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177-179 Albert Street
Waterloo, ON

Transportation Impact Study and Parking Study

Paradigm Transportation Solutions Limited

November 2023
230300

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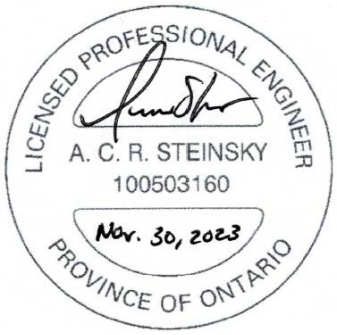
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Project Summary

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177-179 Albert Street, Waterloo, ON Transportation Impact Study and Parking Study



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Executive Summary

Content

14688210 Canada Inc. retained Paradigm Transportation Solutions Limited (Paradigm) to prepare this Transportation Impact Study and Parking Study for a proposed residential development in the City of Waterloo.

The purpose of this study is to assess the transportation related impacts of the development and review the adequacy of the proposed parking supply. This report comprises a review of existing and future traffic conditions at Albert Street and Seagram Drive with and without the proposed development, estimation of the site's parking demand(s) and a review of the overall adequacy of the proposed parking supply.

Development Concept

The subject site is on the northwest corner of Albert Street and Seagram Drive in the City of Waterloo. It comprises two individual lots, each occupied by a two-storey dwelling.

The property owner plans to combine the lots and redevelop the site into a 24-storey, 172-bed residential building with 146 units, geared towards students. Vehicle access is proposed via an all-moves driveway connection to Seagram Drive, near the site's western property line. A separate all-moves driveway connection is proposed to Albert Street, near the north property line, providing access to one loading space and four visitor parking spaces.

Findings and Conclusions

Based on the analyses contained herein, the findings of this report are as follows:

- Under existing (2023) conditions the study intersection (Albert Street and Seagram Drive) is operating at an acceptable level of service and within capacity. There are no critical movements.
- Under future background traffic conditions, (that is, *without development of the subject site*), the study intersection in forecast to operate similar to existing conditions. In the PM peak hour, the eastbound left-turn movement on Seagram Drive at Albert Street is forecast to operate at LOS F, with a v/c ratio of 0.51.

- Redevelopment of the subject site is estimated to generate 32 new trips in the weekday AM peak hour, and 29 new trips in the weekday PM peak hour.
- Under future total traffic conditions, (that is, *with development of the subject site*), the study intersection is forecast to operate similar to background conditions. In the PM peak hour, the eastbound left-turn movement on Seagram Drive at Albert Street is forecast to operate at LOS F, with a v/c ratio of 0.57.

  The site driveways onto Seagram Drive and Albert Street are forecast to operate at LOS B, with v/c ratios no greater than 0.04.
- The site proposes 44 parking spaces (0.30 spaces per unit), comprising 35 residential spaces and nine visitor spaces;
- The proposed parking supply is non-compliant with the minimum parking requirements defined in Zoning By-law 2018-050, for Residential Mixed-Use Zones (RMU) RMU-81 but is compliant with the parking requirements for the Residential Northdale Twenty-Five (RN-25) Zone;
- The Region's Parking Management Worksheet supports a parking reduction of 15% (based on existing and proposed TDM measures), to a maximum of 31%. In either case, the proposed supply is non-compliant;
- Parking surveys conducted in March 2023 at an off-campus student housing development in Guelph within a 25-minute walk of the University of Guelph observed a peak parking demand of 0.18 spaces per unit. This is less than the proposed parking supply of 0.30 spaces per unit;
- Auto-ownership data for apartment dwellers near the subject site, collected as part of the 2016 Transportation Tomorrow Survey indicate an average vehicle ownership of 0.45 per household, suggesting a peak residential parking demand of 66 spaces (not including visitor parking demands). The TTS does not differentiate between parking demands for students and non-students and presents a conservative estimate as compared to the data collected in Guelph; and
- Data published by the ITE suggest a peak parking demand of 64 spaces (0.44 spaces per unit), which is greater than the proposed parking supply of 44 (0.30 spaces per unit). Like the TTS data, ITE not differentiate between parking demands for students and non-students and presents a conservative estimate as compared to the data collected in Guelph.

Based on the findings of this study it is concluded that:

- Redevelopment of the site is forecast to have a negligible impact on traffic operations at Albert Street and Seagram Drive;
- Although the proposed parking supply is non-compliant with the zoning by-law, it is consistent with the parking requirements for the Residential Northdale Twenty-Five (RN-25) Zone and is adequate based on parking data collected at similar off-campus student housing apartment in Guelph.
- The development's location in the Laurier Waterloo Park Major Transit Station Area (MTSA) is conducive to the use of alternative modes and supports a reduction in parking requirements; and
- The reduced parking supply also aligns with City, Region, and Province policies promoting the use of non-auto travel modes and the implementation of transportation demand management (TDM) measures in new development.

Recommendations

Based on the conclusions of this Transportation Impact Study, it is recommended the site be considered for approval with no requirements for off-site transportation network improvements.

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1 Introduction

1.1 Overview

14688210 Canada Inc. retained Paradigm Transportation Solutions Limited (Paradigm) to prepare this Transportation Impact Study and Parking Study for a proposed residential development in the City of Waterloo. **Figure 1.1** illustrates the site location on the northwest corner of Albert Street and Seagram Drive.

1.2 Purpose and Scope

The purpose of this study is to assess the transportation related impacts of the development and review the adequacy of the proposed parking supply.

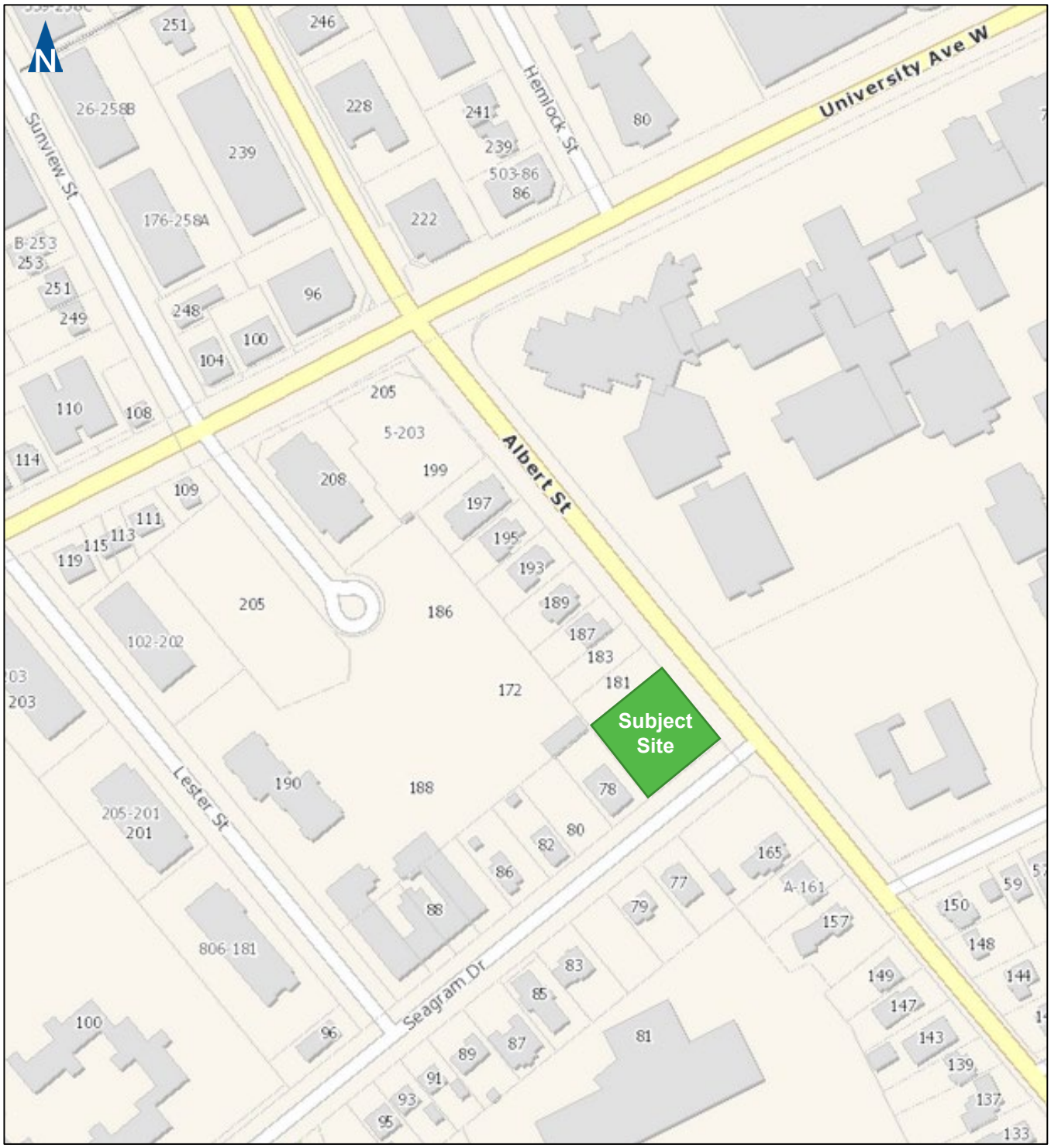
This scope of this study includes:

- An analysis of current and future traffic operations at Albert Street and Seagram Drive (with and without the proposed development);
- Estimates of the trip generation of the proposed development;
- Estimates and analysis of future traffic volumes at a horizon year five-years from the date of this study;
- Estimates of the site's parking demand(s); and
- A review of adequacy of the proposed parking supply.

Paradigm confirmed the scope of work for this study with City of Waterloo transportation planning staff by email in June 2023. **Appendix A** contains the pre-study correspondence material.

This study has been carried out in general accordance with the Region of Waterloo *Transportation Impact Study Guidelines*.[1] The study also reflects comments and direction provided by City staff during pre-study consultation.

[1] Region of Waterloo, *Transportation Impact Study Guidelines*, (Waterloo: Region of Waterloo, 2014).



