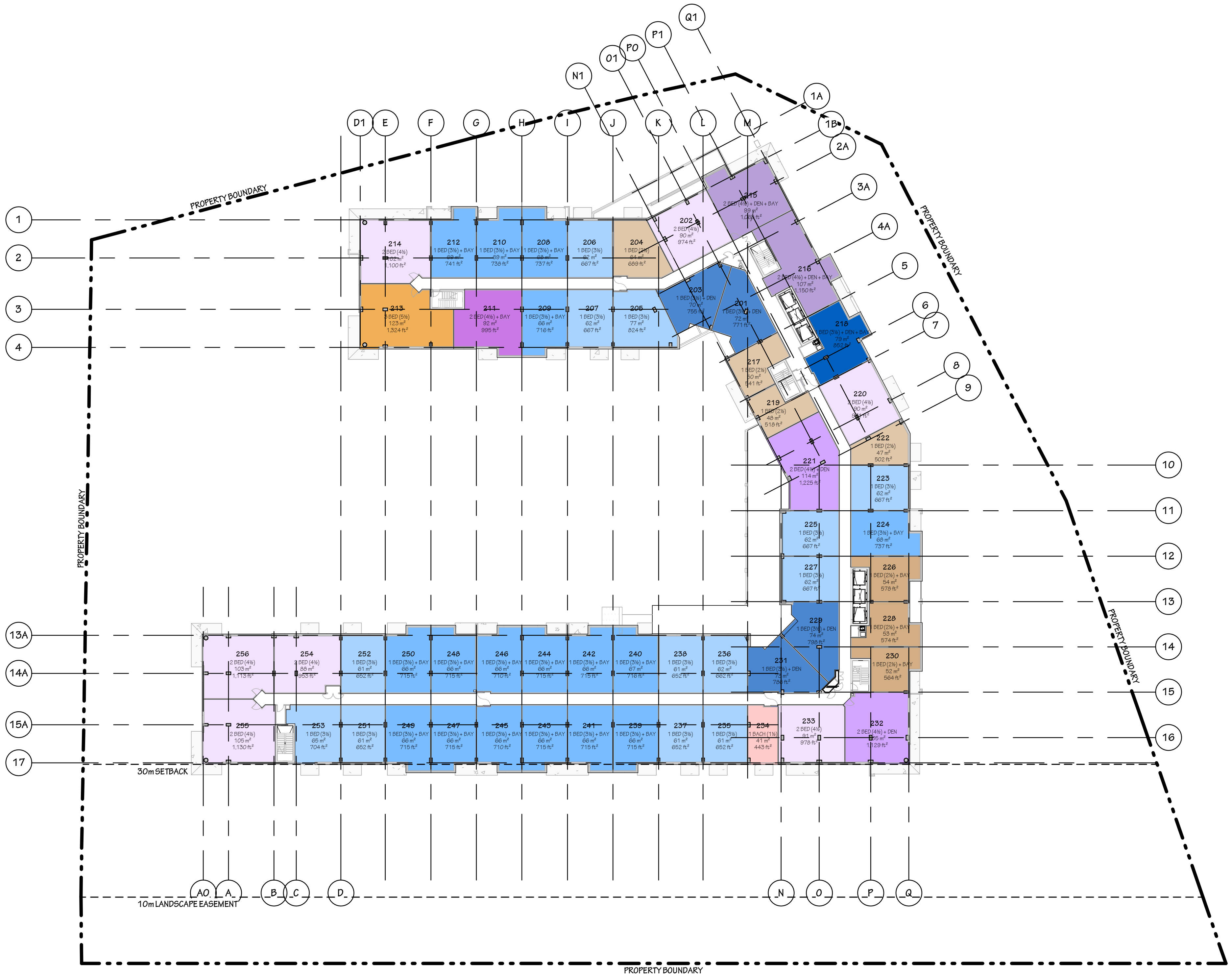
FLOOR PLAN
LEVEL 1
SCALE 1 : 750
February 14, 2025

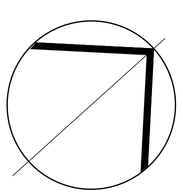


GFA SUMMARY

	GFA PER FLOOR			TOTAL GFA LEVEL 2-5	
	Area m2	Area ft2	# of Floors	Total Area m2	Total Area ft2
NET RES AREA	4,044 m²	43,529 ft²	4	16,176 m²	174,115 ft²
COMMON AREA	530 m²	5,701 ft²	4	2,118 m²	22,803 ft²
TOTAL GFA	4,574 m²	49,229 ft²		18,294 m²	196,917 ft²
TOTAL GFA *INCLUDING BALCONIES	Area m2	Area ft2	# of Floors	Total Area m2	Total Area ft2
	4,937 m²	53,136 ft²	4	19,746 m²	212,546 ft²

UNIT MIX SUMMARY

Unit Type	Units/Floor	# of Floors	Total
1 BACH (1½)	1	4	4
1 BED (2½)	4	4	16
1 BED (2½) + BAY	3	4	12
1 BED (3½)	13	4	52
1 BED (3½) + BAY	17	4	68
1 BED (3½) + DEN	4	4	16
1 BED (3½) + DEN + BAY	1	4	4
2 BED (4½)	7	4	28
2 BED (4½) + BAY	1	4	4
2 BED (4½) + DEN	2	4	8
2 BED (4½) + DEN + BAY	2	4	8
3 BED (5½)	1	4	4
	56		224



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HOBIN ARCHITECTURE

CARP & HAZELDEAN

1174 Carp Rd, Ottawa, ON K2S 1B9

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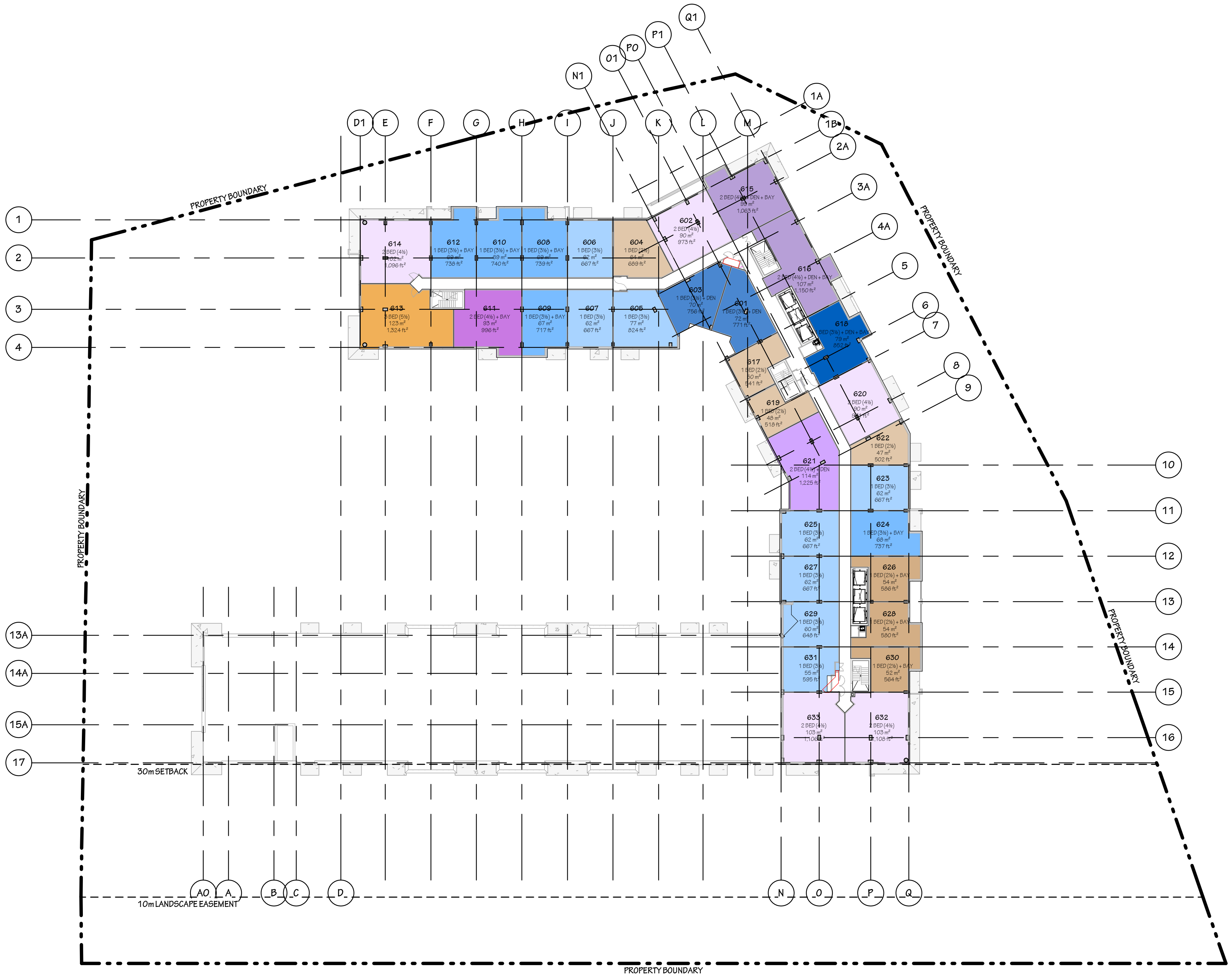
FLOOR PLAN

LEVEL 2-5

SCALE 1 : 750

February 14, 2025

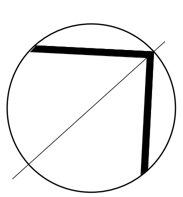


GFA SUMMARY

	GFA PER FLOOR			TOTAL GFA LEVEL 6-9	
	Area m2	Area ft2	# of Floors	Total Area m2	Total Area ft2
NET RES AREA	2,458 m²	26,460 ft²	4	9,833 m²	105,842 ft²
COMMON AREA	358 m²	3,849 ft²	4	1,430 m²	15,397 ft²
TOTAL GFA	2,816 m²	30,310 ft²		11,263 m²	121,239 ft²
TOTAL GFA *INCLUDING BALCONIES	Area m2	Area ft2	# of Floors	Total Area m2	Total Area ft2
	3,042 m²	32,741 ft²	4	12,167 m²	130,964 ft²

UNIT MIX SUMMARY

Unit Type	Units/Floor	# of Floors	Total
1 BED (2½)	4	4	16
1 BED (2½) + BAY	3	4	12
1 BED (3½)	8	4	32
1 BED (3½) + BAY	5	4	20
1 BED (3½) + DEN	2	4	8
1 BED (3½) + DEN + BAY	1	4	4
2 BED (4½)	5	4	20
2 BED (4½) + BAY	1	4	4
2 BED (4½) + DEN	1	4	4
2 BED (4½) + DEN + BAY	2	4	8
3 BED (5½)	1	4	4
	33		132



SCALE 1:750
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HOBIN ARCHITECTURE

CARP & HAZELDEAN

1174 Carp Rd, Ottawa, ON K2S 1B9

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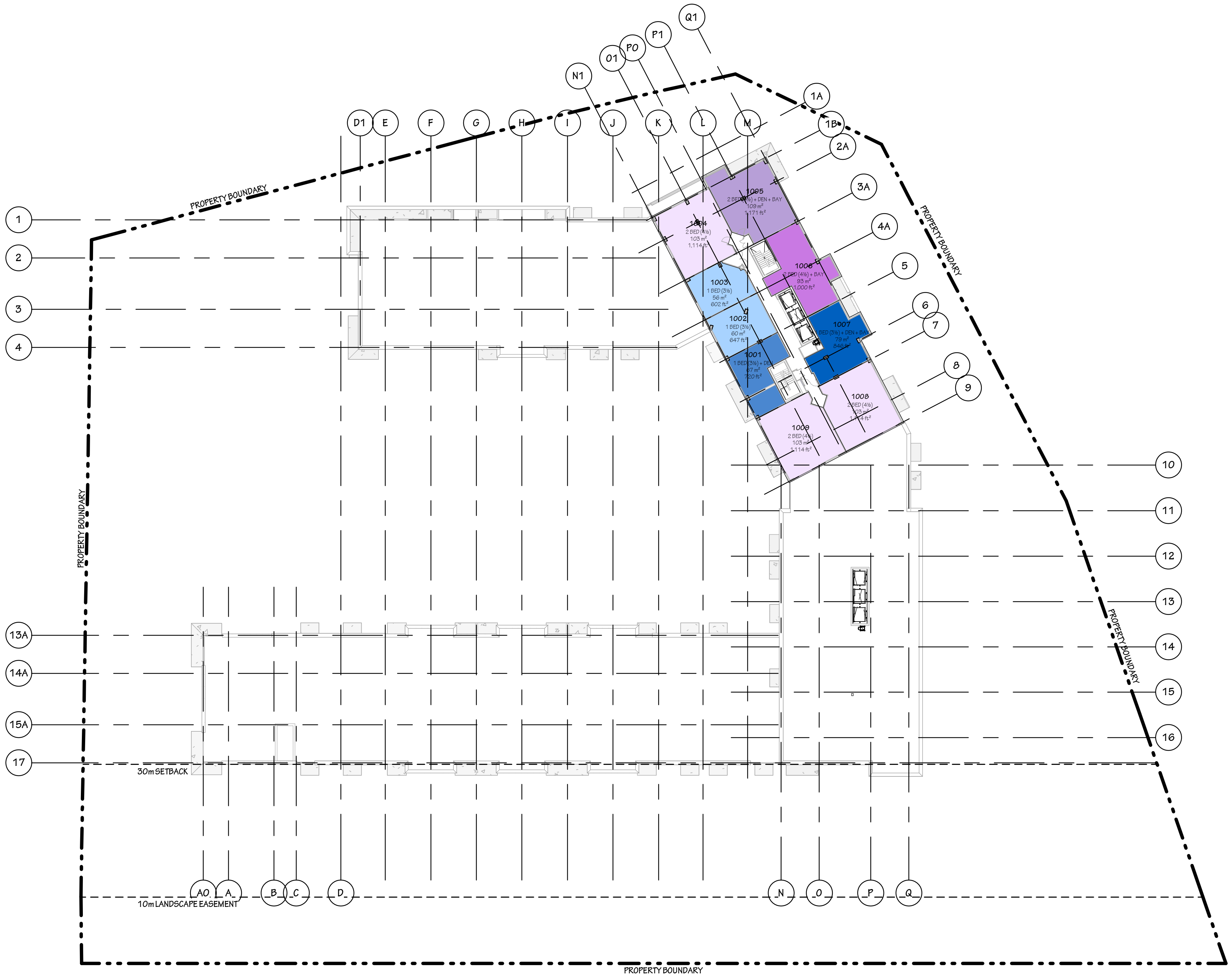
FLOOR PLAN
LEVEL 6-9
SCALE 1 : 750
February 14, 2025

GFA SUMMARY

	GFA PER FLOOR			TOTAL GFA LEVEL 10-13	
	Area m2	Area ft2	# of Floors	Total Area m2	Total Area ft2
NET RES AREA	773 m^2	8,322 ft^2	4	3,092 m^2	33,286 ft^2
COMMON AREA	132 m^2	1,418 ft^2	4	527 m^2	5,672 ft^2
TOTAL GFA	905 m^2	9,740 ft^2		3,619 m^2	38,958 ft^2
TOTAL GFA *INCLUDING BALCONIES	Area m2	Area ft2	# of Floors	Total Area m2	Total Area ft2
	990 m^2	10,659 ft^2	4	3,961 m^2	42,635 ft^2

UNIT MIX SUMMARY

Unit Type	Units/Floor	# of Floors	Total
1 BED (3½)	2	4	8
1 BED (3½) + DEN	1	4	4
1 BED (3½) + DEN + BAY	1	4	4
2 BED (4½)	3	4	12
2 BED (4½) + BAY	1	4	4
2 BED (4½) + DEN + BAY	1	4	4
	9		36



SCALE 1:750
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HOBIN
ARCHITECTURE

CARP & HAZELDEAN

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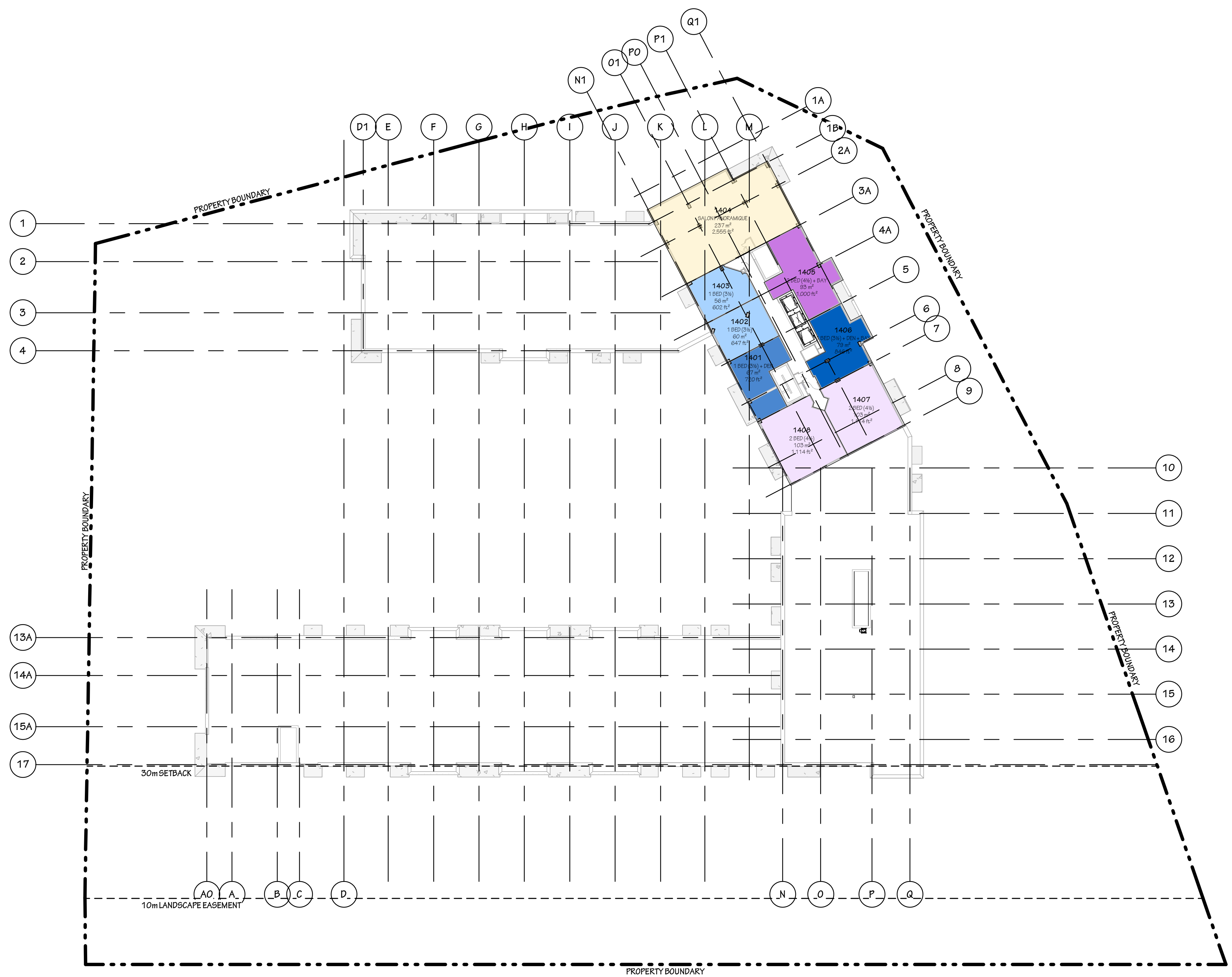
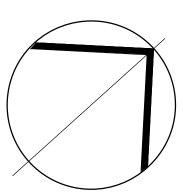
Architect: HOBIN ARCHITECTURE INC, 63 Pamilla St, Ottawa, ON K1S 3K4

FLOOR PLAN
LEVEL 10-13
SCALE 1 : 750
February 14, 2025





GFA SUMMARY

	GFA PER FLOOR			TOTAL GFA LEVEL 14	
	Area m2	Area ft2	# of Floors	Total Area m2	Total Area ft2
NET RES AREA	561 m²	6,036 ft²	1	561 m²	6,036 ft²
INDOOR AMENITY AREA	237 m²	2,556 ft²	1	237 m²	2,556 ft²
COMMON AREA	124 m²	1,340 ft²	1	124 m²	1,340 ft²
TOTAL GFA	923 m²	9,932 ft²		923 m²	9,932 ft²
TOTAL GFA *INCLUDING BALCONIES	Area m2	Area ft2	# of Floors	Total Area m2	Total Area ft2
	971 m²	10,450 ft²	1	971 m²	10,450 ft²

UNIT MIX SUMMARY

Unit Type	Units/Floor	# of Floors	Total
1 BED (3½)	2	1	2
1 BED (3½) + DEN	1	1	1
1 BED (3½) + DEN + BAY	1	1	1
2 BED (4½)	2	1	2
2 BED (4½) + BAY	1	1	1
	7		7

SCALE 1:750
0 5 10 15 20 25

HOBIN ARCHITECTURE

CARP & HAZELDEAN

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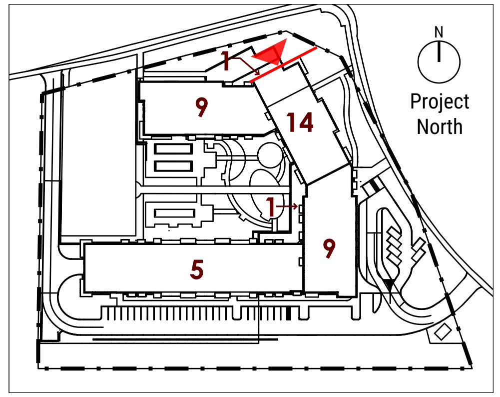
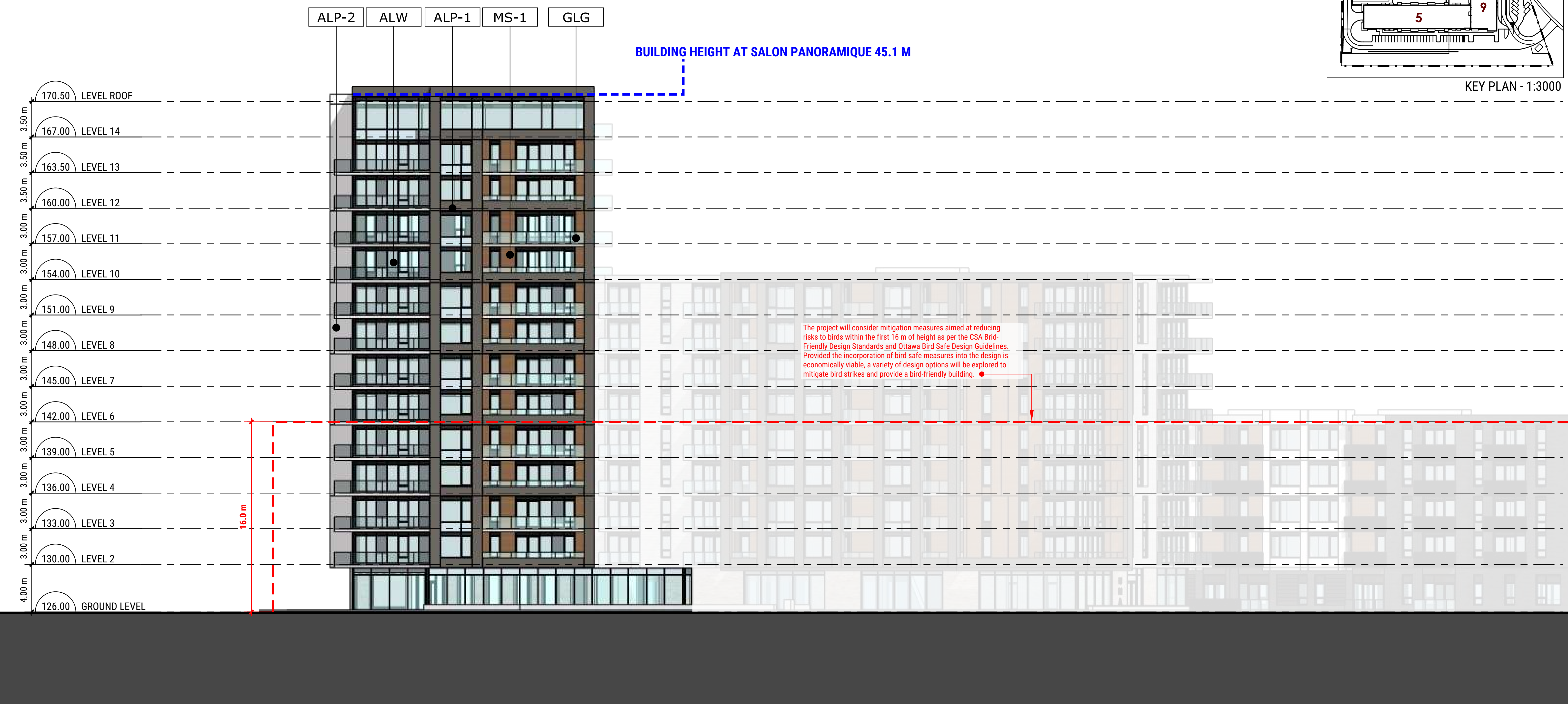
Architect: HOBIN ARCHITECTURE INC, 63 Pamilla St, Ottawa, ON K1S 3K4

FLOOR PLAN
LEVEL 14
SCALE 1 : 750
February 14, 2025





ALP-1	ALP-2	ALP-3	BRM-1	BRM-2	STM	MS-1	MS-2	ALW	ALG	GLG
ALUMINUM PANEL 1	ALUMINUM PANEL 2	ALUMINUM PANEL 3	BRICK MASONRY 1	BRICK MASONRY 2	STONE MASONRY	METAL SIDING 1	METAL SIDING 2	ALUMINUM WINDOWS/ SPANDREL GLASS	ALUMINUM GUARD RAIL	GLASS GUARD RAIL

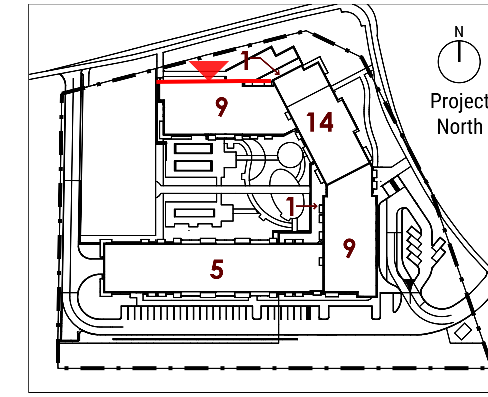
HOBIN

Hazeldean and Carp Road

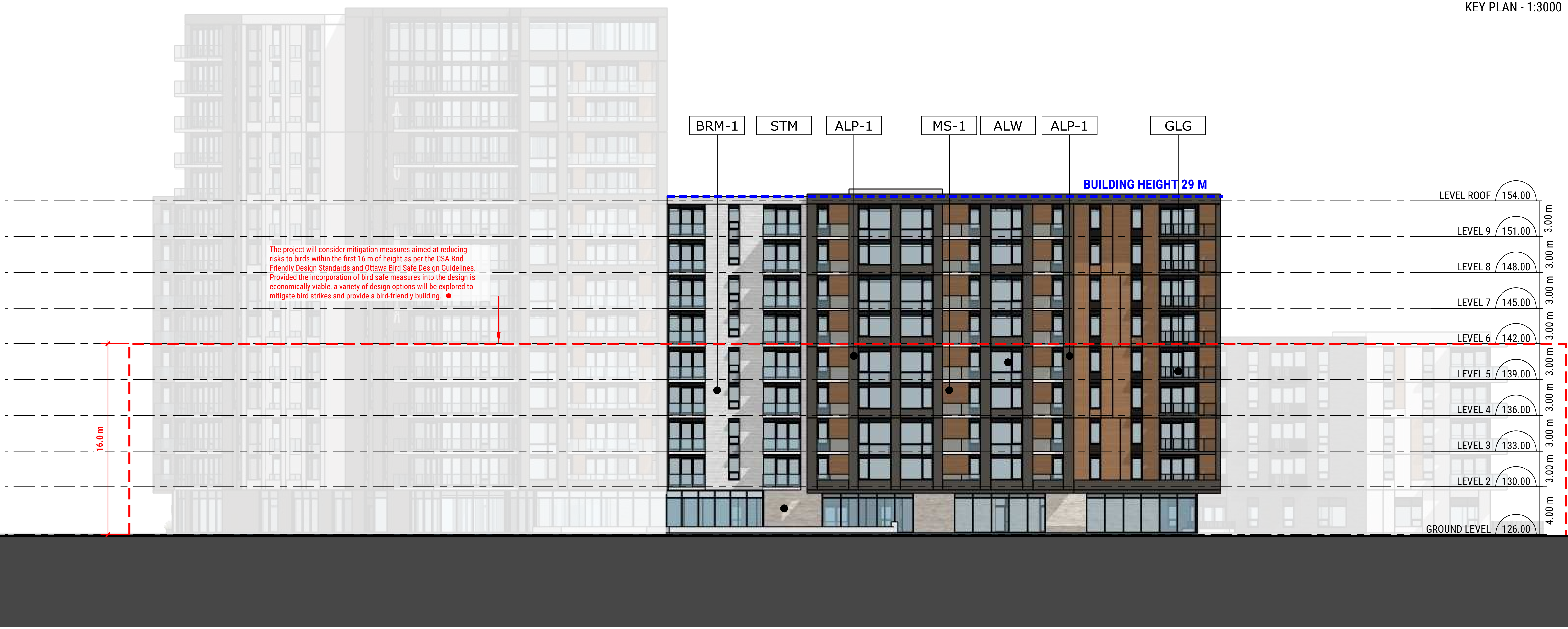
1174 Carp Rd, Stittsville, ON

NORTH WEST ELEVATION

SCALE 1:300
MARCH 2025



KEY PLAN - 1:3000



ALP-1	ALP-2	ALP-3	BRM-1	BRM-2	STM	MS-1	MS-2	ALW	ALG	GLG
ALUMINUM PANEL 1	ALUMINUM PANEL 2	ALUMINUM PANEL 3	BRICK MASONRY 1	BRICK MASONRY 2	STONE MASONRY	METAL SIDING 1	METAL SIDING 2	ALUMINUM WINDOWS/ SPANDREL GLASS	ALUMINUM GUARD RAIL	GLASS GUARD RAIL

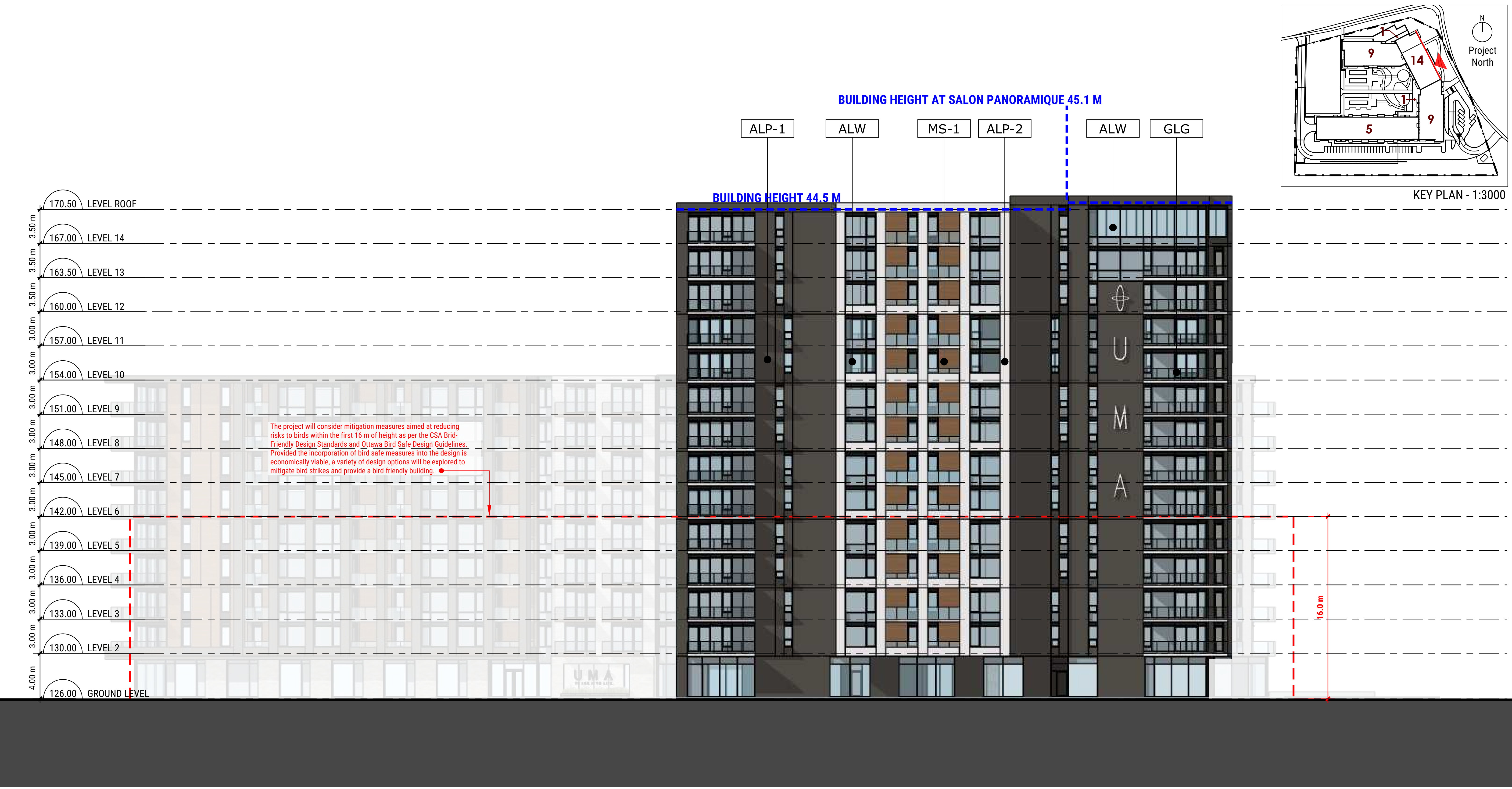
HOBIN

Hazeldean and Carp Road

1174 Carp Rd, Stittsville, ON

NORTH ELEVATION

SCALE 1:300
MARCH 2025



ALP-1	ALUMINUM PANEL 1
ALP-2	ALUMINUM PANEL 2
ALP-3	ALUMINUM PANEL 3
BRM-1	BRICK MASONRY 1
BRM-2	BRICK MASONRY 2
STM	STONE MASONRY
MS-1	METAL SIDING 1
MS-2	METAL SIDING 2
ALW	ALUMINUM WINDOWS/ SPANDREL GLASS
ALG	ALUMINUM GUARD RAIL
GLG	GLASS GUARD RAIL

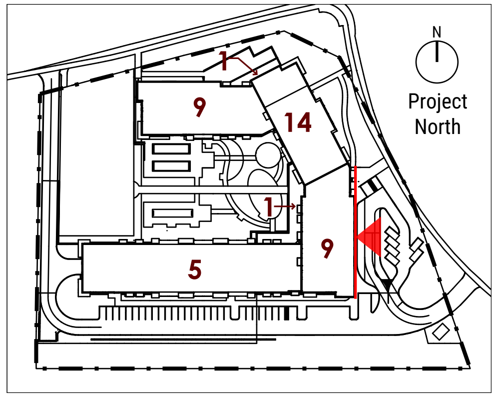
HOBIN

Hazeldean and Carp Road

1174 Carp Rd, Stittsville, ON

NORTH EAST ELEVATION

SCALE 1:300
MARCH 2025



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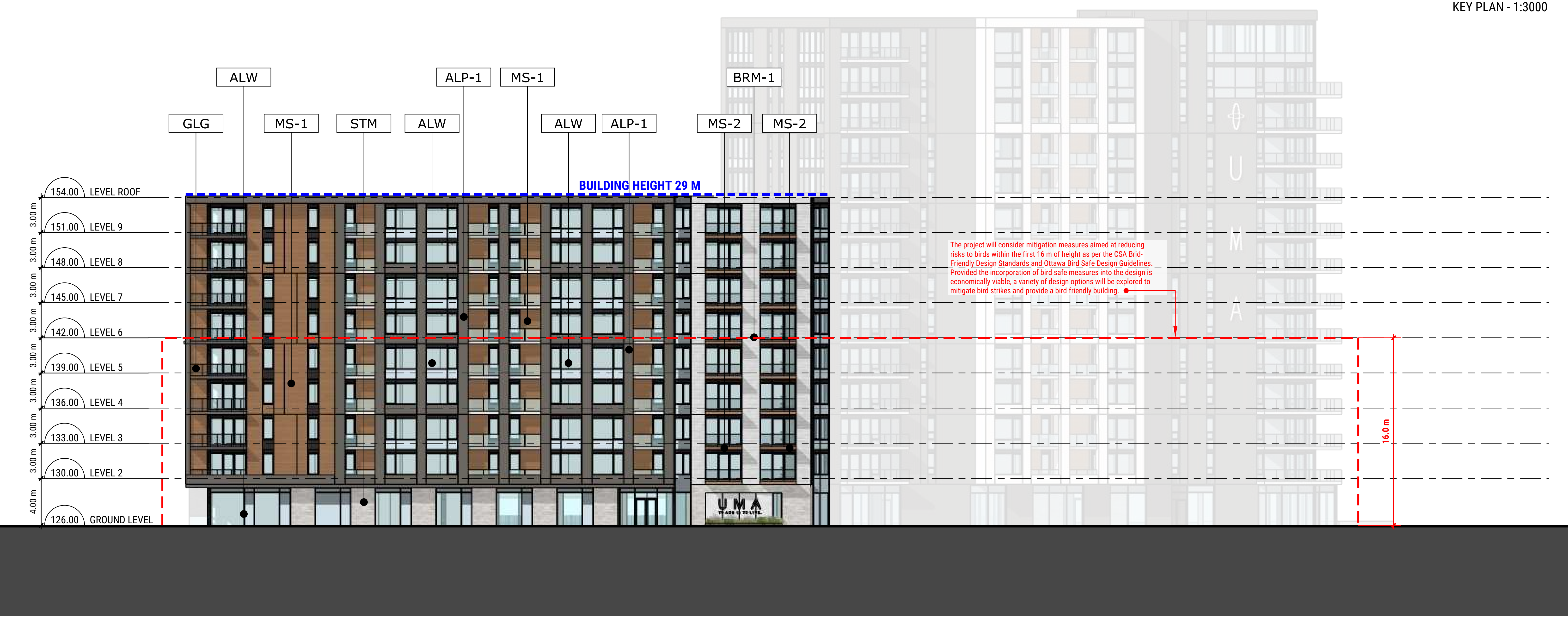


ALP-1	ALP-2	ALP-3	BRM-1	BRM-2	STM	MS-1	MS-2	ALW	ALG	GLG
ALUMINUM PANEL 1	ALUMINUM PANEL 2	ALUMINUM PANEL 3	BRICK MASONRY 1	BRICK MASONRY 2	STONE MASONRY	METAL SIDING 1	METAL SIDING 2	ALUMINUM WINDOWS/ SPANDREL GLASS	ALUMINUM GUARD RAIL	GLASS GUARD RAIL

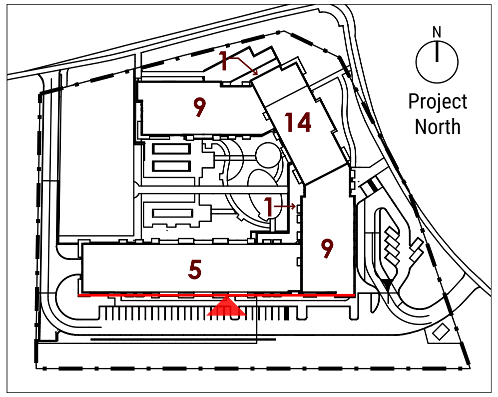
HOBIN

Hazeldean and Carp Road

1174 Carp Rd, Stittsville, ON

EAST ELEVATION

SCALE 1:300
MARCH 2025



KEY PLAN - 1:3000

ALP-1	ALUMINUM PANEL 1
ALP-2	ALUMINUM PANEL 2
ALP-3	ALUMINUM PANEL 3
BRM-1	BRICK MASONRY 1
BRM-2	BRICK MASONRY 2
STM	STONE MASONRY
MS-1	METAL SIDING 1
MS-2	METAL SIDING 2
ALW	ALUMINUM WINDOWS/ SPANDREL GLASS
ALG	ALUMINUM GUARD RAIL
GLG	GLASS GUARD RAIL

