

2025-10-09
Project: (250606)

Zeljko Prica
388 Phillip Inc.
388 Phillip Street
Waterloo, ON N2L 6R7

Dear Mr. Prica:

RE: TRANSPORTATION IMPACT BRIEF, 388 PHILLIP STREET, CITY OF WATERLOO

388 Phillip Inc. retained Paradigm Transportation Solutions Limited to prepare this Transportation Impact Brief for a proposed change of use at 388 Phillip Street in the city of Waterloo. **Figure 1 (attached)** illustrates the site location on the east side of Phillip Street north of Columbia Street West.

The site is occupied by a one storey commercial building with a total gross floor area of 11,860 m² (127,660 sq. ft.). The property owner is proposing to renovate the building into a 2,810 m² (30,246 sq. ft.) data centre, a 7,565 m² (82,409 sq. ft.) specialty food store, and a 1,394 m² (15,005 sq. ft.) office/co-working space.

Purpose and Scope

The purpose of this letter is to estimate the net change in trip generation between the existing and proposed land uses. The scope of this study includes:

- ▶ A description of the existing transportation network near the site, including the road network, transit services, active transportation facilities, and the existing modal split among households near the subject site;
- ▶ Estimates of the site vehicular trip generation for both the existing and proposed land uses; and
- ▶ A qualitative analysis on the net impact of the redevelopment proposal.

This Transportation Impact Brief has been carried out in general accordance with the Region of Waterloo *Transportation Impact Study Guidelines*¹ and direction provided by City staff during pre-study consultation. **Appendix A** contains the pre-study correspondence and comments provided by city staff.

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

Existing Conditions

Roads

Phillip Street is a north-south major collector road² with an undivided two-lane urban cross-section comprising one lane per direction. The speed limit is not posted and is assumed to be 50 km/h. Parking is not permitted on either side of the road.

Transit

Grand River Transit (GRT) is the public transit operator in Waterloo Region and operates three services near the site: Route 9 (Lakeshore), Route 31 (Columbia), and Route 201 (iXpress Fisher-Hallman). All three routes serve stop 3889 on the southeast corner of Columbia Street West and Phillip Street. The site is also a 10-minute walk from the Research and Technology Station on the Region of Waterloo ION light rail network. **Figure 2** (attached) illustrates the GRT routes near the site.

Active Transportation

A continuous sidewalk is provided on the west side of Phillip Street extending from Columbia Street to Albert Street. A bi-directional multi-use path is provided on the east side of Phillip Street extending from Columbia Street to Albert Street. On-road buffered bike lanes are provided on both sides of Phillip Street along the site's frontage and extend to Albert Street.

The intersection of Columbia Street and Phillip Street includes delineated crosswalks and pedestrian signal heads on all approaches. The intersection also includes delineated bike boxes and pavement markings to support bicycle travel in all directions.

Mode Choice

Paradigm conducted a review of the 2022 Transportation Tomorrow Survey (TTS) to estimate the existing mode share among households near the subject site. Because the traffic analysis zone of the subject site is predominantly commercial/office land uses, Paradigm broadened the analysis to include all zones bordering the TAZ of the subject site. This better captures the residential areas surrounding the site which would be expected to make use of the proposed food store, but does not include the main campus areas of the University of Waterloo or Wilfrid Laurier University. **Appendix B** contains the TTS output.

Table 1 summarizes the results of the TTS query across all times of day, the weekday AM period (6 AM to 9 AM), and the weekday PM period (3 PM to 6 PM). The data across all three periods indicate approximately 80% of households report walking or driving as their primary mode of transportation, with approximately 40% indicating walking as the primary mode of transportation. Transit and auto passengers make up another 15% to 20% of the survey results, with 1% to 3% of respondents indicating both cycling or a combination of GO transit and local transit as their primary mode of transportation.

² City of Waterloo, *Official Plan, Schedule E (Road Classification System)*, (Waterloo: City of Waterloo, 2018).



The proportion of households reporting driving as the primary mode of transportation is higher for those areas north of Columbia Street West, whereas walking is the predominant mode of travel for households south of Columbia Street West. These results likely reflect that several of the traffic analysis zones are close to the University of Waterloo and Wilfrid Laurier University, the demographics of which would be expected to result in lower vehicle ownership and private vehicle travel trends.