Not to Scale
Image Source: City of Waterloo Interactive City Map
(https://www.waterloo.ca/en/government/maps-and-open-data.aspx)

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Location of Subject Site

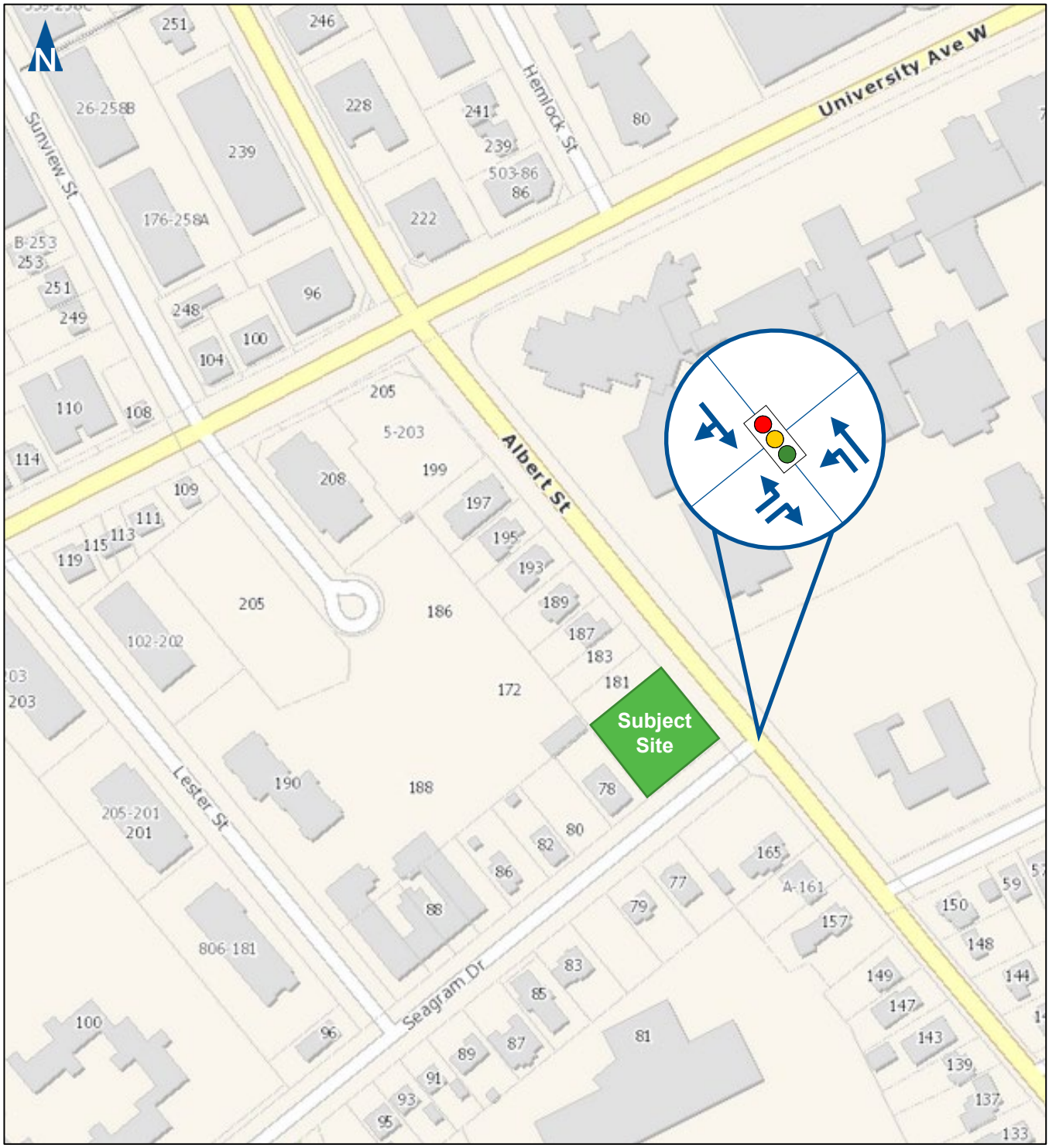
2 Existing Conditions

2.1 Road Network

The main roadways in the study area comprise Albert Street and Seagram Drive, both of which operate under City of Waterloo jurisdiction:

- **Albert Street** is a north-south, major collector with a two-lane urban cross-section. The road is adjacent to the western portion of the Wilfrid Laurier University campus. The speed limit is not posted and is assumed to be 50 km/h. Sidewalks are provided on both sides of the road from University Avenue West to Bridgeport Road West. North of Seagram Drive, buffered bicycle lanes are provided on both sides the road. South of Seagram Drive, dedicated cycling facilities are not provided, requiring all road users to share the road space.
- **Seagram Drive** is an east-west minor collector with a two-lane urban cross-section. The speed limit is not posted and is assumed to be 50 km/h. Sidewalks and buffered bicycle lanes are provided on both sides of the road from University Avenue West to Albert Street.

The intersection of Albert Street and Seagram Drive operates under two-way stop control with an intersection pedestrian signal (IPS) on the north leg of the intersection. This IPS provides a controlled pedestrian crossing of Albert Street and connects to the Wilfrid Laurier University campus. **Figure 2.1** illustrates the existing lane configurations and traffic control at the study intersection.



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Image Source: City of Waterloo Interactive City Map
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Existing Lane Configurations and Traffic Control

2.2 Transit Services

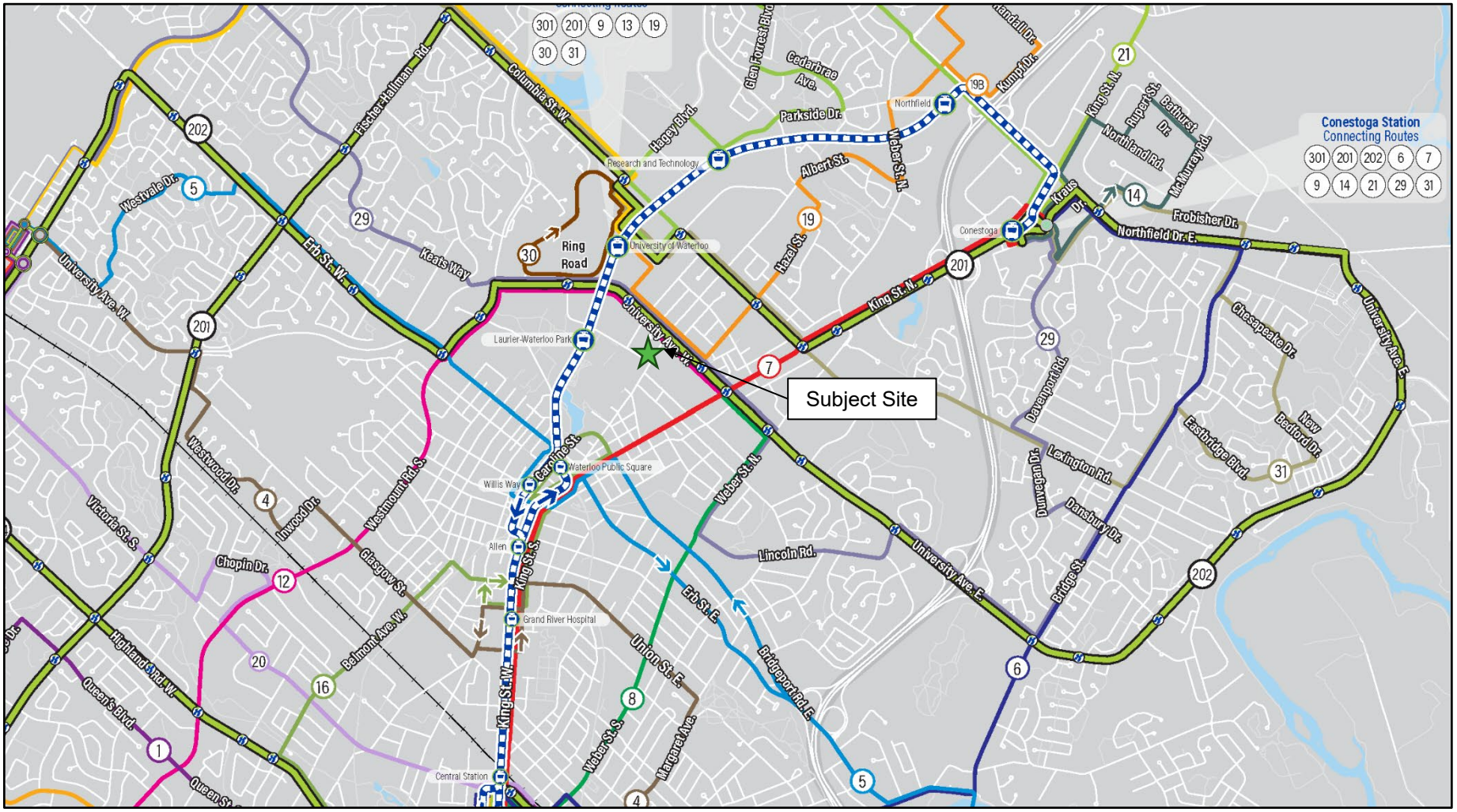
Grand River Transit (GRT) operates four routes near the site, all of which operate along University Avenue West. The nearest bus stops are located on the corner of Sunview Street and University Avenue West, and Hemlock Street and University Avenue West. These stops are approximately 400 to 500 metres from the site, representative of a 4-to-5-minute walk. GRT also operates the ION light rail transit (LRT) network; the nearest stop (Laurier-Waterloo Park Station) is approximately 500 metres west of the site, or a five-minute walk.

The site's proximity to Wilfrid Laurier University also provides connectivity to bus services operated by GO Transit. GO Transit operates Route 30 and Route 30A with service from the University of Waterloo to Bramalea GO Station via Wilfrid Laurier University and Kitchener GO Station.

Figure 2.2 illustrates the existing GRT routes near the site. **Table 2.1** summarizes the existing service hours and headways of GRT and GO Transit services near the site.

TABLE 2.1: GRAND RIVER TRANSIT SERVICES

Route		Day of Week			Peak Headway
		Weekday	Sat.	Sun./Holiday	
GRT Stop 2676 (University Avenue/University of Waterloo)					
12 (Westmount)	To University/King	05:47 to 00:38 (next day)	06:39 to 00:38 (next day)	07:37 to 00:08 (next day)	15 – 30 mins.
	To Fairway Station	05:48 to 00:10 (next day)	06:40 to 00:10 (next day)	07:40 to 00:10 (next day)	15 – 30 mins.
29 (Keats-University	To The Boardwalk Station	05:53 to 23:59	07:40 to 00:40 (next day)	08:35 to 00:35 (next day)	30 min.
	To Conestoga Station	05:56 to 00:00 (next day)	07:10 to 00:40 (next day)	09:10 to 00:40 (next day)	30 min.
GRT Stop 1167 (Hazel/Wilfrid Laurier University)					
19 (Hazel)	To St Jacobs/Northfield Station	05:48 to 23:48	06:34 to 00:04 (next day)	08:02 to 23:32	15 – 30 mins.
	To University of Waterloo	05:46 to 00:16 (next day)	07:02 to 00:12 (next day)	08:29 to 23:59	15 – 30 mins
GRT Stop 1090 (University Avenue/University of Waterloo)					
202 (iXpress University)	To The Boardwalk Station	06:32 to 23:57	07:24 to 00:26 (next day)	07:56 to 00:26 (next day)	10 – 30 mins.
	To Conestoga Station	06;04 to 23:59	06:29 to 23:59	07:29 to 23:59	10 – 30 mins.
Laurier-Waterloo Park Station					
ION Light Rail	To Fairway	04:48 to 23:51	05:36 to 23:50	06:19 to 23:51	10 – 30 mins.
	To Conestoga	06:03 to 00:08 (next day)	06:33 to 00:03 (next day)	07:33 to 00:03 (next day)	10 – 30 mins
GO Transit – Wilfried Laurier University					
Route 30/30A	Eastbound	04:22 to 21:53	06:30 to 21:25	06:30 to 21:25	60 mins
	Westbound	07:48 to 01:29 (next day)	09:46 to 01:45 (next day)	09:46 to 01:45 (next day)	60 mins