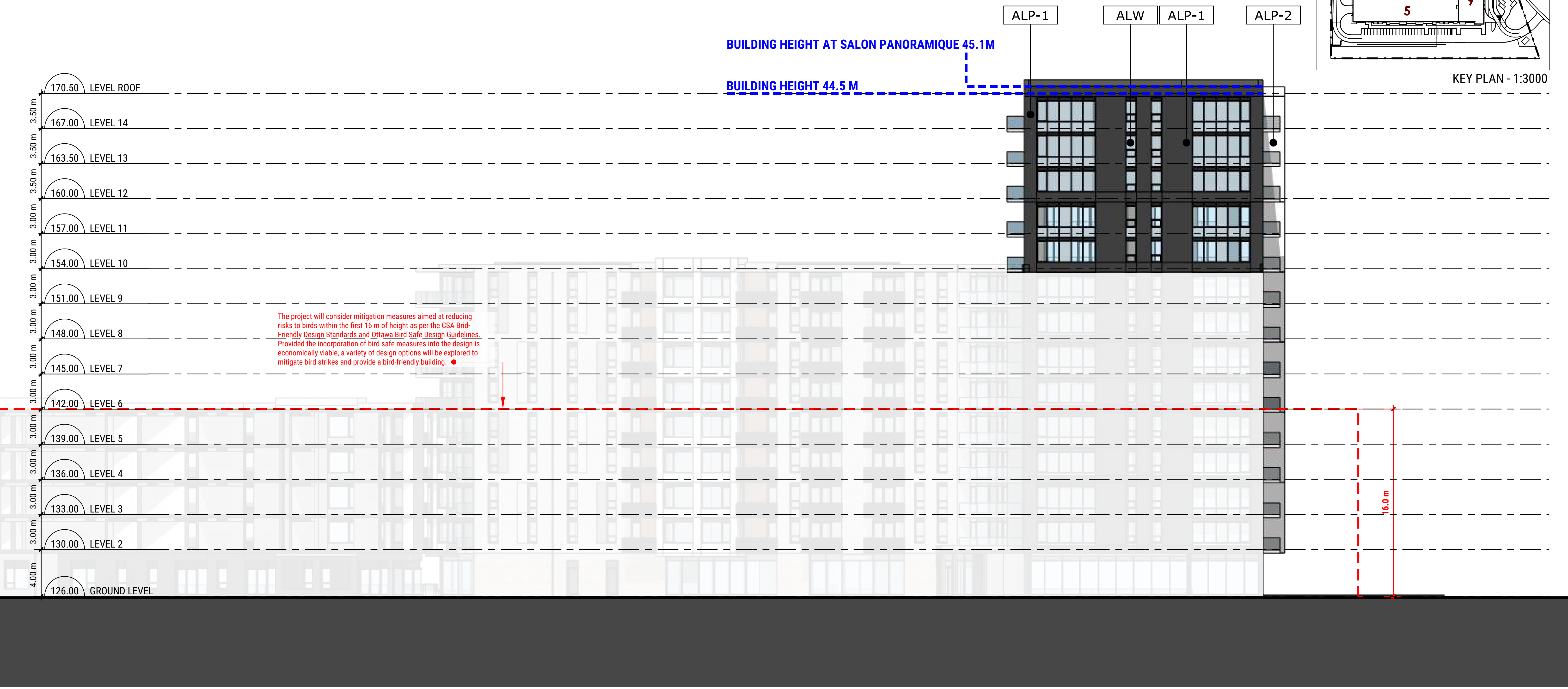
HOBIN

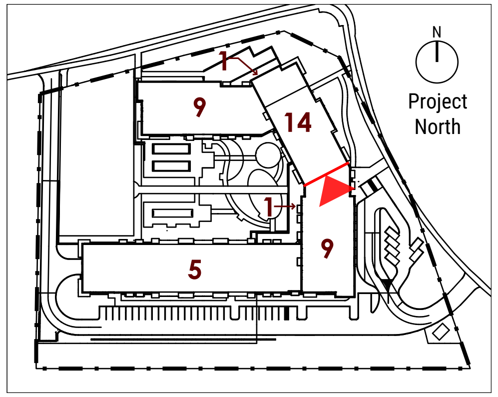
Hazeldean and Carp Road

1174 Carp Rd, Stittsville, ON

SOUTH ELEVATION

SCALE 1:300
MARCH 2025





KEY PLAN - 1:3000

ALP-1	ALP-2	ALP-3	BRM-1	BRM-2	STM	MS-1	MS-2	ALW	ALG	GLG
ALUMINUM PANEL 1	ALUMINUM PANEL 2	ALUMINUM PANEL 3	BRICK MASONRY 1	BRICK MASONRY 2	STONE MASONRY	METAL SIDING 1	METAL SIDING 2	ALUMINUM WINDOWS/ SPANDREL GLASS	ALUMINUM GUARD RAIL	GLASS GUARD RAIL

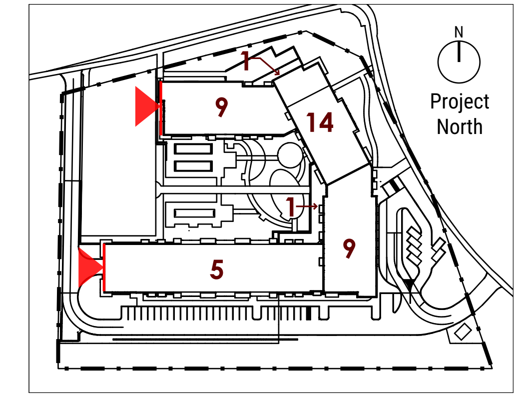
HOBIN

Hazeldean and Carp Road

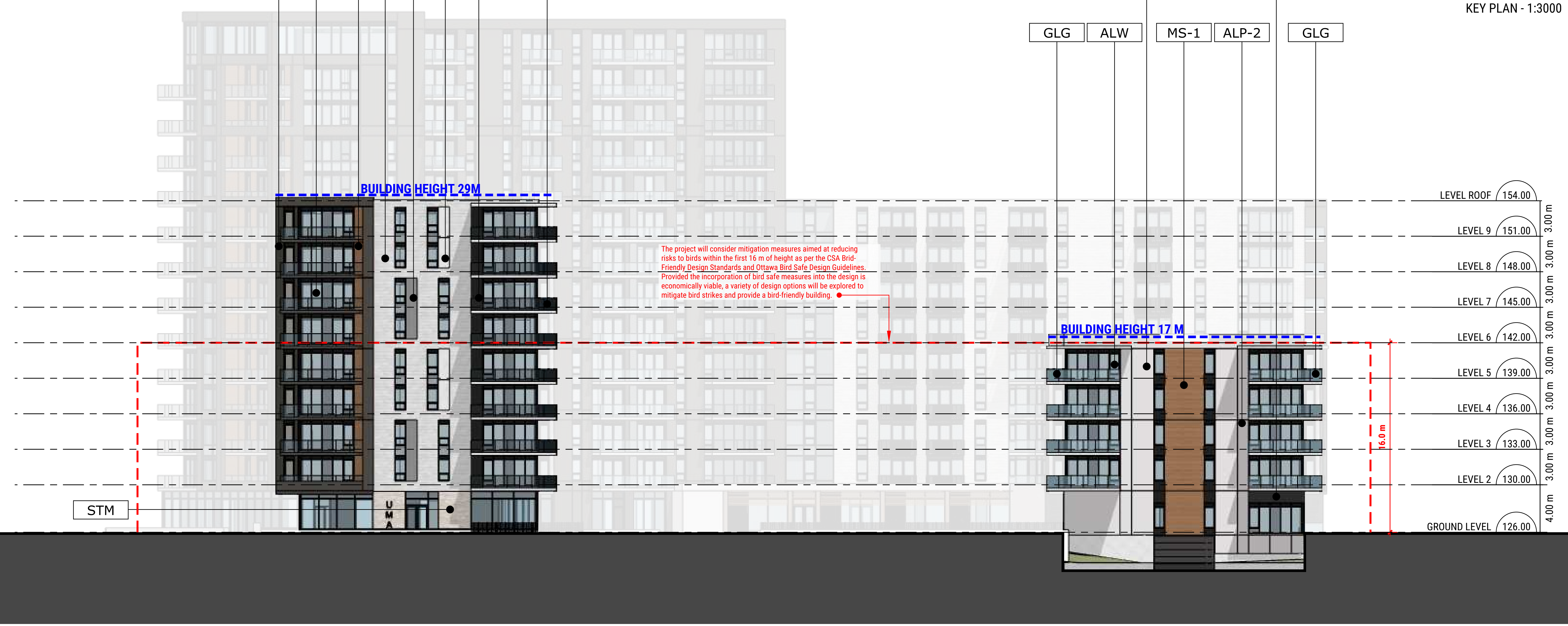
1174 Carp Rd, Stittsville, ON

SOUTH EAST ELEVATION

SCALE 1:300
MARCH 2025



KEY PLAN - 1:3000



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ALUMINUM PANEL 1	ALUMINUM PANEL 2	ALUMINUM PANEL 3	BRICK MASONRY 1	BRICK MASONRY 2	STONE MASONRY	METAL SIDING 1	METAL SIDING 2	ALUMINUM WINDOWS/ SPANDREL GLASS	ALUMINUM GUARD RAIL	GLASS GUARD RAIL

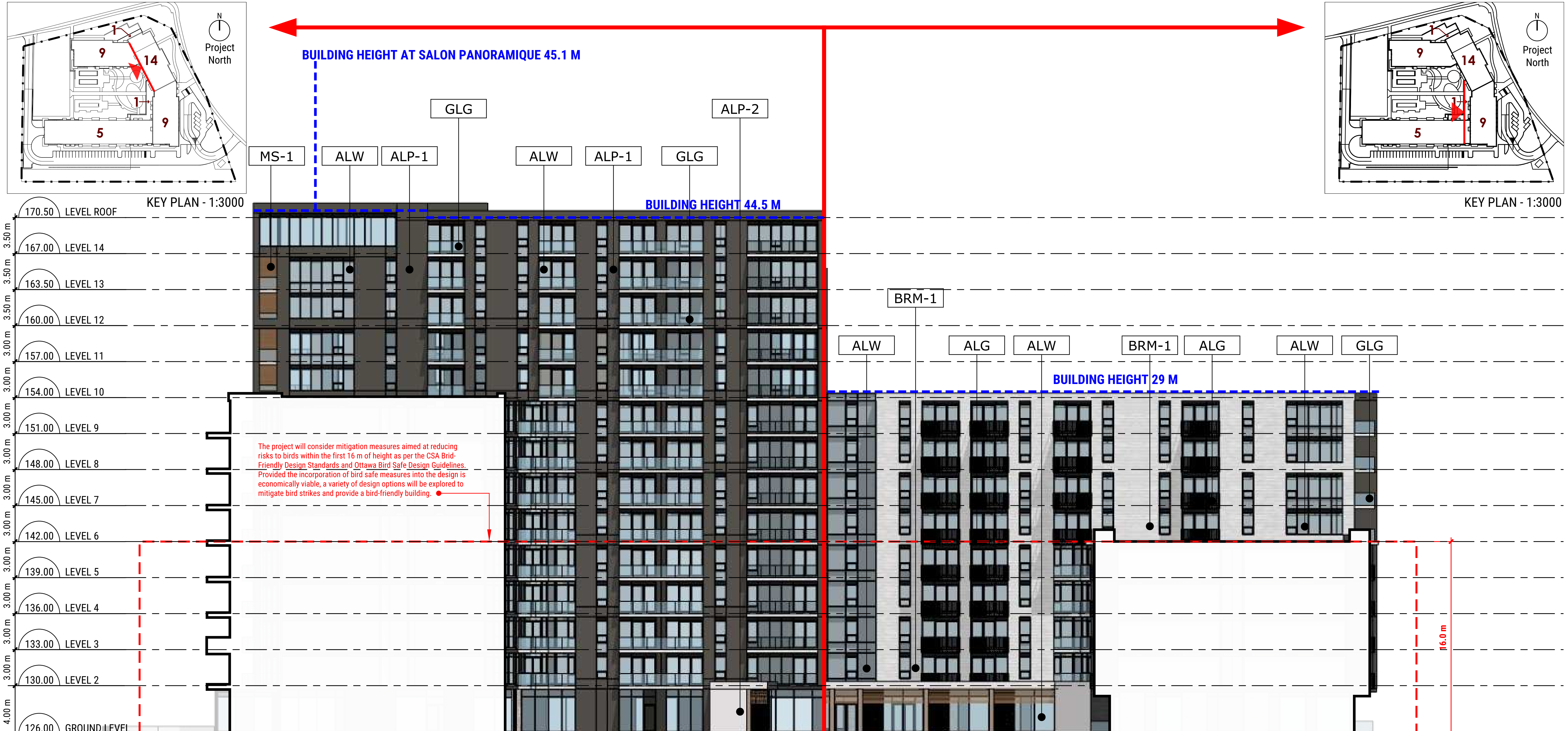
HOBIN

Hazeldean and Carp Road

1174 Carp Rd, Stittsville, ON

WEST ELEVATION

SCALE 1:300
MARCH 2025



SOUTH WEST ELEVATION - COURTYARD

WEST ELEVATION - COURTYARD

ALP-1	ALUMINUM PANEL 1
ALP-2	ALUMINUM PANEL 2
ALP-3	ALUMINUM PANEL 3
BRM-1	BRICK MASONRY 1
BRM-2	BRICK MASONRY 2
STM	STONE MASONRY
MS-1	METAL SIDING 1
MS-2	METAL SIDING 2
ALW	ALUMINUM WINDOWS/ SPANDREL GLASS
ALG	ALUMINUM GUARD RAIL
GLG	GLASS GUARD RAIL

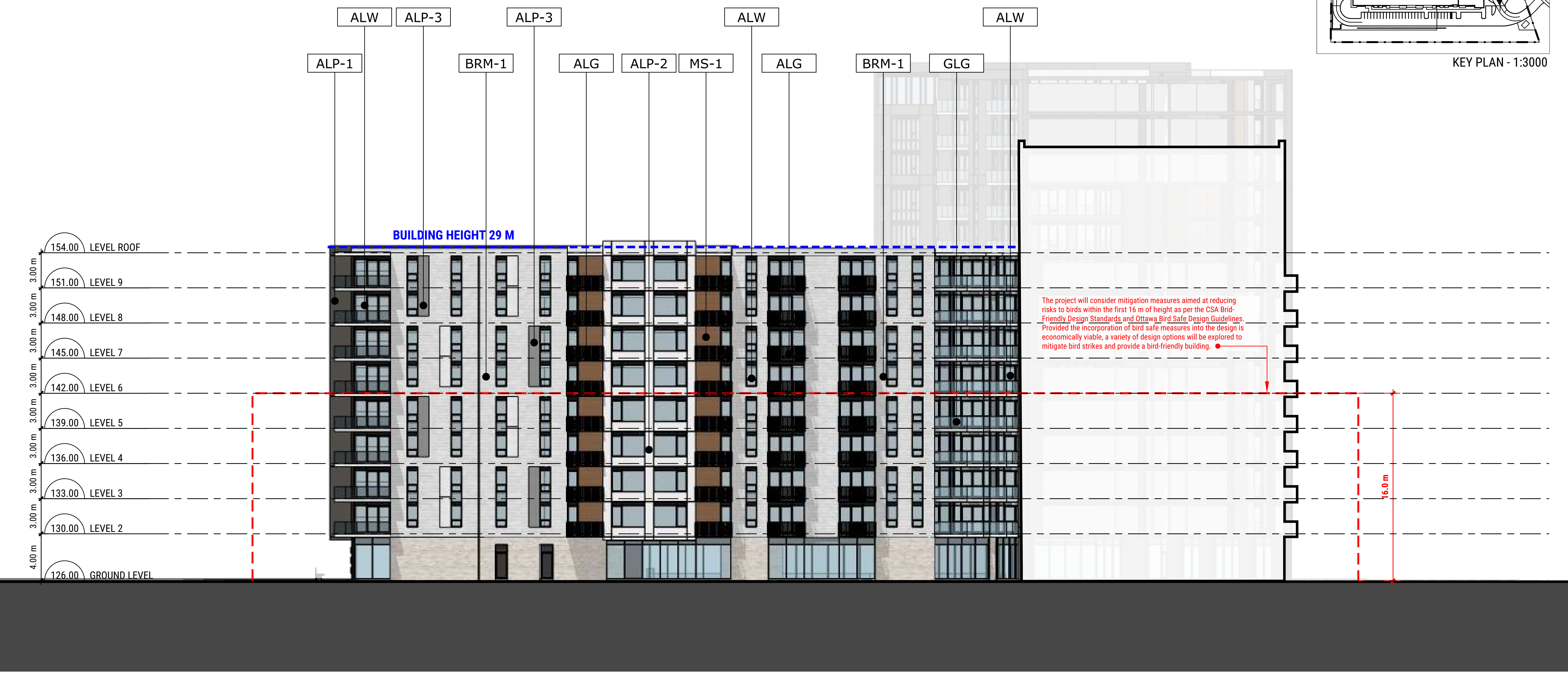
HOBIN

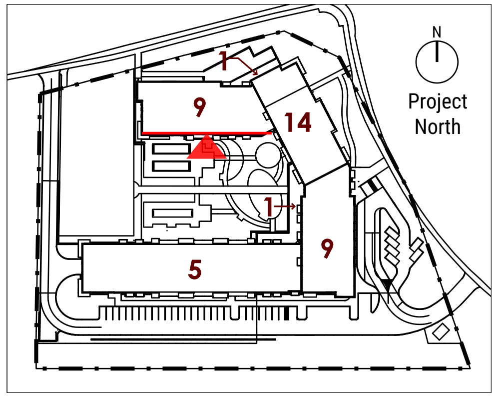
Hazeldean and Carp Road

1174 Carp Rd, Stittsville, ON

SOUTH WEST & WEST ELEVATION - COURTYARD

SCALE 1:300
MARCH 2025





KEY PLAN - 1:3000

ALP-1	ALUMINUM PANEL 1
ALP-2	ALUMINUM PANEL 2
ALP-3	ALUMINUM PANEL 3
BRM-1	BRICK MASONRY 1
BRM-2	BRICK MASONRY 2
STM	STONE MASONRY
MS-1	METAL SIDING 1
MS-2	METAL SIDING 2
ALW	ALUMINUM WINDOWS/ SPANDREL GLASS
ALG	ALUMINUM GUARD RAIL
GLG	GLASS GUARD RAIL

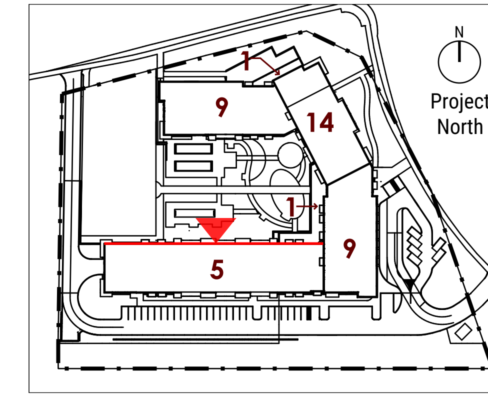
HOBIN

Hazeldean and Carp Road

1174 Carp Rd, Stittsville, ON

SOUTH ELEVATION - COURTYARD

SCALE 1:300
MARCH 2025



KEY PLAN - 1:3000

ALP-1	ALUMINUM PANEL 1
ALP-2	ALUMINUM PANEL 2
ALP-3	ALUMINUM PANEL 3
BRM-1	BRICK MASONRY 1
BRM-2	BRICK MASONRY 2
STM	STONE MASONRY
MS-1	METAL SIDING 1
MS-2	METAL SIDING 2
ALW	ALUMINUM WINDOWS/ SPANDREL GLASS
ALG	ALUMINUM GUARD RAIL
GLG	GLASS GUARD RAIL

HOBIN

Hazeldean and Carp Road

1174 Carp Rd, Stittsville, ON

NORTH ELEVATION - COURTYARD

SCALE 1:300
MARCH 2025

Sun Shadow Analysis Written Summary

Shadow impacts:

Sensitive areas within the sun shadow analysis' study area include a arterial mainstreet (Hazeldean Road), parks, and plazas. This sun shadow study represents the park spaces as a green hatch, plazas a blue hatch, and Hazeldean Road as a blue dashed line (refer to sensitive areas legend).

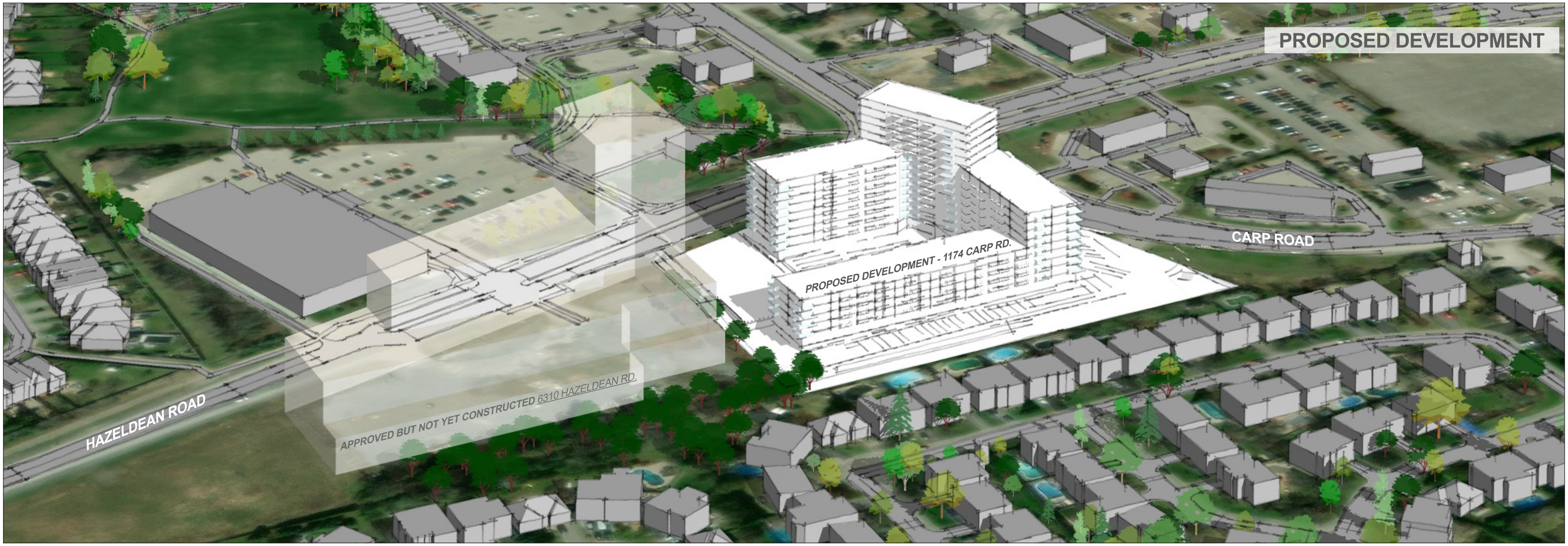
The public spaces including parks, open spaces and plazas are not impacted by the criteria of any new net shadow that results in an average of 50% of any public space being cast in shadow for 5 or more hourly interval times during the September test date.

The arterial mainstreet of Hazeldean Road is not impacted by the criteria of a new net shadow in any one spot for more than 3 consecutive hourly test times of the sidewalk on the opposite side of the street, being cast in shadow during the September test date.

No new net shadow within the no impact zone of any residential private outdoor amenity space is being cast in shadow for more than two consecutive hourly test times during the June and September test date. The times where a net shadow would cast over the rear yard of the abutting low-rise residential building is June at 7:00PM (see page 16), June at 8:00PM (see page 17, where most residential buildings are already in shadow), and September at 6:00PM (see page 28). In summary, the proposed building projects less rear yard shadow compared to the as-of-right massing.

Latitude and Longitude of Site:

Lat: 45.266760
Lng: -75.938960



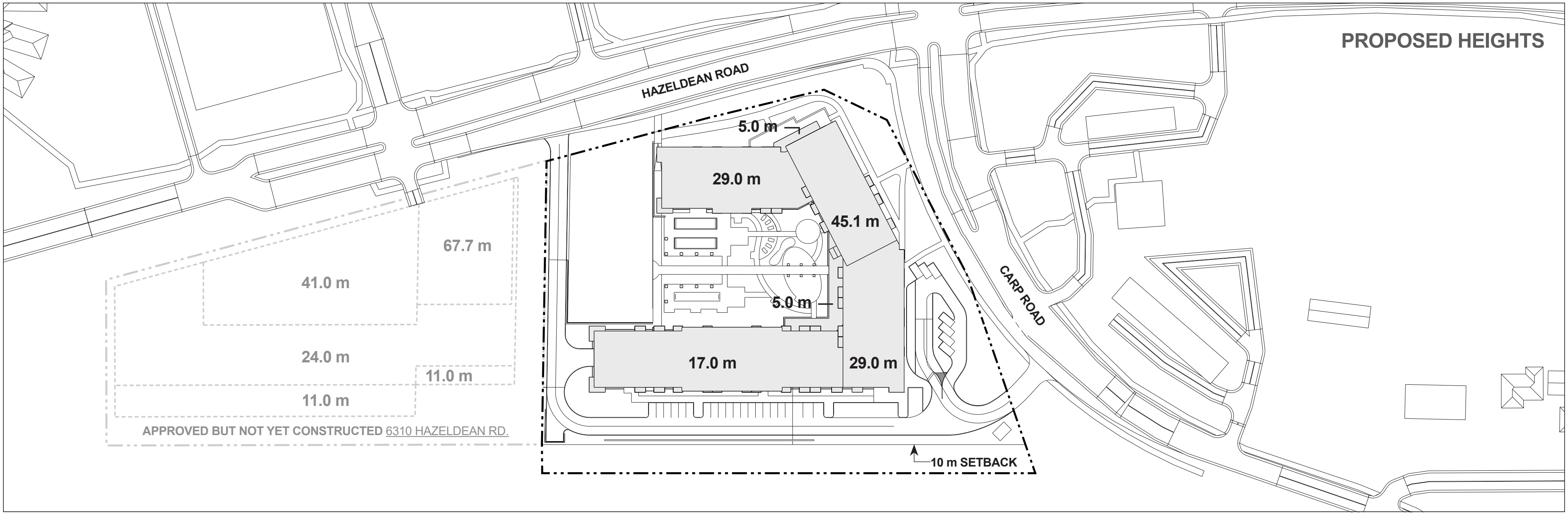
HAZELDEAN & CARP RD

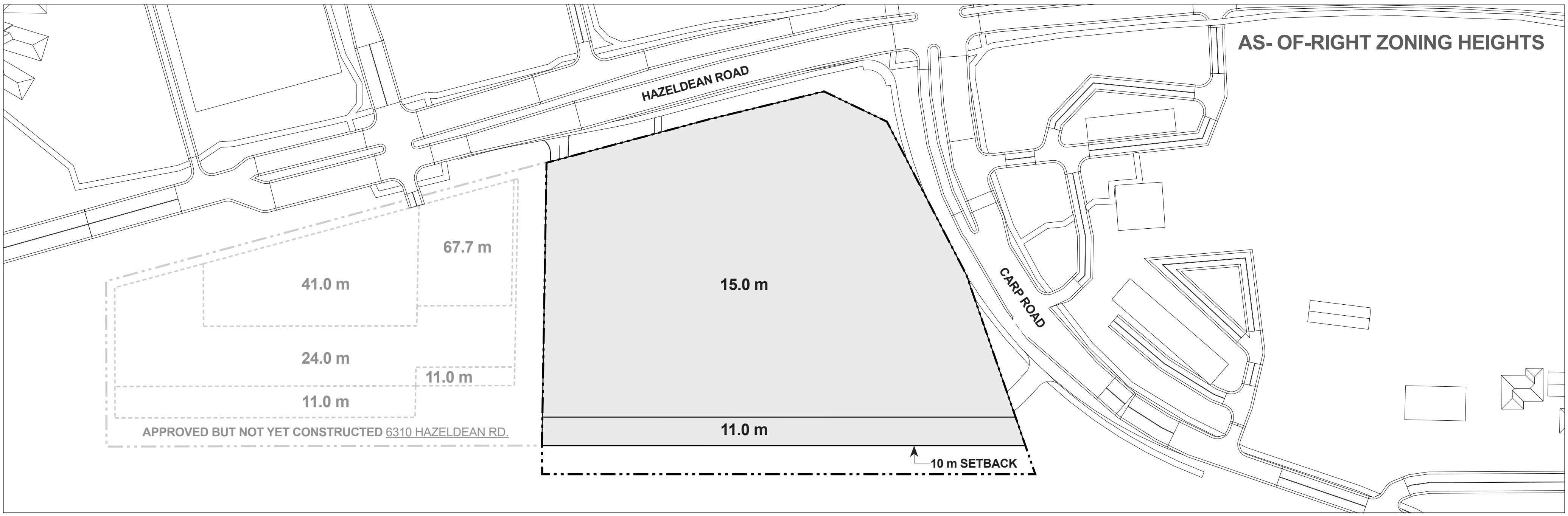
1174 CARP RD, STITTSVILLE, ON

3D Massing Comparison - Looking North East

HOBIN

Company:	Hobin Architecture
Prepared by:	Cristina Hoang
Date:	Mar 28, 2025
Application No.:	
Application Type:	ZBA Submission - UD Brief





HOBIN

HAZELDEAN & CARP RD

1174 CARP RD, STITTSVILLE, ON

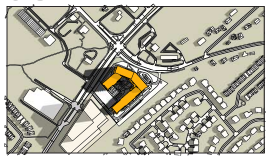
Height and Massing

Company: Hobin Architecture
Prepared by: Cristina Hoang
Date: Mar 28, 2025

Application No.:
Application Type: ZBA Submission - UD Brief
Scale: 1:2000

As-Of-Right & Proposed
HEIGHT & MASSING

JUNE 21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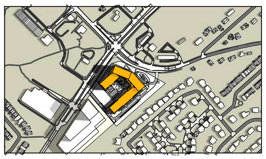
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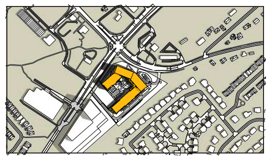
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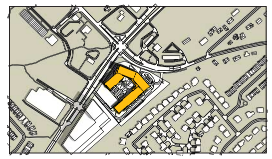
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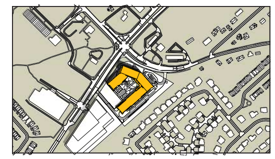
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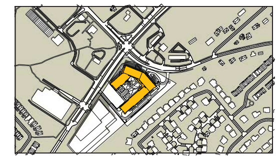
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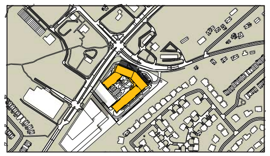
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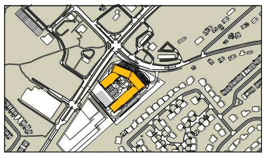
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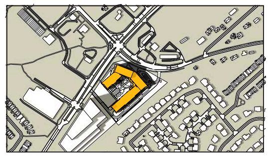
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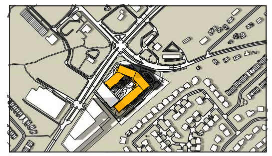
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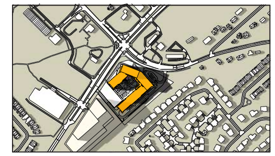
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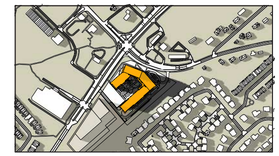
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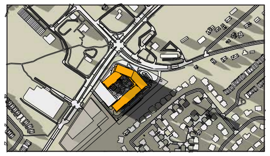
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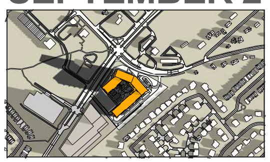
SEPTEMBER 21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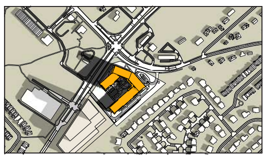
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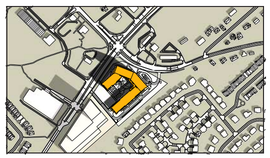
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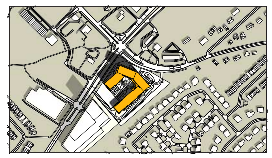
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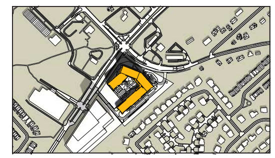
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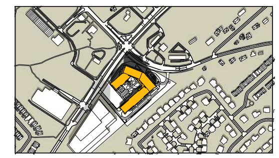
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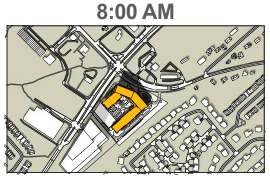
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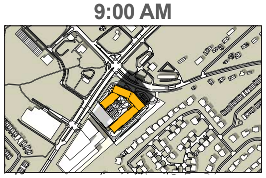
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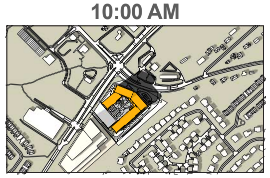
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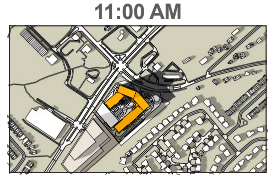
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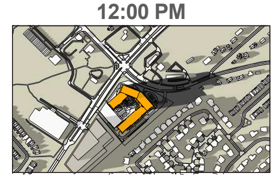
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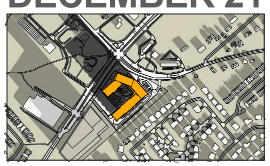
DECEMBER 21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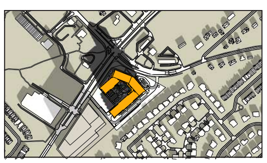
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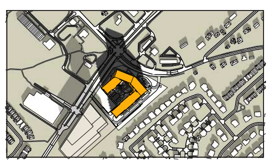
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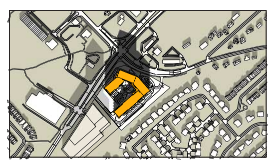
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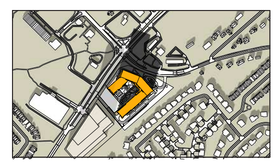
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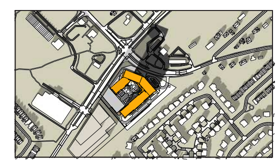
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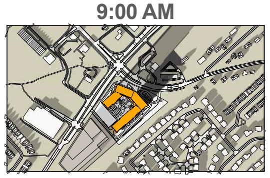
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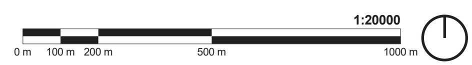
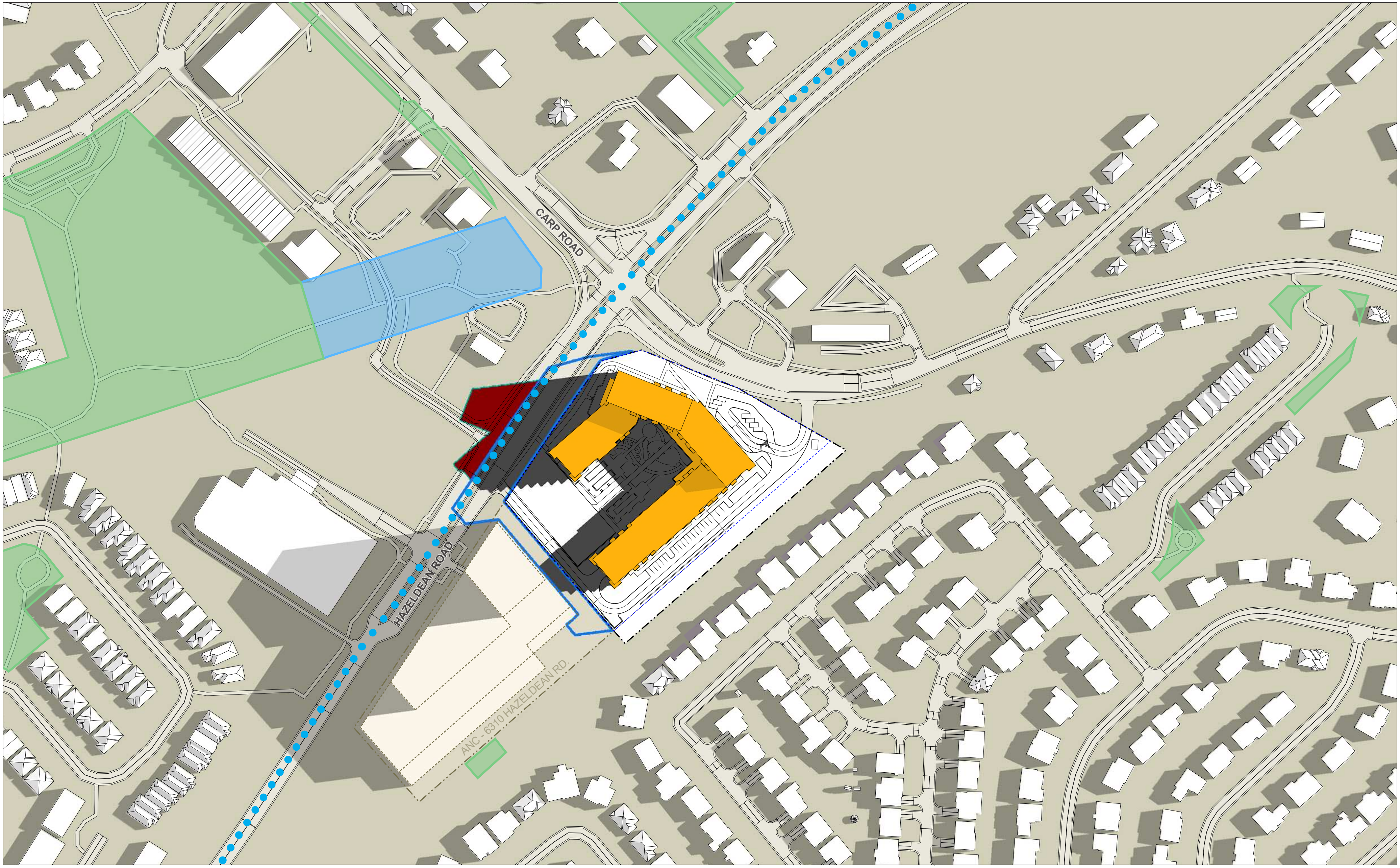




LEGEND:

- New Shadow Outline
- AOR Shadow Outline
- New Development
- Overlap of ANC & New Shadow
- AOR Footprint
- ANC Footprint
- Overlap of AOR & New Shadow
- New Net Shadow
- 7.5m Rear Yard No Impact Buffer Zone (of abutting low-rise residential buildings)
- Property Line
- ANC Property Line

SENSITIVE AREAS:

- Plaza
- Park Spaces
- Traditional / Arterial Mainstreets

New = Proposed Development
AOR = As-Of-Right
ANC = Approved but Not yet Constructed (6310 Hazeldean Rd.)