TABLE 1: PRIMARY MODE OF TRAVEL

Primary Mode of Travel	Daily	AM Period (6 AM to 9 AM)	PM Period (3 PM to 6 PM)
Walk	43%	43%	38%
Auto Driver	38%	41%	39%
Transit excluding GO rail	11%	8%	16%
Auto or Taxi Passenger	6%	6%	4%
Cycle	≤1%	2%	3%
Joint GO Rail and Local Transit	≤1%	0%	0%
Total	100%	100%	100%

Site Description and Proposed Development

The site is occupied by a one storey commercial building with a total gross floor area of 11,860 m² (127,660 sq. ft.). Vehicle access is provided by three all-moves driveway connections to Phillip Street, and an internal connection to 130 Columbia Street. The building was historically used for general office and research and development (R&D) type land uses but at the time of writing is vacant.

The property owner is proposing to renovate the building into

- ▶ a 2,810 m² (30,246 sq. ft.) data centre
- ▶ a 7,565 m² (82,409 sq. ft.) specialty food store; and
- ▶ a 1,394 m² (15,005 sq. ft.) office/co-working space.

Vehicle access is proposed via the existing all-moves driveway connections to Phillip Street. The access to 130 Columbia Street will also remain. **Figure 3** (attached) illustrates the conceptual floor plan of the building after renovation.



Estimated Trip Generation

To estimate of the impact of the proposed change of use, Paradigm has estimated the trip generation for both the proposed land uses and the former uses of the building, to determine the net change in trip generation activity. The trip generation estimates are based on data published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*³ in a general urban/suburban context. While ITE does provide trip generation characteristics for dense multi-use urban and city centre core contexts, data is not provided for all land use codes or analysis periods (that is, weekday AM, weekday PM, Saturday, etc.).

The intended tenant for the specialty food store does operate one store in each of Guelph and Milton; however, both stores operate as one unit of a multi-unit commercial building, making it difficult to establish trip generation rates specific to the existing stores. Both sites also operate in a more suburban context, neither location of which is served by a similar level of public transit, or in an area within walking distance of residential or other destinations.

Former Land Uses

Table 2 summarizes the estimated vehicular trip generation of the former land uses based on land use code (LUC) 715 (Single Tenant Office Building). LUC 715 is described by ITE as a *“building [with] a gross floor area that is greater than 10,000 square feet and [that] contains offices, meeting rooms, and space for file storage and data processing of a single business or company and possibly other service functions including a restaurant or cafeteria.”*

The ITE trip generation data indicate the former land uses are estimated to have generated 253 trips in the weekday AM peak hour and 225 trips in the weekday PM peak hour. These trip generation estimates appear consistent with the scale of the building and the quantity of parking spaces provided on the site, including Google Earth aerial imagery from Wednesday May 20, 2009 which showed upwards of 200 vehicles parked onsite.

TABLE 2: ESTIMATED TRIP GENERATION – FORMER LAND USES

Land Use Code	AM Peak Hour				PM Peak Hour			
	Rate	In	Out	Total	Rate	In	Out	Total
715 – Single Tenant Office Building (127,660 sq. ft.)	Eqn. ^[1]	225	28	253	Eqn. ^[2]	34	191	225
Total Trip Generation		225	28	253		34	191	225

Notes

1. LUC 715 (AM): $T = 2.22(X) - 30.81$, (89% entering, 11% exiting)
2. LUC 715 (PM): $T = 1.99(X) - 28.75$, (15% entering, 85% exiting)

³ Institute of Transportation Engineers, *Trip Generation Manual*, 12th ed., (ITE: Washington, DC, 2025).



Proposed Land Uses

Table 3 summarizes the estimated trip generation of the proposed land uses which is based on data for LUC 160 (Data Centre), LUC 850 (Supermarket), and LUC 710 (General Office Building).