Not to Scale
Image Source: Grand River Transit System Map (September 2023)

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Existing Transit Services

2.3 Traffic Volumes

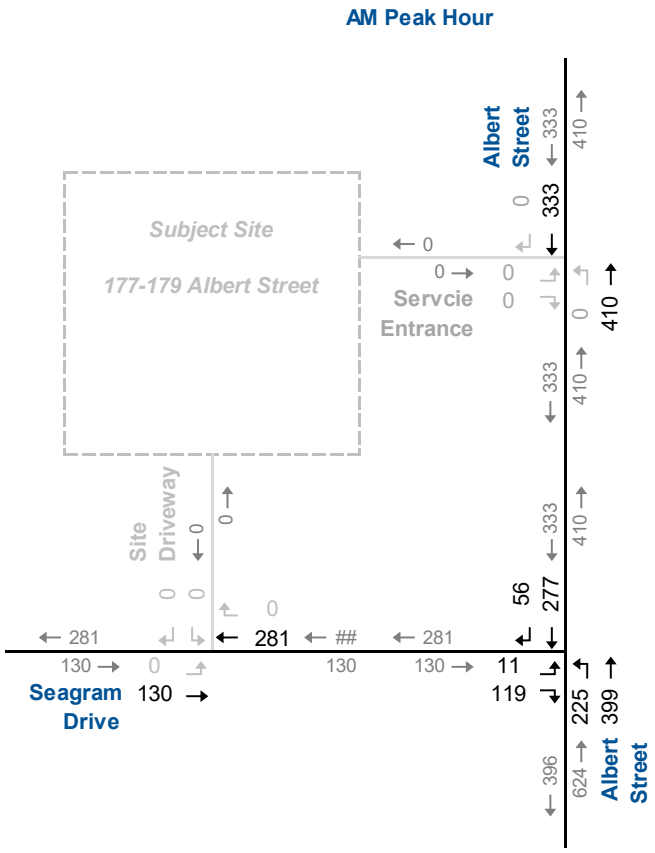
To assess intersection operations, turning movement counts (TMCs) are used to quantify the movement of vehicles through an intersection or roadway segment. Existing traffic data at an intersection or a road section forms the foundation for the operational analyses. The counts are usually conducted so that they capture peak traffic demands. This ensures the level of service analysis reflects worst case operating conditions.

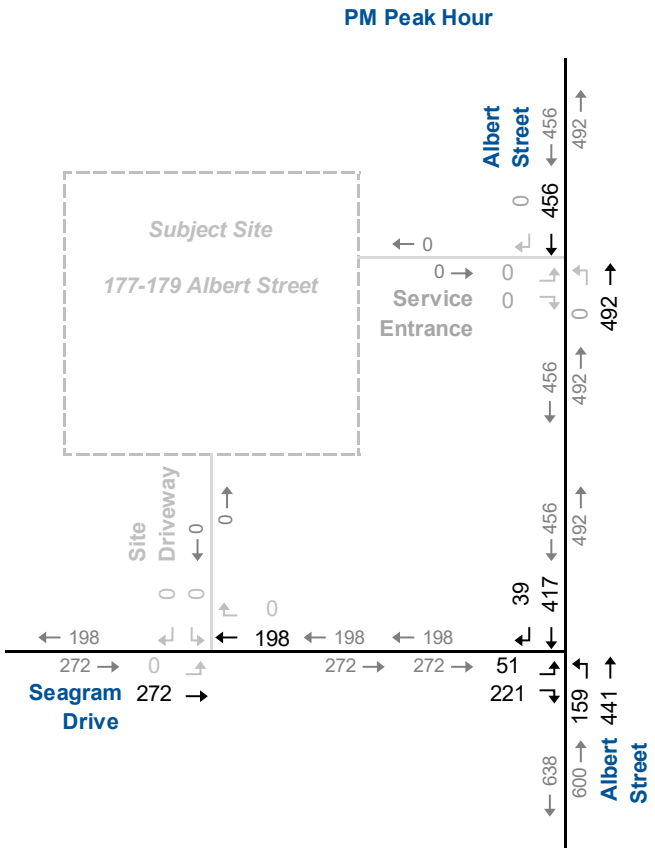
Paradigm conducted an eight-hour turning movement count (TMC) at the study intersection on Thursday 8 June 2023 from 7:30 AM to 10:30 AM, 11:30 AM to 1:30 PM, and 3:00 PM to 6:00 PM. All vehicle, pedestrian, and cyclist movements were recorded in 15-minute intervals. **Appendix B** contains the comprehensive turning movement count data.

The TMC data were compared to a TMC conducted by Paradigm at the same intersection on Tuesday 30 October 2018. The TMC data in October 2018 demonstrate both higher vehicle volumes (approximately 22% in the AM peak hour and 35% in the PM peak hour) and significantly higher pedestrian volumes in both peak hours (approximately two to four times as many as observed in 2023). These observations are consistent with data collection occurring during the school year in 2018, whereas that collected in June 2023 did not capture volumes during the school year.

To present a conservative analysis and better estimate traffic and pedestrian volumes when school is in session, the 2023 volumes have factored to an in-session condition using a factor of 1.36 in the AM peak hour, and 1.22 in the PM peak hour.

Figure 2.3 illustrates the estimated AM and PM peak hour traffic volumes when school is in session at Wilfrid Laurier University, and other nearby post-secondary institutions.





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Existing Traffic Volumes

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Figure 2.3

2.4 Traffic Operations

Intersection Level of Service (LOS) is a recognized method of quantifying the efficiency of vehicular traffic flow at intersections and is based on the delay experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles desiring to make a movement, compared to the estimated capacity for that movement. The capacity is based on several criteria related to opposing traffic flows, and at signalized intersections, signal timing.

The highest possible rating is LOS A, under which the average total delay at signalized and unsignalized intersections is equal or less than 10 seconds per vehicle. When the average delay for a movement exceeds 80 seconds at signalized intersections, or 50 seconds at signalized intersections, the movement is classified as LOS F.

While the LOS and volume-to-capacity (v/c) ratio for each movement are related, they are calculated independently. Therefore, it is possible to have a poor level of service associated with a low v/c ratio, or a good level of service associated with a high v/c ratio. Volume-to-capacity ratios exceeding 1.00 indicate a movement is exceeding its theoretical capacity.

The Region of Waterloo *Transportation Impact Study Guidelines*[2] identify critical intersections as those where the average control delay per vehicle is greater than 55 seconds (for signalized intersections) or 35 seconds (for unsignalized intersections). Both delays correspond to LOS E.

Critical movements, regardless of intersection control type, are defined as those where:

- The average control delay is greater than 55 seconds;
- The estimated 95th percentile queue length for an exclusive movement exceeds the available lane storage, or blocks an existing access;
- Exclusive turning lanes are inaccessible because of queue lengths in adjacent through lanes; or
- There is a poor quality of service for non-auto modes.

[2] Region of Waterloo, *Transportation Impact Study Guidelines*, (Kitchener: Region of Waterloo, 2014), 12.

The operations of the driveway connections have been modelled and analyzed using Synchro 11, which implements the methodology of the Highway Capacity Manual (HCM), with the following parameters:

- Existing lane geometry, traffic control and signal timing (as provided in **Appendix B**);
- Saturation flow rates and peak hour factors as defined in the Region of Waterloo *Transportation Impact Study Requirements for Capacity Analysis, Roundabouts, and Signal Warrants*[3];
- Heavy vehicle percentages, and pedestrian volumes, as extracted from the turning movement counts; and
- Synchro defaults for all other inputs.

The analysis considers three separate measures of performance:

- The level of service (LOS) and average delay for each turning movement, measured in seconds (s);
- The volume to capacity (v/c) ratio for each movement; and
- The 95th percentile queue length, in metres (m).

Table 2.2 summarizes the existing level of service conditions. The results indicate the study intersection is operating at acceptable levels of service and within capacity in both the AM peak hour and PM peak hour. **Appendix C** contains the detailed Synchro reports.

[3] Region of Waterloo, *Transportation Impact Studies, Requirements for Capacity Analysis, Roundabouts, and Signal Warrants*, (Kitchener: Region of Waterloo, n.d.).

TABLE 2.2: EXISTING TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Albert Street and Seagram Drive	TCS	LOS	C		B	**B**					A	A		**A**		A	>	**A**	**A**
			Delay	31		11	**13**					9	5		**5**		5	>	**5**	**5**
			V/C	0.07		0.18						0.20	0.34				0.27	>		**0.28**
			Q	2		5						6	43				33	>		
			Ex	15		-						30	-				-	>		
			Avail.	13		-						24	-				-	>		
PM Peak Hour	Albert Street and Seagram Drive	TCS	LOS	D		B	**C**					A	A		**A**		A	>	**A**	**A**
			Delay	50		17	**23**					10	6		**6**		5	>	**5**	**5**
			V/C	0.40		0.43						0.17	0.39				0.36	>		**0.32**
			Q	13		17						5	52				47	>		
			Ex	15		-						30	-				-	>		
			Avail.	2		-						25	-				-	>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
Q - 95th Percentile Queue Length (m)
Ex. - Existing Available Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control
<- Shared Left/Through Lane
>- Shared Right/Through Lane