1:3000
0 m 10 m 20 m 50 m 100 m

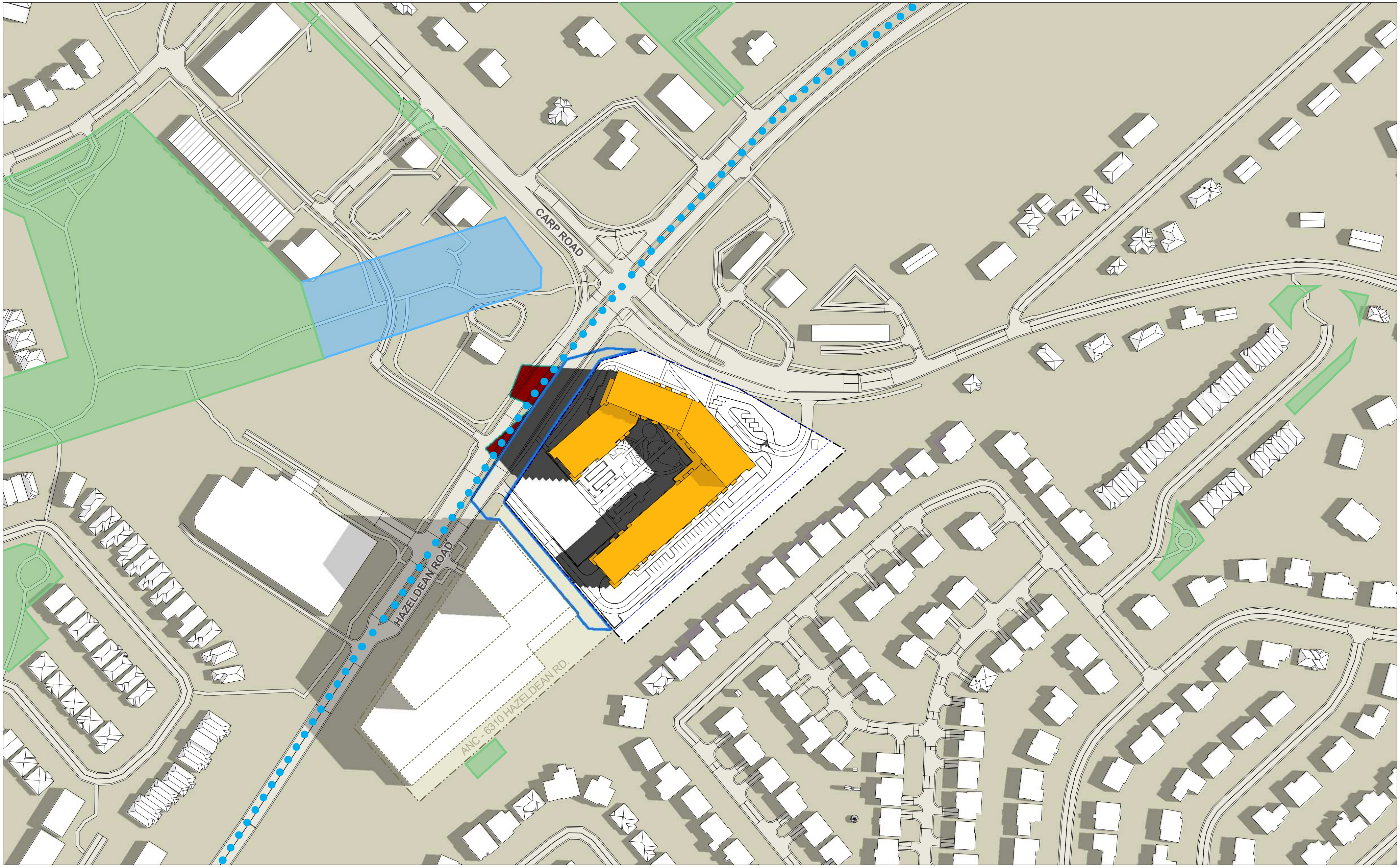
HOBIN

HAZELDEAN & CARP RD
1174 CARP RD, STITTSVILLE, ON
Top-View Shadow Analysis

Company:	Hobin Architecture
Prepared by:	Cristina Hoang
Date:	Mar 28, 2025

Application No.:	
Application Type:	ZBA Submission - UD Brief
Scale:	1:3000

Figure test time:
JUNE 21 8:00am
Eastern Daylight Time (EDT) = Universal Time, 4 hours



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1:3000
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HOBIN

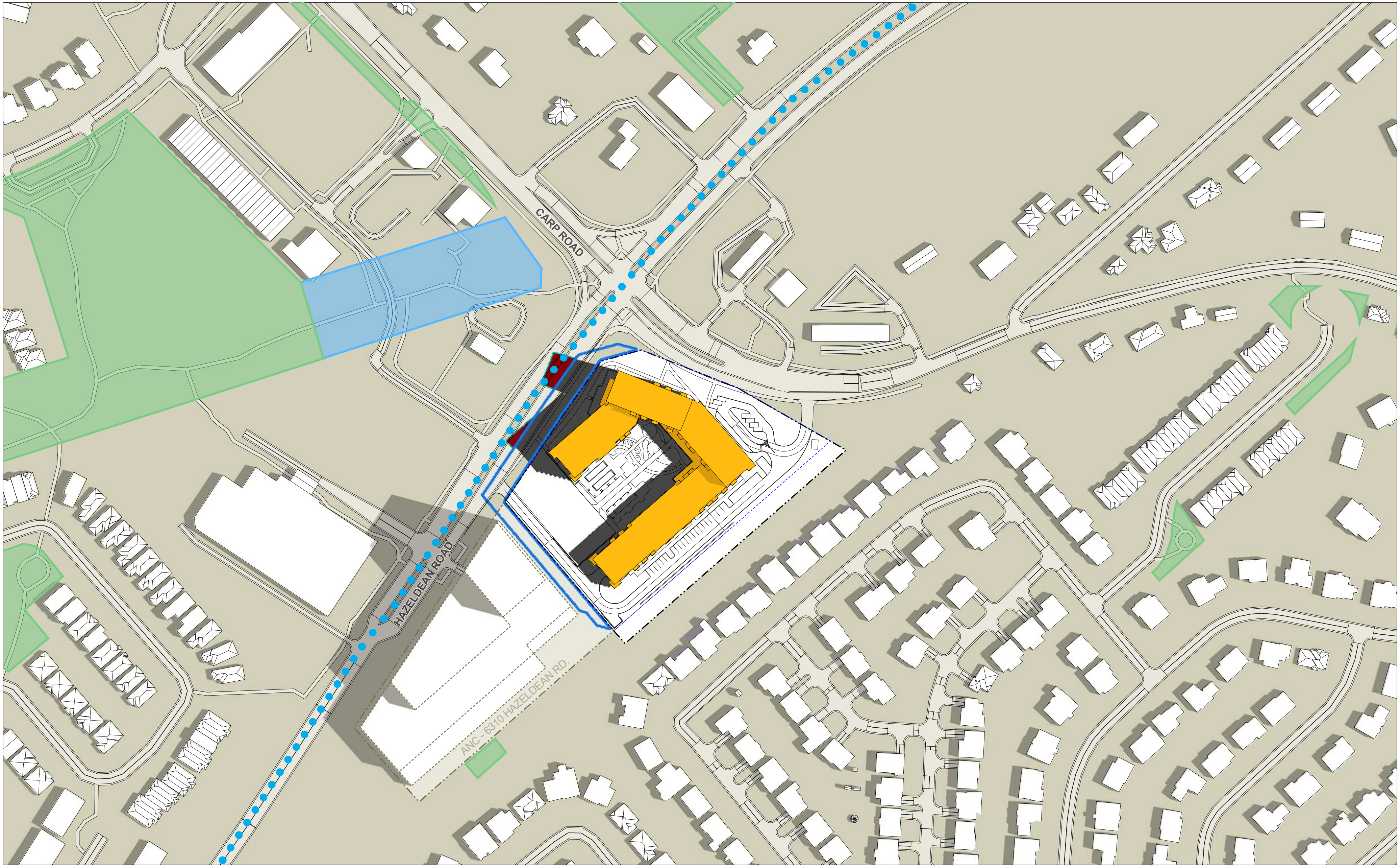
HAZELDEAN & CARP RD

1174 CARP RD, STITTSVILLE, ON

Top-View Shadow Analysis

Company:	Hobin Architecture
Prepared by:	Cristina Hoang
Date:	Mar 28, 2025
Application No.:	
Application Type:	ZBA Submission - UD Brief
Scale:	1:3000

Figure test time:
JUNE 21 9:00am
Eastern Daylight Time (EDT) = Universal Time, 4 hours



LEGEND:

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- AOR Shadow Outline
- New Development
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- ANC Footprint
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1:3000
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HOBIN

HAZELDEAN & CARP RD

1174 CARP RD, STITTSVILLE, ON

Top-View Shadow Analysis

Company: Hobin Architecture
Prepared by: Cristina Hoang
Date: Mar 28, 2025

Application No.:
Application Type: ZBA Submission - UD Brief
Scale: 1:3000

Figure test time:
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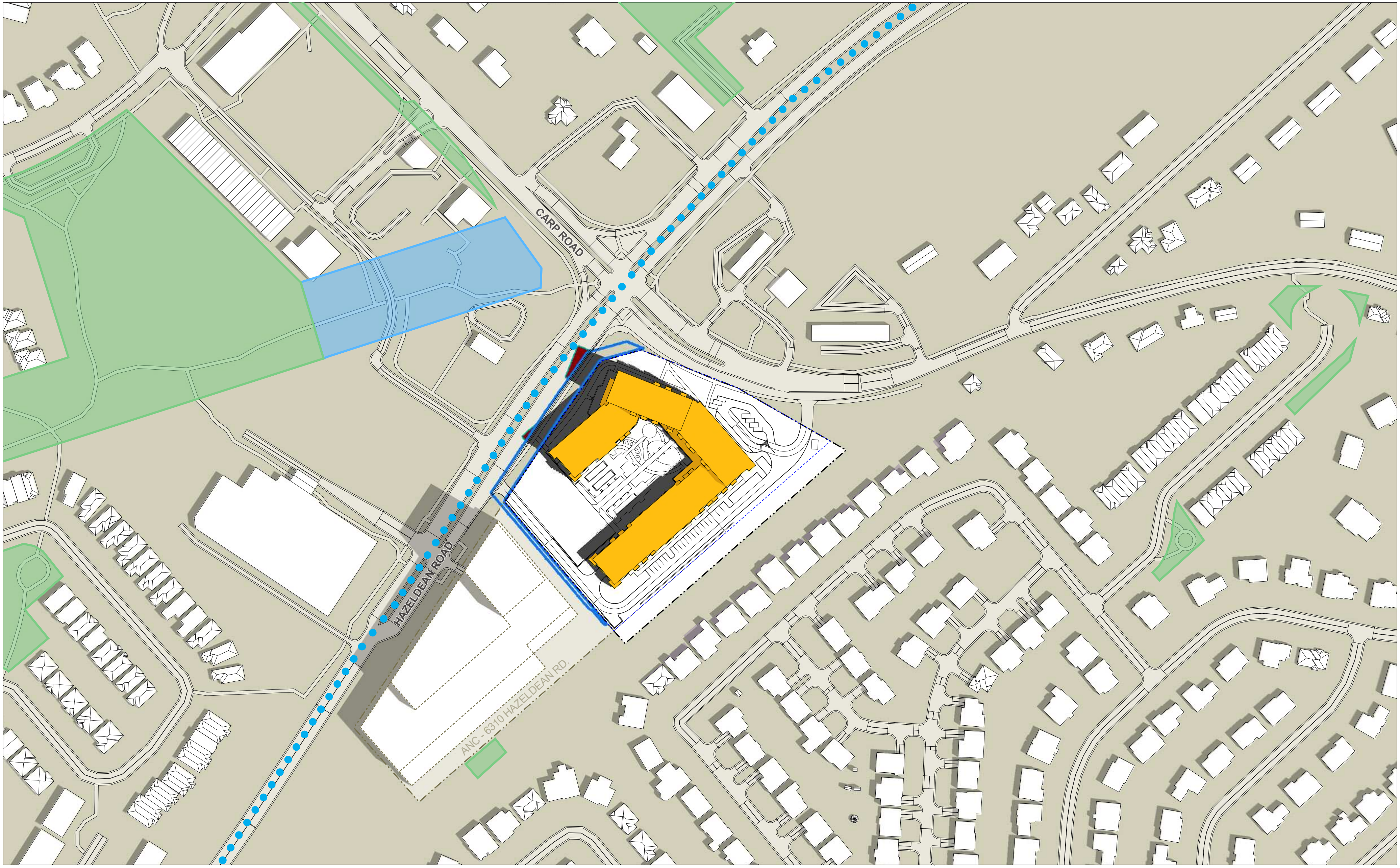
Eastern Daylight Time (EDT) = Universal Time, 4 hours



LEGEND:

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HOBIN

HAZELDEAN & CARP RD

1174 CARP RD, STITTSVILLE, ON

Top-View Shadow Analysis

Company:	Hobin Architecture
Prepared by:	Cristina Hoang
Date:	Mar 28, 2025
Application No.:	
Application Type:	ZBA Submission - UD Brief
Scale:	1:3000

Figure test time:
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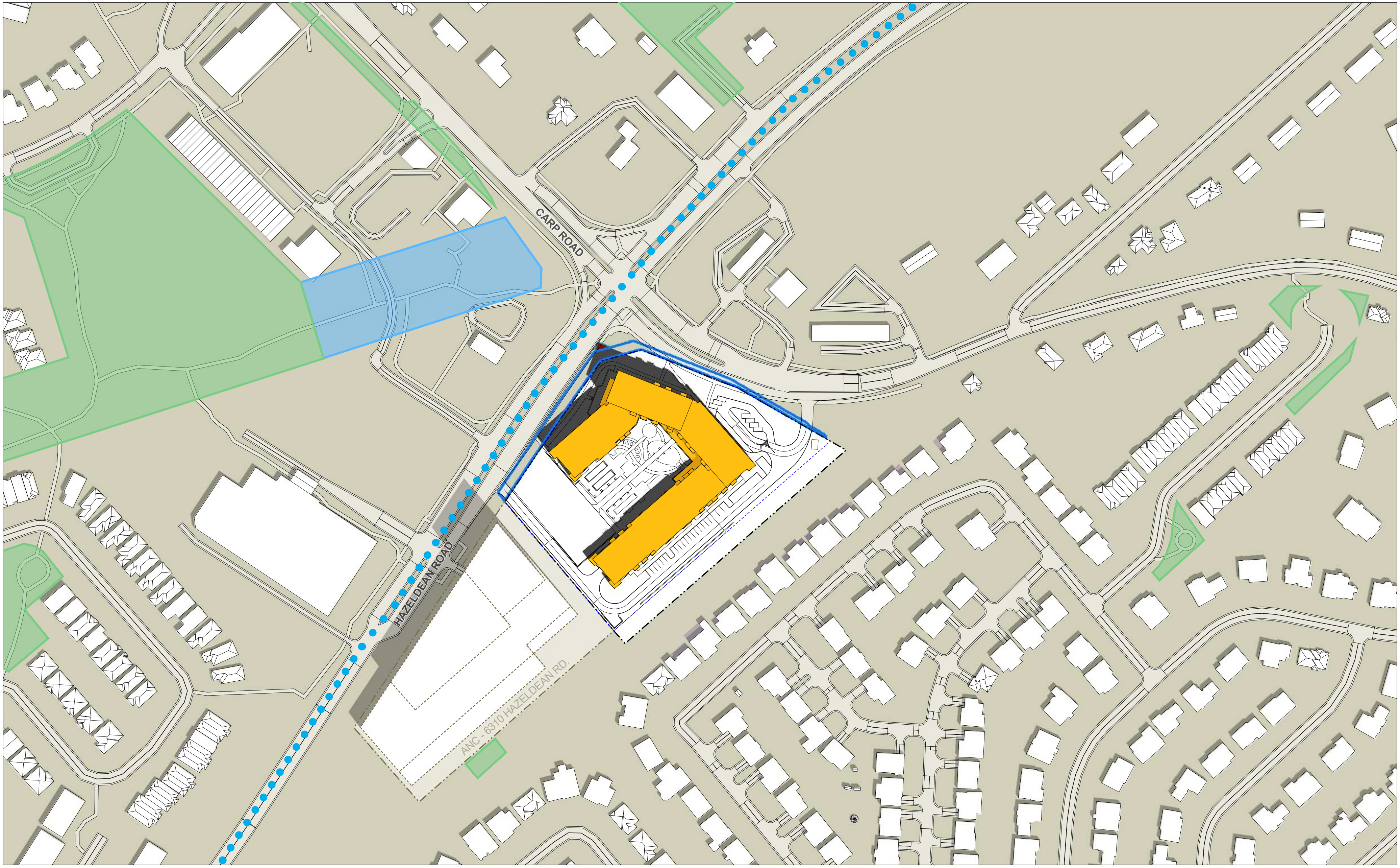
Eastern Daylight Time (EDT) = Universal Time, 4 hours



LEGEND:

- New Shadow Outline
- AOR Shadow Outline
- New Development
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- AOR Footprint
- ANC Footprint
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HOBIN

HAZELDEAN & CARP RD

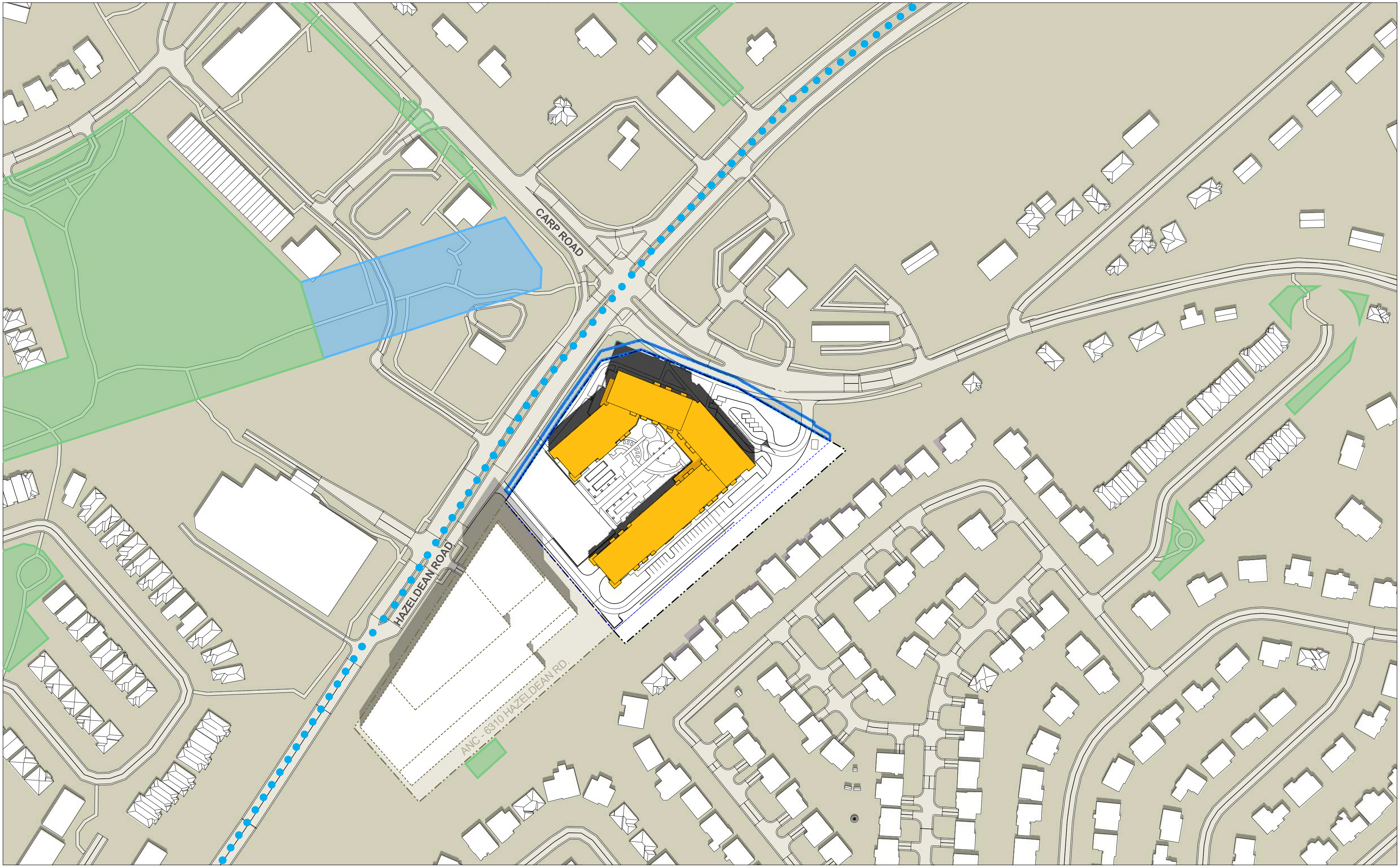
1174 CARP RD, STITTSVILLE, ON

Top-View Shadow Analysis

Company:	Hobin Architecture
Prepared by:	Cristina Hoang
Date:	Mar 28, 2025

Application No.:	
Application Type:	ZBA Submission - UD Brief
Scale:	1:3000

Figure test time:
JUNE 21 12:00pm
Eastern Daylight Time (EDT) = Universal Time, 4 hours



LEGEND:

- New Shadow Outline
- AOR Shadow Outline
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- ANC Footprint
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0 m 10 m 20 m 50 m 100 m

HOBIN

HAZELDEAN & CARP RD

1174 CARP RD, STITTSVILLE, ON

Top-View Shadow Analysis

Company:	Hobin Architecture
Prepared by:	Cristina Hoang
Date:	Mar 28, 2025

Application No.:	
Application Type:	ZBA Submission - UD Brief
Scale:	1:3000

Figure test time:
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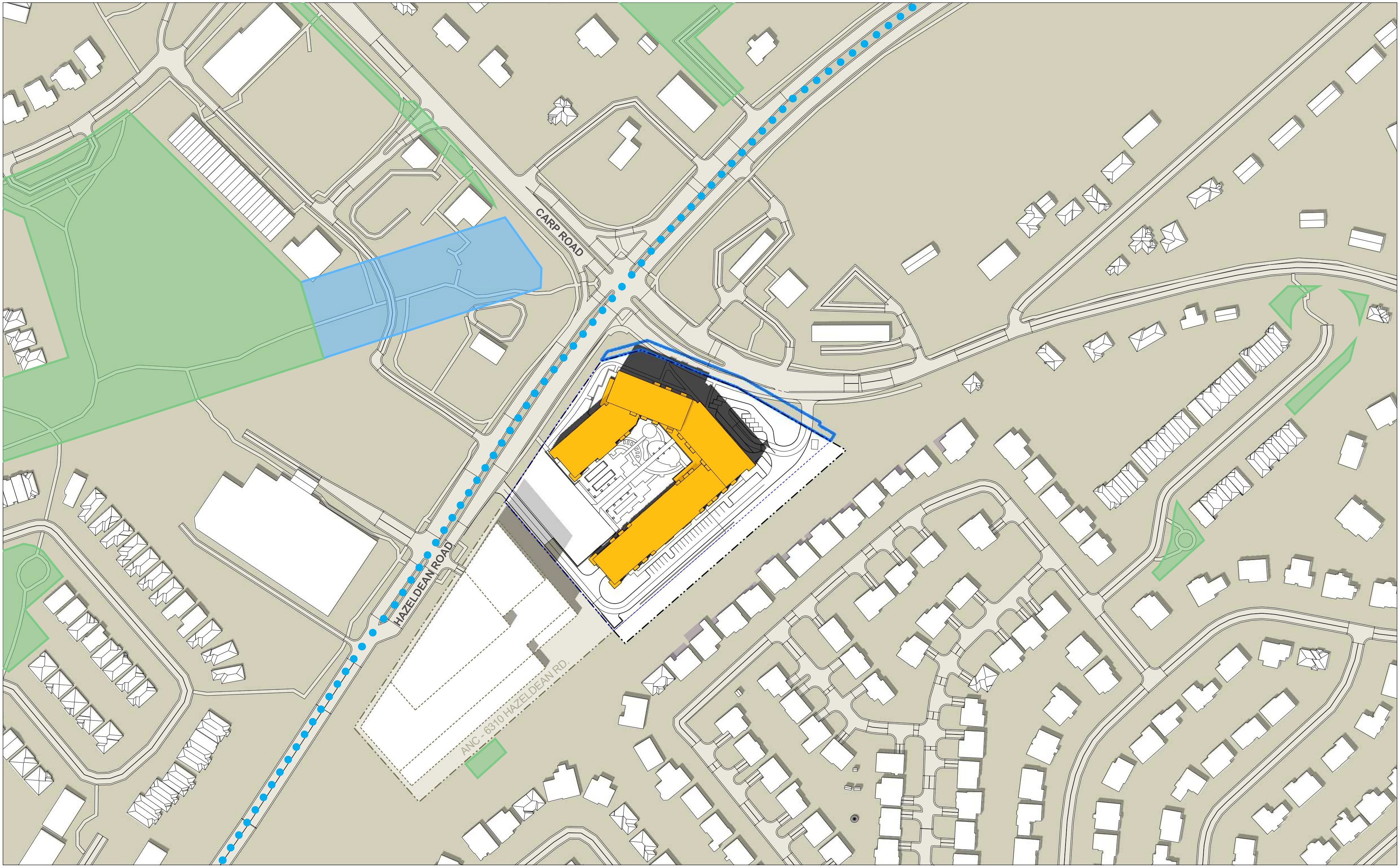
Eastern Daylight Time (EDT) = Universal Time, 4 hours



LEGEND:

- New Shadow Outline
- AOR Shadow Outline
- New Development
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- AOR Footprint
- ANC Footprint
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1:3000
0 m 10 m 20 m 50 m 100 m

HOBIN

HAZELDEAN & CARP RD

1174 CARP RD, STITTSVILLE, ON

Top-View Shadow Analysis

Company: Hobin Architecture
Prepared by: Cristina Hoang
Date: Mar 28, 2025

Application No.:
Application Type: ZBA Submission - UD Brief
Scale: 1:3000

Figure test time:
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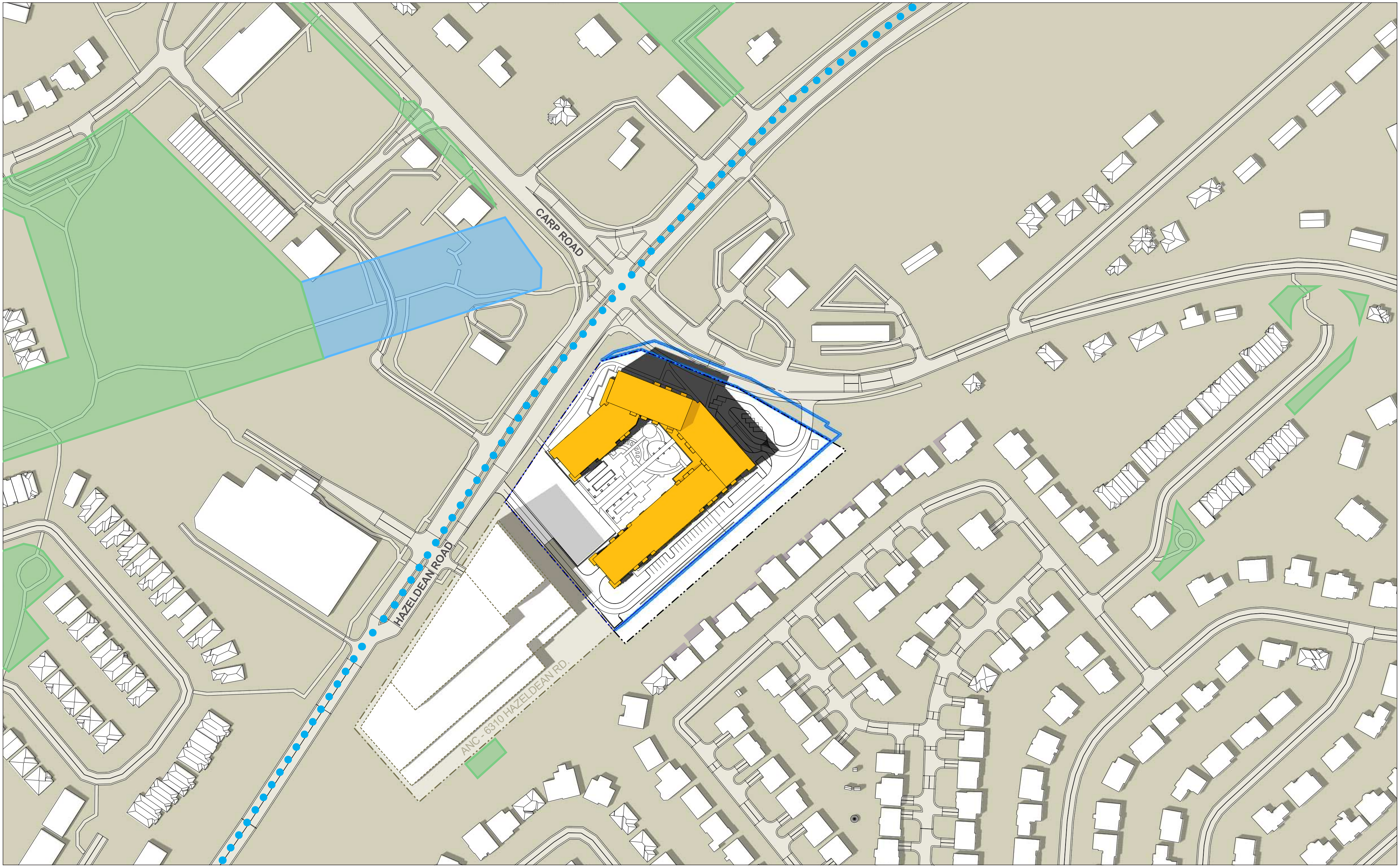

LEGEND:

- New Shadow Outline
- AOR Shadow Outline
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- Overlap of ANC & New Shadow
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1:3000
0 m 10 m 20 m 50 m 100 m

HOBIN

HAZELDEAN & CARP RD

1174 CARP RD, STITTSVILLE, ON

Top-View Shadow Analysis

Company: Hobin Architecture
Prepared by: Cristina Hoang
Date: Mar 28, 2025

Application No.:
Application Type: ZBA Submission - UD Brief
Scale: 1:3000

Figure test time:
JUNE 21 3:00pm
Eastern Daylight Time (EDT) = Universal Time, 4 hours

LEGEND:

- New Shadow Outline
- AOR Shadow Outline
- New Development
- Overlap of ANC & New Shadow
- AOR Footprint
- ANC Footprint
- Overlap of AOR & New Shadow
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1:3000
0 m 10 m 20 m 50 m 100 m

HOBIN

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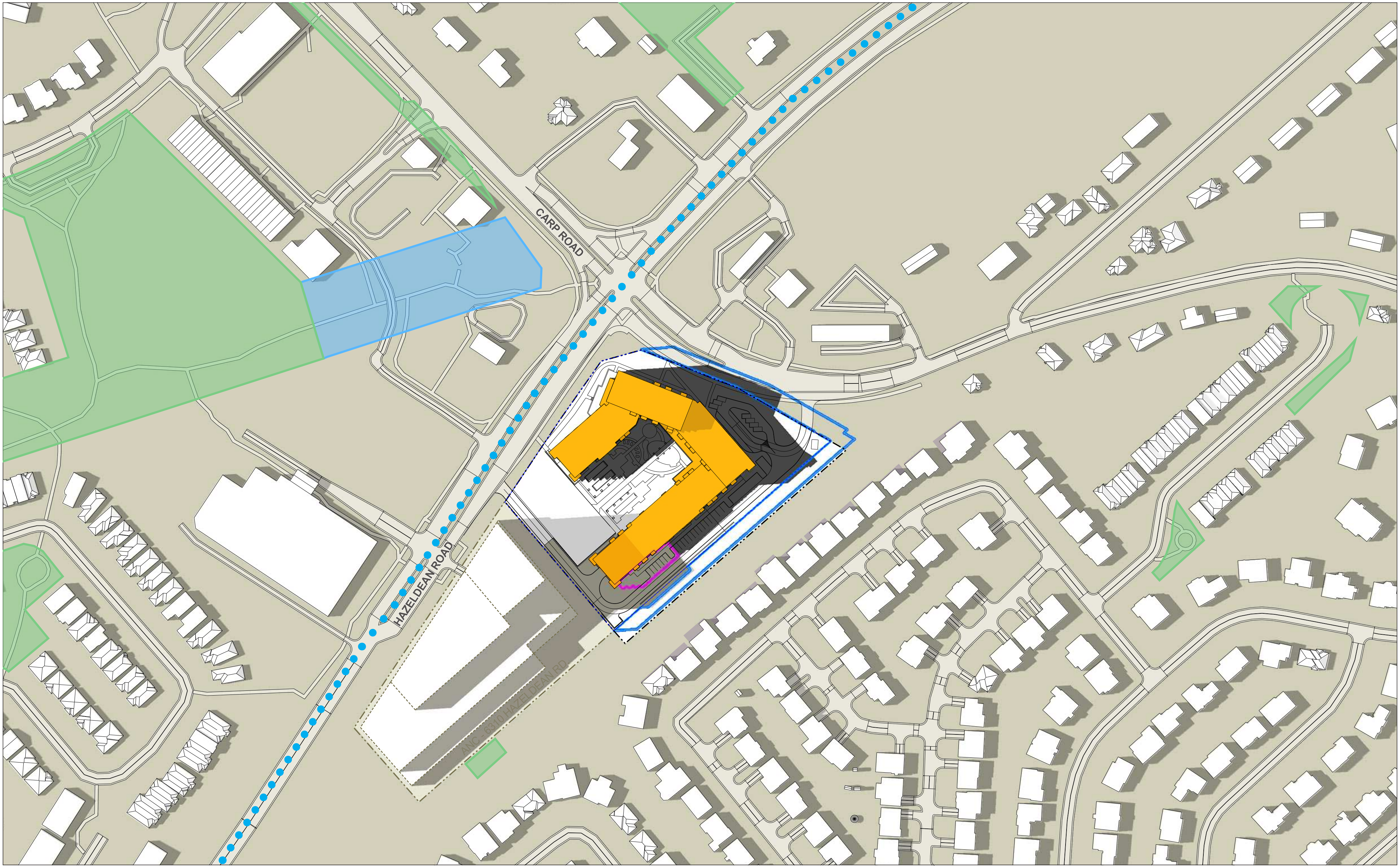
1174 CARP RD, STITTSVILLE, ON

Top-View Shadow Analysis

Company:	Hobin Architecture
Prepared by:	Cristina Hoang
Date:	Mar 28, 2025
Application No.:	
Application Type:	ZBA Submission - UD Brief
Scale:	1:3000

Figure test time:
JUNE 21 4:00pm
Eastern Daylight Time (EDT) = Universal Time, 4 hours



LEGEND:

- New Shadow Outline
- AOR Shadow Outline
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- ANC Footprint
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1:3000
0 m 10 m 20 m 50 m 100 m

HOBIN

HAZELDEAN & CARP RD

1174 CARP RD, STITTSVILLE, ON

Top-View Shadow Analysis

Company:	Hobin Architecture
Prepared by:	Cristina Hoang
Date:	Mar 28, 2025
Application No.:	
Application Type:	ZBA Submission - UD Brief
Scale:	1:3000

Figure test time:
JUNE 21 5:00pm
Eastern Daylight Time (EDT) = Universal Time, 4 hours

LEGEND:

- New Shadow Outline
- AOR Shadow Outline
- New Development
- Overlap of ANC & New Shadow
- AOR Footprint
- ANC Footprint
- Overlap of AOR & New Shadow
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1:3000
0 m 10 m 20 m 50 m 100 m

HOBIN

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1174 CARP RD, STITTSVILLE, ON

Top-View Shadow Analysis

Company:	Hobin Architecture
Prepared by:	Cristina Hoang
Date:	Mar 28, 2025

Application No.:	
Application Type:	ZBA Submission - UD Brief
Scale:	1:3000

Figure test time:
JUNE 21 6:00pm
Eastern Daylight Time (EDT) = Universal Time, 4 hours

LEGEND:

- New Shadow Outline
- AOR Shadow Outline
- New Development
- Overlap of ANC & New Shadow
- AOR Footprint
- ANC Footprint
- Overlap of AOR & New Shadow
- New Net Shadow
- 7.5m Rear Yard No Impact Buffer Zone (of abutting low-rise residential buildings)
- Property Line
- ANC Property Line

SENSITIVE AREAS:

- Plaza
- Park Spaces
- Traditional / Arterial Mainstreets

New = Proposed Development
AOR = As-Of-Right
ANC = Approved but Not yet Constructed (6310 Hazeldean Rd.)

1:3000
0 m 10 m 20 m 50 m 100 m

HOBIN

HAZELDEAN & CARP RD

1174 CARP RD, STITTSVILLE, ON

Top-View Shadow Analysis

Company:	Hobin Architecture
Prepared by:	Cristina Hoang
Date:	Mar 28, 2025

Application No.:	
Application Type:	ZBA Submission - UD Brief
Scale:	1:3000

Figure test time:
JUNE 21 7:00pm
Eastern Daylight Time (EDT) = Universal Time, 4 hours

LEGEND:

- New Shadow Outline
- AOR Shadow Outline
- New Development
- Overlap of ANC & New Shadow
- AOR Footprint
- ANC Footprint
- Overlap of AOR & New Shadow
- New Net Shadow
- 7.5m Rear Yard No Impact Buffer Zone (of abutting low-rise residential buildings)
- Property Line
- ANC Property Line

SENSITIVE AREAS:

- Plaza
- Park Spaces
- Traditional / Arterial Mainstreets

New = Proposed Development
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ANC = Approved but Not yet Constructed (6310 Hazeldean Rd.)

1:3000

0 m 10 m 20 m 50 m 100 m

HOBIN

HAZELDEAN & CARP RD

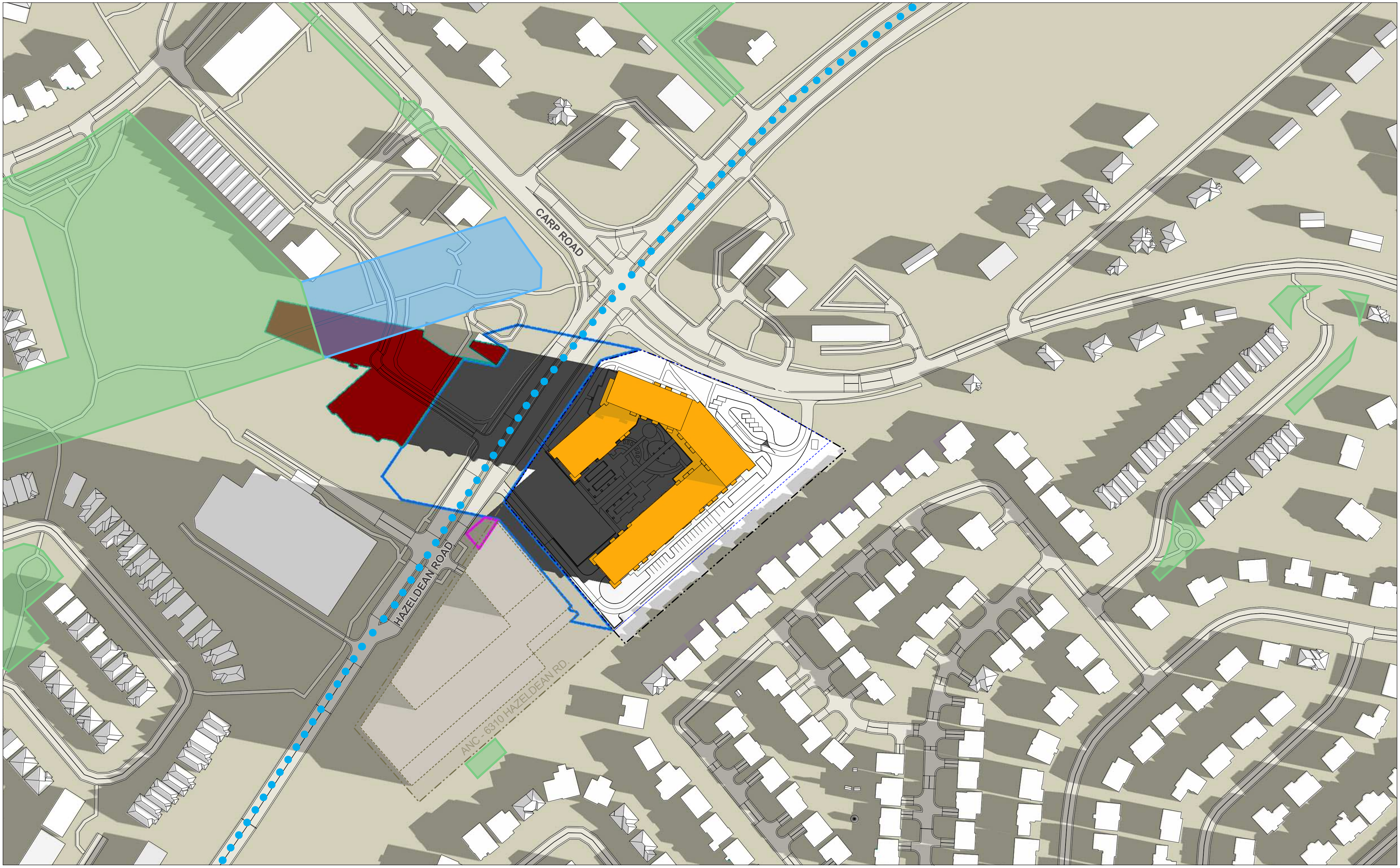
1174 CARP RD, STITTSVILLE, ON

Top-View Shadow Analysis

Company:	Hobin Architecture
Prepared by:	Cristina Hoang
Date:	Mar 28, 2025

Application No.:	
Application Type:	ZBA Submission - UD Brief
Scale:	1:3000

Figure test time:
JUNE 21 8:00pm
Eastern Daylight Time (EDT) = Universal Time, 4 hours



LEGEND:

- New Shadow Outline
- AOR Shadow Outline
- New Development
- Overlap of ANC & New Shadow
- AOR Footprint
- ANC Footprint
- Overlap of AOR & New Shadow
- New Net Shadow
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1174 CARP RD, STITTSVILLE, ON

Top-View Shadow Analysis

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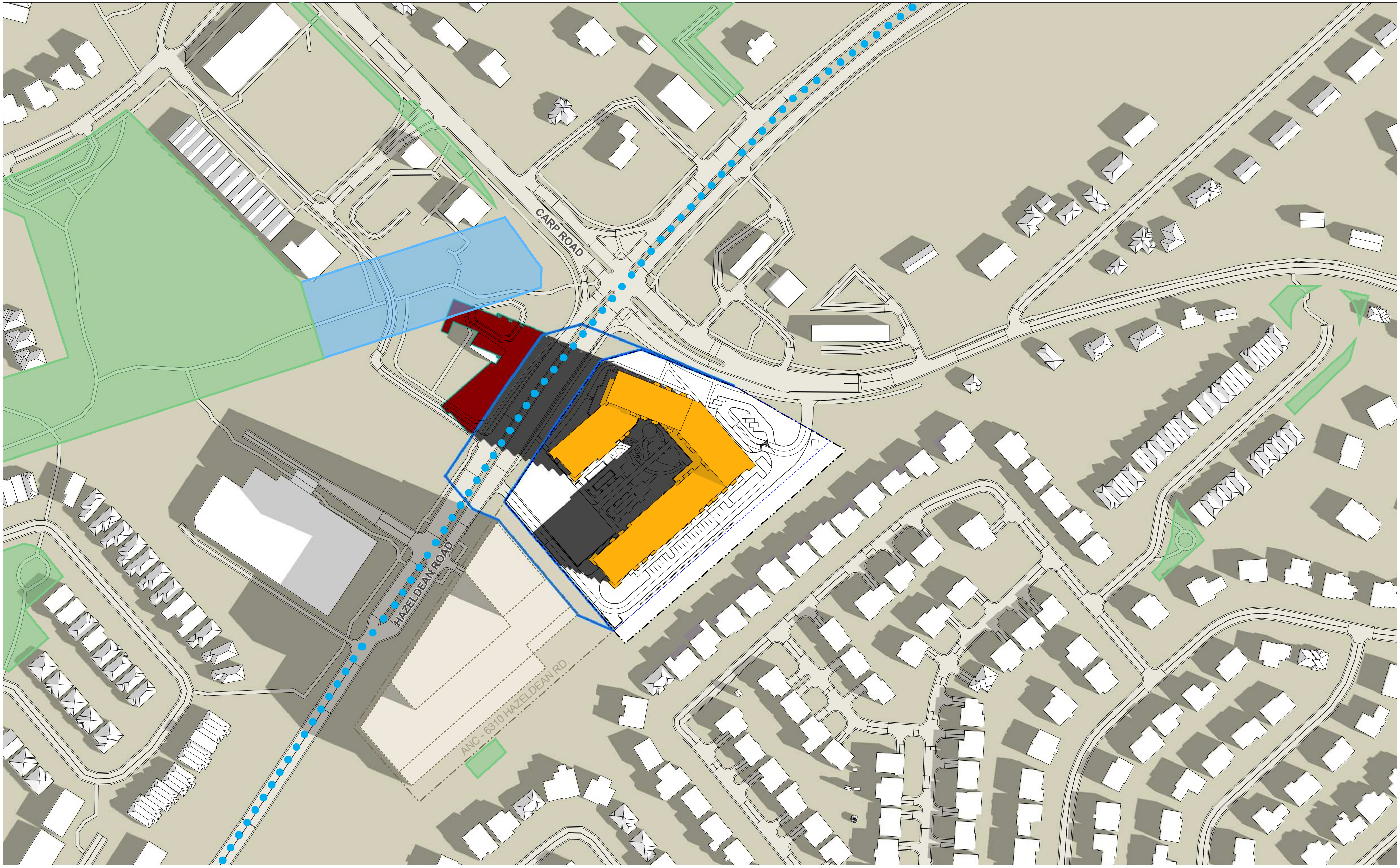
Date:	Mar 28, 2025