The estimates in **Table 3** also include a calculation of pass-by trips, which are a subset of trip generation applicable only to retail land uses. Pass-by trips represent the portion of existing traffic on an adjacent road (in the case of this study, Phillip Street) that are estimated to stop at a site while completing another trip. An example of a pass-by trip is a motorist stopping for groceries on their way home from work. The pass-by rates for LUC 850 reflect those published in the ITE *Trip Generation Handbook*.⁴ Pass-by rates are not published for the weekday AM peak hour. When accounting for pass-by trips, the site is estimated to generate 264 trips in the weekday AM peak hour and 515 trips in the weekday PM peak hour.

TABLE 3: ESTIMATED TRIP GENERATION – PROPOSED LAND USES

Land Use Code	AM Peak Hour				PM Peak Hour			
	Rate	In	Out	Total	Rate	In	Out	Total
160 (Data Centre) 30,246 sq. ft. GFA	0.07 ^[1]	2	0	2	0.05 ^[2]	0	2	2
850 (Supermarket) 82,409 sq. ft. GFA	2.95 ^[3]	143	100	243	Eqn. ^[4]	329	362	657
710 (General Office Building) 15,005 sq. ft. GFA	1.24 ^[5]	16	3	19	1.18 ^[6]	3	15	18
Total Trip Generation		161	103	264		332	379	677
850 (Supermarket) – Pass-by	0%	0	0	0	24%	-81	-81	-162
Net Trip Generation		161	103	264		251	298	515

Notes

1. LUC 160 (AM): Average rate of 0.07 trips per 1,000 sq. ft. GFA (71% entering, 29% exiting)
2. LUC 160 (PM): Average rate of 0.07 trips per 1,000 sq. ft. GFA (19% entering, 81% exiting)
3. LUC 850 (AM): Average rate of 2.86 trips per 1,000 sq. ft. GFA (59% entering, 41% exiting)
4. LUC 850 (PM): $\ln(T) = 0.82\ln(X) + 2.87$ (50% entering, 50% exiting)
5. LUC 710 (AM): Average rate of 1.24 trips per 1,000 sq. ft. GFA (88% entering, 12% exiting)
6. LUC 710 (PM): Average rate of 1.18 trips per 1,000 sq. ft. GFA (16% entering, 84% exiting)

The reader is cautioned that the trip generation estimates for the AM peak hour are likely conservative because they assume the grocery store will be open during the period between 7 AM and 9 AM. If the operating hours of the Waterloo store are consistent with the stores in both Guelph and Milton (9 AM to 9 PM, Monday to Sunday), the trip generation activity for the supermarket may be lower in the AM period since the store would not be open within the weekday AM peak hour.

⁴ Institute of Transportation Engineers, *Trip Generation Handbook*, 3rd ed., (ITE: Washington, DC, 2017).



Net Impact of Proposed Land Uses

Table 4 summarizes the net change in trip generation between the former and proposed land uses on the site. The site is estimated to generate 11 additional trips in the weekday AM peak hour and 290 trips in the weekday PM peak hour. Pass-by trips are omitted from this analysis because these trips are not considered new trips on the road network.

TABLE 4: NET CHANGE IN TRIP GENERATION

Trip Generator	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Former Land Uses	225	28	253	34	191	225
Proposed Land Uses	161	103	264	251	298	515
Net Change	-64	+75	+11	+217	+107	+290

Sensitivity Analysis

The trip generation estimates presented in **Table 3** are representative of a general urban/suburban context which ITE defines as “*an area associated with almost homogeneous vehicle-centred access [such that] nearly all person trips that enter or exit a development site are by personal passenger or commercial vehicle.*” In other words, the ITE data reflect an environment in which nearly all trips are completed by personal vehicles, whereas the modal split data in **Table 1** indicate that travel by personal vehicle accounts for only 40% to 50% of trips.

As a sensitivity analysis, Paradigm has recalculated the site trip generation assuming a modal split of 45%. This rate accounts for any trip taken by a mode or combination of modes other than a personal vehicle, such as walking, transit, or by bike. **Table 5** presents the updated trip generation estimates and **Table 6** summarizes the updated estimate of the net change in trip generation activity. Consistent with the calculations in **Table 3** the estimates for the AM peak hour are likely conservative because they assume the grocery store will be open within the period between 7 AM and 9 AM, even though the operating hours of the stores in both Guelph and Milton are 9 AM to 9 PM, Monday to Sunday.