3 Development Concept

3.1 Site Description and Proposed Development

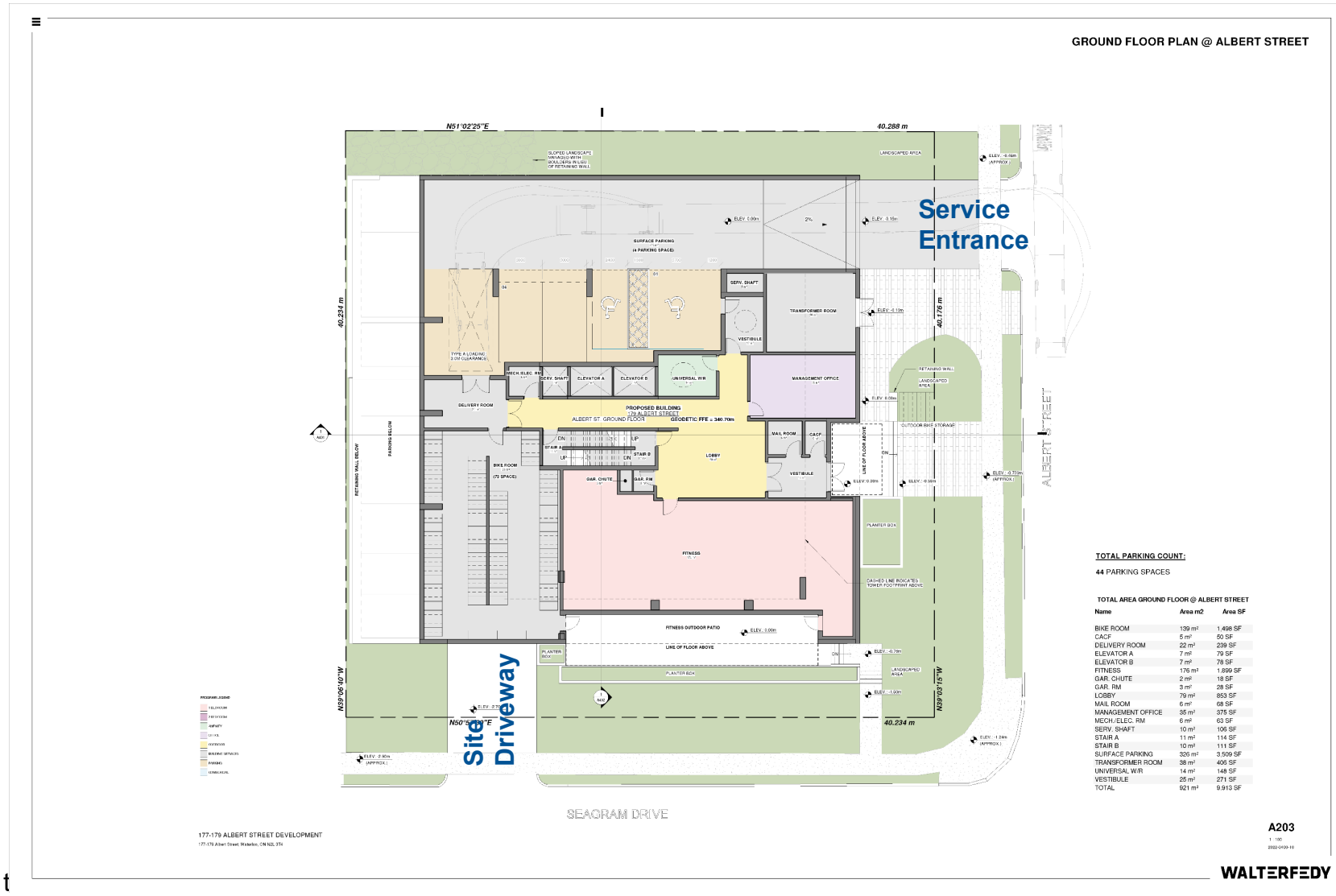
3.1.1 Site Description

The subject lands are on the northwest corner of Albert Street and Seagram Drive and comprise two properties: 177 Albert Street and 179 Albert Street. Each property is occupied by a two-storey dwelling, the former of which (177 Albert Street) is occupied by the Delton Glebe Counselling Centre. The property at 179 Albert Street includes an ancillary garage structure.

Vehicle access to 177 Albert Street is provided by an all-moves driveway connection to Seagram Drive. Vehicle access to 179 Albert Street is provided by an all-moves driveway connection to Albert Street.

3.1.2 Proposed Development

The property owner plans to redevelop the site into a 24-storey, 172-bed residential building with 146 units, geared towards students. Vehicle access is proposed via an all-moves driveway connection to Seagram Drive, near the site's western property line. A separate all-moves driveway connection is proposed to Albert Street, near the north property line, providing access to one loading space and four visitor parking spaces (10% of the parking supply). Redevelopment is planned by 2025. **Figure 3.1** illustrates the conceptual site plan.



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Conceptual Site Plan

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Figure 3.1

4 Future Conditions

4.1 Forecast Background Traffic

Consistent with the Region of Waterloo *Transportation Impact Study Guidelines* and pre-study consultation with the City of Waterloo, future traffic forecasts correspond to five years from the date of this study, represented as Year 2028.

Future traffic growth estimates are based on a general background growth rate of 1.5% compounded per annum. This growth rate is based on direction provided by City of Waterloo transportation planning during pre-study consultation. City staff also confirmed there were no approved or in-stream development applications to be included in the background traffic forecasts.

Figure 4.1 illustrates the future background traffic volumes at the 2028 horizon year.

4.2 Forecast Site Traffic

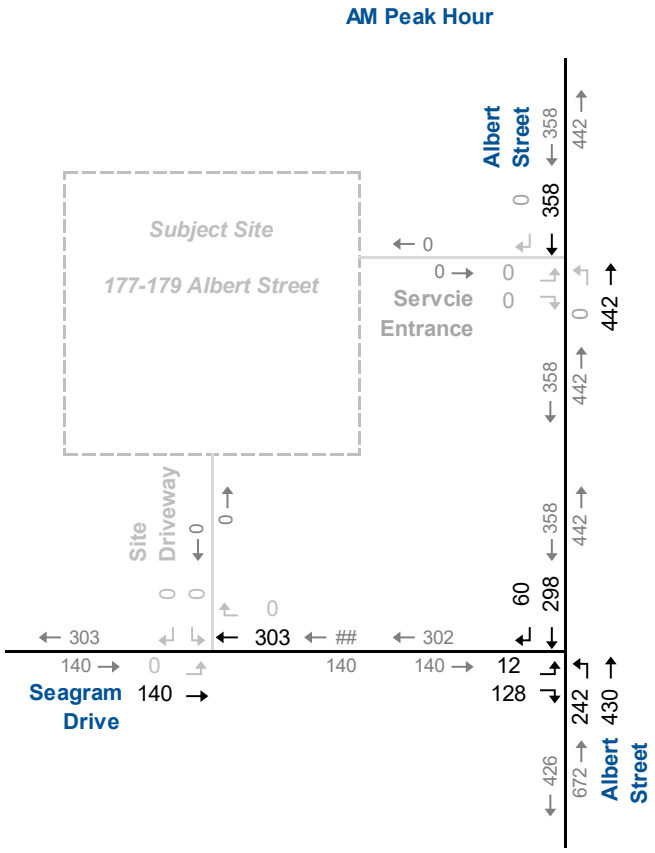
4.2.1 Trip Generation

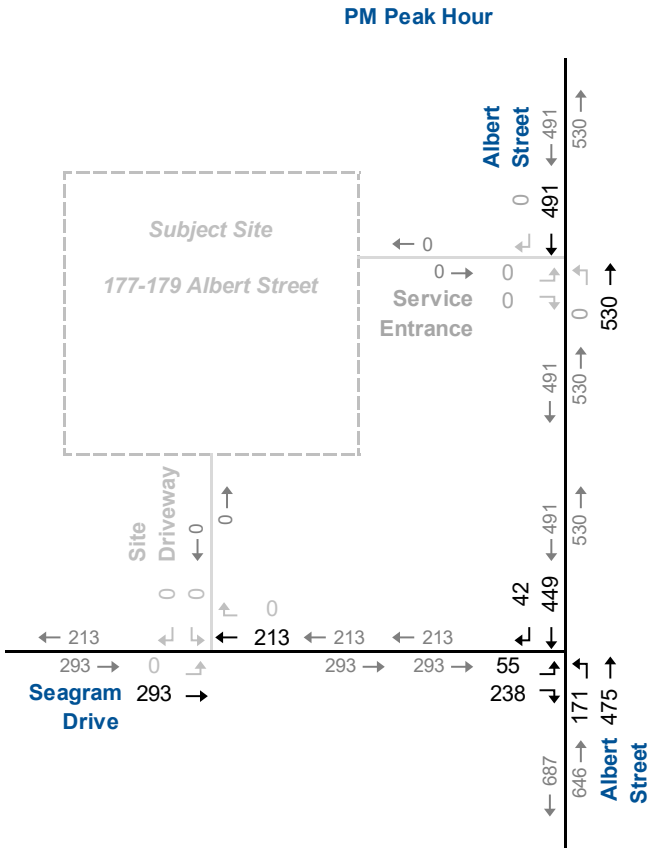
The site trip generation reflects information in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*[4] for land use code (LUC) 222 Multifamily Housing (High-Rise).

LUC 222 is described as “apartments, townhouses, and condominiums [in a building that] has more than 10 floors of living space. Access to individual dwelling units is through an outside building entrance, a lobby, elevators, and a set of hallways.”

Table 4.1 summarizes the estimated trip generation based on the number of units. The site is forecast to generate 32 trips in the weekday AM peak hour and 29 trips in the weekday PM peak hour. **Appendix D** contains the applicable data sheets, as extracted from the *Trip Generation Manual*.

[4] Institute of Transportation Engineers, *Trip Generation Manual*, 11th ed., (Washington, DC: ITE, 2021).





Not to Scale

2028 Background Traffic Volumes

Figure 4.1

TABLE 4.1: ESTIMATED TRIP GENERATION

LUC	AM Peak Hour				PM Peak Hour			
	Rate	In	Out	Total	Rate	In	Out	Total
222 (146 units)	Eqn.[1]	4	28	32	Eqn.[2]	20	9	29
Total Trip Generation		**4**	**28**	**32**		**20**	**9**	**29**

Notes:

1. LUC 222 (AM): Ln(T) = 0.93Ln(X) – 1.17, 11% entering, 89% exiting
2. LUC 222 (PM): Ln(T) = 0.87Ln(X) – 0.96, 69% entering, 31% exiting

4.2.2 Trip Distribution and Assignment

The trip distribution developed for this study is based on existing travel patterns at the study intersection. Given the similarity of the proposed land use with nearby development, and a lack of significant development near the site, it is assumed existing travel patterns provide a reasonable estimate of trip patterns to and from the site. **Table 4.2** summarizes the estimated trip distribution.