Application No.:	
Application Type:	ZBA Submission - UD Brief
Scale:	1:3000

Figure test time:
SEPTEMBER 21 8:00am
Eastern Daylight Time (EDT) = Universal Time, 4 hours



LEGEND:

- New Shadow Outline
- AOR Shadow Outline
- New Development
- Overlap of ANC & New Shadow
- AOR Footprint
- ANC Footprint
- Overlap of AOR & New Shadow
- New Net Shadow
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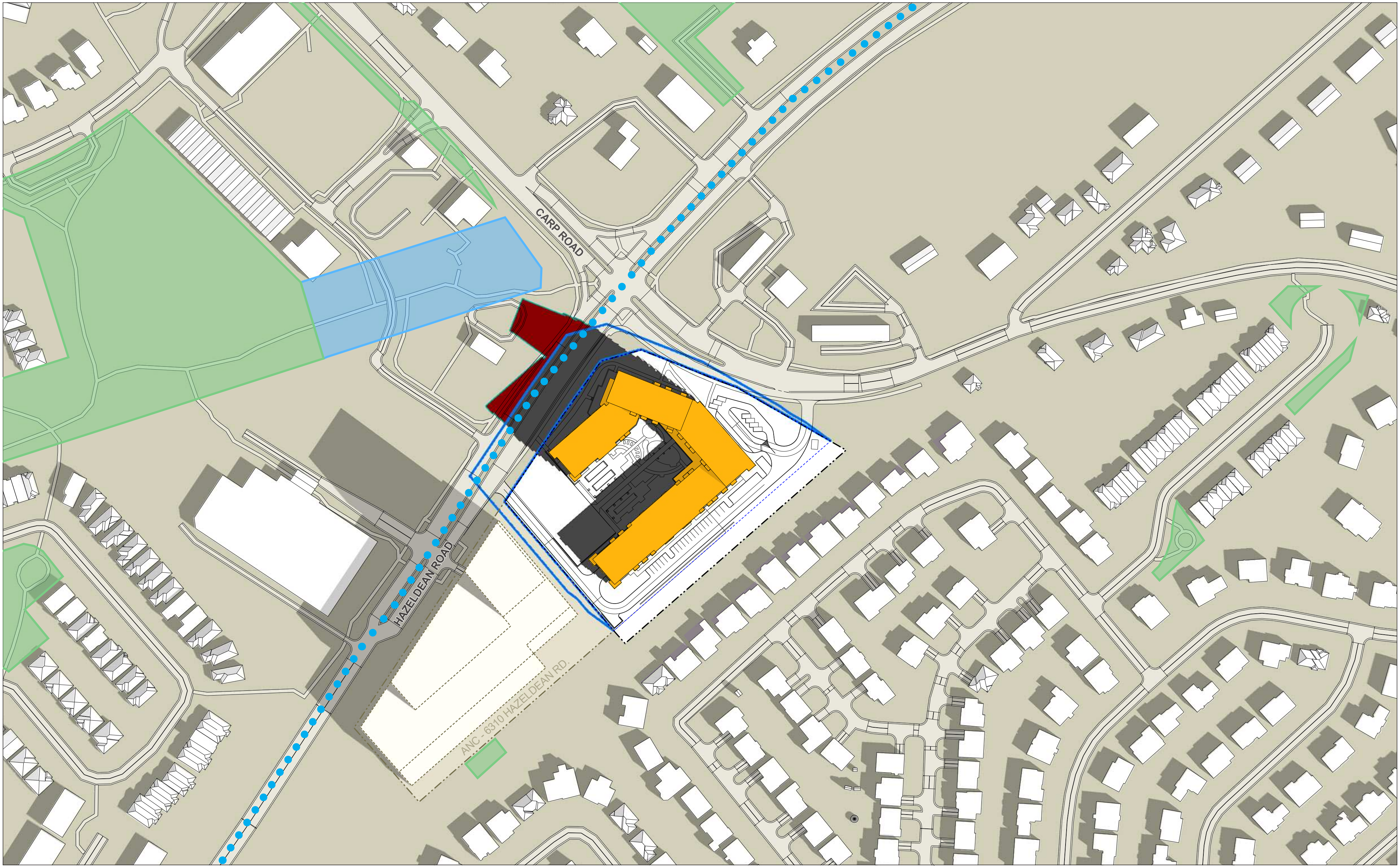
Scale:	1:3000

Figure test time:
SEPTEMBER 21 9:00am
Eastern Daylight Time (EDT) = Universal Time, 4 hours



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- Overlap of ANC & New Shadow
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- ANC Footprint
- Overlap of AOR & New Shadow
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Top-View Shadow Analysis

Company:	Hobin Architecture
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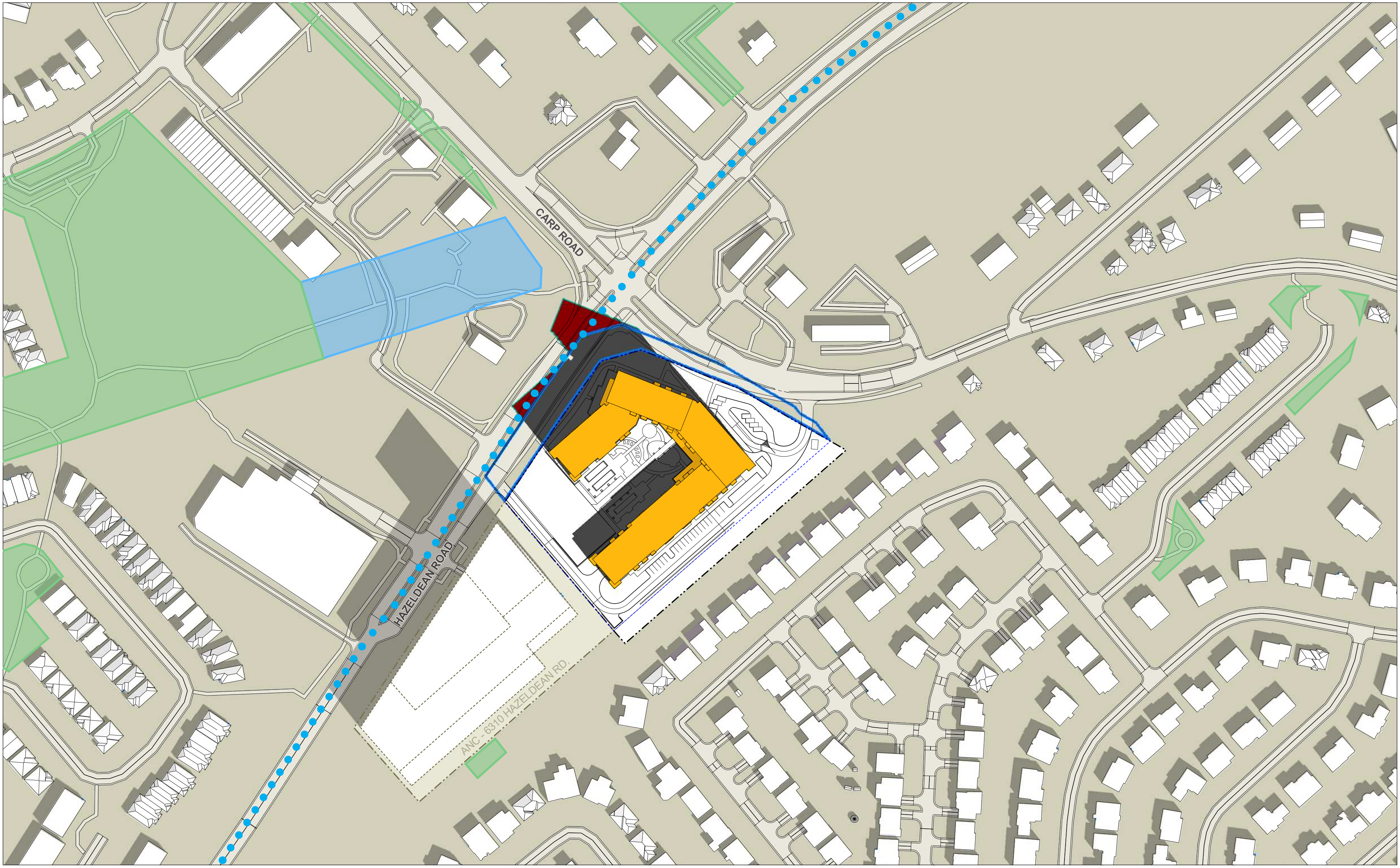
Date:	Mar 28, 2025

Application No.:	
Application Type:	ZBA Submission - UD Brief
Scale:	1:3000

Figure test time:
SEPTEMBER 21 10:00am
Eastern Daylight Time (EDT) = Universal Time, 4 hours



LEGEND:

- New Shadow Outline
- AOR Shadow Outline
- New Development
- Overlap of ANC & New Shadow
- AOR Footprint
- ANC Footprint
- Overlap of AOR & New Shadow
- New Net Shadow
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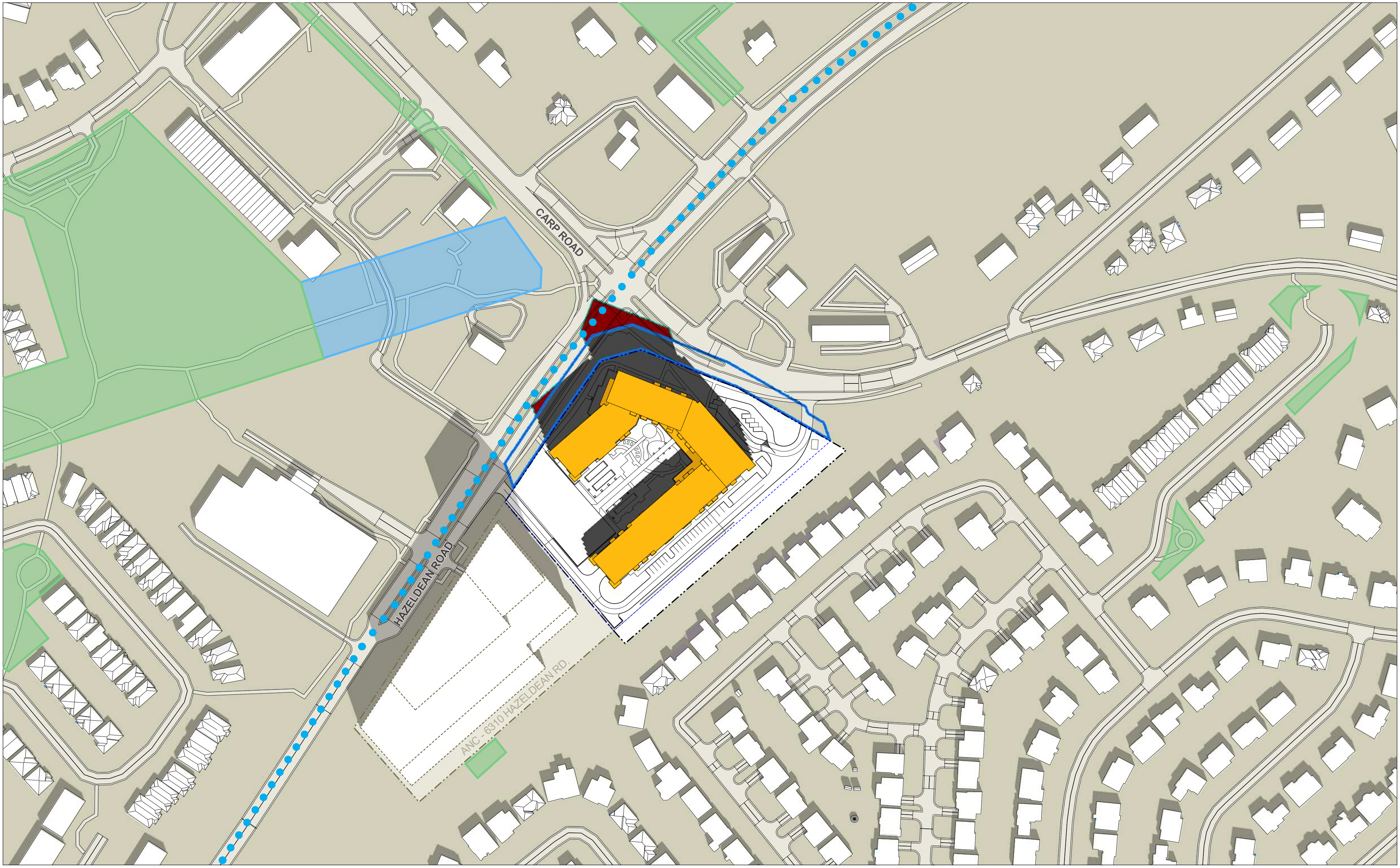
Top-View Shadow Analysis

Company: Hobin Architecture
Prepared by: Cristina Hoang
Date: Mar 28, 2025

Application No.:
Application Type: ZBA Submission - UD Brief
Scale: 1:3000

Figure test time:
SEPTEMBER 21 11:00am
Eastern Daylight Time (EDT) = Universal Time, 4 hours



LEGEND:

- New Shadow Outline
- AOR Shadow Outline
- New Development
- Overlap of ANC & New Shadow
- AOR Footprint
- ANC Footprint
- Overlap of AOR & New Shadow
- New Net Shadow
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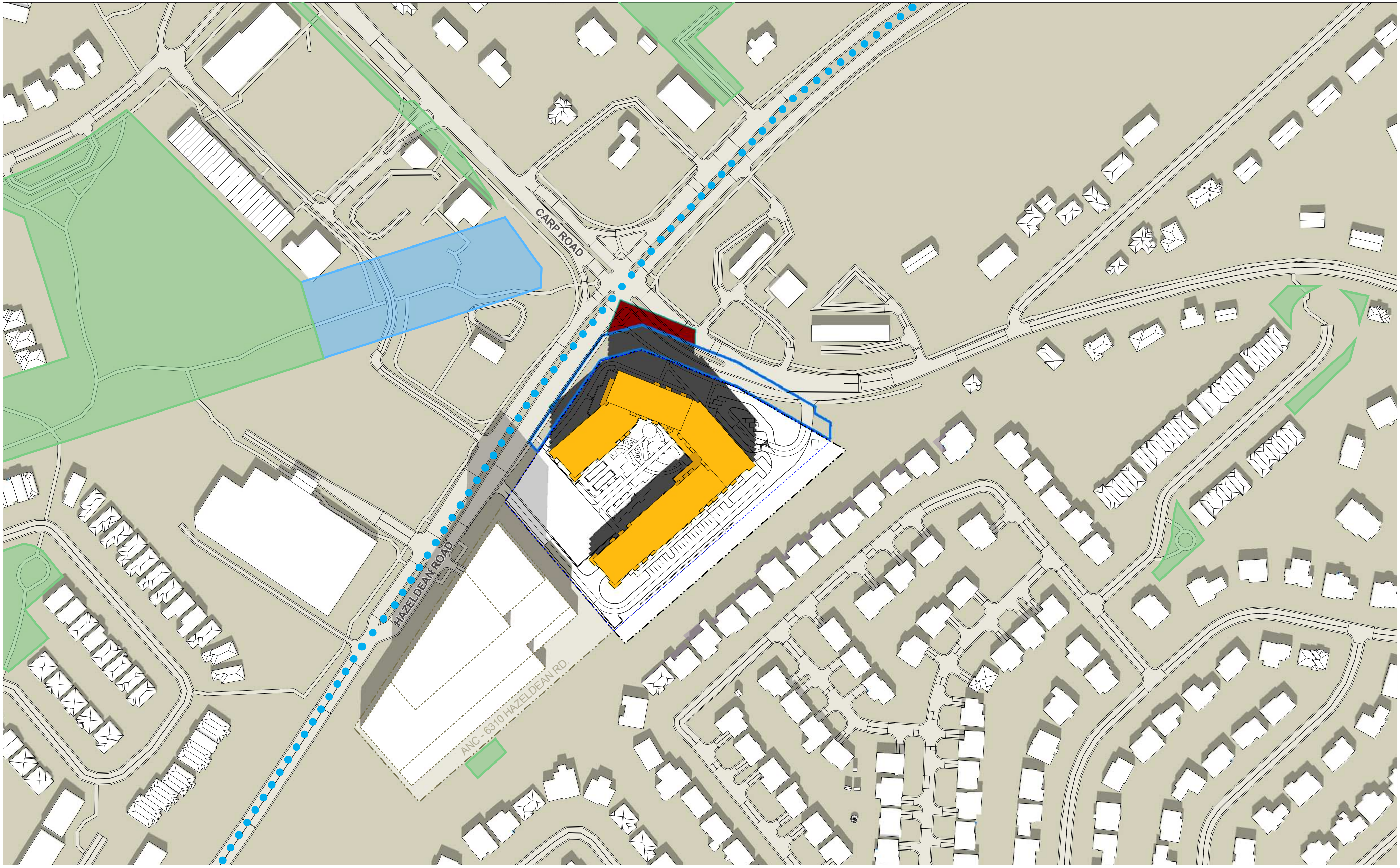
Top-View Shadow Analysis

Company:	Hobin Architecture
Prepared by:	Cristina Hoang
Date:	Mar 28, 2025
Application No.:	
Application Type:	ZBA Submission - UD Brief
Scale:	1:3000

Figure test time:
SEPTEMBER 21 12:00pm
Eastern Daylight Time (EDT) = Universal Time, 4 hours



LEGEND:

- New Shadow Outline
- AOR Shadow Outline
- New Development
- Overlap of ANC & New Shadow
- AOR Footprint
- ANC Footprint
- Overlap of AOR & New Shadow
- New Net Shadow
- 7.5m Rear Yard No Impact Buffer Zone (of abutting low-rise residential buildings)
- Property Line
- ANC Property Line

SENSITIVE AREAS:

- Plaza
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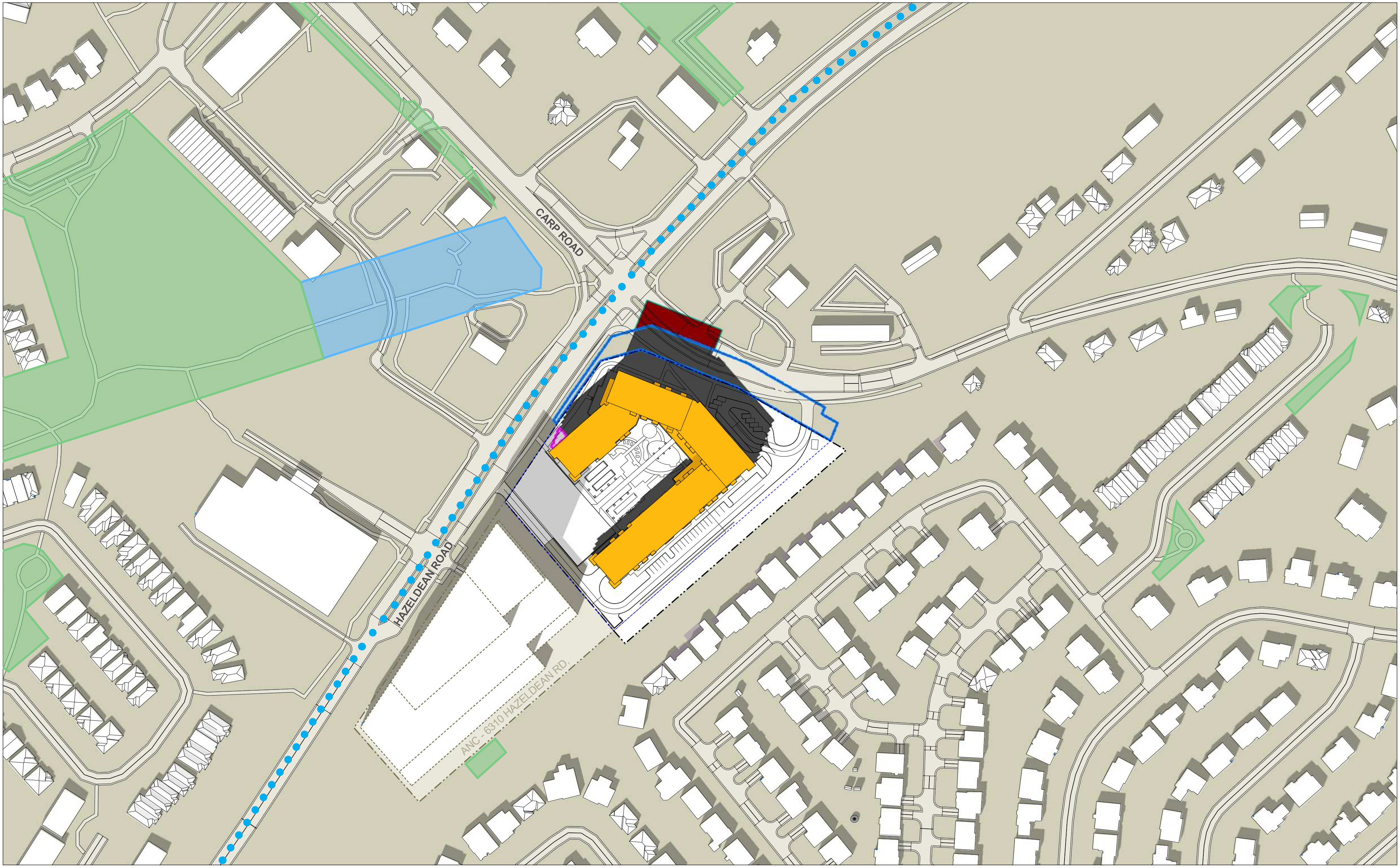
1174 CARP RD, STITTSVILLE, ON

Top-View Shadow Analysis

Company:	Hobin Architecture
Prepared by:	Cristina Hoang
Date:	Mar 28, 2025
Application No.:	
Application Type:	ZBA Submission - UD Brief
Scale:	1:3000

Figure test time:
SEPTEMBER 21 1:00pm
Eastern Daylight Time (EDT) = Universal Time, 4 hours



LEGEND:

- New Shadow Outline
- AOR Shadow Outline
- New Development
- Overlap of ANC & New Shadow
- AOR Footprint
- ANC Footprint
- Overlap of AOR & New Shadow
- New Net Shadow
- 7.5m Rear Yard No Impact Buffer Zone (of abutting low-rise residential buildings)
- Property Line
- ANC Property Line

SENSITIVE AREAS:

- Plaza
- Park Spaces
- Traditional / Arterial Mainstreets

New = Proposed Development
AOR = As-Of-Right
ANC = Approved but Not yet Constructed (6310 Hazeldean Rd.)

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0 m 10 m 20 m 50 m 100 m

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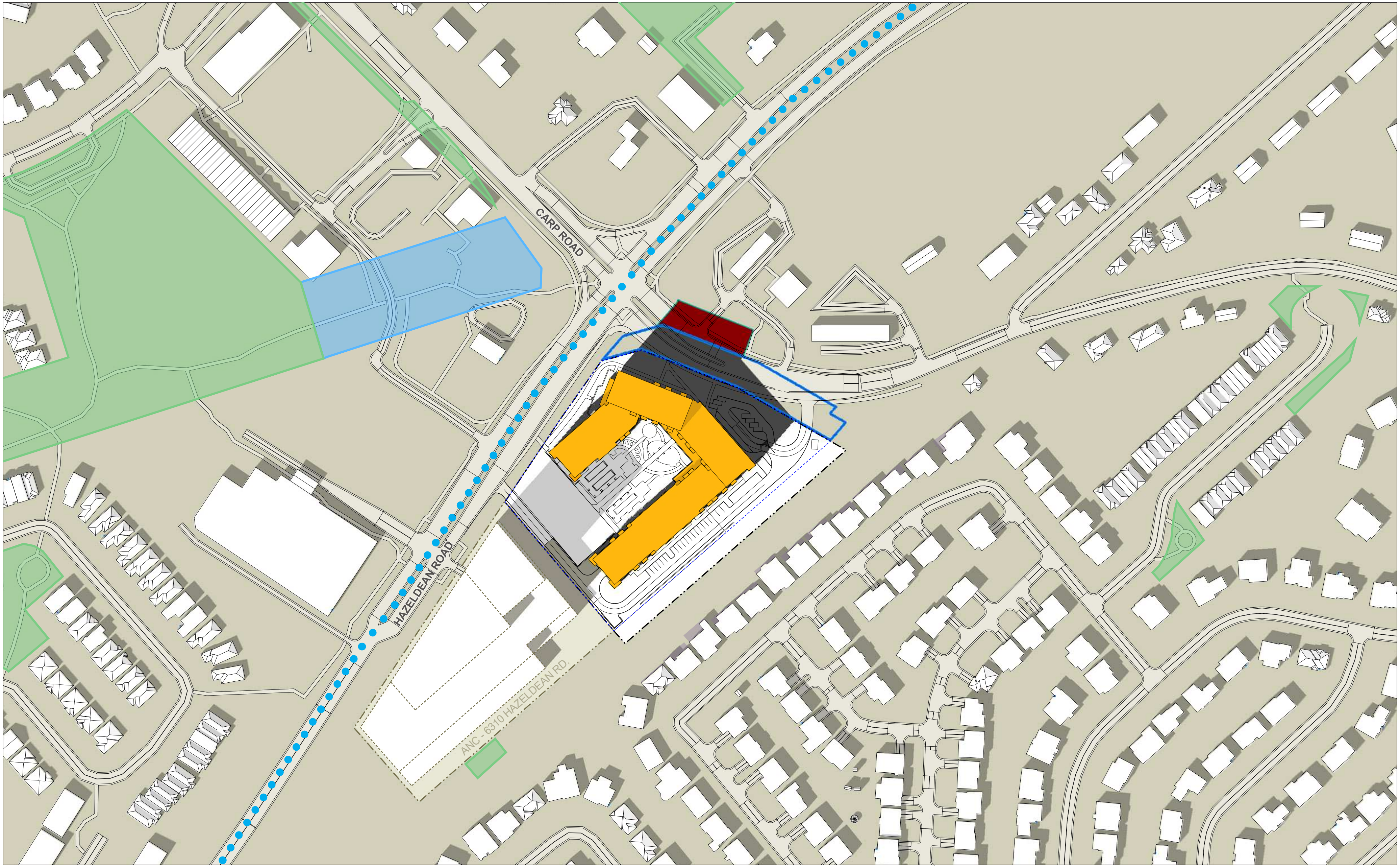
1174 CARP RD, STITTSVILLE, ON

Top-View Shadow Analysis

Company:	Hobin Architecture
Prepared by:	Cristina Hoang
Date:	Mar 28, 2025
Application No.:	
Application Type:	ZBA Submission - UD Brief
Scale:	1:3000

Figure test time:
SEPTEMBER 21 2:00pm
Eastern Daylight Time (EDT) = Universal Time, 4 hours



LEGEND:

New Shadow Outline	Overlap of ANC & New Shadow	Overlap of AOR & New Shadow	Property Line
AOR Shadow Outline	AOR Footprint	New Net Shadow	ANC Property Line
New Development	ANC Footprint	7.5m Rear Yard No Impact Buffer Zone (of abutting low-rise residential buildings)	

SENSITIVE AREAS:

- Plaza
- Park Spaces
- Traditional / Arterial Mainstreets

New = Proposed Development
AOR = As-Of-Right
ANC = Approved but Not yet Constructed (6310 Hazeldean Rd.)

1:3000
0 m 10 m 20 m 50 m 100 m

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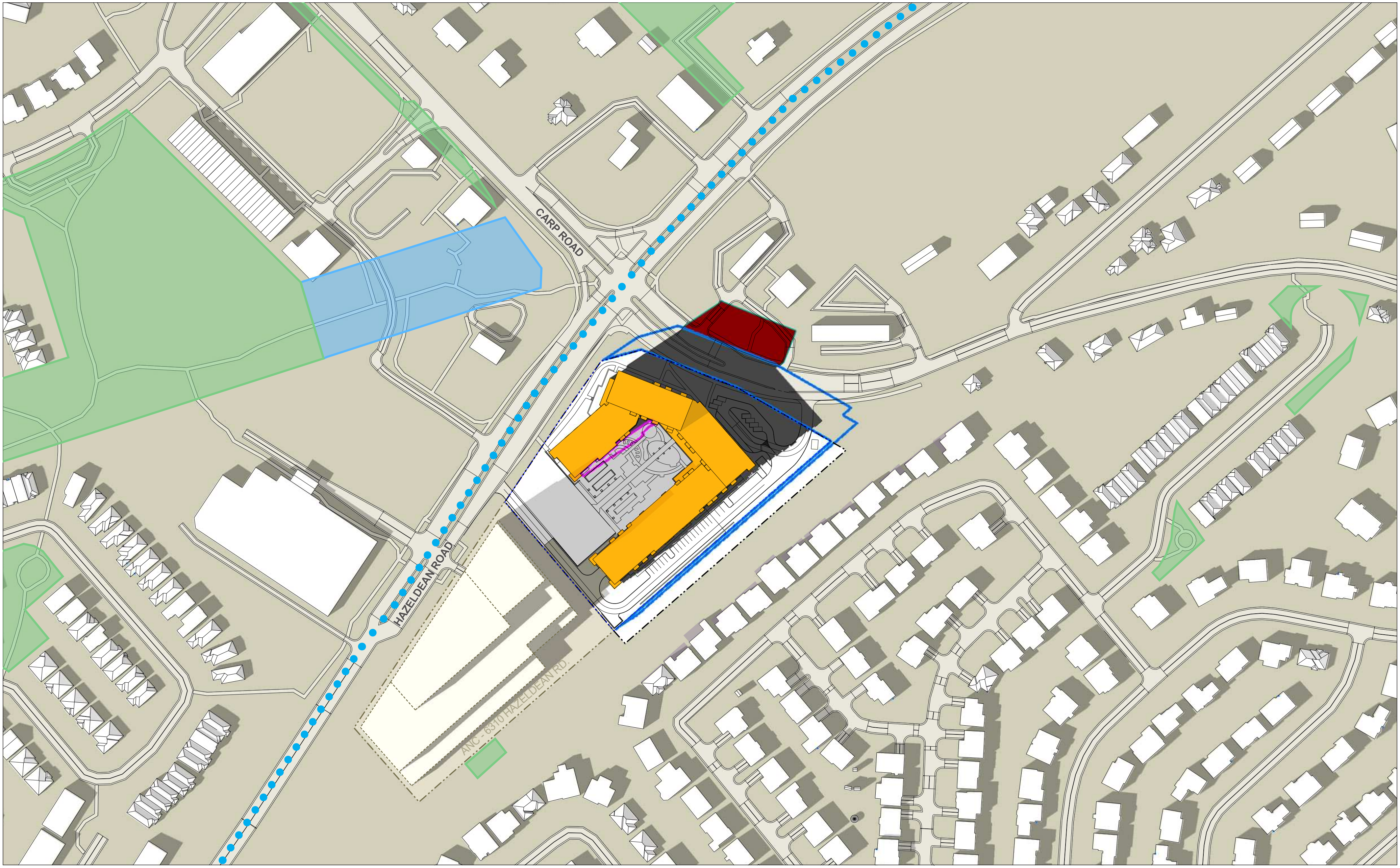
1174 CARP RD, STITTSVILLE, ON

Top-View Shadow Analysis

Company: Hobin Architecture
Prepared by: Cristina Hoang
Date: Mar 28, 2025

Application No.:
Application Type: ZBA Submission - UD Brief
Scale: 1:3000

Figure test time:
SEPTEMBER 21 3:00pm
Eastern Daylight Time (EDT) = Universal Time, 4 hours



LEGEND:

New Shadow Outline	Overlap of ANC & New Shadow	Overlap of AOR & New Shadow	Property Line
AOR Shadow Outline	AOR Footprint	New Net Shadow	ANC Property Line
New Development	ANC Footprint	7.5m Rear Yard No Impact Buffer Zone (of abutting low-rise residential buildings)	

SENSITIVE AREAS:

- Plaza
- Park Spaces
- Traditional / Arterial Mainstreets

New = Proposed Development
AOR = As-Of-Right
ANC = Approved but Not yet Constructed (6310 Hazeldean Rd.)

1:3000
0 m 10 m 20 m 50 m 100 m

HOBIN

HAZELDEAN & CARP RD

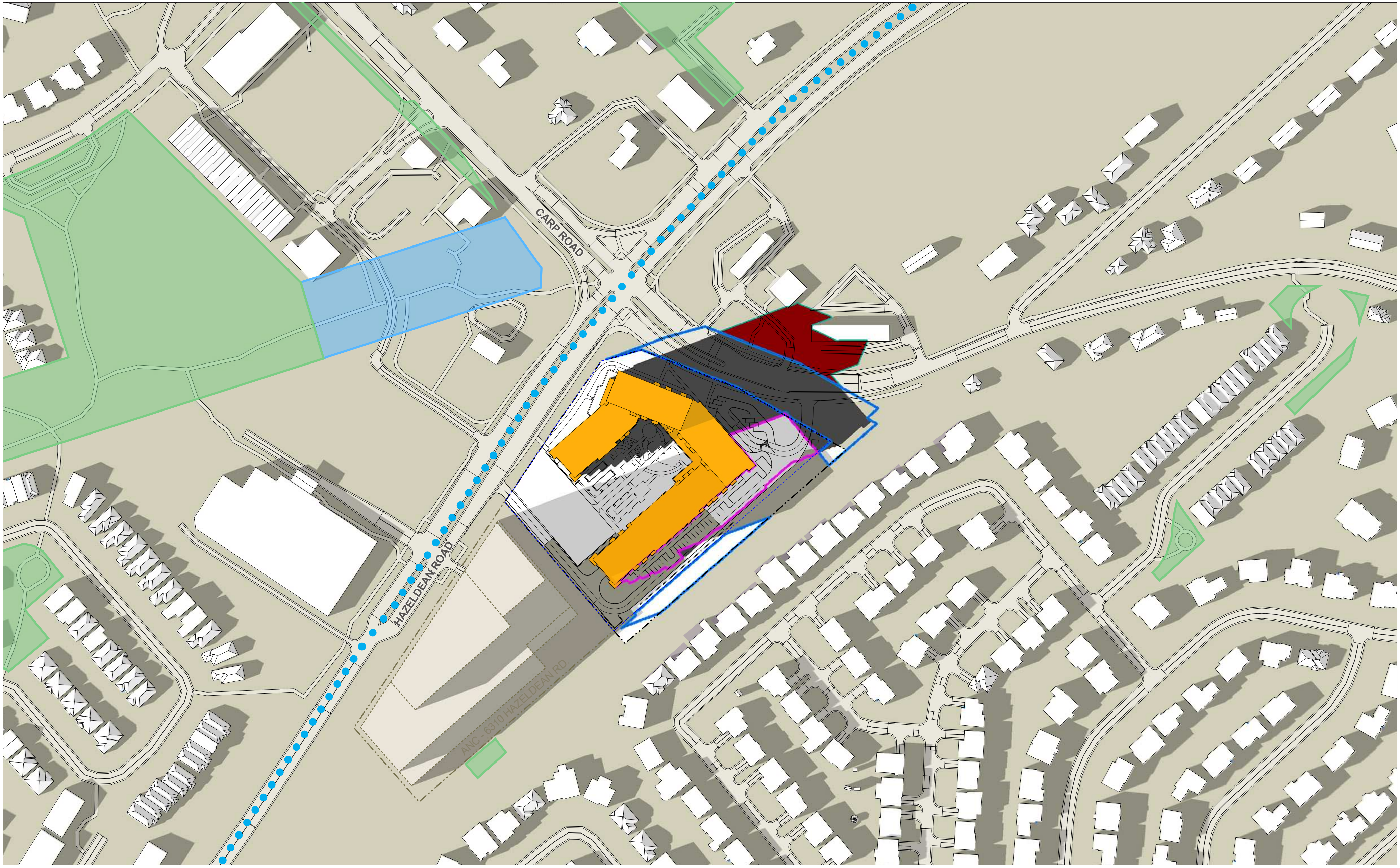
1174 CARP RD, STITTSVILLE, ON

Top-View Shadow Analysis

Company: Hobin Architecture
Prepared by: Cristina Hoang
Date: Mar 28, 2025

Application No.:
Application Type: ZBA Submission - UD Brief
Scale: 1:3000

Figure test time:
SEPTEMBER 21 4:00pm
Eastern Daylight Time (EDT) = Universal Time, 4 hours



LEGEND:

- New Shadow Outline
- AOR Shadow Outline
- New Development
- Overlap of ANC & New Shadow
- AOR Footprint
- ANC Footprint
- Overlap of AOR & New Shadow
- New Net Shadow
- 7.5m Rear Yard No Impact Buffer Zone (of abutting low-rise residential buildings)
- Property Line
- ANC Property Line

SENSITIVE AREAS:

- Plaza
- Park Spaces
- Traditional / Arterial Mainstreets

New = Proposed Development
AOR = As-Of-Right
ANC = Approved but Not yet Constructed (6310 Hazeldean Rd.)

1:3000
0 m 10 m 20 m 50 m 100 m

HOBIN

HAZELDEAN & CARP RD

1174 CARP RD, STITTSVILLE, ON

Top-View Shadow Analysis

Company:	Hobin Architecture
Prepared by:	Cristina Hoang
Date:	Mar 28, 2025

Application No.:	
Application Type:	ZBA Submission - UD Brief
Scale:	1:3000

Figure test time:
SEPTEMBER 21 5:00pm
Eastern Daylight Time (EDT) = Universal Time, 4 hours

LEGEND:

- New Shadow Outline
- AOR Shadow Outline
- New Development
- Overlap of ANC & New Shadow
- AOR Footprint
- ANC Footprint
- Overlap of AOR & New Shadow
- New Net Shadow
- 7.5m Rear Yard No Impact Buffer Zone (of abutting low-rise residential buildings)
- Property Line
- ANC Property Line

SENSITIVE AREAS:

- Plaza
- Park Spaces
- Traditional / Arterial Mainstreets

New = Proposed Development
AOR = As-Of-Right
ANC = Approved but Not yet Constructed (6310 Hazeldean Rd.)