When accounting for local travel characteristics, the site is expected to generate 145 trips in the weekday AM peak hour and 283 trips in the weekday PM peak hour (not including pass-by trips). This is 108 fewer trips in the weekday AM peak hour and 58 additional trips in the weekday PM peak hour as compared to the previous land uses.

This net increase in trip generation would not be expected to have a significant impact on traffic operations on the surrounding road network, especially once dispersed among the site driveways, and the road network near the site (that is, Columbia Street and Albert Street).



**TABLE 5: ESTIMATED TRIP GENERATION - PROPOSED LAND USES
(SENSITIVITY ANALYSIS)**

Land Use Code	AM Peak Hour				PM Peak Hour			
	Rate	In	Out	Total	Rate	In	Out	Total
160 (Data Centre) 30,246 sq. ft. GFA	0.07 ^[1]	2	0	2	0.05 ^[2]	0	2	2
850 (Supermarket) 82,409 sq. ft. GFA	2.95 ^[3]	143	100	243	Eqn. ^[4]	329	362	657
710 (General Office Building) 15,005 sq. ft. GFA	1.24 ^[5]	16	3	19	1.18 ^[6]	3	15	18
Total Trip Generation		161	103	264		332	379	677
850 (Supermarket) – Modal Split	45%	-70	-49	-119	45%	-152	-152	-304
850 (Supermarket) – Pass-by	0%	0	0	0	24%	-45	-45	-90
Net Trip Generation		91	54	145		135	182	283

Notes

1. LUC 160 (AM): Average rate of 0.07 trips per 1,000 sq. ft. GFA (71% entering, 29% exiting)
2. LUC 160 (PM): Average rate of 0.07 trips per 1,000 sq. ft. GFA (19% entering, 81% exiting)
3. LUC 850 (AM): Average rate of 2.86 trips per 1,000 sq. ft. GFA (59% entering, 41% exiting)
4. LUC 850 (PM): $\text{Ln}(T) = 0.82\text{Ln}(X) + 2.87$ (50% entering, 50% exiting)
5. LUC 710 (AM): Average rate of 1.24 trips per 1,000 sq. ft. GFA (88% entering, 12% exiting)
6. LUC 710 (PM): Average rate of 1.18 trips per 1,000 sq. ft. GFA (16% entering, 84% exiting)

TABLE 6: NET CHANGE IN TRIP GENERATION (SENSITIVITY ANALYSIS)

Trip Generator	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Former Land Uses	225	28	253	34	191	225
Proposed Land Uses	91	54	145	135	182	283
Net Change	-134	+26	-108	+101	-9	+58

Findings, Conclusions, and Recommendations

Findings

Based on the analysis contained herein, the findings of this study are as follows:

- The former land uses are estimated to have generated 253 vehicle trips in the weekday AM peak hour and 225 vehicle trips in the weekday PM peak hour, based on trip generation data published by the Institute of Transportation Engineers (ITE).



- ▶ The proposed land uses are estimated to generate 264 vehicle trips in the weekday AM peak hour and 515 vehicle trips in the weekday PM peak hour, based on trip generation data published by ITE. This represents a net increase of 11 trips in the weekday AM peak hour and 290 trips in the weekday PM peak hour.
- ▶ Modal split data extracted from the 2022 Transportation Tomorrow Survey (2022 TTS) indicate that approximately 80% of households near the site report walking (38% to 43%) or driving (39% to 41%) as their primary mode of transportation in the typical AM period (6 AM to 9 AM) and PM period (3 PM to 6 PM), respectively. Transit and auto passengers make up another 15% to 20% of the survey results.
- ▶ Applying a 45% modal split to the aforementioned trip generation estimates indicates that the site would be estimated to generate 145 vehicle trips in the weekday AM peak hour and 283 vehicle trips in the weekday PM peak hour. This is a net change of 108 fewer trips in the weekday AM peak hour and 58 additional trips in the weekday PM peak hour as compared to the former land uses on the site.

Conclusions

Based on the findings of this study, it is concluded that the proposed change of use is estimated to generate a greater number of vehicle trips in the weekday PM peak hour, and a lower number of vehicular trips in the weekday AM peak hour as compared to the former land uses. The net increase of trips in the PM peak hour (58 trips) would not be expected to have a significant impact on traffic operations on the surrounding road network, especially once dispersed among the site driveways, and the road network near the site (that is, Columbia Street and Albert Street).