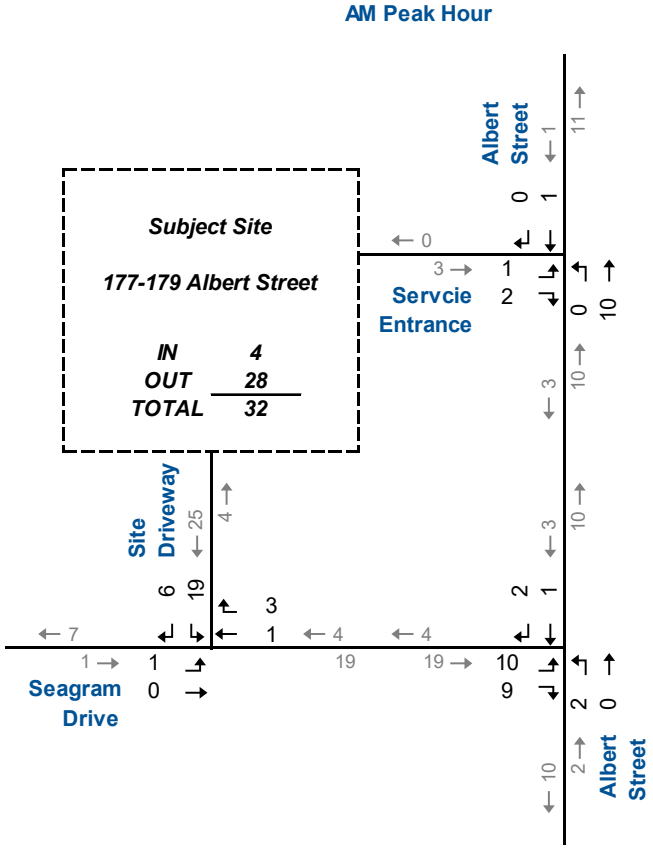
Figure 4.2 illustrates the site generated traffic assignments. Given the distribution of parking spaces, 90% of site trips have been assigned to the Seagram Drive driveway, and 10% to the Albert Street driveway.

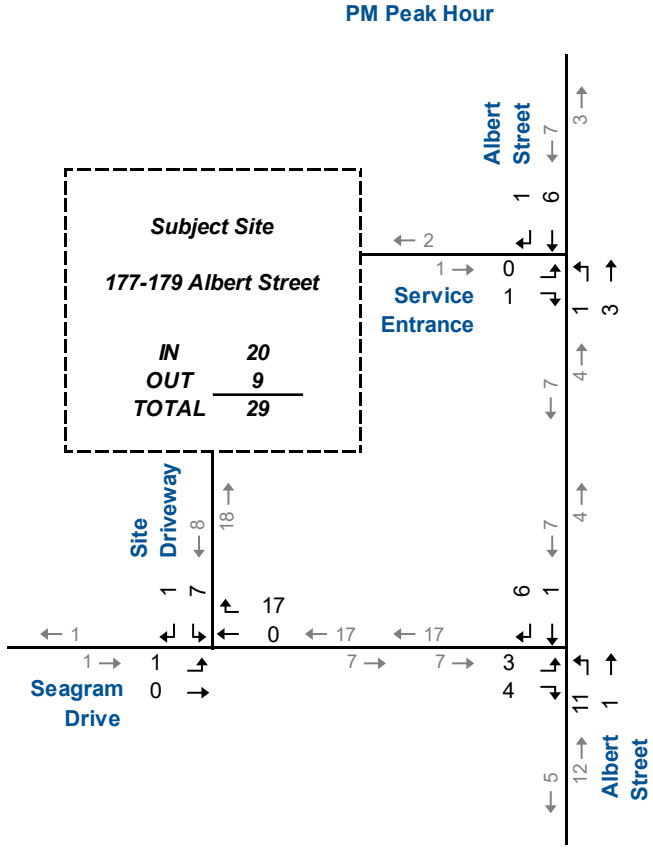
TABLE 4.2: ESTIMATED TRIP DISTRIBUTION

Origin/Destination	AM Peak Hour		PM Peak Hour	
	In	Out	In	Out
North via Albert Street	30%	40%	35%	35%
South via Albert Street	60%	35%	45%	50%
West via Seagram Drive	10%	25%	20%	15%
Total	**100%**	**100%**	**100%**	**100%**

4.3 Future Total Traffic

Figure 4.3 illustrates the future total traffic volumes at the 2028 horizon year. The future total traffic volumes represent the summation of the site generated traffic volumes (**Figure 4.2**) and the background traffic volumes (**Figure 4.1**).

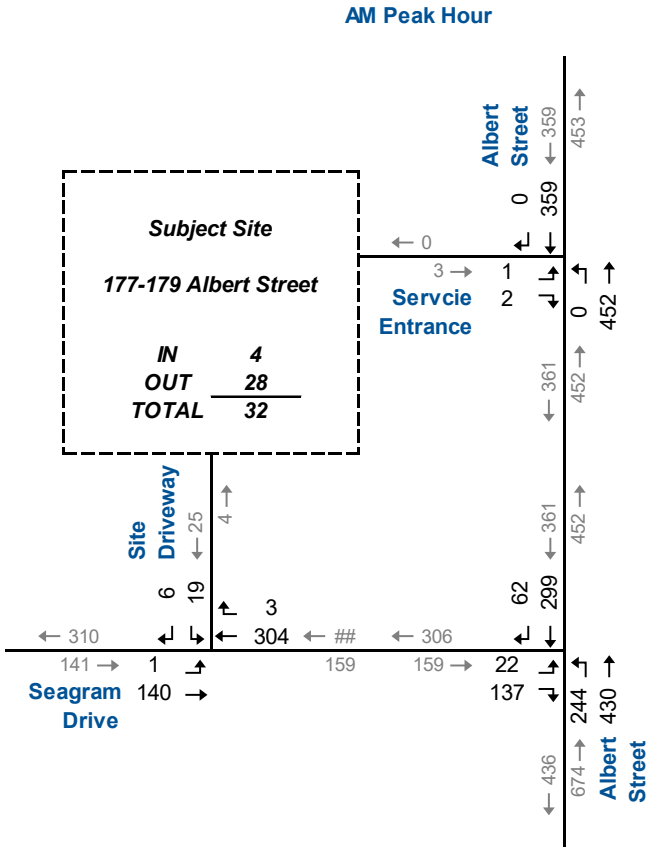


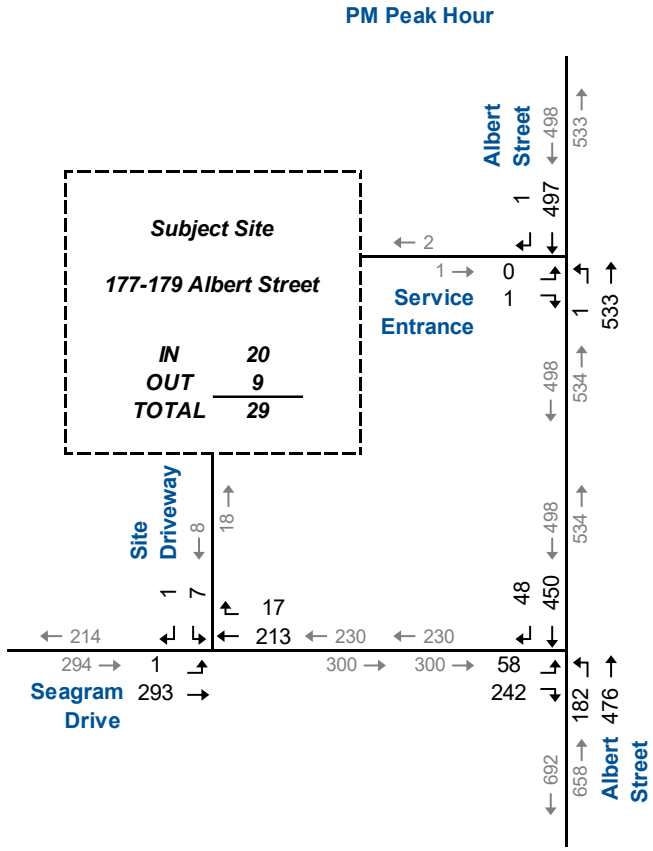


Not to Scale

paradigm TRANSPORTATION SOLUTIONS LIMITED

Site Generated Traffic Volumes





Not to Scale

paradigm TRANSPORTATION SOLUTIONS LIMITED

2028 Total Traffic Volumes

5 Traffic Operations Assessment

5.1 Background Traffic Operations

Analysis of future background traffic conditions uses the same methodology as existing traffic conditions. Signal timing splits and cycle lengths have not been modified. **Table 5.1** summarizes the background traffic level of service conditions. **Appendix E** contains the detailed Synchro reports.

The analysis indicates the study intersection is forecast to operate at similar levels of service to existing traffic operations. In the PM peak hour, the eastbound left-turn movement on Seagram Drive is forecast to operate at LOS E, with a v/c ratio of 0.51, and a 95th percentile queue that exceeds available lane storage by three metres. This LOS and v/c combination indicates the volume of traffic on Albert Street provides limited opportunities for side-street traffic to enter the traffic stream.

5.2 Total Traffic Operations

Analysis of future total traffic conditions uses the same methodology as existing traffic conditions. Signal timing splits and cycle lengths have not been modified. Both site driveways are assumed to operate with one inbound lane and one outbound lane. **Table 5.2** summarizes the total traffic level of service conditions. **Appendix F** contains the detailed Synchro reports.

The analysis indicates the study intersection is forecast to operate at similar levels of service to background traffic operations. In the PM peak hour, the eastbound left-turn movement on Seagram Drive is forecast to operate at LOS E, with a v/c ratio of 0.57, and a 95th percentile queue that exceeds available lane storage by six metres. This LOS and v/c combination indicates the volume of traffic on Albert Street provides limited opportunities for side-street traffic to enter the traffic stream. These findings are consistent with forecast traffic operations without the proposed development.

Both site driveways are forecast to operate at LOS B, and within capacity during both the AM peak hour and PM peak hour. Overall, development of the subject site is forecast to have a negligible impact on traffic operations in the study area.