1:3000
0 m 10 m 20 m 50 m 100 m

HOBIN

HAZELDEAN & CARP RD

1174 CARP RD, STITTSVILLE, ON

Top-View Shadow Analysis

Company:	Hobin Architecture
Prepared by:	Cristina Hoang
Date:	Mar 28, 2025

Application No.:	
Application Type:	ZBA Submission - UD Brief
Scale:	1:3000

Figure test time:
SEPTEMBER 21 6:00pm
Eastern Daylight Time (EDT) = Universal Time, 4 hours

LEGEND:

- New Shadow Outline
- AOR Shadow Outline
- New Development
- Overlap of ANC & New Shadow
- AOR Footprint
- ANC Footprint
- Overlap of AOR & New Shadow
- New Net Shadow
- 7.5m Rear Yard No Impact Buffer Zone (of abutting low-rise residential buildings)
- Property Line
- ANC Property Line

SENSITIVE AREAS:

- Plaza
- Park Spaces
- Traditional / Arterial Mainstreets

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1:3000
0 m 10 m 20 m 50 m 100 m

HOBIN

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1174 CARP RD, STITTSVILLE, ON

Top-View Shadow Analysis

Company:	Hobin Architecture
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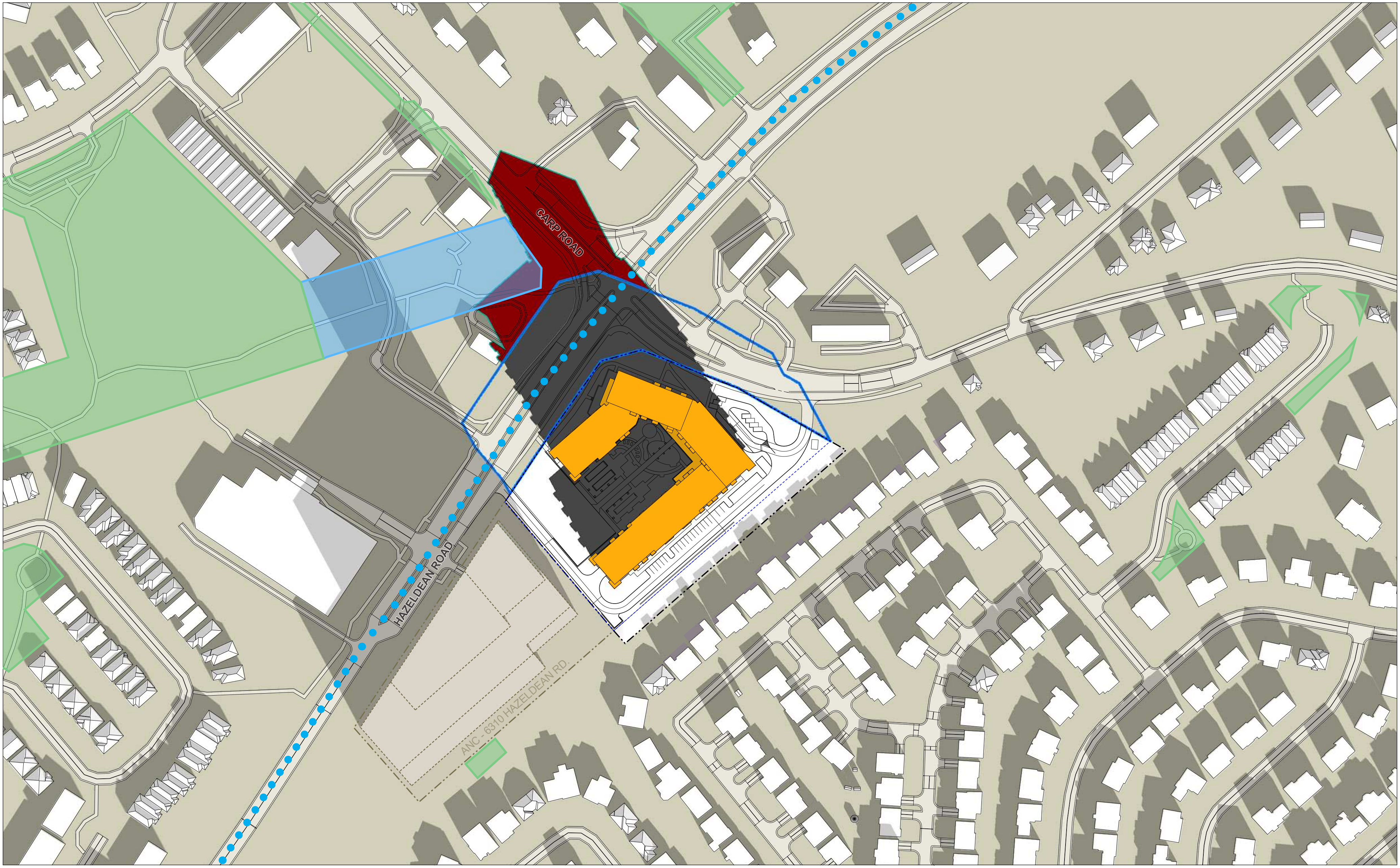
Application Type:	ZBA Submission - UD Brief
Scale:	1:3000

Figure test time:
DECEMBER 21 9:00am
Eastern Standard Time (EST) = Universal Time, 5 hours



LEGEND:

- New Shadow Outline
- AOR Shadow Outline
- New Development
- Overlap of ANC & New Shadow
- AOR Footprint
- ANC Footprint
- Overlap of AOR & New Shadow
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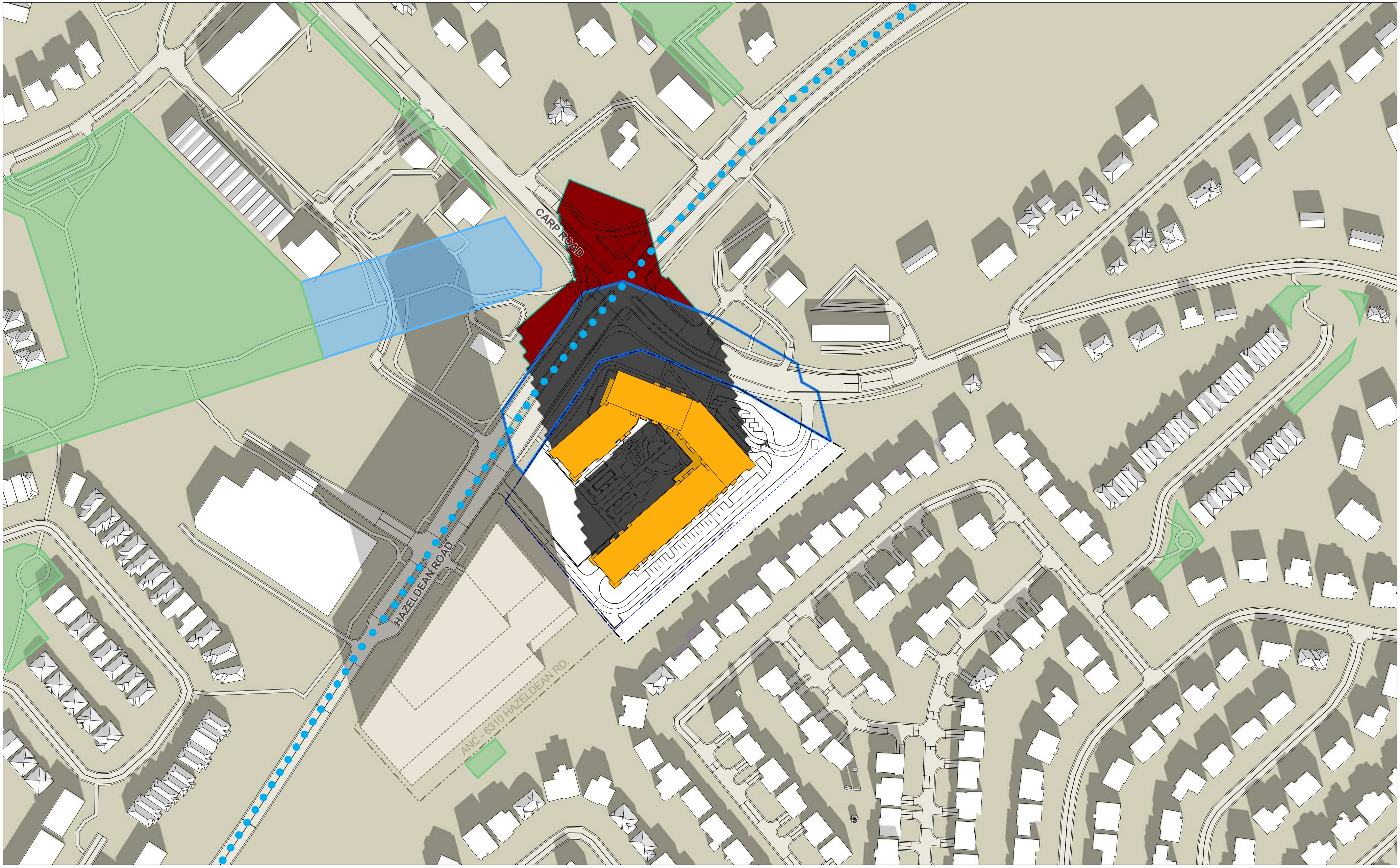
Figure test time:
DECEMBER 21 10:00am
Eastern Standard Time (EST) = Universal Time, 5 hours



LEGEND:

- New Shadow Outline
- AOR Shadow Outline
- New Development
- Overlap of ANC & New Shadow
- AOR Footprint
- ANC Footprint
- Overlap of AOR & New Shadow
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Figure test time:
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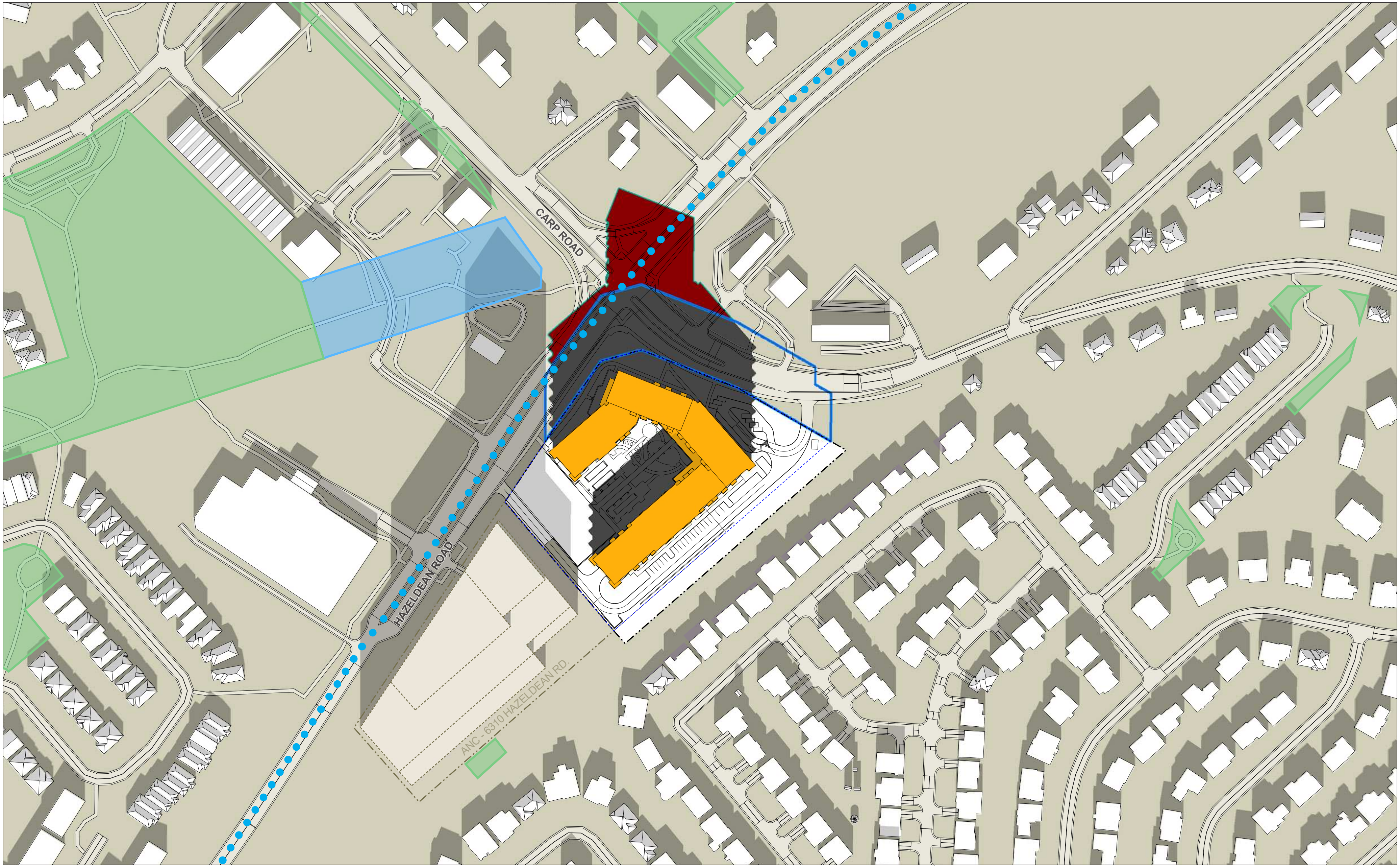

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- ANC Footprint
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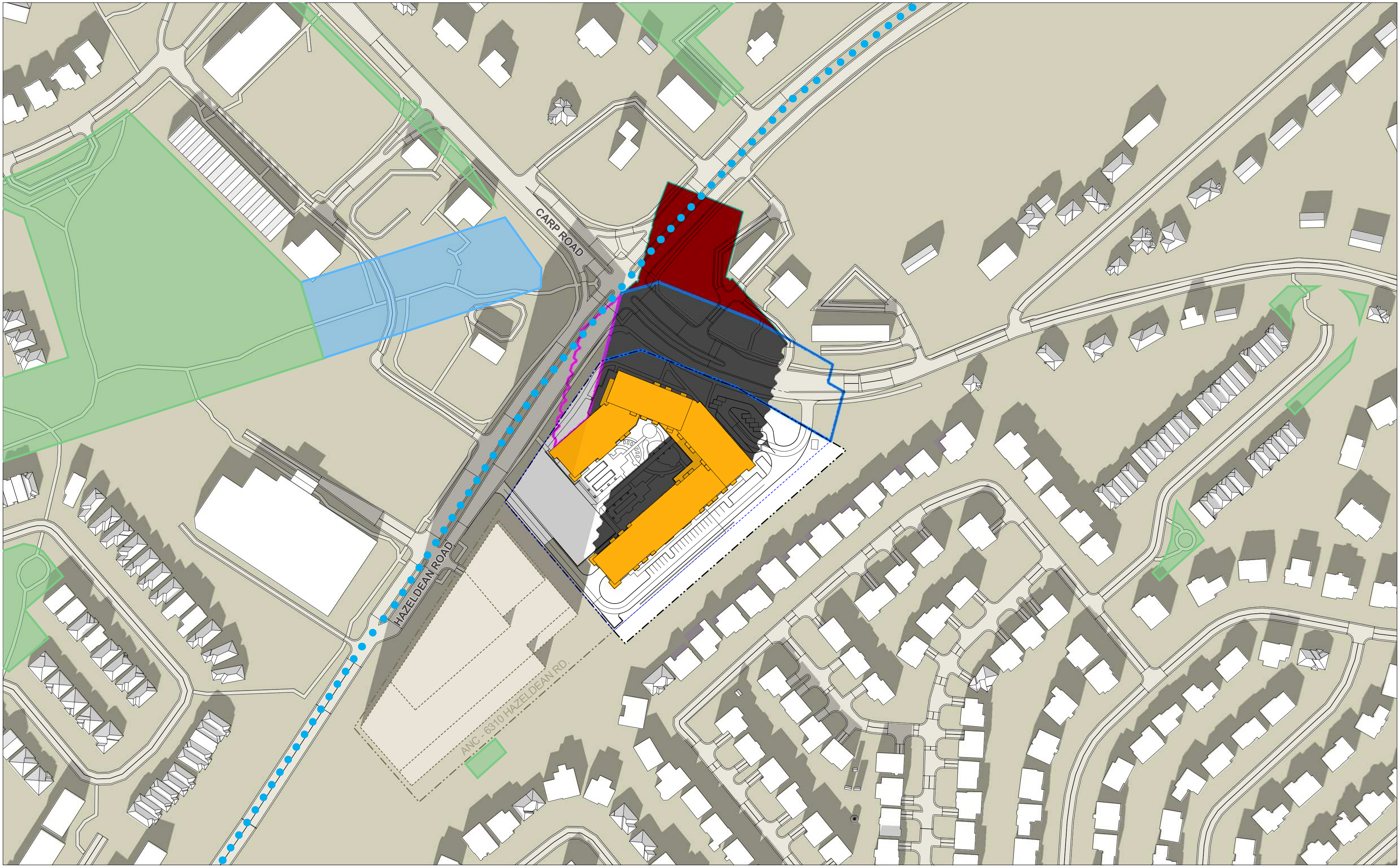

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Figure test time:
DECEMBER 21 1:00pm
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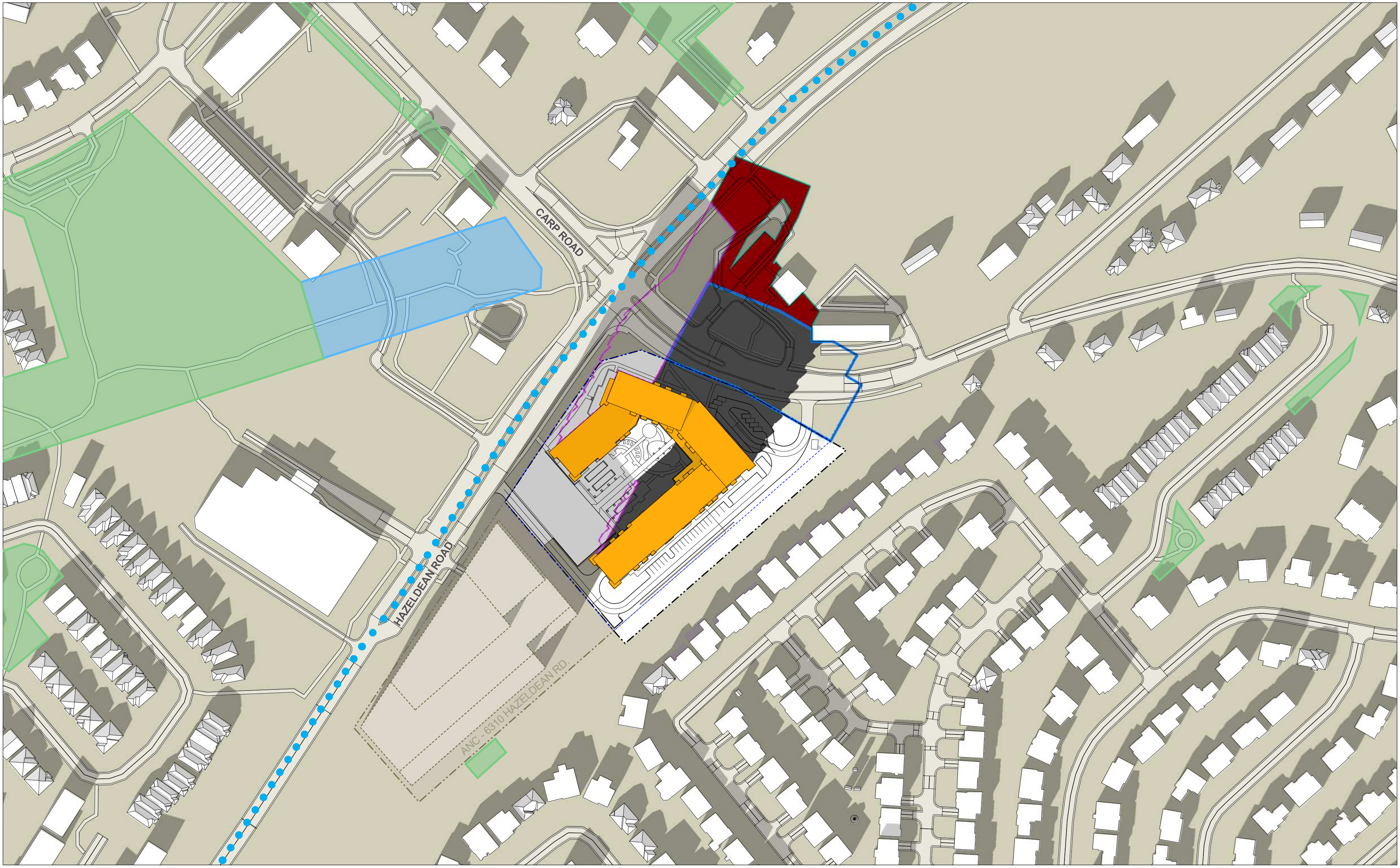

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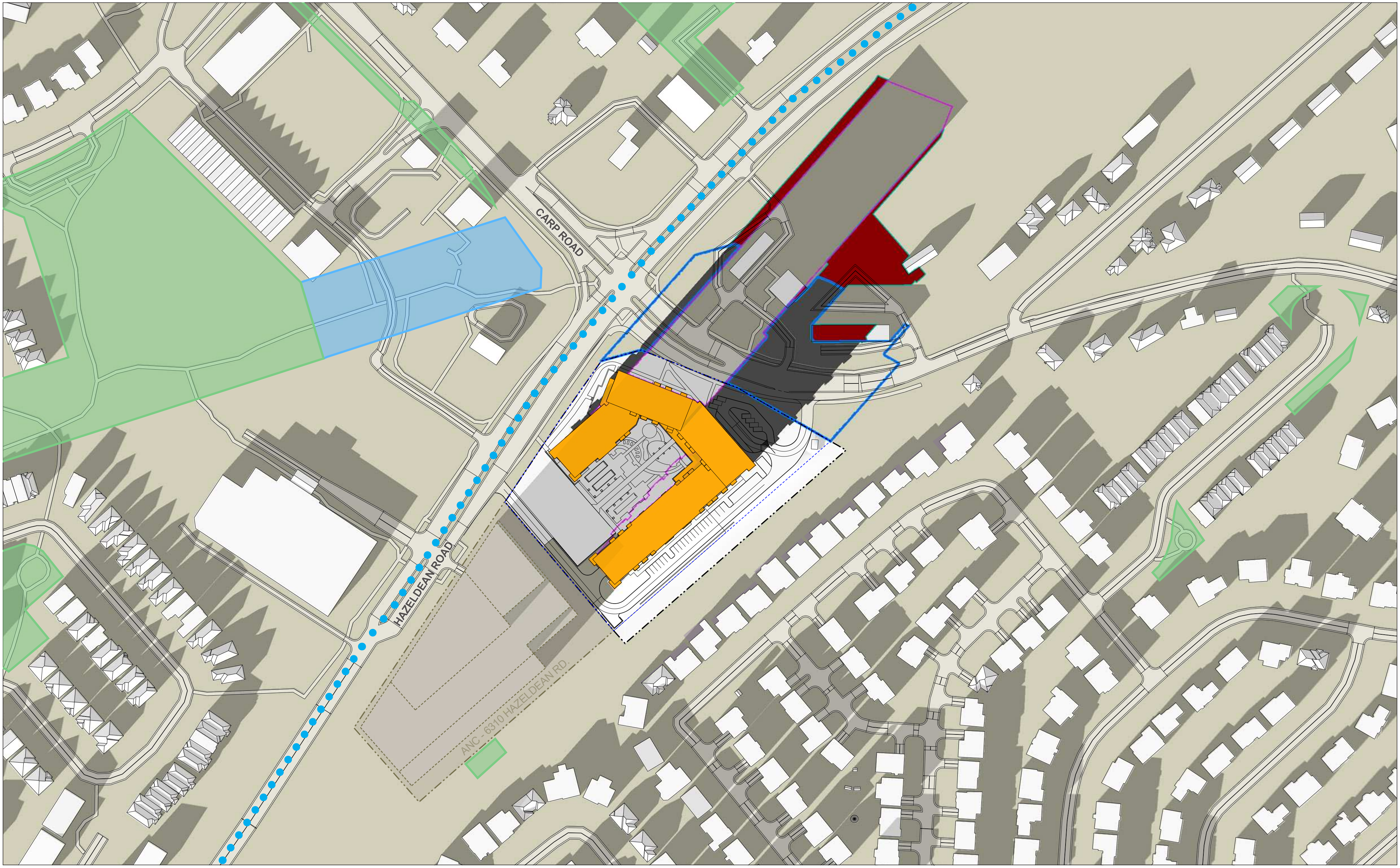
Application No.:
Application Type: ZBA Submission - UD Brief
Scale: 1:3000

Figure test time:
DECEMBER 21 2:00pm
Eastern Standard Time (EST) = Universal Time, 5 hours



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- Overlap of ANC & New Shadow
- AOR Footprint
- ANC Footprint
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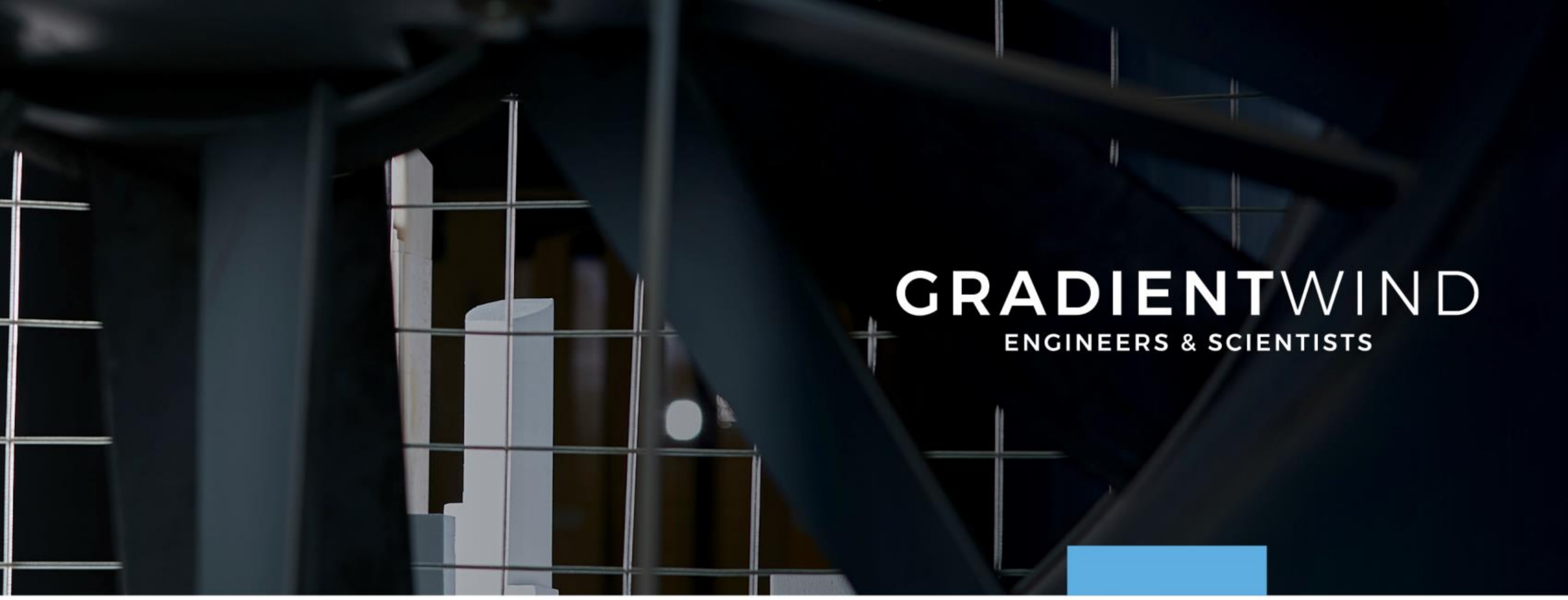
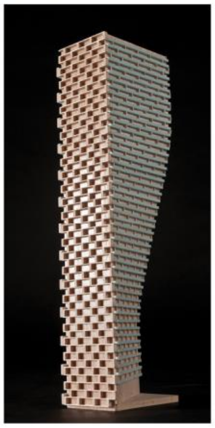
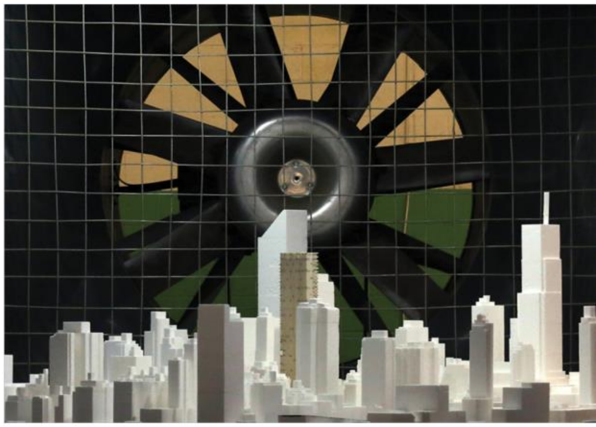


PEDESTRIAN LEVEL WIND STUDY

1174 Carp Road
Ottawa, Ontario

Report: 23-299-PLW





March 1, 2024

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EXECUTIVE SUMMARY

This report describes a pedestrian level wind (PLW) study undertaken to satisfy Site Plan Control application submission requirements for the proposed retirement residence development located at 1174 Carp Road in Ottawa, Ontario (hereinafter referred to as "subject site" or "proposed development"). Our mandate within this study is to investigate pedestrian wind conditions within and surrounding the subject site, and to identify areas where conditions may interfere with certain pedestrian activities so that mitigation measures may be considered, where required.

The study involves simulation of wind speeds for selected wind directions in a three-dimensional (3D) computer model using the computational fluid dynamics (CFD) technique, combined with meteorological data integration, to assess pedestrian wind comfort and safety within and surrounding the subject site according to City of Ottawa wind comfort and safety criteria. The results and recommendations derived from these considerations are detailed in the main body of the report (Section 5), illustrated in Figures 3A-7, and summarized as follows:

1) Most grade-level areas within and surrounding the subject site are predicted to experience conditions that are considered acceptable for the intended pedestrian uses throughout the year. Specifically, conditions over surrounding sidewalks, nearby transit stops, nearby existing surface parking lots, the proposed drive aisle, walkways, drop-off area, loading area, surface parking, and central courtyard, and in the vicinity of building access points, are considered acceptable. A single grade-level area of interest is predicted to experience windier conditions:

    a. **Parkland West of Subject Site**: Wind conditions within the parkland are predicted to be suitable for mostly sitting during the typical use period (that is, May to October, inclusive), with regions suitable for standing to the north and west.

        - Depending on the programming of the parkland, the noted conditions may be considered acceptable. Specifically, if the noted windier areas will not accommodate designated seating or lounging activities, the noted conditions would be considered acceptable.

- If required by programming, comfort levels at designated seating areas to the northwest within the parkland may be improved by implementing landscaping elements that are targeted around sensitive areas such as tall wind screens and clusters of coniferous trees in dense arrangements, in combination with strategically placed seating with high-back benches or other local wind mitigation.

2) The foregoing statements and conclusions apply to common weather systems, during which no dangerous wind conditions, as defined in Section 4.4, are expected anywhere over the subject site. During extreme weather events (for example, thunderstorms, tornadoes, and downbursts), pedestrian safety is the main concern. However, these events are generally short-lived and infrequent and there is often sufficient warning for pedestrians to take appropriate cover.

TABLE OF CONTENTS

1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by Le Groupe Maurice to undertake a pedestrian level wind (PLW) study to satisfy Site Plan Control application submission requirements for the proposed retirement residence located at 1174 Carp Road in Ottawa, Ontario (hereinafter referred to as "subject site" or "proposed development"). Our mandate within this study is to investigate wind conditions within and surrounding the subject site, and to identify areas where conditions may interfere with certain pedestrian activities so that mitigation measures may be considered, where required.

Our work is based on industry standard computer simulations using the computational fluid dynamics (CFD) technique and data analysis procedures, City of Ottawa wind comfort and safety criteria, architectural drawings prepared by Hobin Architecture in January 2024, surrounding street layouts and existing and approved future building massing information obtained from the City of Ottawa, as well as recent satellite imagery.

2. TERMS OF REFERENCE

The subject site is located at 1174 Carp Road in Ottawa, situated to the south at the intersection of Hazeldean Road and Carp Road, on a parcel of land bounded by Hazeldean Road to the northwest, Carp Road to the northeast, low-rise residential dwellings to the southeast, and an empty lot to the southwest. Throughout this report, Carp Road is referred to as project east. The proposed development comprises a 12-storey retirement residence.

Above an underground parking level, the ground floor comprises a near 'C'-shaped planform with its long axis-oriented along Carp Road and includes various indoor amenities to the north, a retail space at the northeast corner, a main entrance, offices, and a drop-off area to the east, a dining room, commercial and open kitchens, a loading space, and shared building support spaces at the southeast corner, residential units to the southwest, and respite rooms and a respite area at the southwest corner. A courtyard is located central to the subject site within the 'C'-shaped planform, and a parkland is located to the west. Surface parking is provided to the east and south. A drive aisle extending from Hazeldean Road to Carp Road along the south and west sides of the subject site provides access to the parking ramp near the southwest corner of the proposed development and to the noted drop-off area, loading space, and surface parking. Levels 2-12 are reserved for residential occupancy.

The building steps back from the inner west elevation at Level 2, from the west elevation of the south wing of the building at Level 6, and from the northeast, south, and west elevations at Level 10.

The near-field surroundings, defined as an area within 200-metres (m) of the subject site, include low-rise residential dwellings from the east clockwise to the south-southwest, an empty lot to the southwest, and low-rise commercial buildings with surface parking lots in the remaining directions. The far-field surroundings, defined as an area beyond the near-field but within a 2-kilometre (km) radius of the subject site, are characterized by suburban massing from the north-northeast clockwise to the south-southeast and from the west clockwise to the north-northeast, and by low-rise suburban massing followed by green spaces and fields in the remaining compass.

Site plans for the proposed and existing massing scenarios are illustrated in Figures 1A and 1B, while Figures 2A-2H illustrate the computational models used to conduct the study. The existing massing scenario includes the existing massing and any future developments approved by the City of Ottawa.

3. OBJECTIVES

The principal objectives of this study are to (i) determine pedestrian level wind conditions at key areas within and surrounding the development site; (ii) identify areas where wind conditions may interfere with the intended uses of outdoor spaces; and (iii) recommend suitable mitigation measures, where required.

4. METHODOLOGY

The approach followed to quantify pedestrian wind conditions over the site is based on CFD simulations of wind speeds across the subject site within a virtual environment, meteorological analysis of the Ottawa area wind climate, and synthesis of computational data with City of Ottawa wind comfort and safety criteria[1]. The following sections describe the analysis procedures, including a discussion of the noted pedestrian wind criteria.

[1] City of Ottawa Terms of References: Wind Analysis
https://documents.ottawa.ca/sites/default/files/torwindanalysis_en.pdf

4.1 Computer-Based Context Modelling

A computer based PLW study was performed to determine the influence of the wind environment on pedestrian comfort over the proposed development site. Pedestrian comfort predictions, based on the mechanical effects of wind, were determined by combining measured wind speed data from CFD simulations with statistical weather data obtained from Ottawa Macdonald-Cartier International Airport. The general concept and approach to CFD modelling is to represent building and topographic details in the immediate vicinity of the subject site on the surrounding model, and to create suitable atmospheric wind profiles at the model boundary. The wind profiles are designed to have similar mean and turbulent wind properties consistent with actual site exposures.

An industry standard practice is to omit trees, vegetation, and other existing and planned landscape elements from the model due to the difficulty of providing accurate seasonal representation of vegetation. The omission of trees and other landscaping elements produces slightly stronger wind speeds.

4.2 Wind Speed Measurements

The PLW analysis was performed by simulating wind flows and gathering velocity data over a CFD model of the site for 12 wind directions. The CFD simulation model was centered on the proposed development, complete with surrounding massing within a radius of 500 m. The process was performed for two context massing scenarios, as noted in Section 2.

Mean and peak wind speed data obtained over the subject site for each wind direction were interpolated to 36 wind directions at 10° intervals, representing the full compass azimuth. Measured wind speeds approximately 1.5 m above local grade were referenced to the wind speed at gradient height to generate mean and peak velocity ratios, which were used to calculate full-scale values. Gradient height represents the theoretical depth of the boundary layer of the earth's atmosphere, above which the mean wind speed remains constant. Further details of the wind flow simulation technique are presented in Appendix A.

4.3 Historical Wind Speed and Direction Data

A statistical model for winds in Ottawa was developed from approximately 40 years of hourly meteorological wind data recorded at Ottawa Macdonald-Cartier International Airport and obtained from Environment and Climate Change Canada. Wind speed and direction data were analyzed for each month of the year to determine the statistically prominent wind directions and corresponding speeds, and to characterize similarities between monthly weather patterns.

The statistical model of the Ottawa area wind climate, which indicates the directional character of local winds on a seasonal basis, is illustrated on the following page. The plots illustrate seasonal distribution of measured wind speeds and directions in kilometers per hour (km/h). Probabilities of occurrence of different wind speeds are represented as stacked polar bars in sixteen azimuth divisions. The radial direction represents the percentage of time for various wind speed ranges per wind direction during the measurement period. The prominent wind speeds and directions can be identified by the longer length of the bars. For Ottawa, the most common winds occur for westerly wind directions, followed by those from the east, while the most common wind speeds are below 36 km/h. The directional prominence and relative magnitude of wind speed changes somewhat from season to season.

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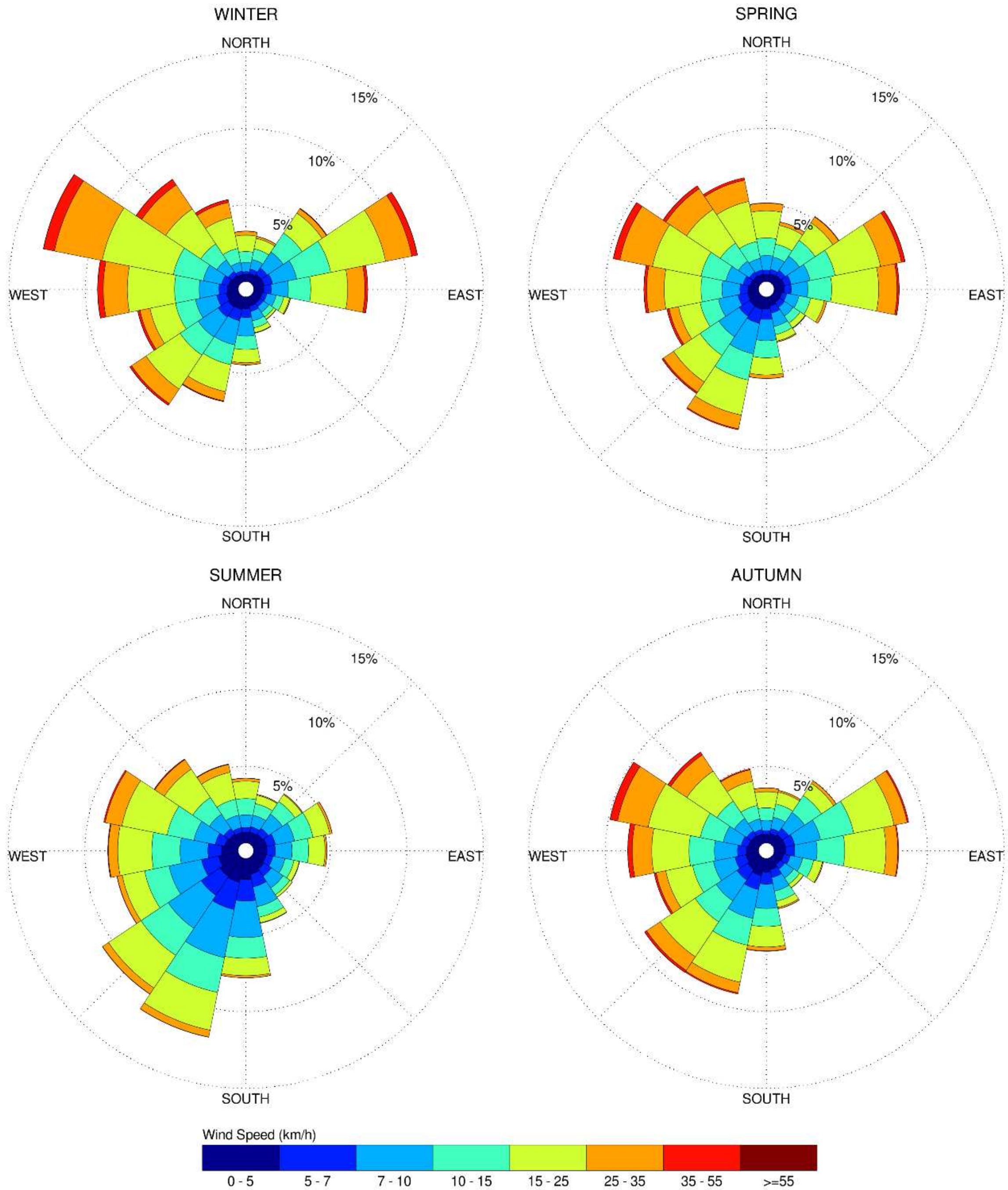
SEASONAL DISTRIBUTION OF WIND
OTTAWA MACDONALD-CARTIER INTERNATIONAL AIRPORT



Notes:

1. Radial distances indicate percentage of time of wind events.
2. Wind speeds are mean hourly in km/h, measured at 10 m above the ground.

4.4 Pedestrian Wind Comfort and Safety Criteria – City of Ottawa

Pedestrian wind comfort and safety criteria are based on the mechanical effects of wind without consideration of other meteorological conditions (that is, temperature and relative humidity). The comfort criteria assume that pedestrians are appropriately dressed for a specified outdoor activity during any given season. Five pedestrian comfort classes based on 20% non-exceedance mean wind speed ranges are used to assess pedestrian comfort: (1) Sitting; (2) Standing; (3) Strolling; (4) Walking; and (5) Uncomfortable. The gust speeds, and equivalent mean speeds, are selected based on the Beaufort scale, which describes the effects of forces produced by varying wind speed levels on objects. Wind conditions suitable for sitting are represented by the colour blue, standing by green, strolling by yellow, and walking by orange; uncomfortable conditions are represented by the colour magenta. Specifically, the comfort classes, associated wind speed ranges, and limiting criteria are summarized as follows:

PEDESTRIAN WIND COMFORT CLASS DEFINITIONS

Wind Comfort Class	GEM Speed (km/h)	Description
SITTING	≤ 10	Mean wind speeds no greater than 10 km/h occurring at least 80% of the time. The equivalent gust wind speed is approximately 16 km/h.
STANDING	≤ 14	Mean wind speeds no greater than 14 km/h occurring at least 80% of the time. The equivalent gust wind speed is approximately 22 km/h.
STROLLING	≤ 17	Mean wind speeds no greater than 17 km/h occurring at least 80% of the time. The equivalent gust wind speed is approximately 27 km/h.
WALKING	≤ 20	Mean wind speeds no greater than 20 km/h occurring at least 80% of the time. The equivalent gust wind speed is approximately 32 km/h.
UNCOMFORTABLE	> 20	Uncomfortable conditions are characterized by predicted values that fall below the 80% target for walking. Brisk walking and exercise, such as jogging, would be acceptable for moderate excesses of this criterion.

Regarding wind safety, the pedestrian safety wind speed criterion is based on the approximate threshold that would cause a vulnerable member of the population to fall. A 0.1% exceedance gust wind speed of 90 km/h is classified as dangerous. From calculations of stability, it can be shown that gust wind speeds of 90 km/h would be the approximate threshold wind speed that would cause an average elderly person in good health to fall. Notably, pedestrians tend to be more sensitive to wind gusts than to steady winds for lower wind speed ranges. For strong winds approaching dangerous levels, this effect is less important because the mean wind can also create problems for pedestrians.

Experience and research on people's perception of mechanical wind effects has shown that if the wind speed levels are exceeded for more than 20% of the time, the activity level would be judged to be uncomfortable by most people. For instance, if a mean wind speed of 10 km/h (equivalent gust wind speed of approximately 16 km/h) were exceeded for more than 20% of the time most pedestrians would judge that location to be too windy for sitting. Similarly, if mean wind speed of 20 km/h (equivalent gust wind speed of approximately 32 km/h) at a location were exceeded for more than 20% of the time, walking or less vigorous activities would be considered uncomfortable. As these criteria are based on subjective reactions of a population to wind forces, their application is partly based on experience and judgment.

Once the pedestrian wind speed predictions have been established throughout the subject site, the assessment of pedestrian comfort involves determining the suitability of the predicted wind conditions for discrete regions within and surrounding the subject site. This step involves comparing the predicted comfort classes to the target comfort classes, which are dictated by the location type for each region (that is, a sidewalk, building entrance, amenity space, or other). An overview of common pedestrian location types and their typical windiest target comfort classes are summarized on the following page. Depending on the programming of a space, the desired comfort class may differ from this table.

TARGET PEDESTRIAN WIND COMFORT CLASSES FOR VARIOUS LOCATION TYPES

Location Types	Target Comfort Classes
Primary Building Entrance	Standing
Secondary Building Access Point	Walking
Public Sidewalk / Bicycle Path	Walking
Outdoor Amenity Space	Sitting / Standing
Café / Patio / Bench / Garden	Sitting / Standing
Transit Stop (Without Shelter)	Standing
Transit Stop (With Shelter)	Walking
Public Park / Plaza	Sitting / Standing
Garage / Service Entrance	Walking
Parking Lot	Walking
Vehicular Drop-Off Zone	Walking

5. RESULTS AND DISCUSSION

The following discussion of the predicted pedestrian wind conditions for the subject site is accompanied by Figures 3A-6B, illustrating wind conditions at grade level for the proposed and existing massing scenarios. Conditions are presented as continuous contours of wind comfort throughout the subject site and correspond to the comfort classes presented in Section 4.4.

Wind comfort conditions are also reported for the typical use period, which is defined as May to October, inclusive. Figure 7 illustrates comfort conditions at grade level, consistent with the comfort classes in Section 4.4. The details of these conditions are summarized in the following pages for each area of interest.