TABLE 5.1: BACKGROUND TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Albert Street and Seagram Drive	TCS	LOS	D		B	B					A	A		A		A	>	A	A
			Delay	36		12	14					9	5		5		5	>	5	5
			V/C	0.09		0.19						0.22	0.36				0.29	>		0.3
			Q	2		6						7	47				36	>		
			Ex	15		-						30	-				-	>		
			Avail.	13		-						23	-				-	>		
PM Peak Hour	Albert Street and Seagram Drive	TCS	LOS	E		B	C					A	A		A		A	>	A	A
			Delay	69		18	28					10	6		6		6	>	6	6
			V/C	0.51		0.47						0.19	0.42				0.39	>		0.35
			Q	18		20						6	58				52	>		
			Ex	15		-						30	-				-	>		
			Avail.	-3		-						24	-				-	>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
Q - 95th Percentile Queue Length (m)
Ex. - Existing Available Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control
<- Shared Left/Through Lane
>- Shared Right/Through Lane

TABLE 5.2: TOTAL TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Albert Street and Seagram Drive	TCS	LOS	D		B	B					A	A		A		A	>	A	A
			Delay	40		12	16					9	5		5		5	>	5	5
			V/C	0.17		0.21						0.22	0.37				0.29	>		0.31
			Q	5		6						7	48				37	>		
			Ex	15		-						30	-				-	>		
			Avail.	10		-						23	-				-	>		
	Seagram Drive and Site Driveway	TWSC	LOS	<	A		A		A	>	A					B		>	B	
			Delay	<	0		0		0	>	0					11		>	11	
			V/C	<	0.00				0.18	>						0.04		>		
			Q	<	0				0	>						1		>		
			Ex	<	-				-	>						-		>		
			Avail.	<	-				-	>						-		>		
	Albert Street and Seagram Drive	TWSC	LOS	B		>	B					<	A		A		A	>	A	
			Delay	12		>	12					<	0		0		0	>	0	
			V/C	0.01		>						<	0.00				0.21	>		
			Q	0		>						<	0				0	>		
			Ex	-		>						<	-				-	>		
			Avail.	-		>						<	-				-	>		
PM Peak Hour	Albert Street and Seagram Drive	TCS	LOS	E		B	C					A	A		A		A	>	A	A
			Delay	79		19	30					10	6		6		6	>	6	6
			V/C	0.57		0.48						0.20	0.42				0.39	>		0.35
			Q	21		21						6	58				52	>		
			Ex	15		-						30	-				-	>		
			Avail.	-6		-						24	-				-	>		
	Seagram Drive and Site Driveway	TWSC	LOS	<	A		A		A	>	A					B		>	B	
			Delay	<	0		0		0	>	0					12		>	12	
			V/C	<	0.00				0.14	>						0.01		>		
			Q	<	0				0	>						0		>		
			Ex	<	-				-	>						-		>		
			Avail.	<	-				-	>						-		>		
	Albert Street and Seagram Drive	TWSC	LOS	B		>	B					<	A		A		A	>	A	
			Delay	11		>	11					<	0		0		0	>	0	
			V/C	0.00		>						<	0.00				0.29	>		
			Q	0		>						<	0				0	>		
			Ex	-		>						<	-				-	>		
			Avail.	-		>						<	-				-	>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
Q - 95th Percentile Queue Length (m)
Ex. - Existing Available Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control
<- Shared Left/Through Lane
>- Shared Right/Through Lane

5.3 Remedial Measures

The operational analyses identify the eastbound left-turn movement as critical, with or without the proposed development. This critical movement is caused by the high volume of through traffic on Albert Street, which provide limited opportunities for side-street traffic to enter the traffic stream. To improve traffic operations at the intersection, and provide controlled pedestrian crossings of each intersection leg, the City could consider installing a full traffic signal to replace the intersection pedestrian signal (IPS).

The warrant analysis for traffic control signals is based on that summarized in Ontario Traffic Manual (OTM) *Book 12 (Traffic Signals)*.[5] Justification 7 uses projected traffic volumes in the AM peak hour and PM peak hour to estimate the need for traffic control signals at an intersection.

Appendix G contains the warrant analysis worksheet which is based on 2028 total traffic forecasts. **Table 5.3** summarizes the results of the warrant analysis, indicating traffic control signals are not warranted at the intersection.

TABLE 5.3: OTM TCS WARRANT SUMMARY - JUSTIFICATION 7

Intersection	Horizon	Justification				Warranted[1]
		1A	1B	2A	2B	
Albert Street and Seagram Drive	2028 Future Total	92%	45%	76%	164%	No

Notes: For existing intersections with forecast traffic, either Justification 1A and 1B, or Justification 2A and 2B must be greater than 120%.

[5] Ontario Ministry of Transportation, *Ontario Traffic Manual Book 12: Traffic Signals*, (Toronto: Queen's Printer of Ontario, 2012).

6 Transportation Demand Management Plan

Transportation Demand Management (TDM) refers to policies, programs, and initiatives that improve the efficiency of the road network and encourage the use of alternative modes of transportation. TDM programs consider how people's choices of travel mode are affected by land use patterns and composition, development design, parking availability, parking cost, and the relative cost, convenience, and availability of alternative modes of travel.

TDM strategies and initiatives at a development can be divided into two basic categories: pre-occupancy and post-occupancy. Pre-occupancy strategies and initiatives are critical because they are most likely to determine how attractive, convenient, and safe alternative travel modes will be once the site is occupied. They may also be difficult to implement after the site is built and occupied. These can include such measures as secure bike parking, a lower vehicle parking supply, or safe pedestrian routes between the development and the municipal sidewalk network.

After a development is built, incentives can be offered to encourage the use of alternative modes of transportation, but these incentives are only effective if the development and surrounding area are designed to facilitate these incentives. These can include subsidies to use transit, rideshare programs, or disseminating information about alternative travel modes.

6.1 Existing Policies, Programs, and Strategies

6.1.1 Walking

Most every trip begins and ends as a walking trip. The pedestrian accessibility of a development is essential in helping ensure that those that can walk, have access to safe, comfortable, and well-lit pedestrian connections.

Sidewalks are provided on both sides of Albert Street and Seagram Drive. These provide uninterrupted connectivity to the University of Waterloo, University Avenue, Wilfrid Laurier University, and downtown Waterloo. The sidewalks on Seagram Drive also provide direct connectivity to the Laurier-Waterloo Park ION Station, west of the site, and transit services on University Avenue, north of the site.

The site plan illustrates the main pedestrian entrance on the east side of the building fronting onto Albert Street. Preliminary perspectives of

the building also indicate the provision of a weather protective awning at the main building entrance.

The building is also located adjacent to the intersection of Albert Street and Seagram Drive, which includes an intersection pedestrian signal (IPS). This provides pedestrians with a proximate controlled crossing and provides direct access to the Wilfrid Laurier University campus.

6.1.2 Cycling

The development is proposing 87 bicycle parking spaces: 75 Type A spaces and 12 Type B spaces. As noted in **Section 2.1**, Albert Street North of Seagram Drive, buffered bicycle lanes are provided on both sides Albert Street, north of Seagram Drive. South of Seagram Drive, dedicated cycling facilities are not provided, requiring all road users to share the road space. Buffered bicycle lanes are also provided on both sides of Seagram Drive from University Avenue West to Albert Street.

The City of Waterloo Zoning By-law requires:

- A minimum of 0.3 Type A bicycle spaces per dwelling unit; and
- A minimum of 0.3 Type B bicycle spaces per dwelling unit.

Under this zoning by-law, 88 parking spaces would be required, comprising 44 Type A and 44 Type B spaces. The site proposes 87 bicycle parking spaces, which is one less than the zoning by-law requirement.

6.1.3 Transit

As noted in **Section 2.2**, Grand River Transit (GRT) operates four surface bus routes near the site. The site is also within 800 metres of the Laurier Waterloo Park Station on the ION Light Rail Network Route 301, accessible via Philip Street. Route 301 (ION Light Rail) operates seven days a week between Conestoga Station and Fairway Station.

These routes are accessible via existing sidewalks in the study area. These routes also provide good connectivity to the broader network and key destinations within the Region including malls, Uptown Waterloo, and universities/colleges.

6.2 Potential Policies, Programs, and Strategies

6.2.1 Parking Management

Parking management refers to various policies and programs that result in more efficient use of parking resources. They include but are not limited to unbundled parking, shared parking, and parking pricing.

Unbundled parking policies separate the cost of a parking space from the lease or ownership cost of a dwelling unit. This enables those who want or need a parking space to purchase or rent the spaces they need. For residents who do not need (or do not want a parking space) unbundled parking allows them to purchase or rent a unit without the need to pay for a parking space they do not need.

The purchase or rental cost of each parking space remains unknown, however, charging for parking can help manage parking demands. By removing the provision of free parking on-site, residents can compare the cost and convenience of owning or renting a parking space to that of alternative modes of transportation.

The proposed parking supply is less than that required in the City of Waterloo zoning by-law for RMU-81 zones (see **Chapter 7**); however, it does comply with the parking requirements of the Residential Northdale Twenty-Five Zone (RN-25), which is applicable to select land parcels on the north side of University Avenue West (north of the site).

6.2.2 Car Share Program

Car sharing programs are automobile rental services intended to substitute for private vehicle ownership. It makes occasional use of a vehicle affordable while providing an incentive to minimize driving and increase the use of alternative travel options.

By providing this type of mode share on site, lower automobile ownership rates and parking requirements can be obtained. Residents of the building could choose to use walking, transit, or cycling as their primary mode of travel and use car share services as a secondary mode of travel for longer distance, or once in-a-while trips.

There are three car share providers in the Region of Waterloo: Communauto (VRTUCAR), ZipCar, and Enterprise CarShare. Each service provider has several locations across the Region.

Coordination with a local car-share provider and providing on-site car-share spaces in a premium location could provide a more convenient option for residents to use car share services

6.2.3 Travel Planning/Education/Promotion

Increasing awareness of sustainable transportation opportunities for residents and visitors of the subject site could be considered by the property owner.

Providing a welcome package to new residents and tenants can help support the use of alternate modes of transportation. This can include information about local transit services, car share programs, or bike parking locations.

General education of all modes of transportation, including their benefits and how to make the best use of them, are a key component to TDM success. By educating about sustainable modes of travel as well as providing travel demand management tools and incentives to residents, TDM can be integrated into the development to promote all modes of transportation.

6.2.4 TDM Coordinator

Delegating an interested individual or hiring an individual as part of the building's staff, to act as a coordinator for TDM programing can support the continuity and uptake of said programs.

The TDM coordinator can provide information on nearby transit, active transportation and carshare, and administer access to secured bicycle parking. It is expected that a representative of the City of Waterloo will be available to assist the TDM coordinator to help get the program(s) started during the early stages of operations.

6.2.5 Subsidized Transit Passes

Providing subsidized transit passes to all residents of the development for a minimum period after building opening could further encourage transit as a primary mode of transportation for trips to/from the subject development. Depending on the resident demographic, and acknowledging the development is to be geared towards students, this TDM initiative may be included in the U-Pass provided to eligible students at the University of Waterloo and Wilfrid Laurier University.

6.3 TDM Checklist

The Region of Waterloo's TDM Checklist is included in Appendix I of the Region's TIS Guidelines. It calculates a score between 0 and 65 to determine if a development is TDM supportive, based on four criteria: Site Access, Public Transportation Access, Parking, and Trip Reduction Incentives. A minimum score of 24 is required to be considered a TDM Supportive development.

Appendix H contains the completed TDM Checklist. Based on the site's proximity to Laurier-Waterloo Park Station, existing sidewalk network, and provision of structured (rather than surface) parking, the site is considered a TDM supportive development.

6.4 TDM Summary

Based on the details outlined herein, the following confirmed initiatives and measures will help support the use of alternative modes of transportation, and likely reduce the parking demands of the site:

- Active building frontages on Albert Street and Seagram Drive, and the primary building entrance onto Albert Street;
- Providing 87 bicycle parking spaces; and
- Providing a vehicle parking supply less than required by the municipal zoning by-law.

The development's location also provides connectivity to GRT bus service and the ION LRT via Laurier-Waterloo Park Station. These routes provide connectivity to other GRT routes and destinations throughout the Region.

To further promote TDM, and support the muti-modal transportation network near the site, the developer and/or building owner (as applicable) could consider:

- Unbundling the costs of parking spaces from the costs of units to support residents and tenants who do not own a vehicle;
- Providing subsidized transit passes for all residents;
- Providing transit and active transportation information in a welcome package to new residents and tenants, including the posting of this information in a central location;
- Delegating or hiring a TDM coordinator; and
- Partnering with a car sharing organization to provide car sharing services on-site.

7 Parking Justification

7.1 Proposed Parking Supply

The site proposes 44 parking spaces (0.30 spaces per unit), comprising 35 residential spaces and nine visitor spaces. These spaces are proposed at-grade (18 spaces) and in an underground parking structure (26 spaces).

7.2 City of Waterloo Zoning By-law

Schedule A (Zoning Map) of City of Waterloo Zoning By-law 2018-050 identifies the subject site as a Residential Mixed-Use (RMU) zone, specifically RMU-81. Schedule A1 (Parking Overlay) identifies the subject site in Parking Area A. Under RMU-81 the following minimum parking requirements apply for Parking Area A:

- Residential: 0.60 parking spaces per dwelling unit (88 spaces)
- Visitor: 0.10 parking spaces per dwelling unit (15 spaces)
- Non-Residential: 1.50 parking spaces for every 100 m^2 of gross floor area (not applicable).

A total of 103 spaces (0.70 spaces per unit) is required for the site. Compared to the proposed supply of 44 spaces, there is a regulatory shortfall of 59 spaces.

Although the site is zoned RMU-81, the proposed parking supply complies with the parking requirements of the Residential Northdale Twenty-Five (RN-25) Zone:

- Residential: 0.20 parking spaces per bedroom (35 spaces)
- Visitor: 0.05 parking spaces per bedroom (9 spaces)
- Non-Residential: 3.00 parking spaces for every 100 m^2 of gross floor area, except for a personal service shop, office, café, commercial recreation, or commercial wellness, where a minimum of 2.00 spaces per 100 m^2 of gross floor area is required (not applicable).

The Residential Northdale zoning designations apply to various land parcels in the Northdale neighbourhood, immediately north of the subject site, which is bounded by Phillip Street, Columbia Street West, King Street North, and University Avenue West. The *Northdale Land Use and Community Improvements Plan Study, Urban Design and Built Form Guidelines* identify Northdale as "as a neighbourhood in transition, …that will accommodate a large portion of the City's infill

and intensification growth over the next twenty years given the proximity of the neighbourhood to the Universities, designated nodes and corridors, and planned Major Transit Station Areas (MTSAs)."[6]

The City of Waterloo *Official Plan* further notes that "parking requirements will be minimized in Northdale, to recognize that the community is being planned to support rapid transit facilities and will continue to accommodate a large portion of students and University related faculty and staff, area business employees, and permanent residents, resulting in a walkable, mixed-use community that has exceptional access to transit."[7]

Although the subject site is not in the Northdale neighbourhood, its proximity to the University of Waterloo and Wilfrid Laurier University and planned resident demographic (that is, students) is consistent with City policies related to development in the Northdale neighbourhood.

7.3 Estimated Parking Demand

7.3.1 Transportation Demand Management (TDM)

The Region of Waterloo has developed a TDM Checklist to assess whether developments are planned in such a manner to support the overall objectives of the Region to increase transit use and reduce single occupant vehicle (SOV) travel. The worksheet includes calculations of potential parking reductions based on a site's context, and proposed TDM initiatives. **Chapter 6** provides a more detailed TDM Plan for the development, highlighting existing and proposed TDM policies, programs, and initiatives.

The Region of Waterloo *Parking Management Worksheet* forms part of the TDM Checklist. It calculates a maximum achievable parking reduction based on four criteria: pedestrian and cyclist orientation, public transportation access, parking, and trip reduction incentives. Depending on the site context (urban growth centre, intensification corridor, or other), the maximum achievable reduction is between 22% and 57%. The site is in an Intensification Corridor (IC) given its proximity to the Laurier Waterloo Park Station. It is not identified in an Urban Growth Centre in the City of Waterloo Zoning By-law.

Appendix I contains the completed Parking Management Worksheet based on information available at the time of writing. The site achieves a parking reduction of 15%, because of its proximity to Laurier

6 City of Waterloo, *Northdale Land Use and Community Improvement Plan Study, Urban Design and Built Form Guidelines*, (Waterloo: City of Waterloo, 2012), 8.
7 City of Waterloo, *Official Plan*, (Waterloo, City of Waterloo, 2022), 336.

Waterloo Park Station, existing sidewalk network, and provision of structured (rather than surface) parking.

A 15% parking reduction results in a modified parking requirement of 88 spaces (0.60 spaces per unit). If the development were to adopt the full list of TDM incentives outlined in the Parking Management Worksheet, it could achieve a maximum reduction of 31%. In this case, 72 spaces (0.49 spaces per unit) would be required for the site.

7.3.2 Proxy Data – City of Guelph

In March 2023, Paradigm conducted a two-day parking survey of an off-site student housing development at 601 Scottsdale Road in the City of Guelph. The site provides off-campus student housing for students at the University of Guelph and is about a 25-minute walk from the main campus. Eight transit routes support four transit stops within a one-minute walk of the site.

The parking surveys were conducted from 3:00 PM on Tuesday March 7, 2023 to 3:00 PM on Wednesday March 8, 2023. The survey identified a peak parking demand of 0.18 spaces per unit. Aplpied to the proposed development, this would be equal to 27 spaces. This is less than the proposed supply of 44 spaces.

7.3.3 Auto Ownership and Mode Share

The need for parking is based in part on auto ownership rates and proximity to destinations within walking distance or access to transit. The most recent Transportation Tomorrow Survey (TTS) provides data on the number of vehicles owned by private households in Waterloo Region in 2016.[8]

A review of vehicle ownership among apartment units within an area bounded by Columbia Street West, King Street North, Bricker Avenue, Seagram Drive, and the ION LRT (traffic analysis zones 7044, 7048, 7049, 7050) suggests approximately 55% of households in apartment units do not own a vehicle. The data from the 2016 TTS indicates a vehicle ownership rate in the surrounding area of 0.45 vehicles per apartment unit. Applied to the proposed development, the potential parking demand for residents is estimated to be 66 spaces. **Appendix J** contains the TTS Data.

The reader is cautioned that the 2016 TTS data does not account for the opening of the ION LRT in June 2019, and potential decreases in

[8] Data Management Group, *Transportation Tomorrow Survey 2016,* University of Toronto.

vehicle ownership and increases in non-auto mode-share. It also does not differentiate between different resident demographics.

7.3.4 Institute of Transportation Engineers

The Institute of Transportation Engineers (ITE) *Parking Generation Manual*[9] provides parking related data based on parking surveys conducted in Canada and the United States of America. For some land uses, parking data is also provided based on the urban context (for example, dense multi-use urban, or general urban/suburban), and proximity to public transit.

The parking demands of the site have been estimated using land use code 222 (Multifamily Housing – High Rise) across two urban contexts (urban/suburban, and dense multi-use urban). The parking demand data published by ITE illustrate decreasing parking demands for residential land uses as the urban context shifts from urban/suburban to dense multi-use urban. This reflects a general increase in accessibility of alternate modes of transportation, and modal splits which reduce auto ownership and parking demands.

Table 7.1 summarizes the estimated parking demand based on the data published by ITE, suggesting 64 parking spaces (0.44 spaces per unit) would be sufficient for the subject lands.

TABLE 7.1: ESTIMATED PARKING DEMAND - ITE RATES

LUC 222 (146 units)	Estimated Parking Demand
Urban/Suburban	143
Dense Multi-Use Urban (no nearby rail transit)	80
Dense Multi-Use Urban (less than ½ mile from rail transit)	64

Source: Institute of Transportation Engineers, Parking Generation, 5th ed., (Washington, DC: ITE, 2019).

Notes

1. Average weekday parking demand of 0.98 vehicles per dwelling unit
2. Average weekday parking demand of 0.55 vehicles per dwelling unit
3. Average weekday parking demand of 0.44 vehicles per dwelling unit

[9] Institute of Transportation Engineers, *Parking Generation*, 5th ed., (Washington, DC: ITE, 2019).

As with the TTS data, ITE does not provide parking demand data based on different resident demographics (such as student versus non-student). Compared to the proxy data collected in Guelph, ITE presents a conservative estimate of parking demands for the site.

7.4 Parking Policy

7.4.1 City of Waterloo Official Plan

The City of Waterloo *Official Plan*[10] identifies the following City-wide objectives with respect to parking:

- To plan for and/or create an appropriate amount of bicycle and vehicular parking to accommodate the intended use;
- To plan for bicycle and vehicular parking areas that are attractive and well designed and reflect consideration of safe, secure, and convenient access to all segments of the community;
- To ensure that parking will be efficient and environmentally sensitive in terms of design, location, and surface treatment;
- To support transit and measures relating to transportation demand management through restrictions on parking supply, where appropriate; and
- To minimize large areas of surface parking associated with higher density developments in Nodes, Corridors, and Major Transit Station Areas, where possible, and encourage the use of parking structures and/or underground parking.

Further to these objectives, subsection 5 of Section 6.6.1 identifies "encouraging walking, cycling, and transit movement as preferred modes of travel, by defining and applying through the Zoning By-law, parking standards that:

- Establish minimum and maximum vehicular parking requirements;
- Limit surface parking;
- Permit shared parking, where appropriate, as an efficient use of available parking facilities;

[10] City of Waterloo, *Official Plan Chapter 6 Transportation*, (Waterloo: City of Waterloo, 2022), 102-115.

- Require the provision of commuter/carpool spaces to be provided in locations that provide convenient access to building entrances;
- Require the provision of bicycle parking facilities that provide for convenient access to building entrances; and/or
- Apply reduced vehicular parking requirements for development, giving consideration to access to transit, potential for shared parking, potential for small and/or micro spaces and/or other considerations that the City may deem appropriate.

As noted in **Section 7.2**, Section 11.1.45 of the *Official Plan* also outlines a Specific Provision Area for the Northdale Neighbourhood and notes that "parking requirements will be minimized in Northdale, to recognize that the community is being planned to support rapid transit facilities and will continue to accommodate a large portion of students and University related faculty and staff, area business employees, and permanent residents, resulting in a walkable, mixed-use community that has exceptional access to transit."[11]

7.4.2 Waterloo Region Official Plan

The Region of Waterloo *Official Plan*[12] identifies region-wide policy direction related to parking management and transportation demand management.

Policies 2.D.6 through 2.D.10 reflect Urban Development Policies for Major Transit Station Areas, defined as lands "within a 600 to 800 metre radius of a rapid transit station." Policy 2.D.9 states "Area Municipalities are encouraged to apply flexible zoning regulations, reduced parking requirements and other incentives as necessary and appropriate to assist in facilitating redevelopment of such areas to support Transit Oriented Development." The reduced parking supply is consistent with this policy direction, given the site's proximity to Laurier Waterloo Park Station.