5.1 Wind Comfort Conditions

Sidewalks and Transit Stop along Hazeldean Road: Following the introduction of the proposed development, wind comfort conditions over the nearby public sidewalks along Hazeldean Road are predicted to be suitable for standing, or better, during the summer, becoming suitable for a mix of standing and strolling during the autumn, winter, and spring. Conditions in the vicinity of the nearby transit stop along Hazeldean Road, which is served by a typical shelter, are predicted to be suitable for standing during the spring, summer, and autumn, becoming suitable for strolling during the winter. The noted conditions are considered acceptable.

Wind conditions over the sidewalks along Hazeldean Road with the existing massing are predicted to be suitable for standing, or better, during the summer and autumn, becoming suitable for a mix of standing and strolling during the winter and spring. With the existing massing, conditions in the vicinity of the noted nearby transit stop along Hazeldean Road are predicted to be suitable for standing during the summer and autumn, becoming suitable for a mix of standing and strolling during the spring, and suitable for strolling during the winter. While the introduction of the proposed development produces slightly windier conditions over Hazeldean Road, wind comfort conditions with the proposed development are nevertheless considered acceptable.

Sidewalks along Carp Road: Following the introduction of the proposed development, conditions over the nearby public sidewalks along Carp Road are predicted to be suitable for a mix of sitting and standing during the summer, becoming suitable for standing, or better, during the autumn, with an isolated region suitable for strolling near the intersection of Hazeldean Road and Carp Road, and suitable for strolling, or better, during the winter and spring, with an isolated region suitable for walking near the noted intersection during the winter. The noted conditions are considered acceptable.

Wind conditions over the sidewalks along Carp Road with the existing massing are predicted to be suitable for a mix of sitting and standing during summer, becoming suitable for standing during the autumn, and suitable for a mix of standing and strolling during the winter and spring. While the introduction of the proposed development produces slightly windier conditions in comparison to existing conditions, wind comfort conditions with the proposed development are nevertheless considered acceptable.

Neighbouring Existing Surface Parking Lots: Following the introduction of the proposed development, conditions over the neighbouring existing surface parking lots located from the northwest clockwise to the east of the subject site are predicted to be suitable for standing, or better, during the summer and autumn, becoming suitable for strolling, or better, during the spring and winter. The noted conditions are considered acceptable.

With the existing massing, conditions over the noted neighbouring surface parking lots are predicted to be suitable for standing, or better, during the summer and autumn, with an isolated region suitable for strolling within the northwest surface parking lot during the autumn, becoming suitable for strolling, or better, during the winter and spring. Notably, the introduction of the proposed development is predicted to improve comfort levels over some of the noted areas in comparison to existing conditions, and wind conditions with the proposed development are nevertheless considered acceptable.

Courtyard and Parkland: During the typical use period, wind conditions within the courtyard situated central to the subject site are predicted to be suitable for sitting, as illustrated in Figure 7. The noted conditions are considered acceptable.

During the typical use period, wind conditions within the parkland situated to the west of the subject site are predicted to be suitable for mostly sitting, with regions suitable for standing to the north and west, as illustrated in Figure 7.

Depending on the programming of the parkland, the noted conditions may be considered acceptable. Specifically, if the noted windier areas suitable for standing will not accommodate designated seating or lounging activities, the noted conditions would be considered acceptable.

If required by programming, comfort levels at designated seating areas to the northwest within the parkland may be improved by implementing landscaping elements that are targeted around sensitive areas such as tall wind screens and clusters of coniferous trees in dense arrangements, in combination with strategically placed seating with high-back benches or other local wind mitigation.

Drive Aisle, Walkways, Drop-off Area, Loading Area, and Surface Parking Within Subject Site: Wind conditions over the drive aisle, surface parking, the loading area, and the proposed walkways within the subject site are predicted to be suitable for a mix of sitting and standing during the summer, becoming suitable for strolling, or better, throughout the remainder of the year. Conditions over the drop-off area to the east of the proposed development are predicted to be suitable for sitting throughout the year. The noted conditions are considered acceptable.

Building Access Points: Wind conditions in the vicinity of the building access points along the south elevation of the north wing are predicted to be suitable for sitting during the spring, summer, and autumn, becoming suitable for a mix of sitting and standing during the winter. Conditions in the vicinity of the remaining building access points serving the proposed development are predicted to be suitable for sitting throughout the year. The noted conditions are considered acceptable.

5.2 Wind Safety

Within the context of typical weather patterns, which exclude anomalous localized storm events such as tornadoes and downbursts, no pedestrian areas within or surrounding the subject site are expected to experience conditions that could be considered dangerous, as defined in Section 4.4.

5.3 Applicability of Results

Pedestrian wind comfort and safety have been quantified for the specific configuration of existing and foreseeable construction around the subject site. Future changes (that is, construction or demolition) of these surroundings may cause changes to the wind effects in two ways, namely: (i) changes beyond the immediate vicinity of the subject site would alter the wind profile approaching the subject site; and (ii) development in proximity to the subject site would cause changes to local flow patterns.

6. CONCLUSIONS AND RECOMMENDATIONS

A complete summary of the predicted wind conditions is provided in Section 5 and illustrated in Figures 3A-7. Based on computer simulations using the CFD technique, meteorological data analysis of the Ottawa wind climate, City of Ottawa wind comfort and safety criteria, and experience with numerous similar developments, the study concludes the following:

1) Most grade-level areas within and surrounding the subject site are predicted to experience conditions that are considered acceptable for the intended pedestrian uses throughout the year. Specifically, conditions over surrounding sidewalks, nearby transit stops, nearby existing surface parking lots, the proposed drive aisle, walkways, drop-off area, loading area, surface parking, and central courtyard, and in the vicinity of building access points, are considered acceptable. A single grade-level area of interest is predicted to experience windier conditions:

    a. **Parkland West of Subject Site**: Wind conditions within the parkland are predicted to be suitable for mostly sitting during the typical use period (that is, May to October, inclusive), with regions suitable for standing to the north and west.

        - Depending on the programming of the parkland, the noted conditions may be considered acceptable. Specifically, if the noted windier areas will not accommodate designated seating or lounging activities, the noted conditions would be considered acceptable.

        - If required by programming, comfort levels at designated seating areas to the northwest within the parkland may be improved by implementing landscaping elements that are targeted around sensitive areas such as tall wind screens and clusters of coniferous trees in dense arrangements, in combination with strategically placed seating with high-back benches or other local wind mitigation.

2) The foregoing statements and conclusions apply to common weather systems, during which no dangerous wind conditions, as defined in Section 4.4, are expected anywhere over the subject site. During extreme weather events (for example, thunderstorms, tornadoes, and downbursts), pedestrian safety is the main concern. However, these events are generally short-lived and infrequent and there is often sufficient warning for pedestrians to take appropriate cover.

Sincerely,

Gradient Wind Engineering Inc.

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Mar 1, 2024
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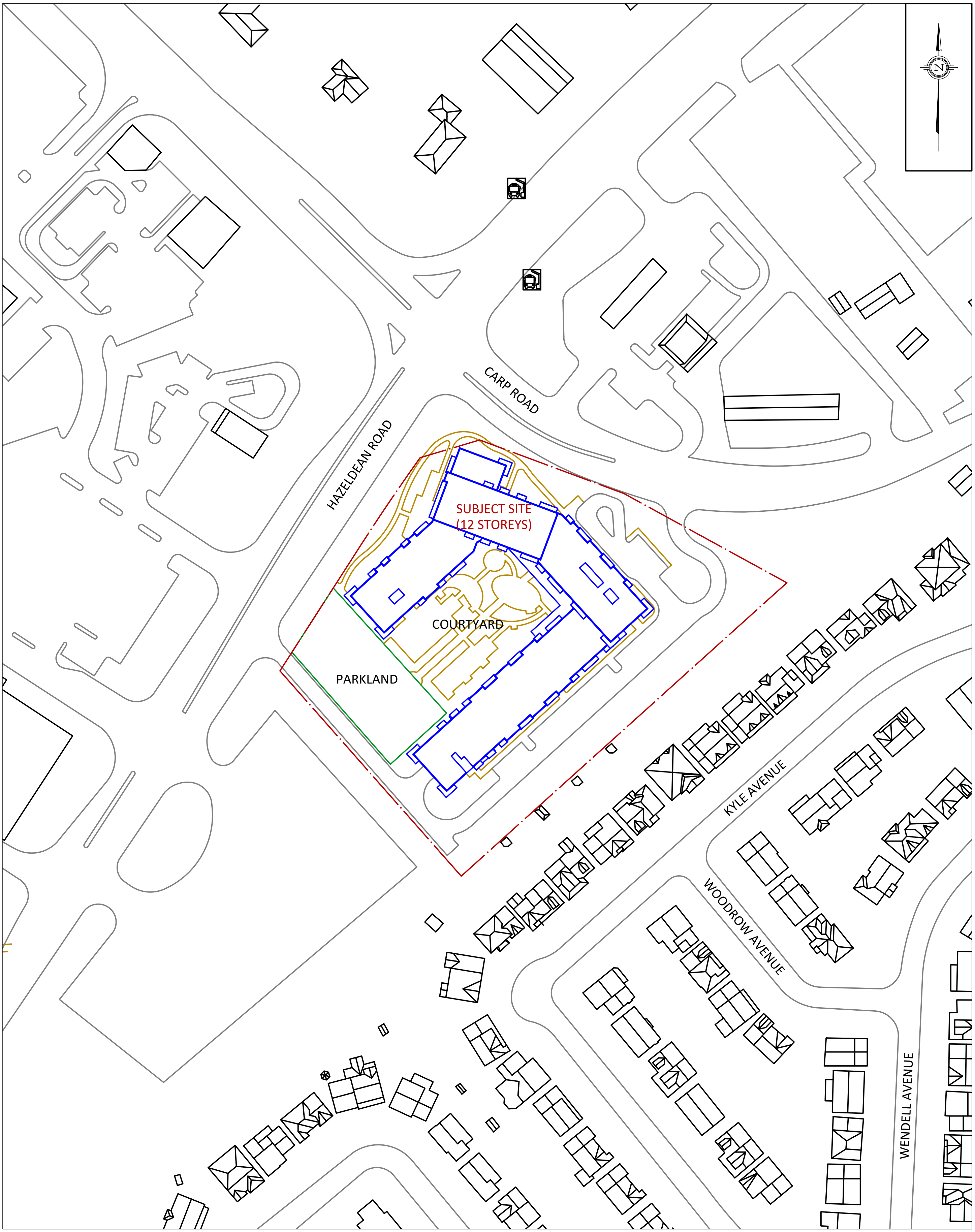

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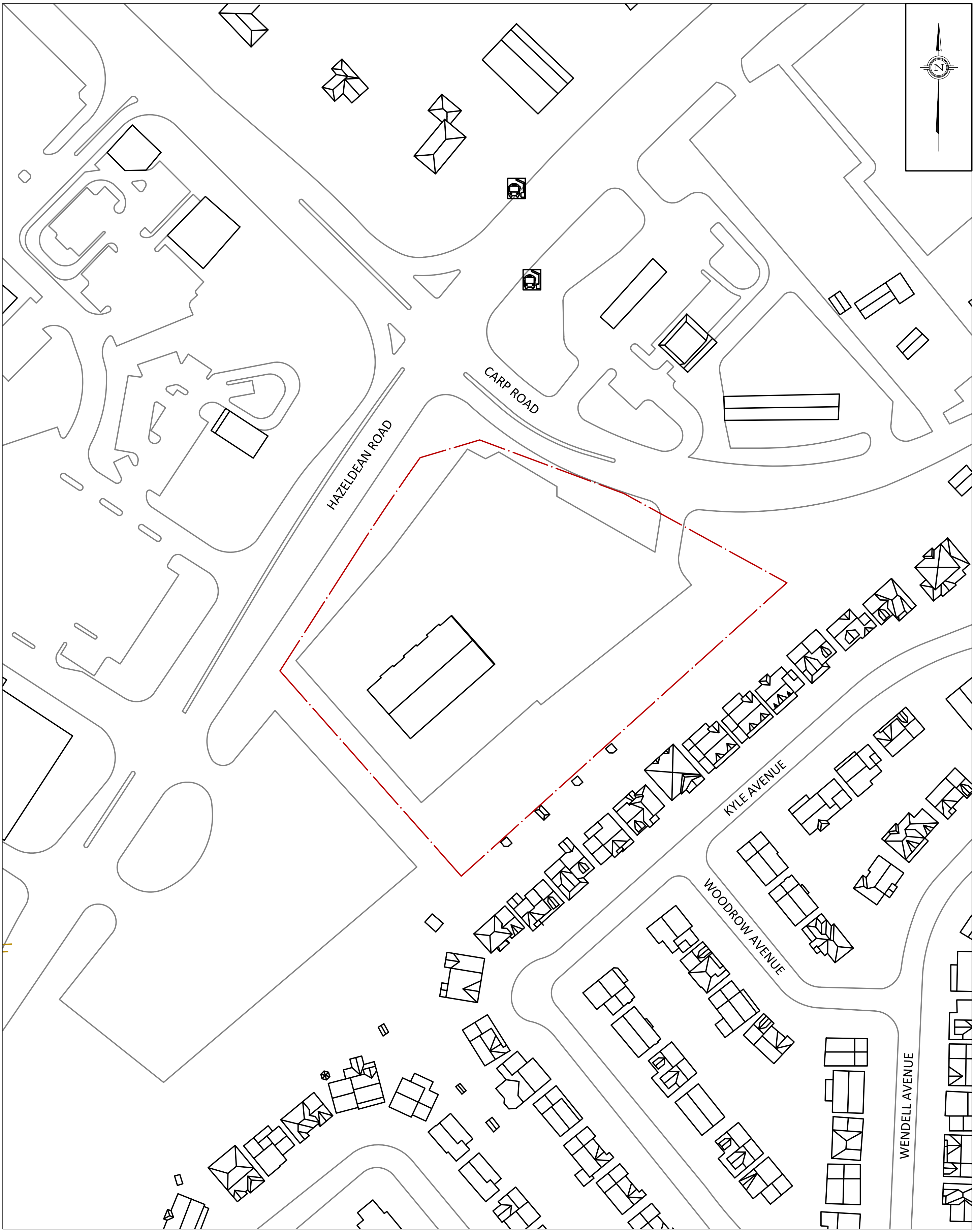
PROJECT	1174 CARP ROAD, OTTAWA PEDESTRIAN LEVEL WIND STUDY		
SCALE	1:2000	DRAWING NO.	23-299-PLW-1A
DATE	MARCH 1, 2024	DRAWN BY	S.K.

DESCRIPTION

FIGURE 1A:
PROPOSED SITE PLAN AND SURROUNDING CONTEXT



GRADIENTWIND ENGINEERS & SCIENTISTS	PROJECT 1174 CARP ROAD, OTTAWA PEDESTRIAN LEVEL WIND STUDY		DESCRIPTION FIGURE 1B: EXISTING SITE PLAN AND SURROUNDING CONTEXT
127 WALGREEN ROAD, OTTAWA, ON 613 836 0934 • GRADIENTWIND.COM	SCALE 1:2000	DRAWING NO. 23-299-PLW-1B	
	DATE MARCH 1, 2024	DRAWN BY S.K.	

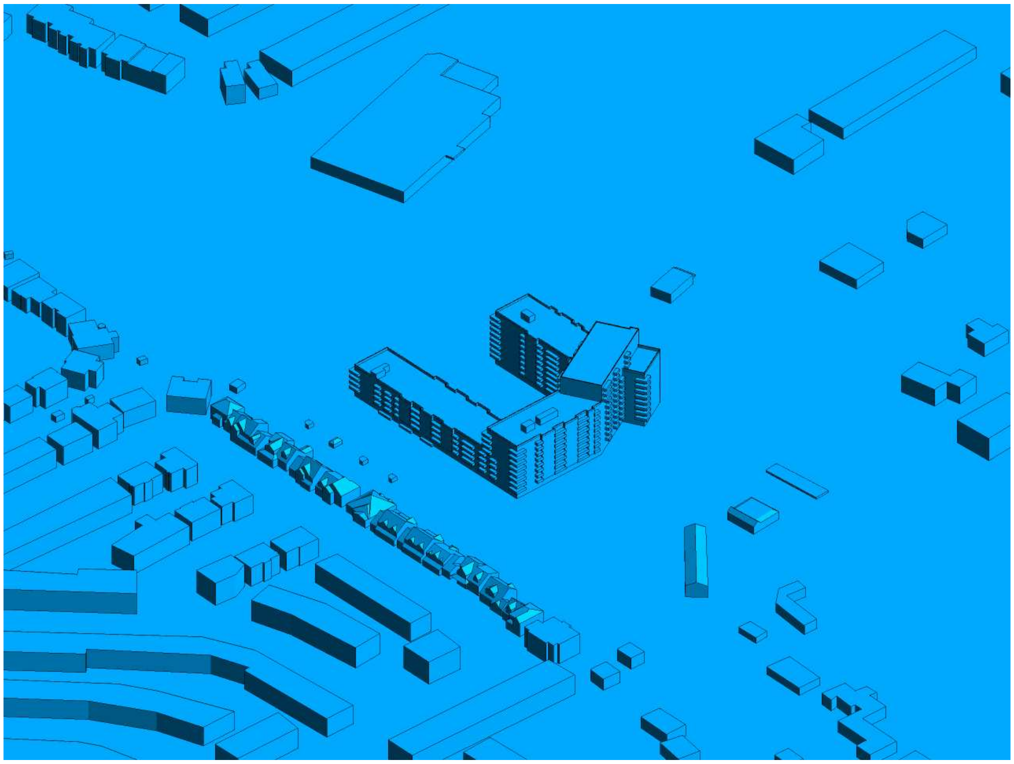


FIGURE 2A: COMPUTATIONAL MODEL, PROPOSED MASSING, EAST PERSPECTIVE

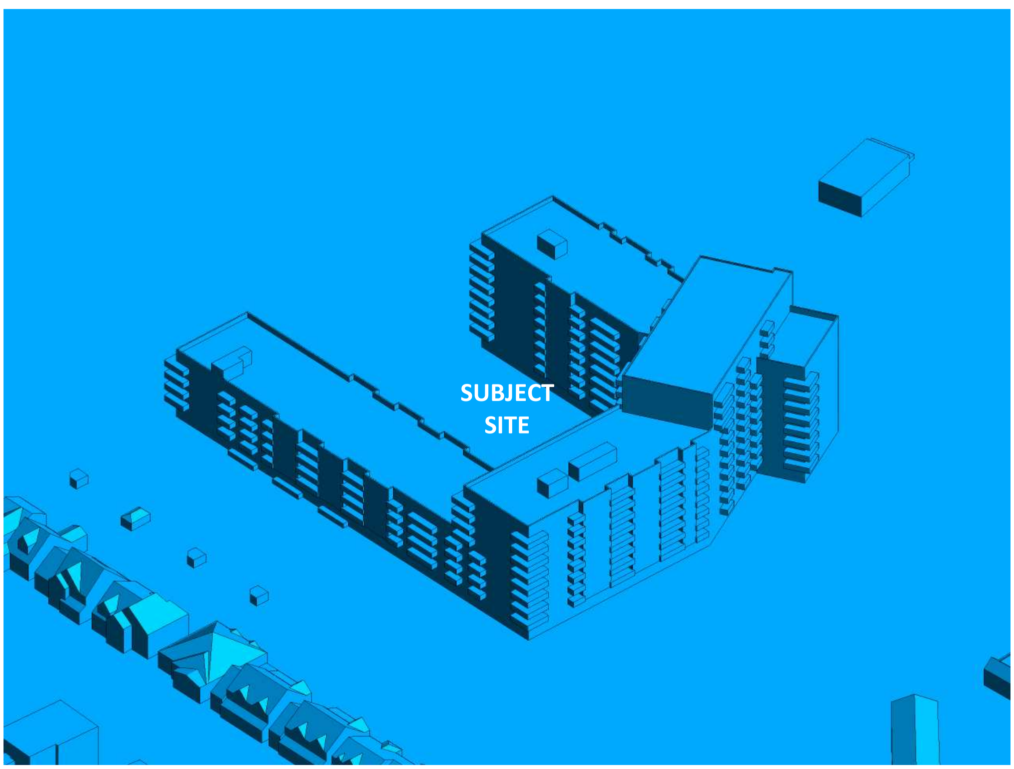


FIGURE 2B: CLOSE UP OF FIGURE 2A

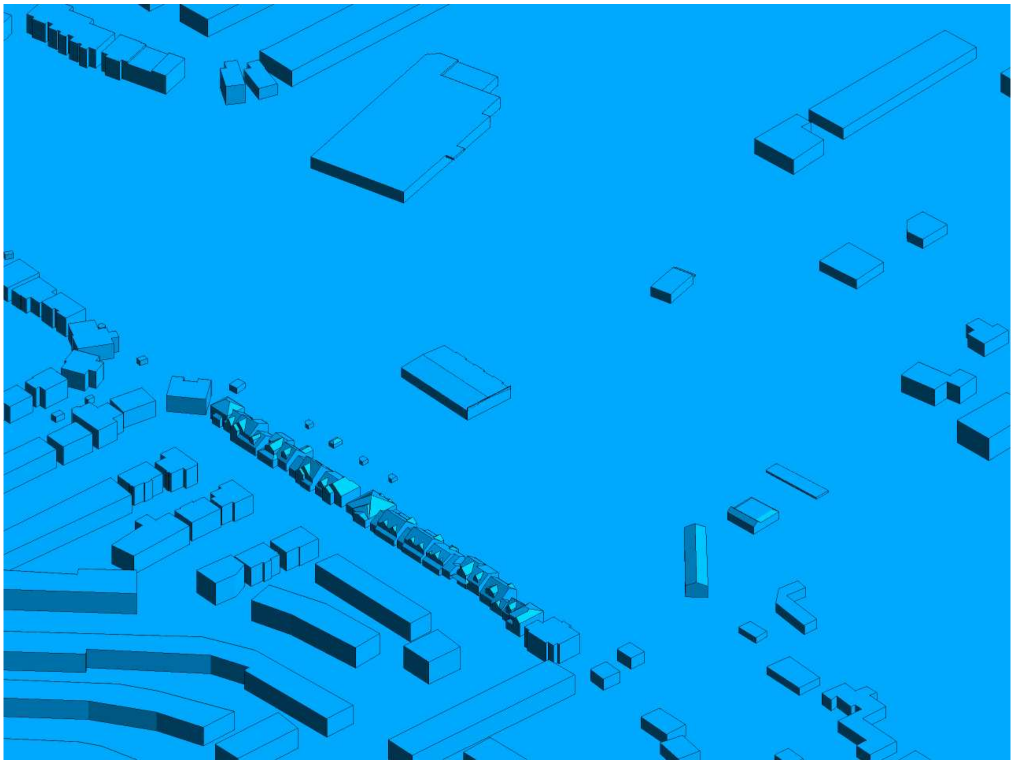


FIGURE 2C: COMPUTATIONAL MODEL, EXISTING MASSING, EAST PERSPECTIVE

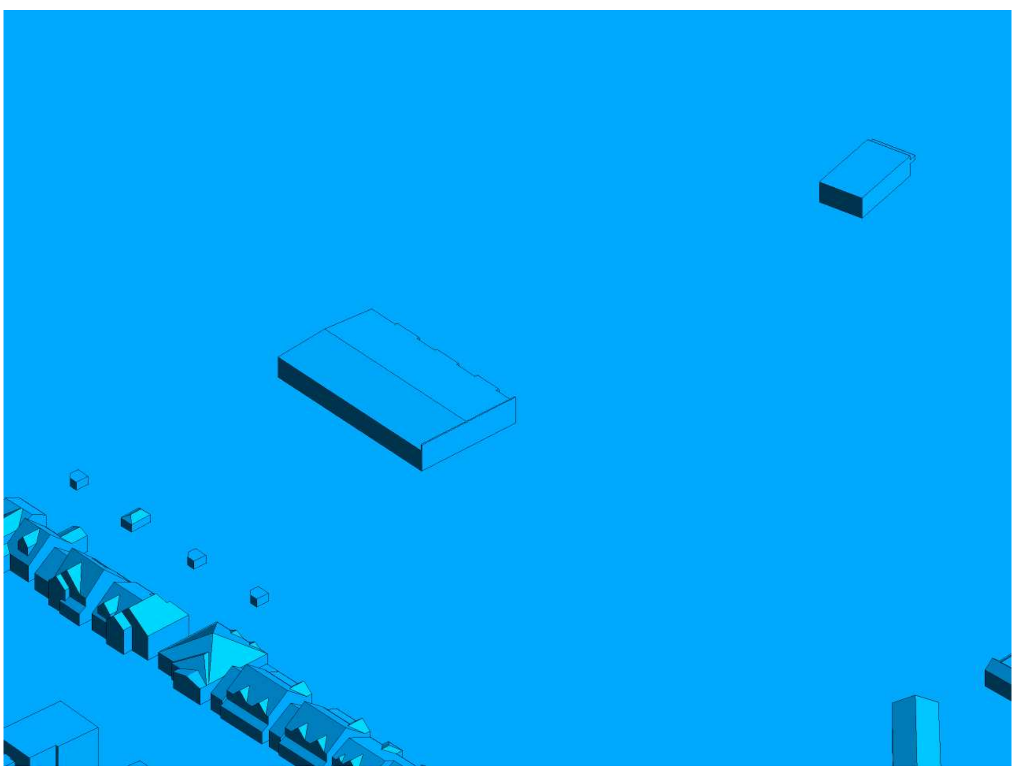


FIGURE 2D: CLOSE UP OF FIGURE 2C

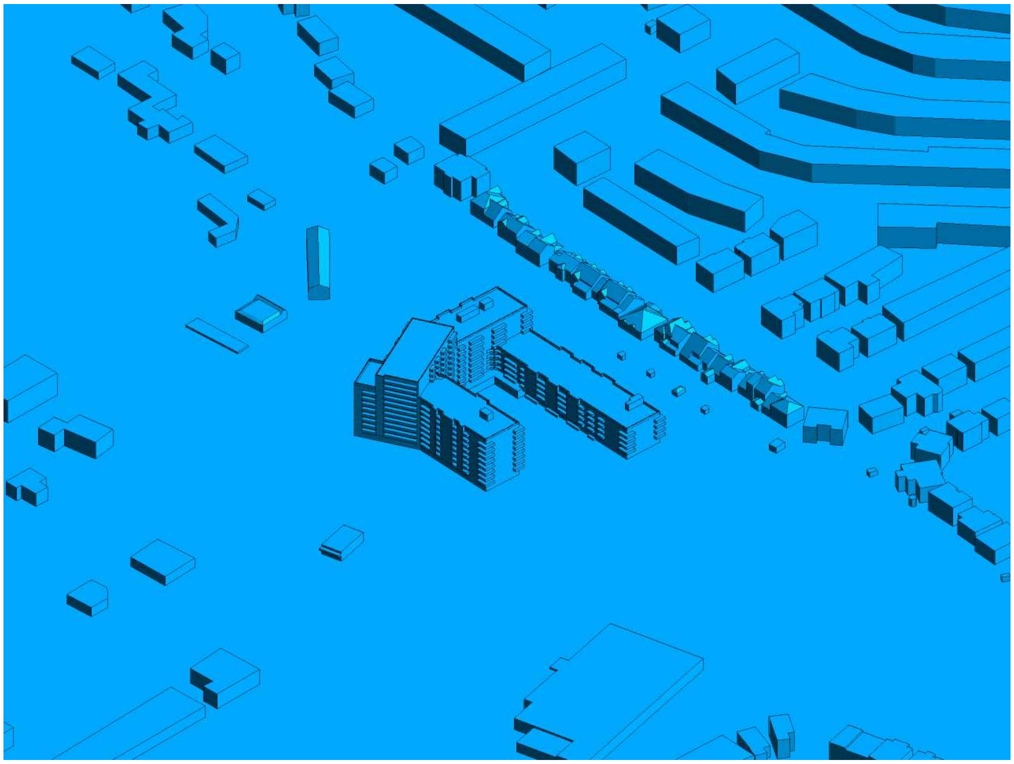


FIGURE 2E: COMPUTATIONAL MODEL, PROPOSED MASSING, WEST PERSPECTIVE

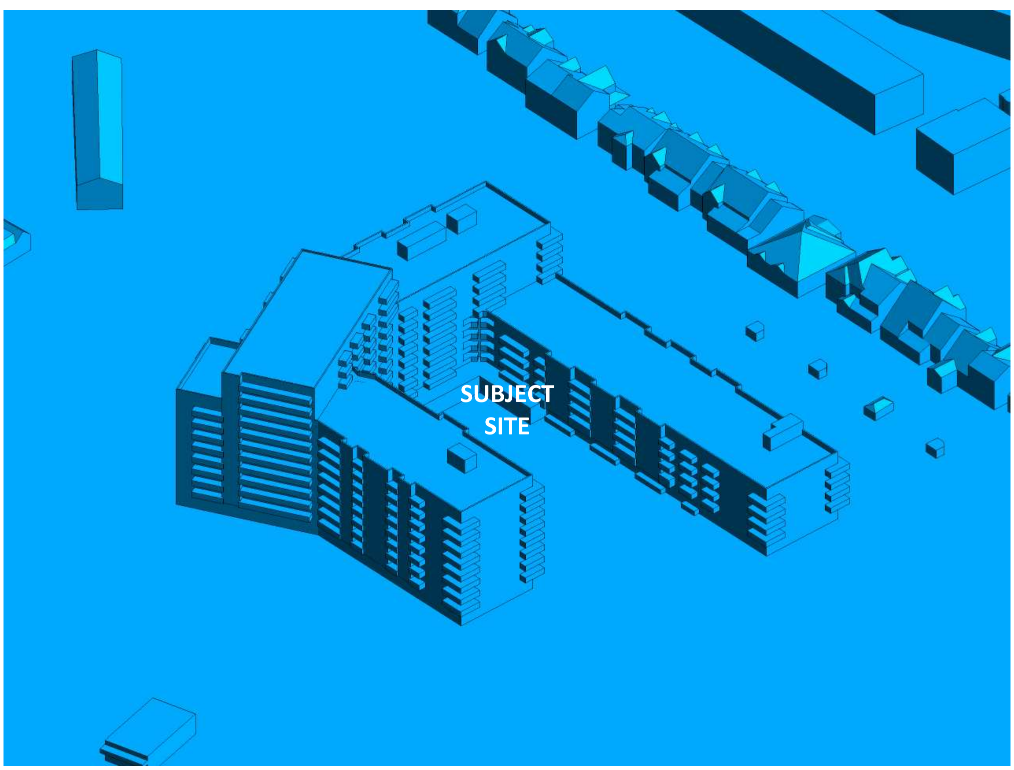


FIGURE 2F: CLOSE UP OF FIGURE 2E

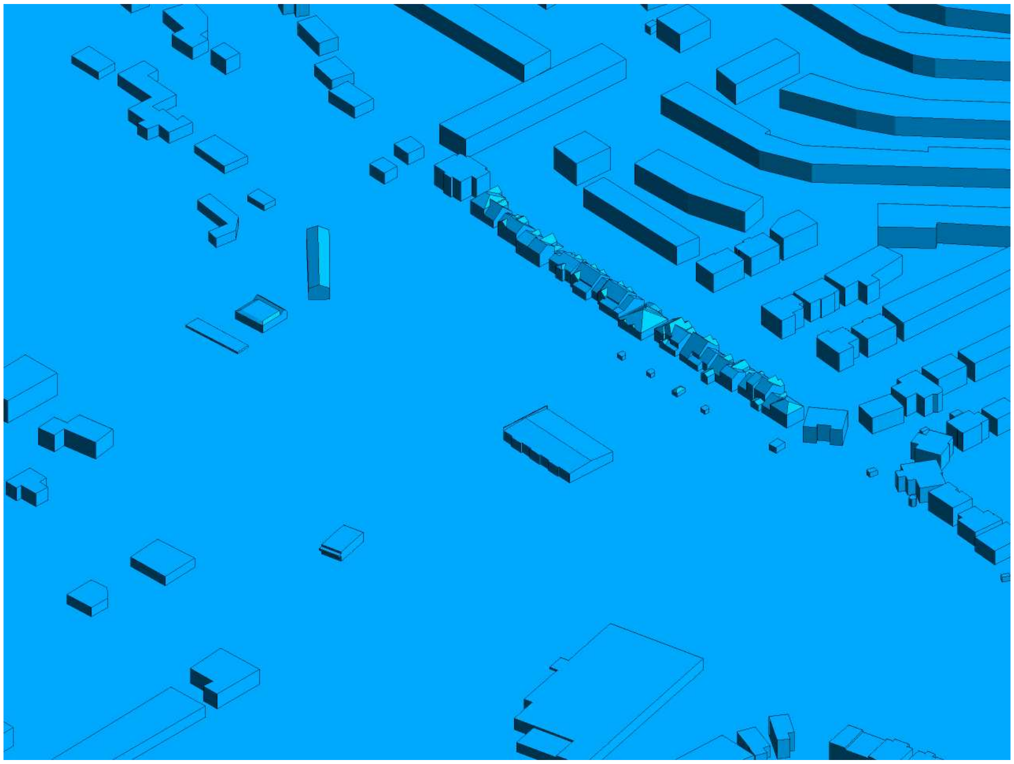


FIGURE 2G: COMPUTATIONAL MODEL, EXISTING MASSING, WEST PERSPECTIVE

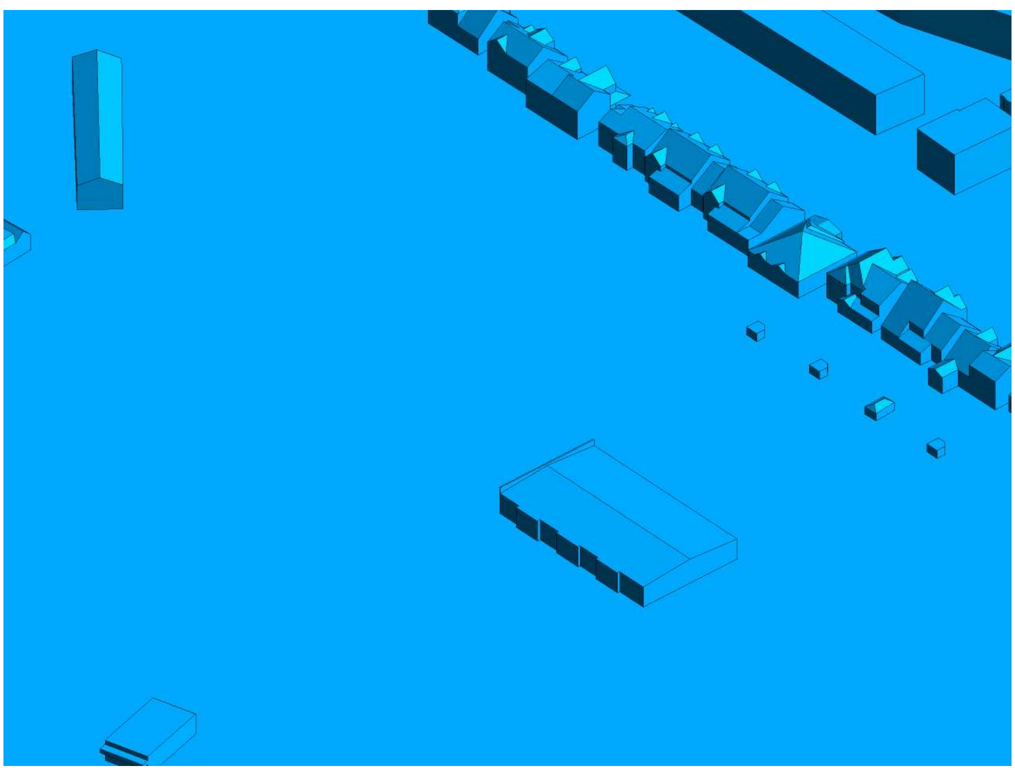


FIGURE 2H: CLOSE UP OF FIGURE 2G

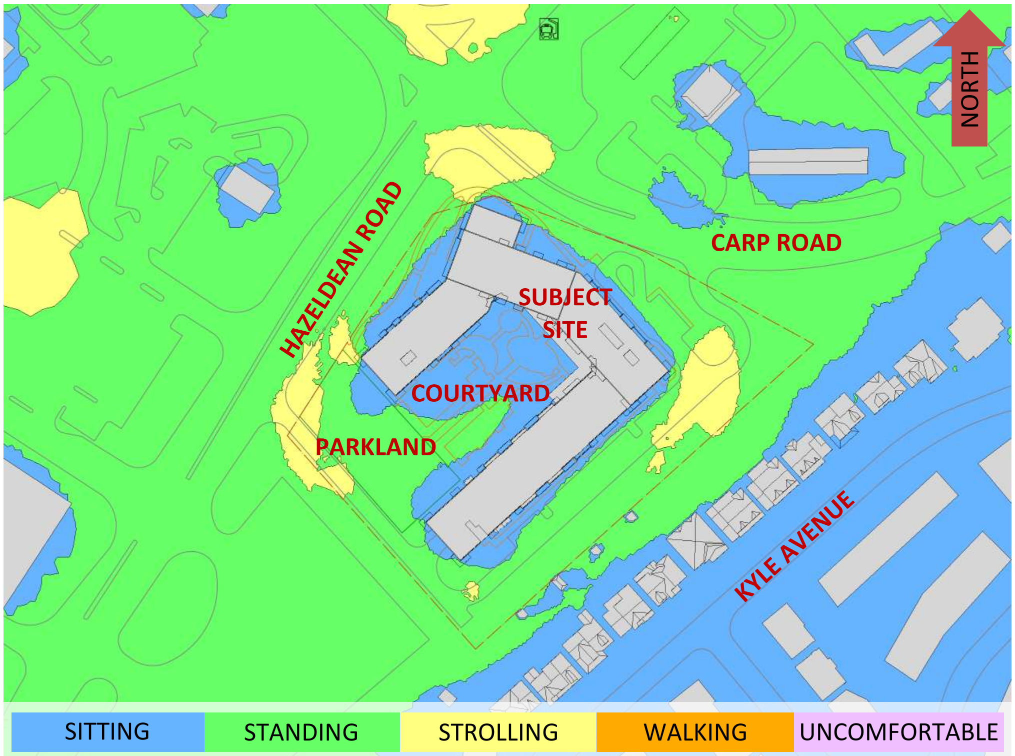


FIGURE 3A: SPRING – WIND COMFORT, GRADE LEVEL – PROPOSED MASSING

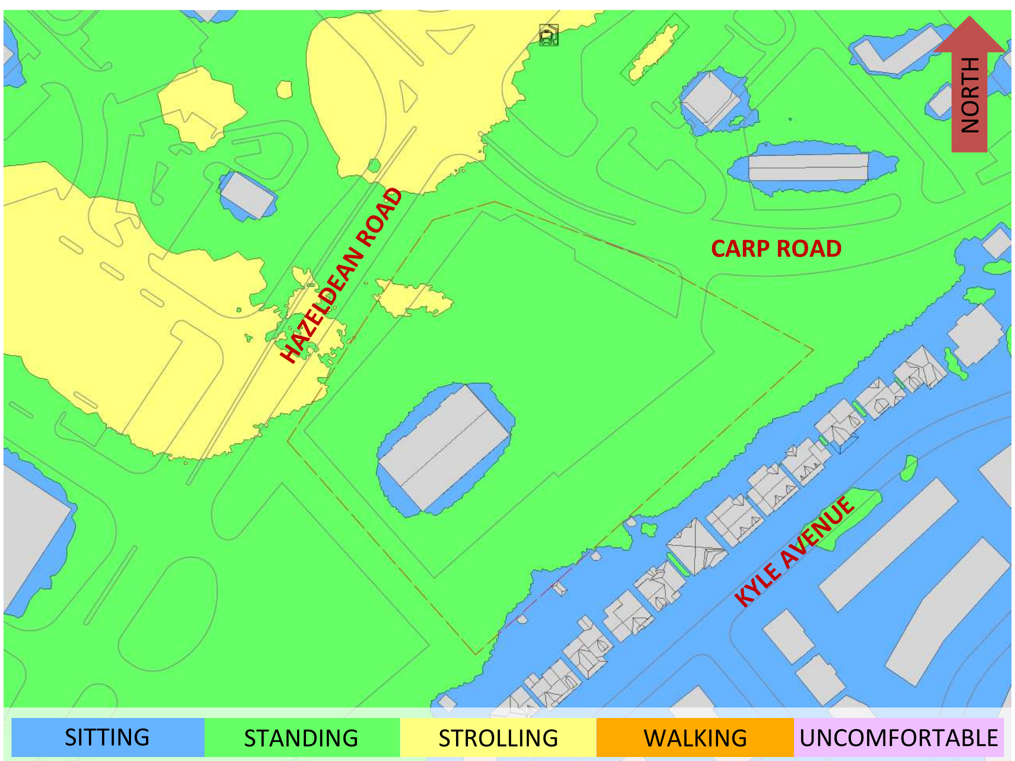


FIGURE 3B: SPRING – WIND COMFORT, GRADE LEVEL – EXISTING MASSING

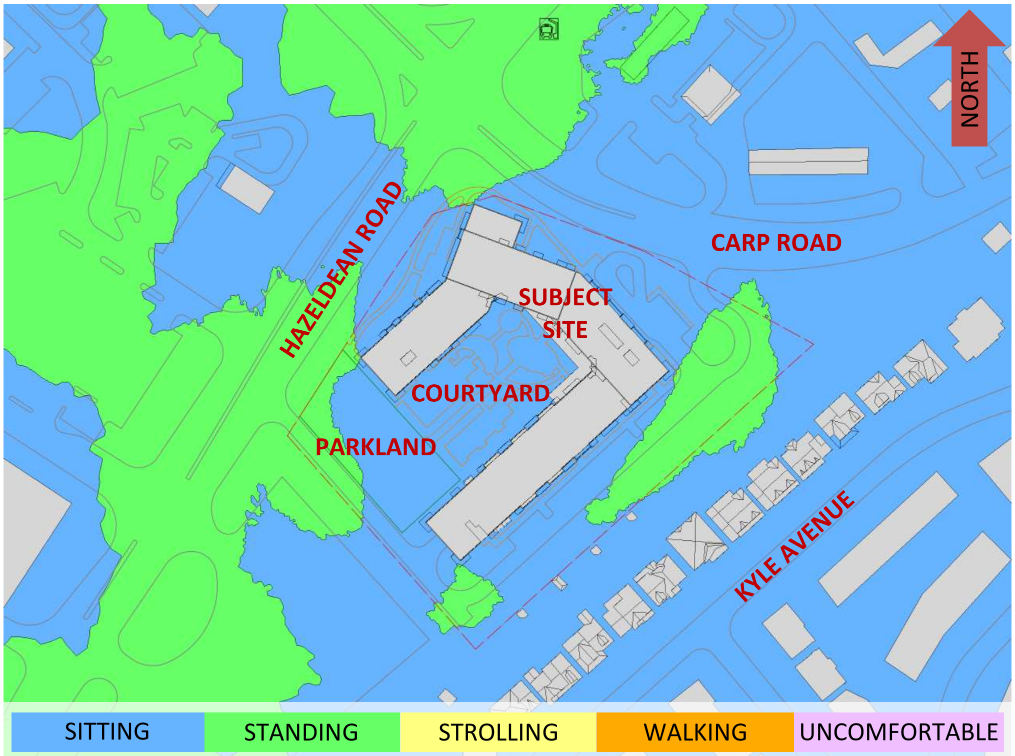


FIGURE 4A: SUMMER – WIND COMFORT, GRADE LEVEL – PROPOSED MASSING

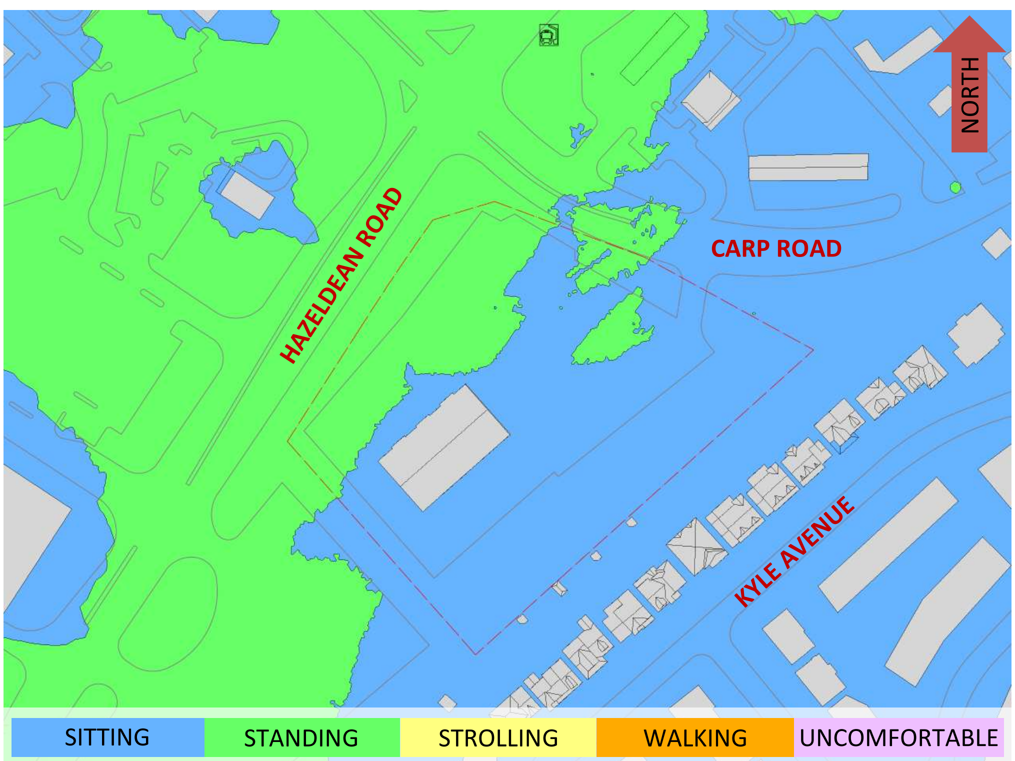


FIGURE 4B: SUMMER – WIND COMFORT, GRADE LEVEL – EXISTING MASSING

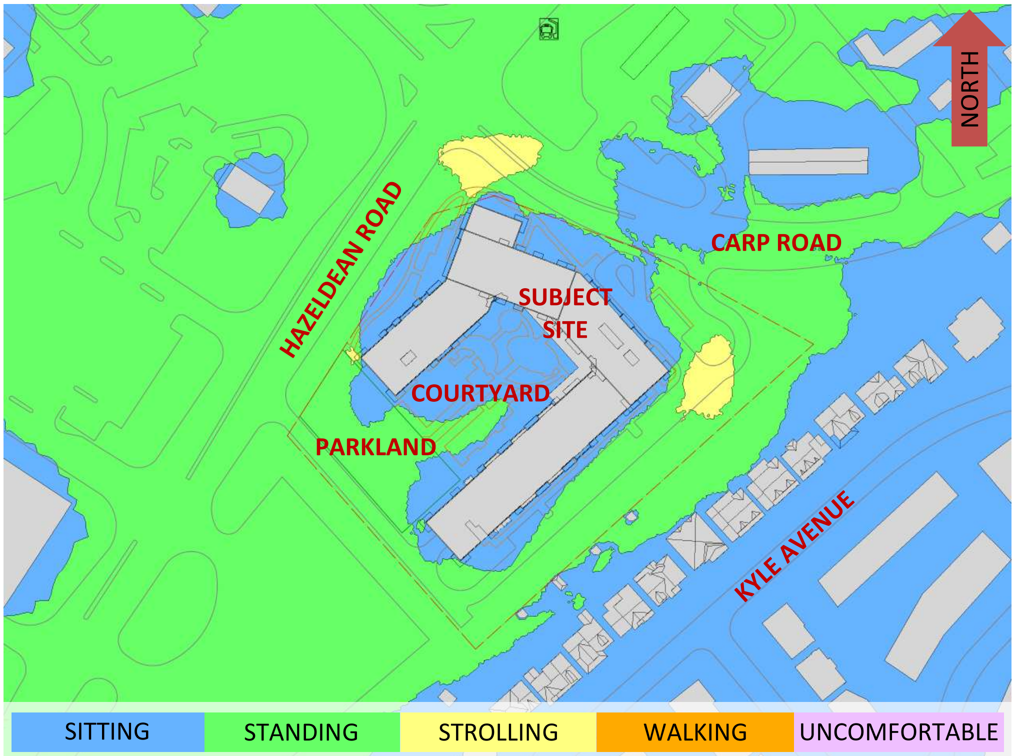


FIGURE 5A: AUTUMN – WIND COMFORT, GRADE LEVEL – PROPOSED MASSING

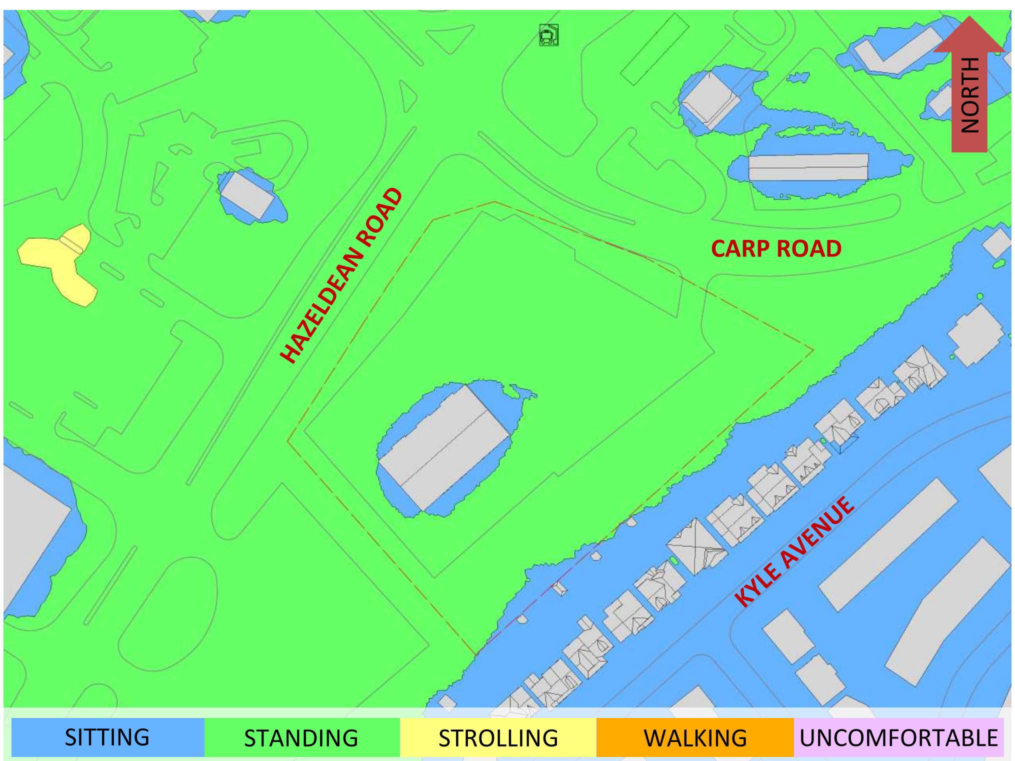


FIGURE 5B: AUTUMN – WIND COMFORT, GRADE LEVEL – EXISTING MASSING

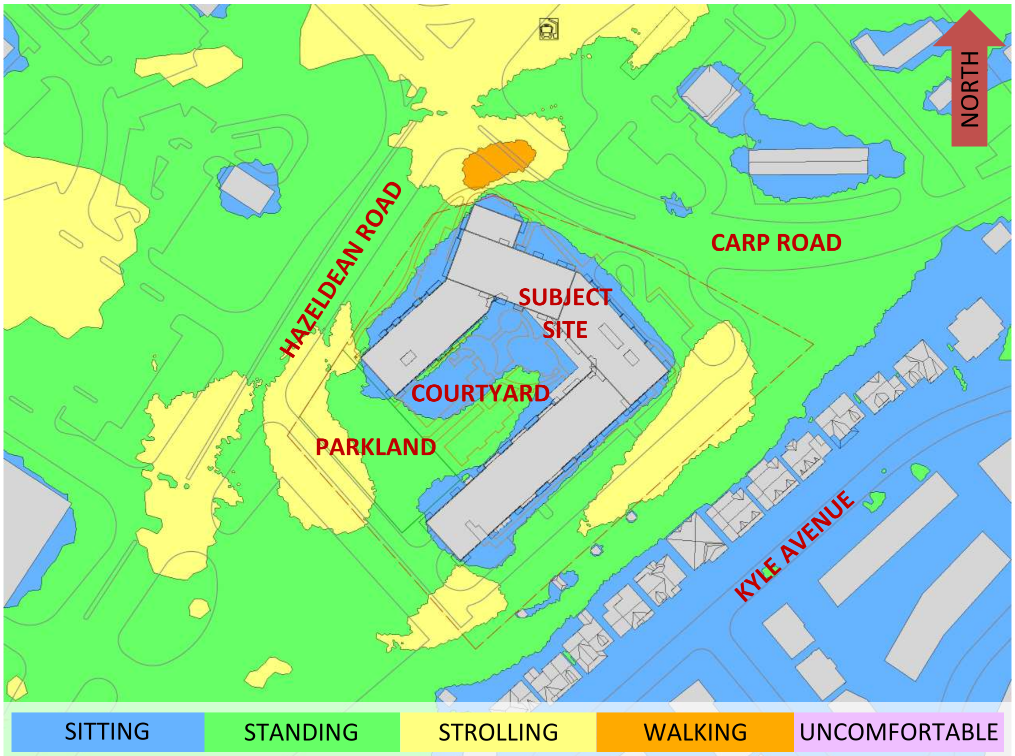


FIGURE 6A: WINTER – WIND COMFORT, GRADE LEVEL – PROPOSED MASSING

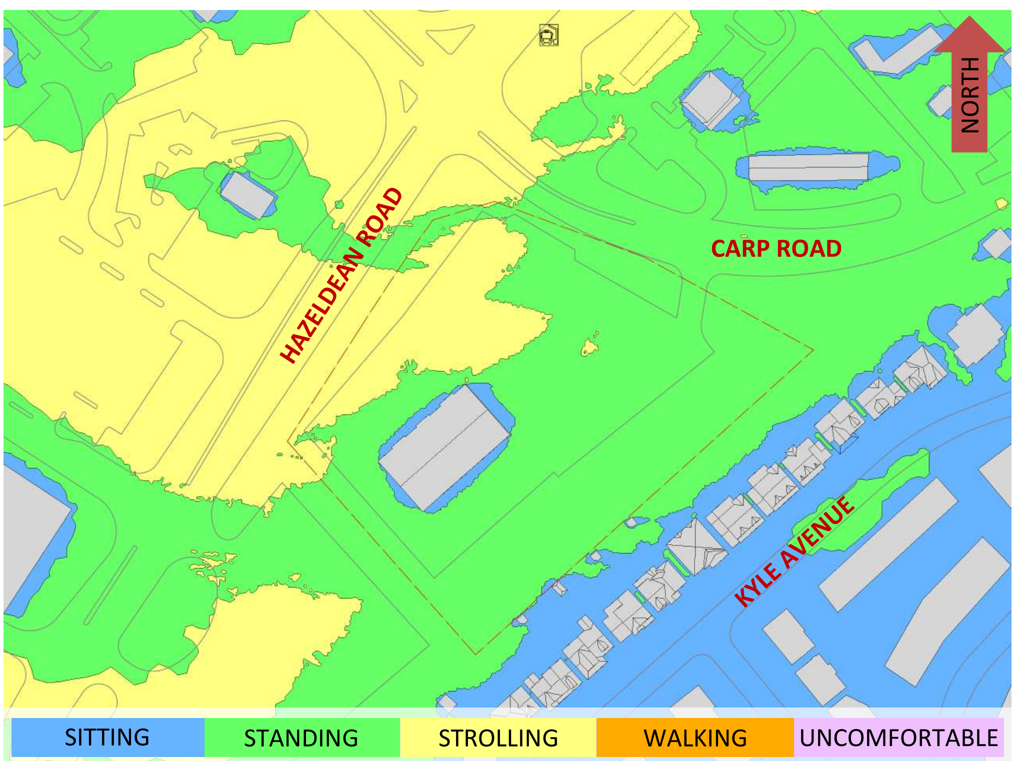


FIGURE 6B: WINTER – WIND COMFORT, GRADE LEVEL – EXISTING MASSING

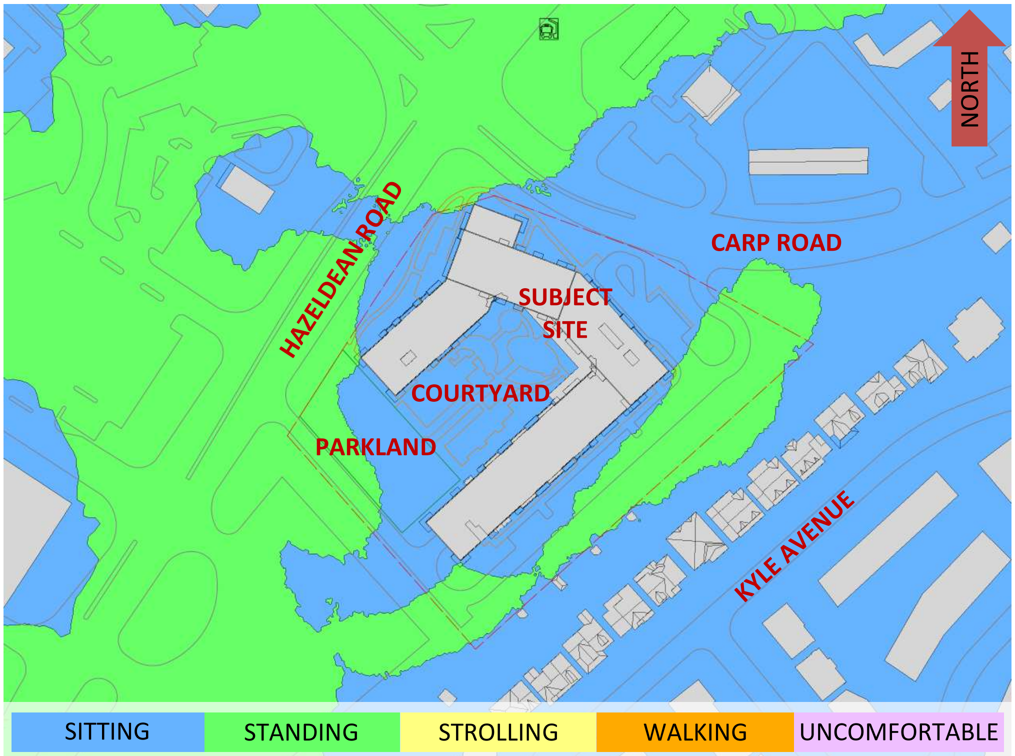


FIGURE 7: TYPICAL USE PERIOD – WIND COMFORT, GRADE LEVEL – PROPOSED MASSING

APPENDIX A

SIMULATION OF THE ATMOSPHERIC BOUNDARY LAYER

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SIMULATION OF THE ATMOSPHERIC BOUNDARY LAYER

The atmospheric boundary layer (ABL) is defined by the velocity and turbulence profiles according to industry standard practices. The mean wind profile can be represented, to a good approximation, by a power law relation, Equation (1), giving height above ground versus wind speed (1), (2).

$$U = U_g \left(\frac{Z}{Z_g}\right)^{\alpha} \qquad \text{Equation (1)}$$

where, $\boldsymbol{U}$ = mean wind speed, $\boldsymbol{U_g}$ = gradient wind speed, $\boldsymbol{Z}$ = height above ground, $\boldsymbol{Z_g}$ = depth of the boundary layer (gradient height), and α is the power law exponent.

For the model, U_g is set to 6.5 metres per second, which approximately corresponds to the 60% mean wind speed for Ottawa based on historical climate data and statistical analyses. When the results are normalized by this velocity, they are relatively insensitive to the selection of gradient wind speed.

Z_g is set to 540 m. The selection of gradient height is relatively unimportant, so long as it exceeds the building heights surrounding the subject site. The value has been selected to correspond to our physical wind tunnel reference value.

α is determined based on the upstream exposure of the far-field surroundings (that is, the area that it not captured within the simulation model).

Table 1 presents the values of α used in this study, while Table 2 presents several reference values of α. When the upstream exposure of the far-field surroundings is a mixture of multiple types of terrain, the α values are a weighted average with terrain that is closer to the subject site given greater weight.

TABLE 1: UPSTREAM EXPOSURE (ALPHA VALUE) VS TRUE WIND DIRECTION

Wind Direction (Degrees True)	Alpha Value (α)
0	0.20
49	0.22
74	0.22
103	0.23
167	0.20
197	0.19
217	0.19
237	0.19
262	0.19
282	0.19
301	0.20
324	0.20

TABLE 2: DEFINITION OF UPSTREAM EXPOSURE (ALPHA VALUE)

Upstream Exposure Type	Alpha Value (α)
Open Water	0.14-0.15
Open Field	0.16-0.19
Light Suburban	0.21-0.24
Heavy Suburban	0.24-0.27
Light Urban	0.28-0.30
Heavy Urban	0.31-0.33

The turbulence model in the computational fluid dynamics (CFD) simulations is a two-equation shear-stress transport (SST) model, and thus the ABL turbulence profile requires that two parameters be defined at the inlet of the domain. The turbulence profile is defined following the recommendations of the Architectural Institute of Japan for flat terrain (3).

$$I(Z) = \begin{cases} 0.1\left(\frac{Z}{Z_g}\right)^{-\alpha-0.05}, & Z > 10\text{ m} \\ 0.1\left(\frac{10}{Z_g}\right)^{-\alpha-0.05}, & Z \le 10\text{ m} \end{cases}$$

Equation (2)

$$L_t(Z) = \begin{cases} 100\text{ m}\sqrt{\frac{Z}{30}}, & Z > 30\text{ m} \\ 100\text{ m}, & Z \le 30\text{ m} \end{cases}$$

Equation (3)

where, ***I*** = turbulence intensity, $\boldsymbol{L_t}$ = turbulence length scale, ***Z*** = height above ground, and α is the power law exponent used for the velocity profile in Equation (1).

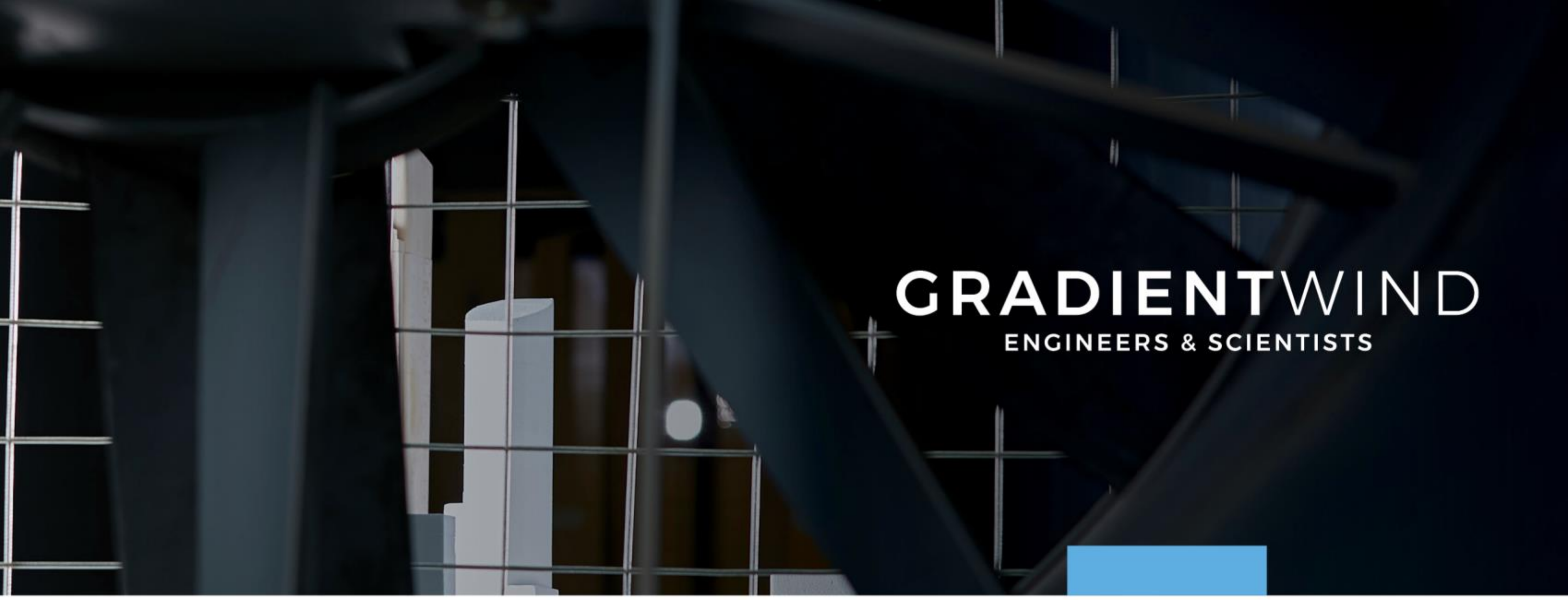
Boundary conditions on all other domain boundaries are defined as follows: the ground is a no-slip surface; the side walls of the domain have a symmetry boundary condition; the top of the domain has a specified shear, which maintains a constant wind speed at gradient height; and the outlet has a static pressure boundary condition.

REFERENCES

[1] P. Arya, "Chapter 10: Near-neutral Boundary Layers," in *Introduction to Micrometeorology*, San Diego, California, Academic Press, 2001.

[2] S. A. Hsu, E. A. Meindl and D. B. Gilhousen, "Determining the Power-Law Wind Profile Exponent under Near-neutral Stability Conditions at Sea," vol. 33, no. 6, 1994.

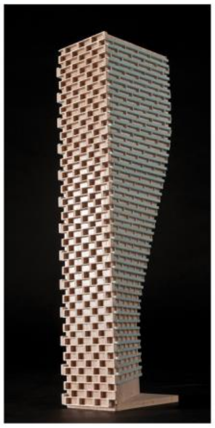
[3] Y. Tamura, H. Kawai, Y. Uematsu, K. Kondo and T. Okhuma, "Revision of AIJ Recommendations for Wind Loads on Buildings," in *The International Wind Engineering Symposium, IWES 2003*, Taiwan, 2003.

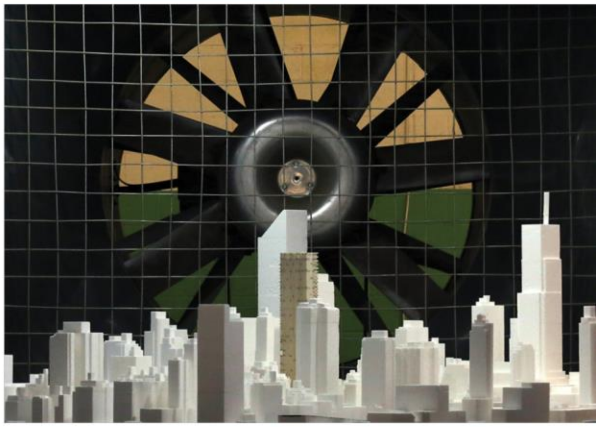


ROADWAY TRAFFIC NOISE ASSESSMENT

1174 Carp Road
Ottawa, Ontario

Report: 23-299 – Detailed Traffic Noise





May 17, 2024

PREPARED FOR
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EXECUTIVE SUMMARY

This report describes a detailed roadway traffic noise assessment performed in support of a Site Plan Control application for the proposed mixed-use development located at 1174 Carp Road in Ottawa, Ontario. The study site is bordered by Hazeldean Road to the northwest, Carp Road to the northeast, and single houses to the southeast. A future multi-rise building (6310 Hazeldean Road) is located to the southwest of the study site, however, the noise-screening effects of this future development were not included in this study. The Hazeldean Road façade is referred to as "North" throughout this study. The major sources of roadway traffic noise are Hazeldean Road and Carp Road. Figure 1 illustrates the site plan with the surrounding context.

The proposed development comprises a multi-storey building with a 'C' shaped planform open to the west. The building features several amenity spaces, retail areas, and residential units at grade along with a courtyard, a parkland, a drop-off zone, outdoor parking, and a driveway leading to below-grade parking. The remaining floors comprise residential units, with floorplate setbacks at levels two (2), six (6), and ten (10).

The assessment is based on (i) theoretical noise prediction methods that conform to the Ministry of the Environment, Conservation and Parks (MECP) and City of Ottawa requirements; (ii) noise level criteria as specified by the City of Ottawa's Environmental Noise Control Guidelines (ENCG); (iii) future vehicular traffic volumes based on the City of Ottawa's Official Plan roadway classifications; and (iv) drawings prepared by Hobin Architecture Incorporated, dated January 12, 2024.

The results of the current analysis indicate that noise levels will range between 72 and 59 dBA at Plane of Window (POW) receptors during the daytime period (07:00-23:00) and 64 and 51 dBA during the nighttime period (23:00-07:00). The highest noise levels occur along the north and northeast façades, which are most exposed to Hazeldean and Carp Roads. The results of the analysis show that the noise levels in the courtyard (Receptor 10) will be below the ENCG criteria.

The results of the calculations indicate that the north, northwest, northeast, and east façades and partially west façade of the building will require upgraded building components. Building components compliant with the Ontario Building Code (OBC 2020) will be sufficient for the remaining façades.

The results of the calculations also indicate that the building will require central air conditioning, or a similar ventilation system for the residential units, which will allow occupants to keep windows closed and maintain a comfortable working environment. The following Warning Clause[1] will also be required to be placed on all Lease, Purchase and Sale Agreements, as summarized in Section 6.

Potential existing sources of stationary noise, include a carwash across Carp Road, which is anticipated to fall below the noise produced from Hazelden and Carp Road.

As the proposed building is much taller than the surroundings, locating larger pieces of outdoor mechanical equipment, such as cooling towers, and emergency generators on the roof will help attenuate noise emissions from these and similar pieces of equipment. The building will be designed to comply with ENCG sound level limits. A stationary noise study will be performed once mechanical plans for the proposed building become available. This study should assess the stationary noise impacts from rooftop mechanical units serving the proposed building on surrounding noise-sensitive areas. This study would include recommendations for any noise control measures that may be necessary to ensure noise levels fall below ENCG limits.

[1] City of Ottawa Environmental Noise Control Guidelines, January 2016

TABLE OF CONTENTS

1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by Le Group Maurice to undertake a roadway traffic noise assessment for the proposed mixed-use development located at 1174 Carp Road in Ottawa, Ontario. This report summarizes the methodology, results and recommendations related to the assessment of exterior noise levels generated by local roadway traffic.

This assessment is based on theoretical noise calculation methods conforming to the City of Ottawa[2] and the Ministry of the Environment, Conservation and Parks (MECP)[3] guidelines. Noise calculations were based on drawings prepared by Hobin Architecture Incorporated, dated January 12, 2024, with future traffic volumes corresponding to the City of Ottawa's Official Plan (OP) roadway classifications.

2. TERMS OF REFERENCE

The proposed development is located at 1174 Carp Road, Ottawa Ontario. The study site is bordered by Hazeldean Road to the northwest, Carp Road to the northeast, and single houses to the southeast. A future multi-rise building (6310 Hazeldean Road) is located to the southwest of the study site, however, the noise-screening effects of this future development were not included in this study. The Hazeldean Road façade is referred to as "North" throughout this study.

The development comprises a multi-storey building with a 'C' shaped planform open to the west. The building features several amenity spaces, retail areas, and residential units at grade along with a courtyard, a parkland, a drop-off zone, outdoor parking, and a driveway leading to below-grade parking. The remaining floors comprise residential units, with floorplate setbacks at levels two (2), six (6), and ten (10).

The major sources of roadway traffic noise are Hazeldean Road and Carp Road. Figure 1 illustrates the site plan with the surrounding context.

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[2] City of Ottawa Environmental Noise Control Guidelines, January 2016
[3] Ontario Ministry of the Environment and Climate Change – Environmental Noise Guidelines, Publication NPC-300, Queens Printer for Ontario, Toronto, 2013

3. OBJECTIVES

The principal objectives of this study are to (i) calculate the future noise levels on the study buildings produced by local roadway traffic, and (ii) ensure that interior and exterior noise levels do not exceed the allowable limits specified by the City of Ottawa's Environmental Noise Control Guidelines (ENCG) as outlined in Section 4.2 of this report.

4. METHODOLOGY

4.1 Background

Noise can be defined as any obtrusive sound. It is created at a source, transmitted through a medium, such as air, and intercepted by a receiver. Noise may be characterized in terms of the power of the source or the sound pressure level at a specific distance. While the power of a source is characteristic of that particular source, the sound pressure depends on the location of the receiver and the path that the noise takes to reach the receiver. Measurement of noise is based on the decibel unit, dBA, which is a logarithmic ratio referenced to a standard sound pressure level (2×10^{-5} Pascals). The 'A' suffix refers to a weighting scale, which better represents how the noise is perceived by the human ear. With this scale, a doubling of power results in a 3 dBA increase in measured noise levels and is just perceptible to most people. An increase of 10 dBA is often perceived to be twice as loud.

4.2 Roadway Traffic Noise

4.2.1 Criteria for Roadway Traffic Noise

For vehicular traffic, the equivalent sound energy level, L_{eq}, provides a measure of the time-varying noise levels, which is well correlated with the annoyance of sound. It is defined as the continuous sound level, which has the same energy as a time-varying noise level over a period of time. For roadways and LRT, the L_{eq} is commonly calculated on the basis of a 16-hour (L_{eq16}) daytime (07:00-23:00) / 8-hour (L_{eq8}) nighttime (23:00-07:00) split to assess its impact on residential buildings. The City of Ottawa's Environmental Noise Control Guidelines (ENCG) specifies that the recommended indoor noise limit range (that is relevant to this study) for roadways is 45 and 40 dBA for living rooms and sleeping quarters, respectively, and 50 for retail stores as listed in Table 1. Based on Gradient Wind's experience, more comfortable indoor noise levels should be targeted, towards 42 and 37, respectively, to control peak noise and deficiencies in building envelope construction.

TABLE 1: INDOOR SOUND LEVEL CRITERIA

Type of Space	Time Period	Leq (dBA)
General offices, reception areas, **retail stores**, etc.	07:00 – 23:00	50
Living/dining/den areas of residences, hospitals, schools, nursing/retirement homes, day-care centres, theatres, places of worship, libraries, individual or semi-private offices, conference rooms, etc.	07:00 – 23:00	45
Sleeping quarters of hotels/motels	23:00 – 07:00	45
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	23:00 – 07:00	40

Predicted noise levels at the plane of window (POW) dictate the action required to achieve the recommended sound levels. An open window is considered to provide a 10 dBA reduction in noise, while a standard closed window is capable of providing a minimum 20 dBA noise reduction[4]. A closed window due to a ventilation requirement will bring noise levels down to achieve an acceptable indoor environment[5]. Therefore, where noise levels exceed 55 dBA daytime and 50 dBA nighttime, the ventilation for the building should consider the need for having windows and doors closed, which triggers the need for forced air heating with provision for central air conditioning. Where noise levels exceed 65 dBA daytime and 60 dBA nighttime, air conditioning will be required and building components will require higher levels of sound attenuation[6].

The sound level criterion for outdoor living areas (OLA) is 55 dBA, which applies during the daytime period (07:00 to 23:00). When noise levels exceed 55 dBA and are less than or equal to 60 dBA, mitigation should be considered to reduce noise levels to as close to 55 dBA if technically, economically, and administratively feasible. If noise levels exceed 60 dBA, mitigation must be provided to reduce noise levels below 60 dBA.

[4] Burberry, P.B. (2014). Mitchell's Environment and Services. Routledge, Page 125
[5] MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.8
[6] MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.1.3

4.2.2 Theoretical Roadway Noise Predictions

Noise predictions were performed with the aid of the Ministry of the Environment, Conservations and Parks' (MECP) computerized noise assessment program, STAMSON 5.04, for road analysis. Appendix A includes the STAMSON 5.04 input and output data.

Roadway traffic noise calculations were performed by treating each roadway segment as separate line sources of noise. In addition to the traffic volumes summarized in Table 2, theoretical noise predictions were based on the following parameters:

- Truck traffic on all roadways was taken to comprise 5% heavy trucks and 7% medium trucks, as per ENCG requirements for noise level predictions.
- The day/night split for all roads was taken to be 92% / 8%, respectively.
- Ground surfaces were taken to be reflective due to the presence of hard ground (pavement, concrete) on the paths between the receptors and road segments.
- Topography was assumed to be a flat/gentle slope surrounding the study site.
- A total of eleven (11) receptor locations were chosen around the study site; ten (10) of them are at the facades of the building as Plane of Window (POW) receptors and one (1) of them as Outdoor Living Area (OLA) receptor in the courtyard.
- POW receptor heights were taken to be at the centre of the highest-level windows of the related façade. The OLA receptor height was taken at 1.5 m above grade.
- The receptor distances to roadway traffic and exposure angles are illustrated in Figures 3-5.

4.2.3 Roadway Traffic Volumes

The ENCG dictates that noise calculations should consider future sound levels based on a roadway's classification at the mature state of development. Therefore, traffic volumes are based on the roadway classifications outlined in the City of Ottawa's Official Plan (OP) and Transportation Master Plan[7] which provide additional details on future roadway expansions. Average Annual Daily Traffic (AADT) volumes

[7] City of Ottawa Transportation Master Plan, November 2013

are then based on data in Table B1 of the ENCG for each roadway classification. Table 2 (below) summarizes the AADT values used for each roadway included in this assessment.

TABLE 2: ROADWAY TRAFFIC DATA

Segment	Roadway Traffic Data	Speed Limit (km/h)	Traffic Volumes
Hazeldean Road	4-Lane Urban Arterial Undivided (4-UAU)	60	**30,000**
Carp Road	4-Lane Urban Arterial Undivided (4-UAU)	60	**30,000**

4.3 Indoor Noise Calculations

The difference between outdoor and indoor noise levels is the noise attenuation provided by the building envelope. According to common industry practice, complete walls and individual wall elements are rated according to the Sound Transmission Class (STC). The STC ratings of common residential walls built in conformance with the Ontario Building Code (2020) typically exceed STC 35, depending on exterior cladding, thickness and interior finish details. For example, brick veneer walls can achieve STC 50 or more. Standard commercially-sided exterior metal stud walls have around STC 45. Standard good quality double-glazed non-operable windows can have STC ratings ranging from 25 to 40, depending on the window manufacturer, pane thickness and inter-pane spacing. As previously mentioned, the windows are the known weak points in a partition.

As per Section 4.2, when daytime noise levels from road sources at the plane of the window exceed 65 dBA, calculations must be performed to evaluate the sound transmission quality of the building components to ensure acceptable indoor noise levels are achieved. The calculation procedure[8] considers:

- Window type and total area as a percentage of total room floor area
- Exterior wall type and total area as a percentage of the total room floor area
- Acoustic absorption characteristics of the room
- Outdoor noise source type and approach geometry

[8] Building Practice Note: Controlling Sound Transmission into Buildings by J.D. Quirt, National Research Council of Canada, September 1985

- Indoor sound level criteria, which vary according to the intended use of a space

Based on published research[9], exterior walls possess specific sound attenuation characteristics that are used as a basis for calculating the required STC ratings of windows in the same partition. Due to the limited information available at the time of the study, detailed floor layouts have not been finalized; therefore, detailed STC calculations could not be performed at this time. As a guideline, the anticipated STC requirements for windows have been estimated based on the overall noise reduction required for each intended use of space (STC = outdoor noise level – targeted indoor noise levels + safety factor).

5. ROADWAY TRAFFIC NOISE RESULTS AND DISCUSSION

5.1 Roadway Traffic Noise Levels

The results of the roadway traffic noise calculations are summarized in Table 3 below. A complete set of input and output data from all STAMSON 5.04 calculations is available in Appendix A.

TABLE 3: EXTERIOR NOISE LEVELS DUE TO ROAD TRAFFIC

Receptor Number	Receptor Height Above Grade (m)	Receptor Type/Location	STAMSON 5.04 Noise Level (dBA)	
			Day	Night
1	25.5	POW/North Façade - Level 9	70	63
2	25.5	POW/Northeast Façade - Level 9	72	64
3	34.5	POW/Northeast Façade - Level 12	70	62
4	25.5	POW/East Façade - Level 9	69	62
5	25.5	POW/South Façade - Level 9	62	54
6	13.5	POW/South Façade - Level 5	59	51
7	13.5	POW/West Façade - Level 5	63	55
8	13.5	POW/North Façade - Level 5	63	55
9	25.5	POW/West Façade - Level 9	67	59
10	1.5	OLA/Courtyard	53	N/A*
11	34.5	POW/Southwest Façade - Level 12	64	57

* OLA noise levels during the nighttime are not considered, as per the ENCG.

[9] CMHC, Road & Rail Noise: Effects on Housing

The results of the current analysis indicate that noise levels will range between 72 and 59 dBA at Plane of Window (POW) receptors during the daytime period (07:00-23:00) and 64 and 51 dBA during the nighttime period (23:00-07:00). The highest noise levels occur along the north and northeast façades, which are most exposed to Hazeldean and Carp Roads. The results of the analysis show that the noise levels in the courtyard (Receptor 10) will be below the ENCG criteria.

The results of the calculations indicate that the north and east façades and partially west façade of the building will require upgraded building components. Building components compliant with the Ontario Building Code (OBC 2020) will be sufficient for the remaining façades.

5.2 Noise Control Measures

The noise levels predicted due to roadway traffic exceed the criteria listed in Section 4.2 for building components. As discussed in Section 4.3, the anticipated STC requirements for windows and walls have been estimated based on the overall noise reduction required for each intended use of space (STC = outdoor noise level – targeted indoor noise levels + safety factor). As per the City of Ottawa requirements, detailed STC calculations will be required to be completed prior to the building permit application. The STC requirements for the windows are summarized below for various units within the development (see also Figure 6):

- **Bedroom Windows**

(i) Bedroom windows facing the northeast façade of the 9-storey section of the building will require a minimum STC of 35.

(ii) Bedroom windows facing the northwest and northeast façades of the 12-storey section of the building will require a minimum STC of 33.

(iii) Bedroom windows facing the north and east façades of the building will require a minimum STC of 33.

(iv) Bedroom windows facing the west façade of the 9-storey section of the building will require a minimum STC of 30.

(v) All other bedroom windows are to satisfy Ontario Building Code (OBC 2020) requirements

- **Living Room Windows**

(i) Living room windows facing the northeast façade of the 9-storey section of the building will require a minimum STC of 30.

(ii) Living room windows facing the northwest and northeast façades of the 12-storey section of the building will require a minimum STC of 28.

(iii) Living room windows facing the north and east façades of the building will require a minimum STC of 28.

(iv) Living room windows facing the west façade of the 9-storey section of the building will require a minimum STC of 25.

(v) All other bedroom windows are to satisfy Ontario Building Code (OBC 2020) requirements

- **Retail Windows**

(i) Retail windows facing north, northwest, northeast, and east will require a minimum STC of 20

(ii) All other living room windows are to satisfy Ontario Building Code (OBC 2020) requirements

- **Exterior Walls**

(i) Exterior wall components on north, northwest, northeast, and east façades will require a minimum STC of 45, which will be achieved with brick cladding or an acoustical equivalent according to NRC test data[10]

The STC requirements apply to windows, doors, spandrel panels and curtainwall elements. Exterior wall components on these façades are recommended to have a minimum STC of 45, where a punched window and wall system is used. A review of window supplier literature indicates that the specified STC ratings can be achieved by a variety of window systems that have a combination of glass thickness and inter-pane spacing. It is the responsibility of the manufacturer to ensure that the window achieves the required STC. This can only be assured by using window configurations that have been certified by laboratory testing. The requirements for STC ratings assume that the remaining components of the building are constructed and installed according to the minimum standards of the Ontario Building Code. The specified STC requirements also apply to swinging and/or sliding patio doors.