Policy 3.C.4 further states "Area Municipalities are encouraged to provide reduced parking standards for development applications where the owner/applicant agrees to incorporate transportation demand management strategies as part of the proposed development." The site's TDM Plan includes a reduced parking supply consistent with zoning requirements for the RN-25 zone, rather than the RMU-81 zone. This reflects the planned resident demographic.

[11] City of Waterloo, *Official Plan*, (Waterloo: City of Waterloo, 2022), 336.
[12] Region of Waterloo, *Official Plan*, (Kitchener: Region of Waterloo, 2015).

7.4.3 Planning Act

The Planning Act directs municipalities to have regard to matters of provincial interest set out in Section 2 of the Planning Act, including:

> (q) the promotion of development that is designed to be sustainable, to support public transit and to be oriented to pedestrians; and
>
> (s) the mitigation of greenhouse gas emissions and adaptation to a changing climate.

The proposed parking supply can promote sustainable, transit-supportive development and mitigate greenhouse gas emissions by discouraging automobile ownership and reducing the demand for single-occupant vehicle trips.

7.4.4 Provincial Policy Statement (2020)

The Provincial Policy Statement (2020) (the "PPS") contains several policies which promote efficient development and the optimization of land and infrastructure. Specifically, policy 1.1.1 e) states that healthy, liveable, and safe communities are sustained by "promoting the integration of land use planning, growth management, transit-supportive development, intensification and infrastructure planning to achieve cost-effective development patterns, optimization of transit investments, and standards to minimize land consumption and servicing costs."[13]

Policy 1.1.3.2 states that "Land use patterns within settlement areas shall be based on densities and a mix of land uses which:

> a) efficiently use land and resources;
>
> b) are appropriate for, and efficiently use, the infrastructure and public service facilities which are planned or available, and avoid the need for their unjustified and/or uneconomical expansion;
>
> c) minimize negative impacts to air quality and climate change, and promote energy efficiency;
>
> d) prepare for the impacts of a changing climate;
>
> e) support active transportation;

[13] Ministry of Municipal Affairs and Housing, *Provincial Policy Statement 2020,* (Toronto, Queen's Printer for Ontario, 2020), 7.

f) are transit-supportive, where transit is planned, exists, or may be developed;

Policy 1.1.3.4. states that "Appropriate development standards should be promoted which facilitate intensification, redevelopment and compact form, while avoiding or mitigating risks to public health and safety."

Policy 1.6.7.2. states that "Efficient use should be made of existing and planned infrastructure, including through the use of transportation demand management strategies, where feasible."[14]

The proposed reduction in residential parking rates associated with the development is an appropriate development standard to facilitate intensification and transit-supportive development as planned for the area. The proposed parking supply is part of the overall transportation demand management strategy for the proposed development to support the use of transit infrastructure, and proximity to nearby destinations, notably the University of Waterloo and Wilfrid Laurier University.

7.4.5 Ontario's Growth Plan

Ontario's most recent *A Place to Grow – Growth Plan for the Greater Golden Horseshoe* (the 'Growth Plan'), published in May 2019, outlines requirements for accommodating growth to 2041.[15] The plan covers a wide range of areas and topics, many of which apply to this development.

- **Transportation and Moving People** – Public transit will be the priority for significant transportation investment. Transit growth will focus on increasing the capacity of transit systems while also expanding transit services to connect nearby neighbourhoods with urban growth centres and major transit station areas. These goals should increase the modal share of transit and reduce greenhouse gas emissions.
- **Active Transportation** – To reduce single-occupant vehicle trips and address climate change, municipalities should encourage and include the growth plan guidelines for active transportation networks. These networks provide sidewalks, bicycle lanes, and easy access to surrounding major transit station areas.

[14] Ministry of Municipal Affairs and Housing, *Provincial Policy Statement 2020,* (Toronto, Queen's Printer for Ontario, 2020), 20.

[15] Ministry of Municipal Affairs and Housing, *A Place to Grow, Growth Plan for the Greater Golden Horseshoe,* (Toronto, Queen's Printer for Ontario, 2020).

- **Reduce single-passenger vehicle trips** – The Growth Plan calls for municipalities to develop and implement local TDM policies and active transportation strategies to reduce single-occupant automobile trips. This will aid in shifting trip demand from the automobile to the strengthened multi-modal networks also proposed in the plan to reduce the need for individual automobile ownership.

The policies in the Growth Plan, in combination with the proposed TDM measures, and reduced parking supply support the proposed development's intention to reduce reliance on automobiles by encouraging lower vehicle ownership rates, and increased use of public transit and active transportation.

7.5 Parking Summary

The findings of this parking study are as follows:

- The site proposes 44 parking spaces (0.30 spaces per unit), comprising 35 residential spaces and nine visitor spaces;
- The proposed parking supply is non-compliant with the minimum parking requirements defined in Zoning By-law 2018-050, for Residential Mixed-Use Zones (RMU) RMU-81 but is compliant with the parking requirements for the Residential Northdale Twenty-Five (RN-25) Zone;
- The Region's Parking Management Worksheet supports a parking reduction of 15% (based on existing and proposed TDM measures), to a maximum of 31%. In either case, the proposed supply is non-compliant;
- Parking surveys conducted in March 2023 at an off-campus student housing development in Guelph within a 25-minute walk of the University of Guelph observed a peak parking demand of 0.18 spaces per unit. This is less than the proposed parking supply of 0.30 spaces per unit;
- Auto-ownership data for apartment dwellers near the subject site, collected as part of the 2016 Transportation Tomorrow Survey indicate an average vehicle ownership of 0.45 per household, suggesting a peak residential parking demand of 66 spaces (not including visitor parking demands). The TTS does not differentiate between parking demands for students and non-students and presents a conservative estimate as compared to the data collected in Guelph;
- Data published by the ITE suggest a peak parking demand of 64 spaces (0.44 spaces per unit), which is greater than the proposed parking supply of 44 (0.30 spaces per unit). Like the

TTS data, ITE not differentiate between parking demands for students and non-students and presents a conservative estimate as compared to the data collected in Guelph;

- The proposed parking supply is consistent with City, Regional, and Provincial policy direction to support transit-oriented development and encourage the use of alternate modes of transportation through reduced parking requirements, and other measures to reduce single occupant vehicle travel.

Based on the findings of this parking study, it is concluded that although the proposed parking supply is non-compliant with the zoning by-law, it is consistent with the parking requirements for the Residential Northdale Twenty-Five (RN-25) Zone and is adequate based on parking data collected at a similar off-campus student housing apartment in Guelph.

The development's location in the Laurier Waterloo Park Major Transit Station Area (MTSA) is conducive to the use of alternative modes and supports a reduction in parking requirements.

The reduced parking supply also aligns with City, Region, and Province policies promoting the use of non-auto travel modes and the implementation of transportation demand management (TDM) measures in new development.

8 Conclusions and Recommendations

8.1 Findings and Conclusions

Based on the analyses contained herein, the findings of this report are as follows:

- Under existing (2023) conditions the study intersection (Albert Street and Seagram Drive) is operating at an acceptable level of service and within capacity. There are no critical movements.
- Under future background traffic conditions, (that is, *without development of the subject site*), the study intersection in forecast to operate similar to existing conditions. In the PM peak hour, the eastbound left-turn movement on Seagram Drive at Albert Street is forecast to operate at LOS F, with a v/c ratio of 0.51.
- Redevelopment of the subject site is estimated to generate 32 new trips in the weekday AM peak hour, and 29 new trips in the weekday PM peak hour.
- Under future total traffic conditions, (that is, *with development of the subject site*), the study intersection is forecast to operate similar to background conditions. In the PM peak hour, the eastbound left-turn movement on Seagram Drive at Albert Street is forecast to operate at LOS F, with a v/c ratio of 0.57.

  The site driveways onto Seagram Drive and Albert Street are forecast to operate at LOS B, with v/c ratios no greater than 0.04.
- The site proposes 44 parking spaces (0.30 spaces per unit), comprising 35 residential spaces and nine visitor spaces.
- The proposed parking supply is non-compliant with the minimum parking requirements defined in Zoning By-law 2018-050, for Residential Mixed-Use Zones (RMU) RMU-81 but is compliant with the parking requirements for the Residential Northdale Twenty-Five (RN-25) Zone.
- The Region's Parking Management Worksheet supports a parking reduction of 15% (based on existing and proposed TDM measures), to a maximum of 31%. In either case, the proposed supply is non-compliant.
- Parking surveys conducted in March 2023 at an off-campus student housing development in Guelph within a 25-minute walk of the University of Guelph observed a peak parking demand of 0.18 spaces per unit. This is less than the proposed parking supply of 0.30 spaces per unit.



- Auto-ownership data for apartment dwellers near the subject site, collected as part of the 2016 Transportation Tomorrow Survey (TTS) indicate an average vehicle ownership of 0.45 per household, suggesting a peak residential parking demand of 66 spaces (not including visitor parking demands). The TTS does not differentiate between parking demands for students and non-students and presents a conservative estimate as compared to the data collected in Guelph.
- Data published by the Institute of Transportation Engineers (ITE) suggest a peak parking demand of 64 spaces (0.44 spaces per unit), which is greater than the proposed parking supply of 44 (0.30 spaces per unit). Like the TTS data, ITE not differentiate between parking demands for students and non-students and presents a conservative estimate as compared to the data collected in Guelph.

Based on the findings of this study it is concluded that:

- Redevelopment of the site is forecast to have a negligible impact on traffic operations at Albert Street and Seagram Drive;
- Although the proposed parking supply is non-compliant with the zoning by-law, it is consistent with the parking requirements for the Residential Northdale Twenty-Five (RN-25) Zone and is adequate based on parking data collected at similar off-campus student housing apartment in Guelph.
- The development's location in the Laurier Waterloo Park Major Transit Station Area (MTSA) is conducive to the use of alternative modes and supports a reduction in parking requirements; and
- The reduced parking supply aligns with City, Region, and Province policies promoting the use of non-auto travel modes and the implementation of transportation demand management (TDM) measures in new development.

8.2 Recommendations

Based on the conclusions of this Transportation Impact Study, it is recommended the site be considered for approval with no requirements for off-site transportation network improvements.

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Appendix A

Pre-Study Consultation Notes

Appendix B

Turning Movement Count Data and Signal Timing

Appendix C

Base Year Traffic Operations Reports

Appendix D

ITE Trip Generation Manual Excerpts

Appendix E

Background Traffic Operations Reports

Appendix F

Total Traffic Operations Reports

Appendix G

OTM Traffic Control Signal Warrant

Appendix H

Region of Waterloo TDM Checklist

Appendix I

Region of Waterloo Parking Management Worksheet

Appendix J

TTS Auto Ownership Data