[10] J.S. Bradley and J.A. Birta. Laboratory Measurements of the Sound Insulation of Building Façade Elements, National Research Council October 2000.

The results of the calculations also indicate that the building will require central air conditioning, or a similar ventilation system for the residential units, which will allow occupants to keep windows closed and maintain a comfortable working environment. In addition to ventilation requirements, warning clauses will also be required in all Lease, Purchase and Sale Agreements, as summarized in Section 6.

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current analysis indicate that noise levels will range between 72 and 59 dBA at Plane of Window (POW) receptors during the daytime period (07:00-23:00) and 64 and 51 dBA during the nighttime period (23:00-07:00). The highest noise levels occur along the north and northeast façades, which are most exposed to Hazeldean and Carp Roads.

The results of the calculations indicate that the north, northwest, northeast, and east façades and partially west façade of the building will require upgraded building components. Building components compliant with the Ontario Building Code (OBC 2020) will be sufficient for the remaining façades. The results of the analysis show that the noise levels in the courtyard (Receptor 10) will be below the ENCG criteria.

The results of the calculations also indicate that the building will require central air conditioning, or a similar ventilation system for the residential units, which will allow occupants to keep windows closed and maintain a comfortable working environment. The following Warning Clause[11] will also be required to be placed on all Lease, Purchase and Sale Agreements, as summarized below:

Type D

> *"This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."*

[11] City of Ottawa Environmental Noise Control Guidelines, January 2016

Potential existing sources of stationary noise, include a carwash across Carp Road, which is anticipated to fall below the noise produced from Hazelden and Carp Road.

As the proposed building is much taller than the surroundings, locating larger pieces of outdoor mechanical equipment, such as cooling towers, and emergency generators on the roof will help attenuate noise emissions from these and similar pieces of equipment. The building will be designed to comply with ENCG sound level limits. A stationary noise study will be performed once mechanical plans for the proposed building become available. This study should assess the stationary noise impacts from rooftop mechanical units serving the proposed building on surrounding noise-sensitive areas. This study would include recommendations for any noise control measures that may be necessary to ensure noise levels fall below ENCG limits.

This concludes our traffic noise assessment and report. If you have any questions or wish to discuss our findings, please advise us. In the interim, we thank you for the opportunity to be of service.

Sincerely,

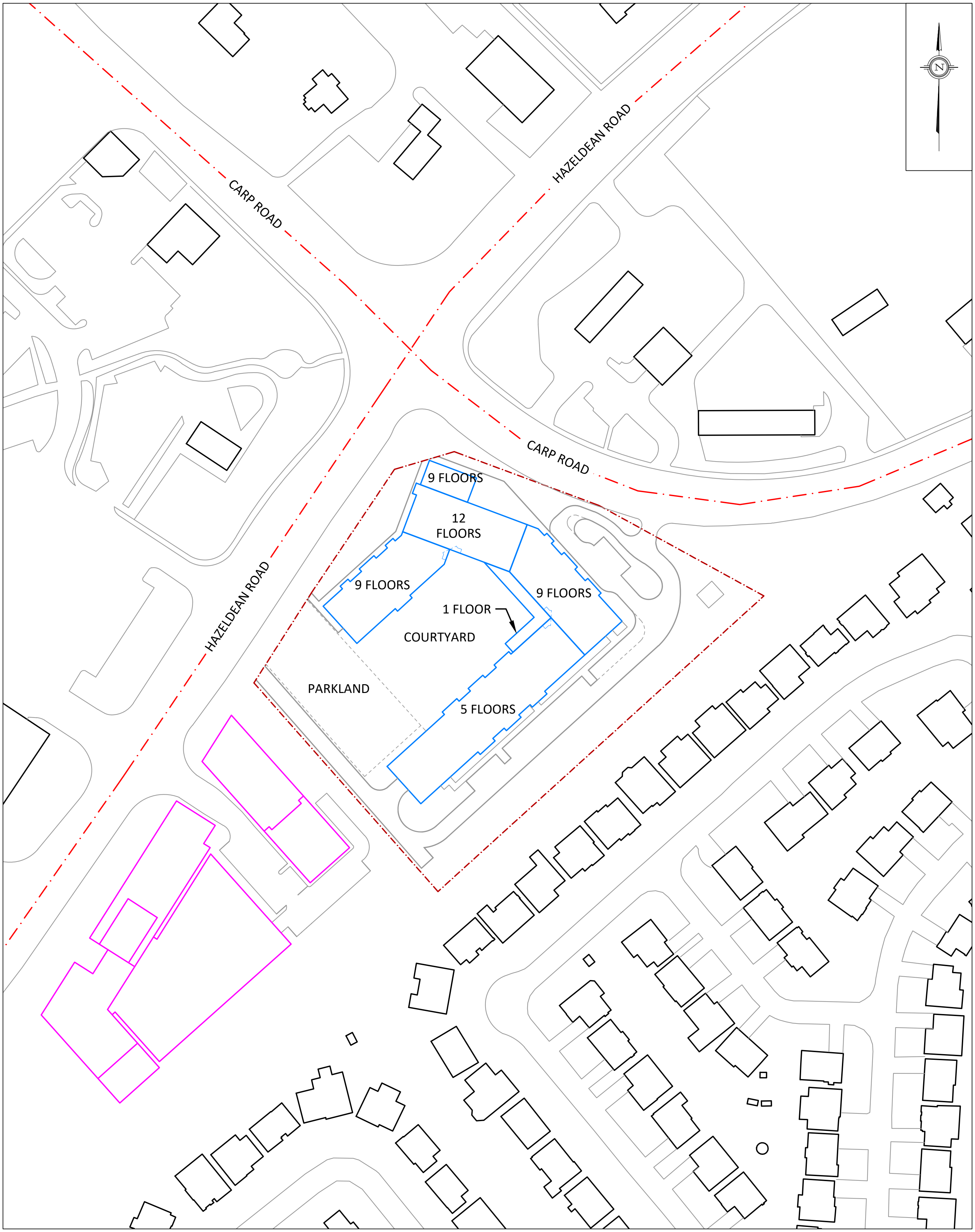
Gradient Wind Engineering Inc.

LICENSED PROFESSIONAL ENGINEER
J. R. FOSTER
100155655
May 17, 2024
PROVINCE OF ONTARIO

Efser Kara, MSc, LEED GA
Acoustic Scientist

Joshua Foster, P.Eng.
Lead Engineer

Gradient Wind File #23-299 – Detailed Traffic Noise



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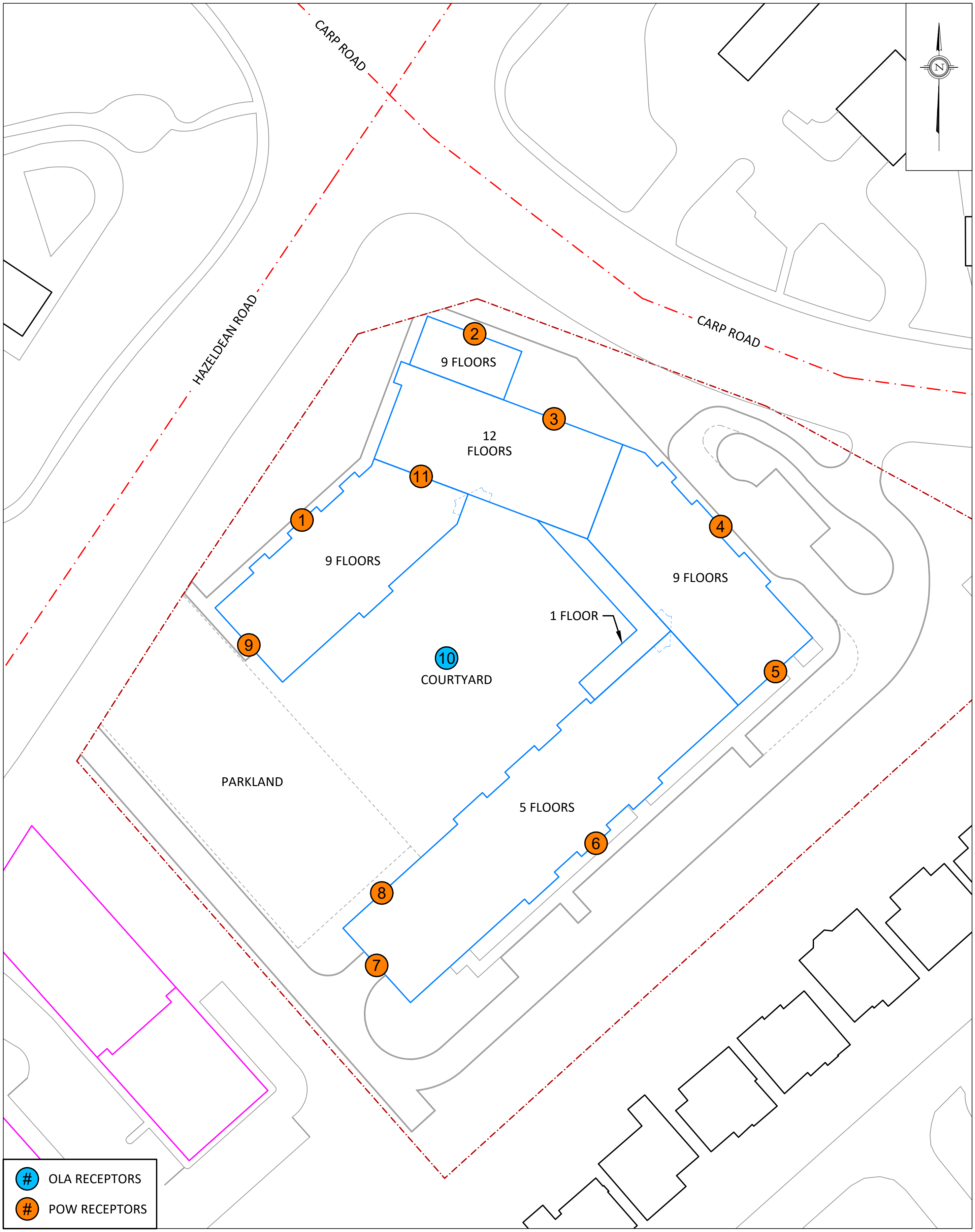
PROJECT	1174 CARP ROAD, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT		
SCALE	1:2000 (APPROX.)	DRAWING NO.	23-299 - 1
DATE	JANUARY 19, 2024	DRAWN BY	E.K.

DESCRIPTION

FIGURE 1:
SITE PLAN AND SURROUNDING CONTEXT



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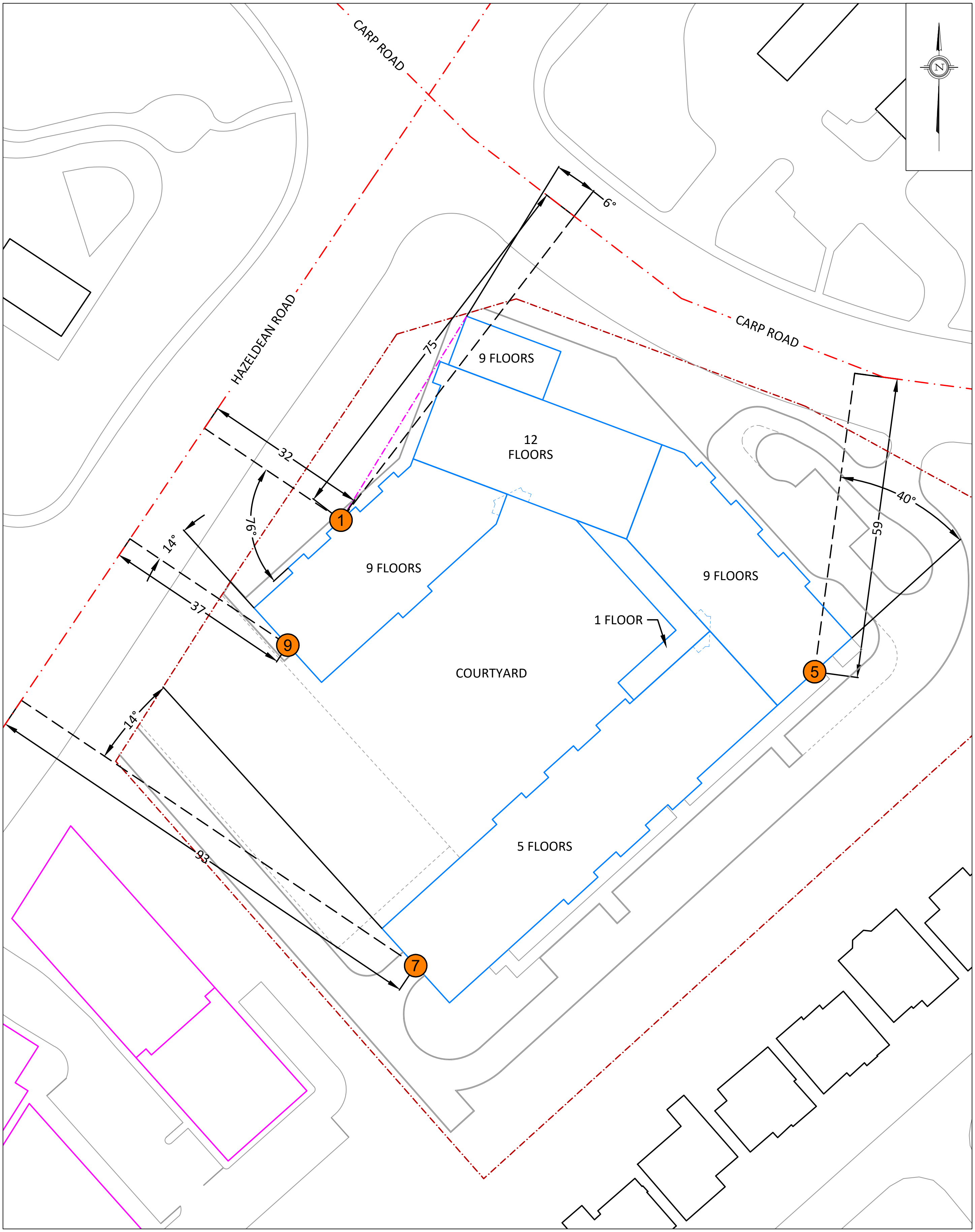
PROJECT	1174 CARP ROAD, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT		
SCALE	1:1000 (APPROX.)	DRAWING NO.	23-299 - 2
DATE	JANUARY 19, 2024	DRAWN BY	E.K.

DESCRIPTION

FIGURE 2:
RECEPTOR LOCATIONS



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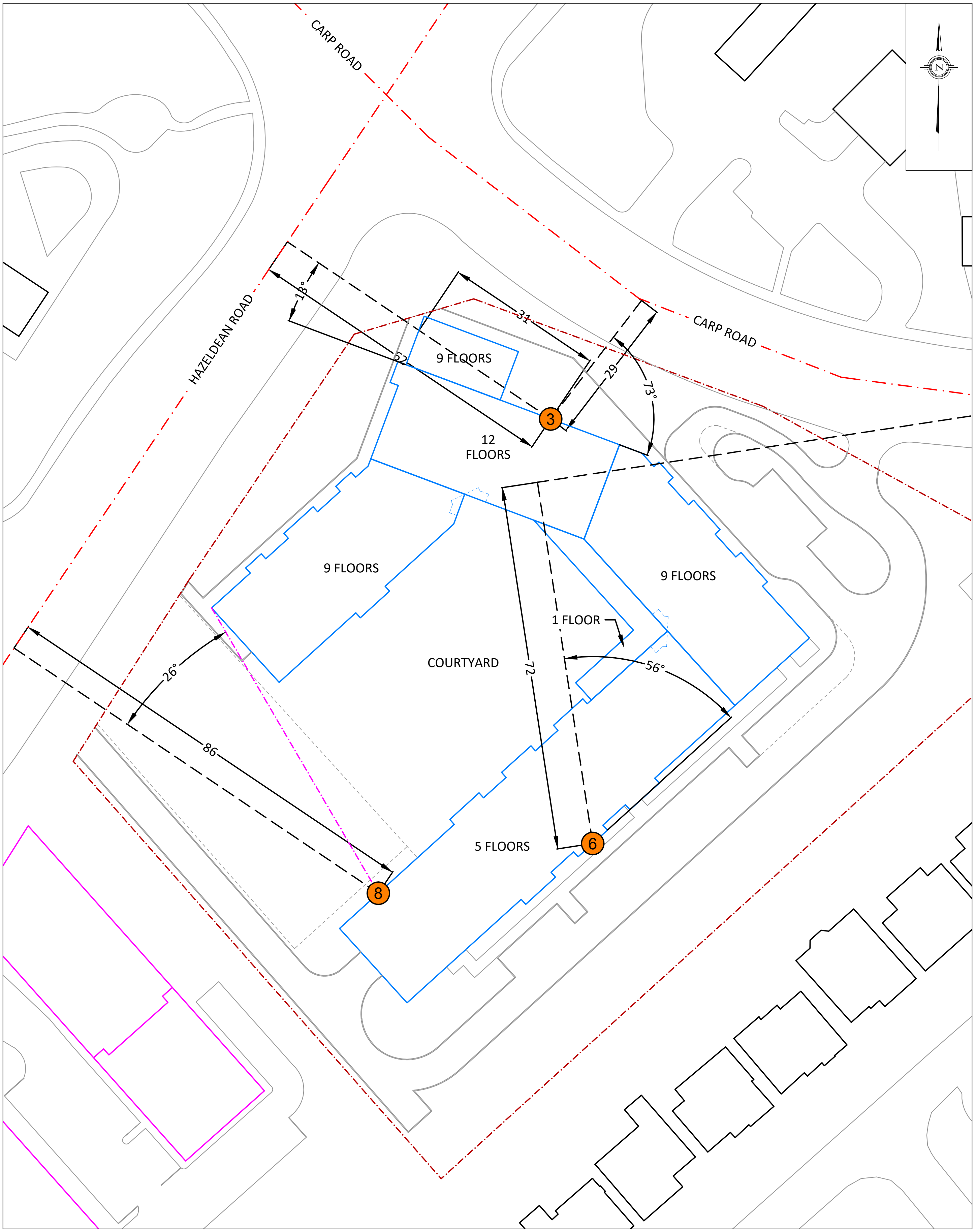
PROJECT	1174 CARP ROAD, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT	
SCALE	1:1000 (APPROX.)	DRAWING NO. 23-299 - 3
DATE	JANUARY 19, 2024	DRAWN BY E.K.

DESCRIPTION

FIGURE 3:
STAMSON INPUT DATA FOR
RECEPTORS 1, 5, 7, & 9



PROJECT		DESCRIPTION
1174 CARP ROAD, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT		FIGURE 4: STAMSON INPUT DATA FOR RECEPTORS 3, 6, & 8
SCALE: 1:1000 (APPROX.)	DRAWING NO.: 23-299 - 4	
DATE: JANUARY 19, 2024	DRAWN BY: E.K.	

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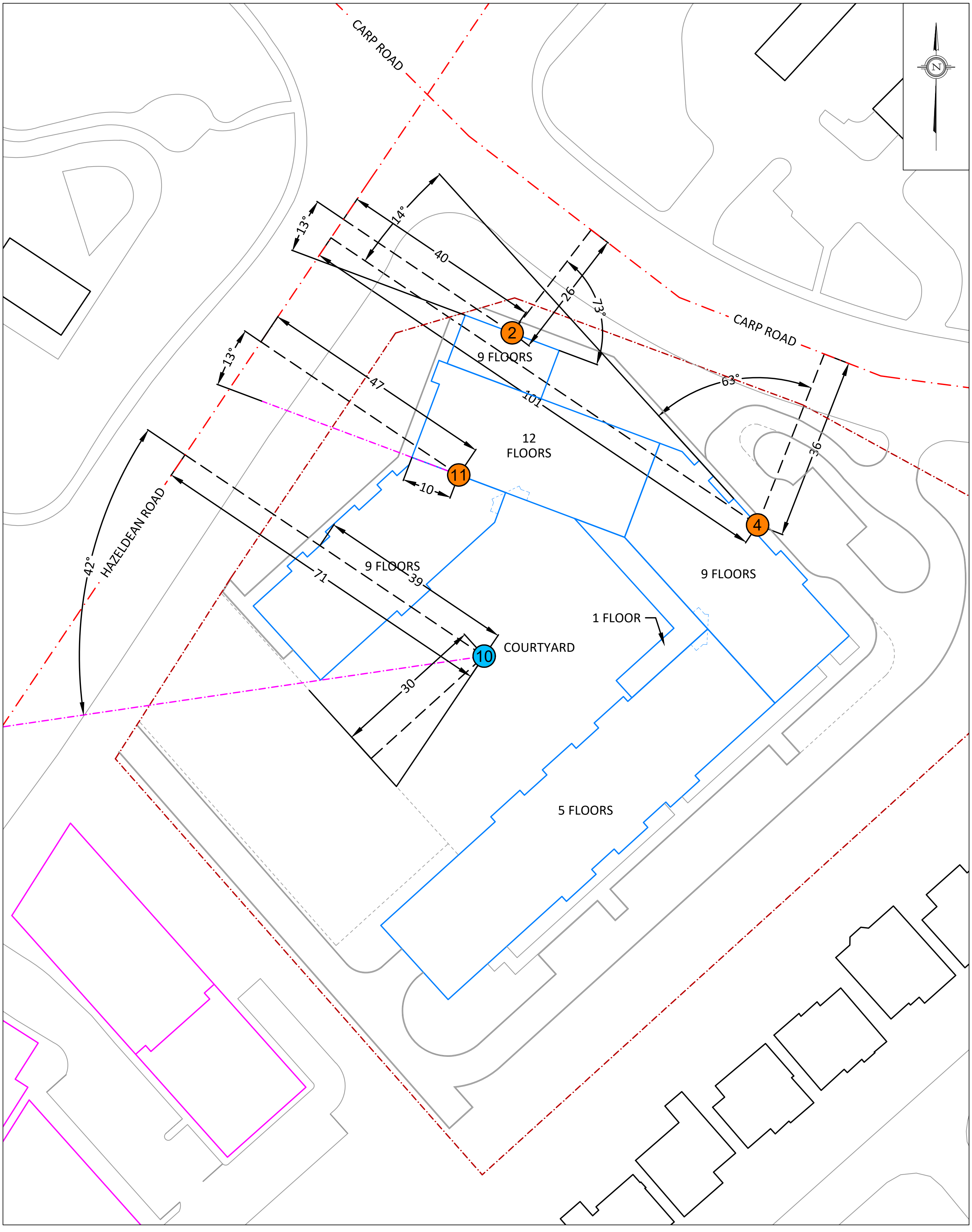

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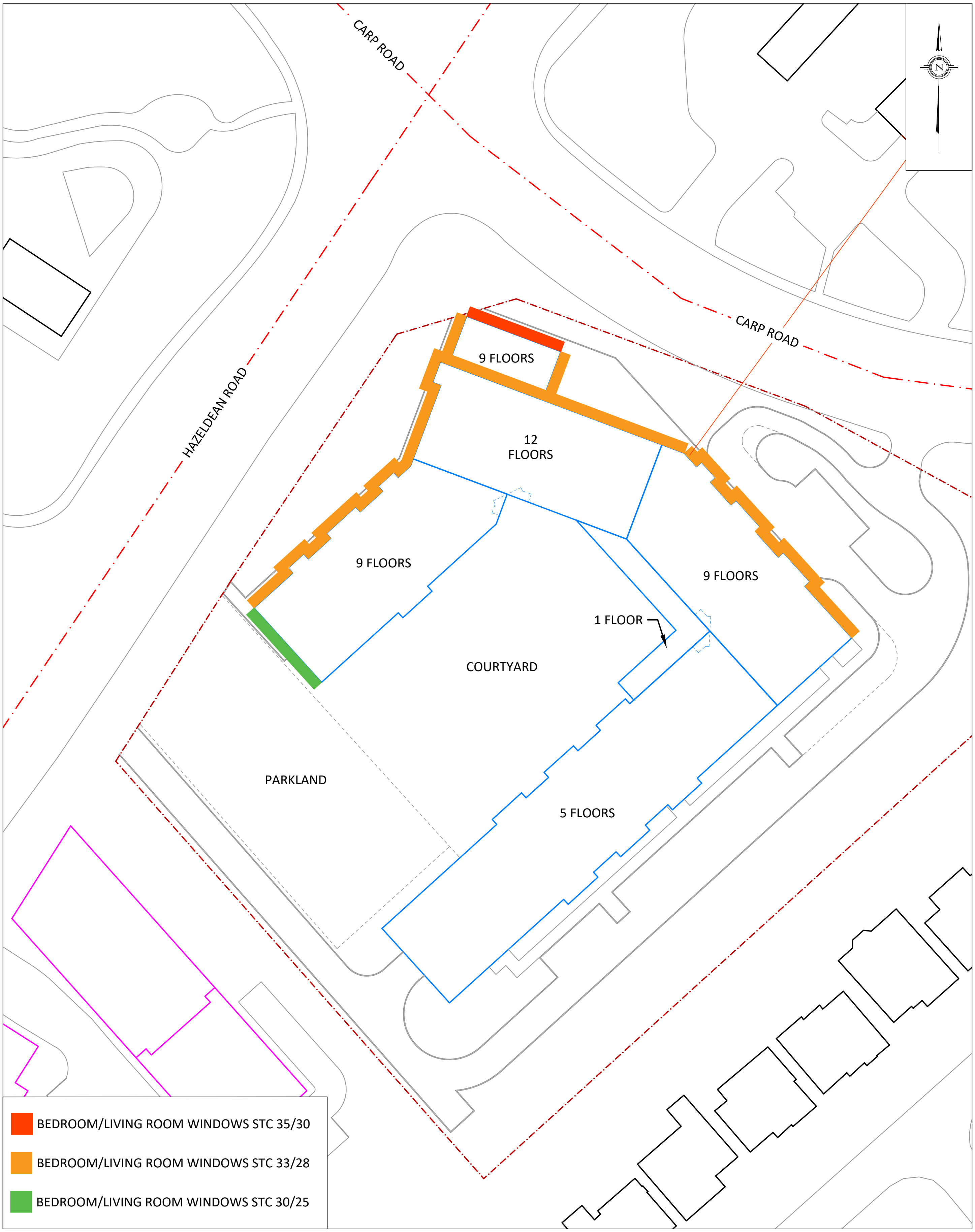
PROJECT	1174 CARP ROAD, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT		
SCALE	1:1000 (APPROX.)	DRAWING NO.	23-299 - 5
DATE	JANUARY 19, 2024	DRAWN BY	E.K.

DESCRIPTION

FIGURE 5:
STAMSON INPUT DATA FOR
RECEPTORS 2, 4, 10, & 11



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PROJECT	1174 CARP ROAD, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT		
SCALE	1:1000 (APPROX.)	DRAWING NO.	23-299 - 6
DATE	JANUARY 19, 2024	DRAWN BY	E.K.

DESCRIPTION

FIGURE 6:
STC REQUIREMENTS

APPENDIX A

STAMSON 5.04 – INPUT AND OUTPUT DATA

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STAMSON 5.0 NORMAL REPORT Date: 12-01-2024 17:52:44
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R01.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Hazeldean (day/night)

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 30000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Hazeldean (day/night)

Angle1 Angle2 : -76.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 32.00 / 32.00 m
Receiver height : 25.50 / 25.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Carp (day/night)

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 30000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Carp (day/night)

Angle1 Angle2 : -90.00 deg -6.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 75.00 / 75.00 m
Receiver height : 25.50 / 25.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Hazeldean (day)

Source height = 1.50 m

ROAD (0.00 + 69.36 + 0.00) = 69.36 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-76	90	0.00	73.01	0.00	-3.29	-0.35	0.00	0.00	0.00	69.36

Segment Leq : 69.36 dBA

Results segment # 2: Carp (day)

Source height = 1.50 m

ROAD (0.00 + 62.71 + 0.00) = 62.71 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-6	0.00	73.01	0.00	-6.99	-3.31	0.00	0.00	0.00	62.71

Segment Leq : 62.71 dBA

Total Leq All Segments: 70.21 dBA

Results segment # 1: Hazeldean (night)

Source height = 1.50 m

ROAD (0.00 + 61.77 + 0.00) = 61.77 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-76	90	0.00	65.41	0.00	-3.29	-0.35	0.00	0.00	0.00	61.77

Segment Leq : 61.77 dBA

Results segment # 2: Carp (night)

Source height = 1.50 m

ROAD (0.00 + 55.11 + 0.00) = 55.11 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-6	0.00	65.41	0.00	-6.99	-3.31	0.00	0.00	0.00	55.11

Segment Leq : 55.11 dBA

Total Leq All Segments: 62.62 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 70.21
(NIGHT): 62.62

STAMSON 5.0 NORMAL REPORT Date: 12-01-2024 17:58:28
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R02.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Hazeldean (day/night)

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 30000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Hazeldean (day/night)

Angle1 Angle2 : -13.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 40.00 / 40.00 m
Receiver height : 25.50 / 25.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Carp (day/night)

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 30000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Carp (day/night)

Angle1 Angle2 : -90.00 deg 73.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 26.00 / 26.00 m
Receiver height : 25.50 / 25.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Hazeldean (day)

Source height = 1.50 m

ROAD (0.00 + 66.32 + 0.00) = 66.32 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-13	90	0.00	73.01	0.00	-4.26	-2.42	0.00	0.00	0.00	66.32

Segment Leq : 66.32 dBA

Results segment # 2: Carp (day)

Source height = 1.50 m

ROAD (0.00 + 70.19 + 0.00) = 70.19 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	73	0.00	73.01	0.00	-2.39	-0.43	0.00	0.00	0.00	70.19

Segment Leq : 70.19 dBA

Total Leq All Segments: 71.68 dBA

```
Results segment # 1: Hazeldean (night)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 58.73 + 0.00) = 58.73 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------
   -13     90   0.00  65.41   0.00  -4.26  -2.42   0.00   0.00   0.00  58.73
--------------------------------------------------------------------------

Segment Leq : 58.73 dBA


Results segment # 2: Carp (night)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 62.59 + 0.00) = 62.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------
   -90     73   0.00  65.41   0.00  -2.39  -0.43   0.00   0.00   0.00  62.59
--------------------------------------------------------------------------

Segment Leq : 62.59 dBA

Total Leq All Segments: 64.09 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 71.68
                         (NIGHT): 64.09
```

STAMSON 5.0 NORMAL REPORT Date: 15-01-2024 10:31:59
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r03.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Hazeldean (day/night)

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 30000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Hazeldean (day/night)

Angle1 Angle2 : -13.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 62.00 / 62.00 m
Receiver height : 34.50 / 34.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -13.00 deg Angle2 : 90.00 deg
Barrier height : 27.00 m
Barrier receiver distance : 31.00 / 31.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

Road data, segment # 2: Carp (day/night)

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168   veh/TimePeriod *
Heavy truck volume : 1380/120   veh/TimePeriod *
Posted speed limit :   60 km/h
Road gradient   :   0 %
Road pavement   :   1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 30000
Percentage of Annual Growth   : 0.00
Number of Years of Growth   : 0.00
Medium Truck % of Total Volume   : 7.00
Heavy Truck % of Total Volume   : 5.00
Day (16 hrs) % of Total Volume   : 92.00

Data for Segment # 2: Carp (day/night)

Angle1   Angle2   : -90.00 deg   73.00 deg
Wood depth   :   0   (No woods.)
No of house rows   :   0 / 0
Surface   :   2   (Reflective ground surface)
Receiver source distance : 29.00 / 29.00 m
Receiver height   : 34.50 / 34.50 m
Topography   :   1   (Flat/gentle slope; no barrier)
Reference angle   : 0.00

```
Results segment # 1: Hazeldean (day)
------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
      1.50 !      34.50 !      18.00 !       18.00

ROAD (0.00 + 48.54 + 0.00) = 48.54 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------
   -13     90   0.00  73.01   0.00  -6.16  -2.42   0.00   0.00 -15.88  48.54
--------------------------------------------------------------------------

Segment Leq : 48.54 dBA


Results segment # 2: Carp (day)
------------------------------

Source height = 1.50 m

ROAD (0.00 + 69.71 + 0.00) = 69.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------
   -90     73   0.00  73.01   0.00  -2.86  -0.43   0.00   0.00   0.00  69.71
--------------------------------------------------------------------------

Segment Leq : 69.71 dBA

Total Leq All Segments: 69.74 dBA
```

```
Results segment # 1: Hazeldean (night)
--------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
      1.50 !      34.50 !      18.00 !        18.00

ROAD (0.00 + 40.94 + 0.00) = 40.94 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------------
   -13     90  0.00  65.41   0.00  -6.16  -2.42   0.00   0.00 -15.88  40.94
----------------------------------------------------------------------------

Segment Leq : 40.94 dBA


Results segment # 2: Carp (night)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 62.12 + 0.00) = 62.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------------
   -90     73  0.00  65.41   0.00  -2.86  -0.43   0.00   0.00   0.00  62.12
----------------------------------------------------------------------------

Segment Leq : 62.12 dBA

Total Leq All Segments: 62.15 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 69.74
                         (NIGHT): 62.15
```

STAMSON 5.0 NORMAL REPORT Date: 12-01-2024 18:11:53
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r04.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Hazeldean (day/night)

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 30000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Hazeldean (day/night)

Angle1 Angle2 : 14.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 101.00 / 101.00 m
Receiver height : 25.50 / 25.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Carp (day/night)

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 30000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Carp (day/night)

Angle1 Angle2 : -63.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 36.00 / 36.00 m
Receiver height : 25.50 / 25.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Hazeldean (day)

Source height = 1.50 m

ROAD (0.00 + 60.98 + 0.00) = 60.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
14	90	0.00	73.01	0.00	-8.28	-3.74	0.00	0.00	0.00	60.98

Segment Leq : 60.98 dBA

Results segment # 2: Carp (day)

Source height = 1.50 m

ROAD (0.00 + 68.50 + 0.00) = 68.50 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-63	90	0.00	73.01	0.00	-3.80	-0.71	0.00	0.00	0.00	68.50

Segment Leq : 68.50 dBA

Total Leq All Segments: 69.21 dBA

Results segment # 1: Hazeldean (night)

Source height = 1.50 m

ROAD (0.00 + 53.38 + 0.00) = 53.38 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
14	90	0.00	65.41	0.00	-8.28	-3.74	0.00	0.00	0.00	53.38

Segment Leq : 53.38 dBA

Results segment # 2: Carp (night)

Source height = 1.50 m

ROAD (0.00 + 60.90 + 0.00) = 60.90 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-63	90	0.00	65.41	0.00	-3.80	-0.71	0.00	0.00	0.00	60.90

Segment Leq : 60.90 dBA

Total Leq All Segments: 61.61 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 69.21
(NIGHT): 61.61

STAMSON 5.0 NORMAL REPORT Date: 15-01-2024 10:26:39
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r05.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Carp (day/night)

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 30000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Carp (day/night)

Angle1 Angle2 : 40.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 59.00 / 59.00 m
Receiver height : 25.50 / 25.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carp (day)

Source height = 1.50 m

ROAD (0.00 + 61.50 + 0.00) = 61.50 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
40	90	0.00	73.01	0.00	-5.95	-5.56	0.00	0.00	0.00	61.50

Segment Leq : 61.50 dBA

Total Leq All Segments: 61.50 dBA

Results segment # 1: Carp (night)

Source height = 1.50 m

ROAD (0.00 + 53.90 + 0.00) = 53.90 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
40	90	0.00	65.41	0.00	-5.95	-5.56	0.00	0.00	0.00	53.90

Segment Leq : 53.90 dBA

Total Leq All Segments: 53.90 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.50
(NIGHT): 53.90

STAMSON 5.0 NORMAL REPORT Date: 15-01-2024 10:31:23
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r06.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Carp (day/night)

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 30000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Carp (day/night)

Angle1 Angle2 : 56.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 72.00 / 72.00 m
Receiver height : 13.50 / 13.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carp (day)

Source height = 1.50 m

ROAD (0.00 + 58.96 + 0.00) = 58.96 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
56	90	0.00	73.01	0.00	-6.81	-7.24	0.00	0.00	0.00	58.96

Segment Leq : 58.96 dBA

Total Leq All Segments: 58.96 dBA

Results segment # 1: Carp (night)

Source height = 1.50 m

ROAD (0.00 + 51.36 + 0.00) = 51.36 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
56	90	0.00	65.41	0.00	-6.81	-7.24	0.00	0.00	0.00	51.36

Segment Leq : 51.36 dBA

Total Leq All Segments: 51.36 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.96
(NIGHT): 51.36

STAMSON 5.0 NORMAL REPORT Date: 15-01-2024 10:30:52
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r07.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Hazeldean (day/night)

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 30000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Hazeldean (day/night)

Angle1 Angle2 : -90.00 deg 14.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 93.00 / 93.00 m
Receiver height : 13.50 / 13.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Hazeldean (day)

Source height = 1.50 m

ROAD (0.00 + 62.70 + 0.00) = 62.70 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	14	0.00	73.01	0.00	-7.92	-2.38	0.00	0.00	0.00	62.70

Segment Leq : 62.70 dBA

Total Leq All Segments: 62.70 dBA

Results segment # 1: Hazeldean (night)

Source height = 1.50 m

ROAD (0.00 + 55.10 + 0.00) = 55.10 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	14	0.00	65.41	0.00	-7.92	-2.38	0.00	0.00	0.00	55.10

Segment Leq : 55.10 dBA

Total Leq All Segments: 55.10 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.70
(NIGHT): 55.10

STAMSON 5.0 NORMAL REPORT Date: 15-01-2024 10:36:10
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r08.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Hazeldean (day/night)

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 30000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Hazeldean (day/night)

Angle1 Angle2 : -76.00 deg 26.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 86.00 / 86.00 m
Receiver height : 13.50 / 13.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Hazeldean (day)

Source height = 1.50 m

ROAD (0.00 + 62.96 + 0.00) = 62.96 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-76	26	0.00	73.01	0.00	-7.58	-2.47	0.00	0.00	0.00	62.96

Segment Leq : 62.96 dBA

Total Leq All Segments: 62.96 dBA

Results segment # 1: Hazeldean (night)

Source height = 1.50 m

ROAD (0.00 + 55.36 + 0.00) = 55.36 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-76	26	0.00	65.41	0.00	-7.58	-2.47	0.00	0.00	0.00	55.36

Segment Leq : 55.36 dBA

Total Leq All Segments: 55.36 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.96
(NIGHT): 55.36

STAMSON 5.0 NORMAL REPORT Date: 15-01-2024 10:38:07
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r09.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Hazeldean (day/night)

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 30000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Hazeldean (day/night)

Angle1 Angle2 : -90.00 deg 14.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 37.00 / 37.00 m
Receiver height : 25.50 / 25.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Hazeldean (day)

Source height = 1.50 m

ROAD (0.00 + 66.70 + 0.00) = 66.70 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	14	0.00	73.01	0.00	-3.92	-2.38	0.00	0.00	0.00	66.70

Segment Leq : 66.70 dBA

Total Leq All Segments: 66.70 dBA

Results segment # 1: Hazeldean (night)

Source height = 1.50 m

ROAD (0.00 + 59.11 + 0.00) = 59.11 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	14	0.00	65.41	0.00	-3.92	-2.38	0.00	0.00	0.00	59.11

Segment Leq : 59.11 dBA

Total Leq All Segments: 59.11 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.70
(NIGHT): 59.11

STAMSON 5.0 NORMAL REPORT Date: 05-03-2024 14:24:35
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r10.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Hazeldean (day/night)

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 30000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Hazeldean (day/night)

Angle1 Angle2 : -90.00 deg -42.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 71.00 / 71.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Hazeldean (day)

Source height = 1.50 m

ROAD (0.00 + 53.20 + 0.00) = 53.20 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-42	0.66	73.01	0.00	-11.21	-8.60	0.00	0.00	0.00	53.20

Segment Leq : 53.20 dBA

Total Leq All Segments: 53.20 dBA

Results segment # 1: Hazeldean (night)

Source height = 1.50 m

ROAD (0.00 + 45.60 + 0.00) = 45.60 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-42	0.66	65.41	0.00	-11.21	-8.60	0.00	0.00	0.00	45.60

Segment Leq : 45.60 dBA

Total Leq All Segments: 45.60 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.20
(NIGHT): 45.60

STAMSON 5.0 NORMAL REPORT Date: 19-01-2024 15:16:42
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r11.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Hazeldean (day/night)

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 30000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Hazeldean (day/night)

Angle1 Angle2 : -90.00 deg -13.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 47.00 / 47.00 m
Receiver height : 34.50 / 34.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -13.00 deg
Barrier height : 27.00 m
Barrier receiver distance : 10.00 / 10.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

Results segment # 1: Hazeldean (day)

Source height = 1.50 m

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       34.50 !       27.48 !        27.48
```

```
ROAD (0.00 + 64.36 + 0.00) = 64.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------
   -90    -13  0.00  73.01   0.00  -4.96  -3.69   0.00   0.00  -4.75  59.61*
   -90    -13  0.00  73.01   0.00  -4.96  -3.69   0.00   0.00   0.00  64.36
--------------------------------------------------------------------------
```

 * Bright Zone !

Segment Leq : 64.36 dBA

Total Leq All Segments: 64.36 dBA

Results segment # 1: Hazeldean (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	34.50	27.48	27.48

ROAD (0.00 + 56.76 + 0.00) = 56.76 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-13	0.00	65.41	0.00	-4.96	-3.69	0.00	0.00	-4.75	52.01*
-90	-13	0.00	65.41	0.00	-4.96	-3.69	0.00	0.00	0.00	56.76

* Bright Zone !

Segment Leq : 56.76 dBA

Total Leq All Segments: 56.76 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.36
(NIGHT): 56.76