Recommendations

Based on the conclusions of this study, it is recommended the proposed change of use be considered for approval.

Yours truly,

PARADIGM TRANSPORTATION SOLUTIONS LIMITED

<< Original Signed By >>

Andrew Steinsky

P.Eng., PTOE, PTP, RSP1
Project Manager, Associate



Attachments



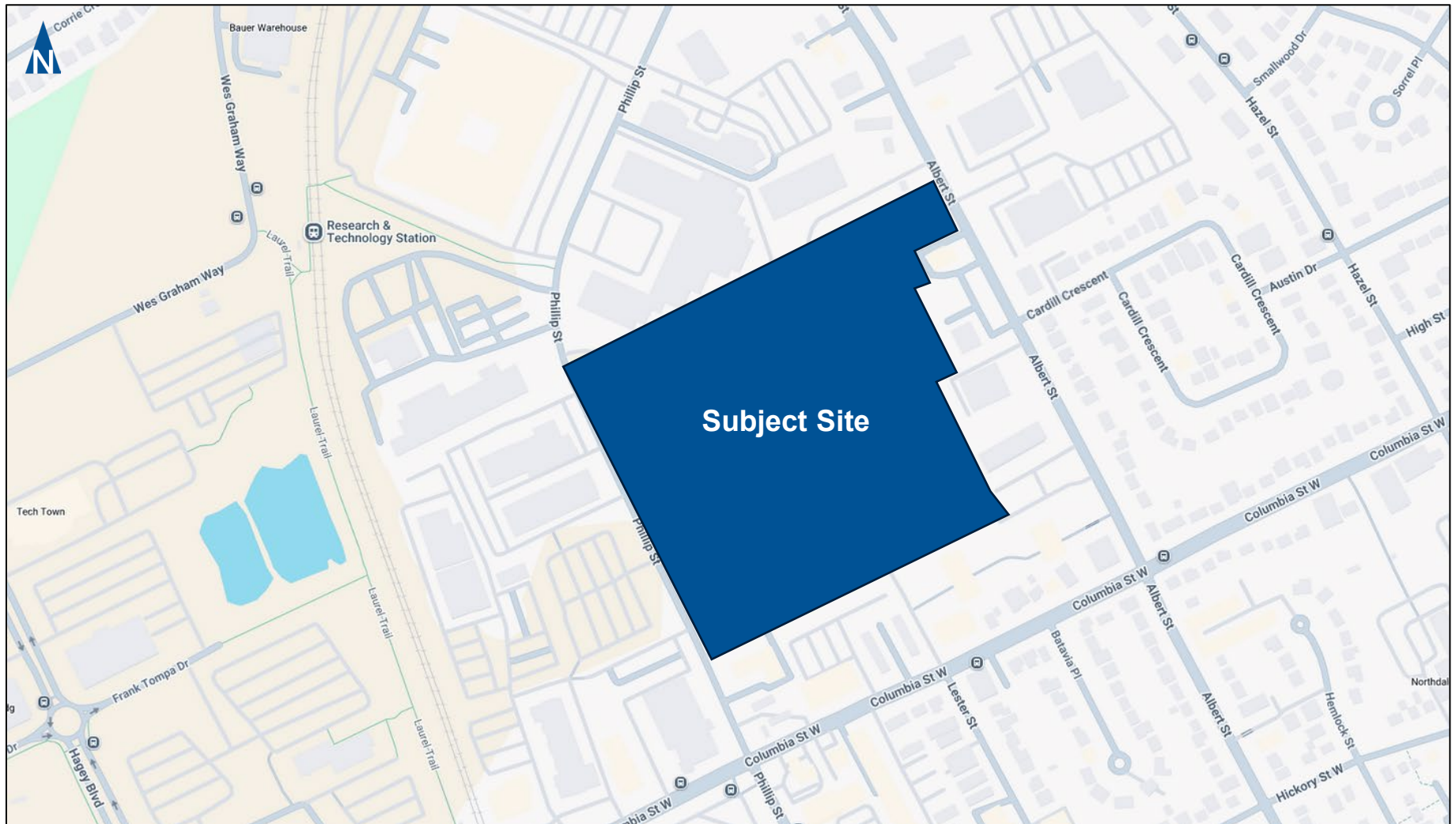
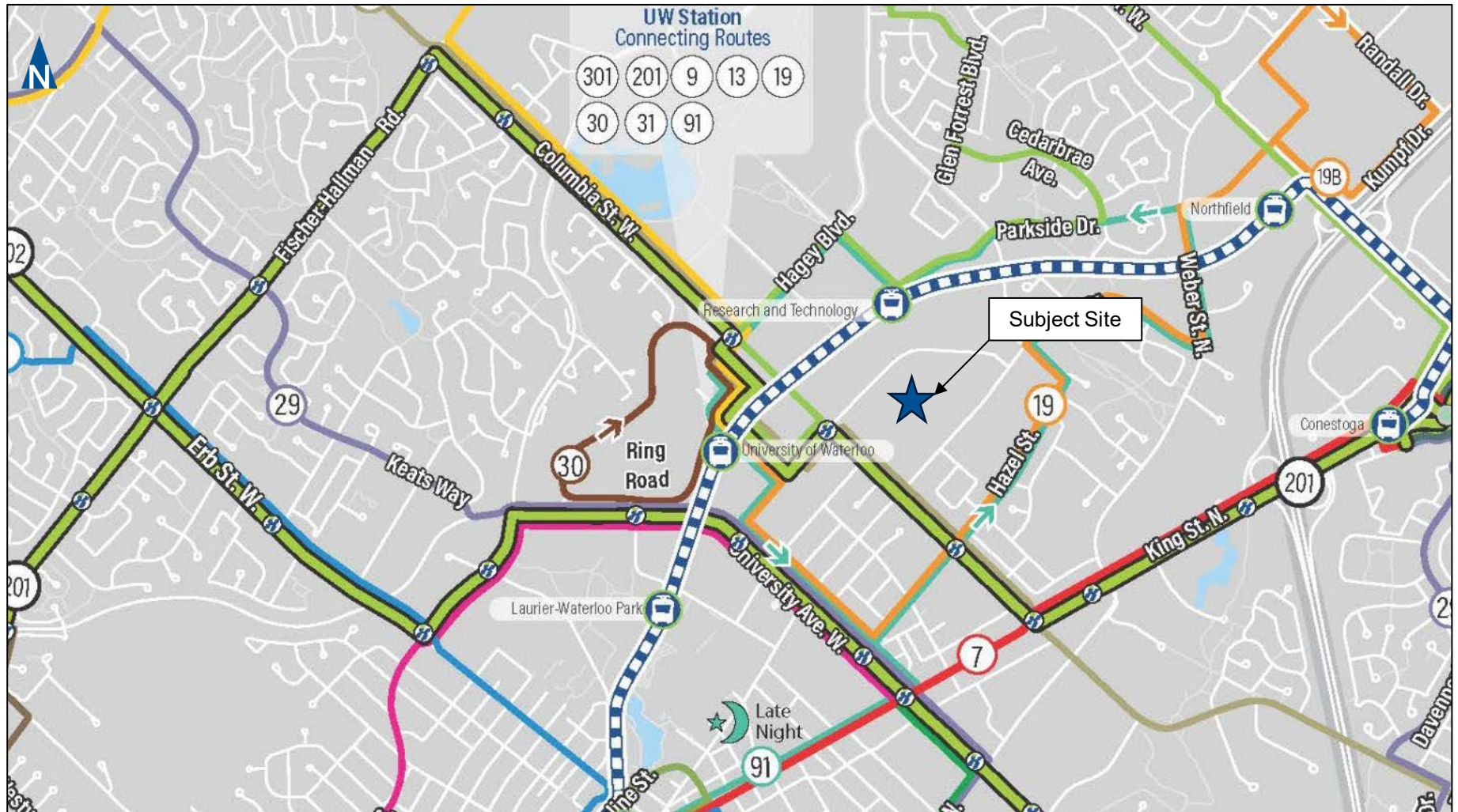


Image Source: SnazzyMaps, licensed under creative commons (<https://snazzymaps.com/>)

*Approximate site boundary. For illustrative purposes only.

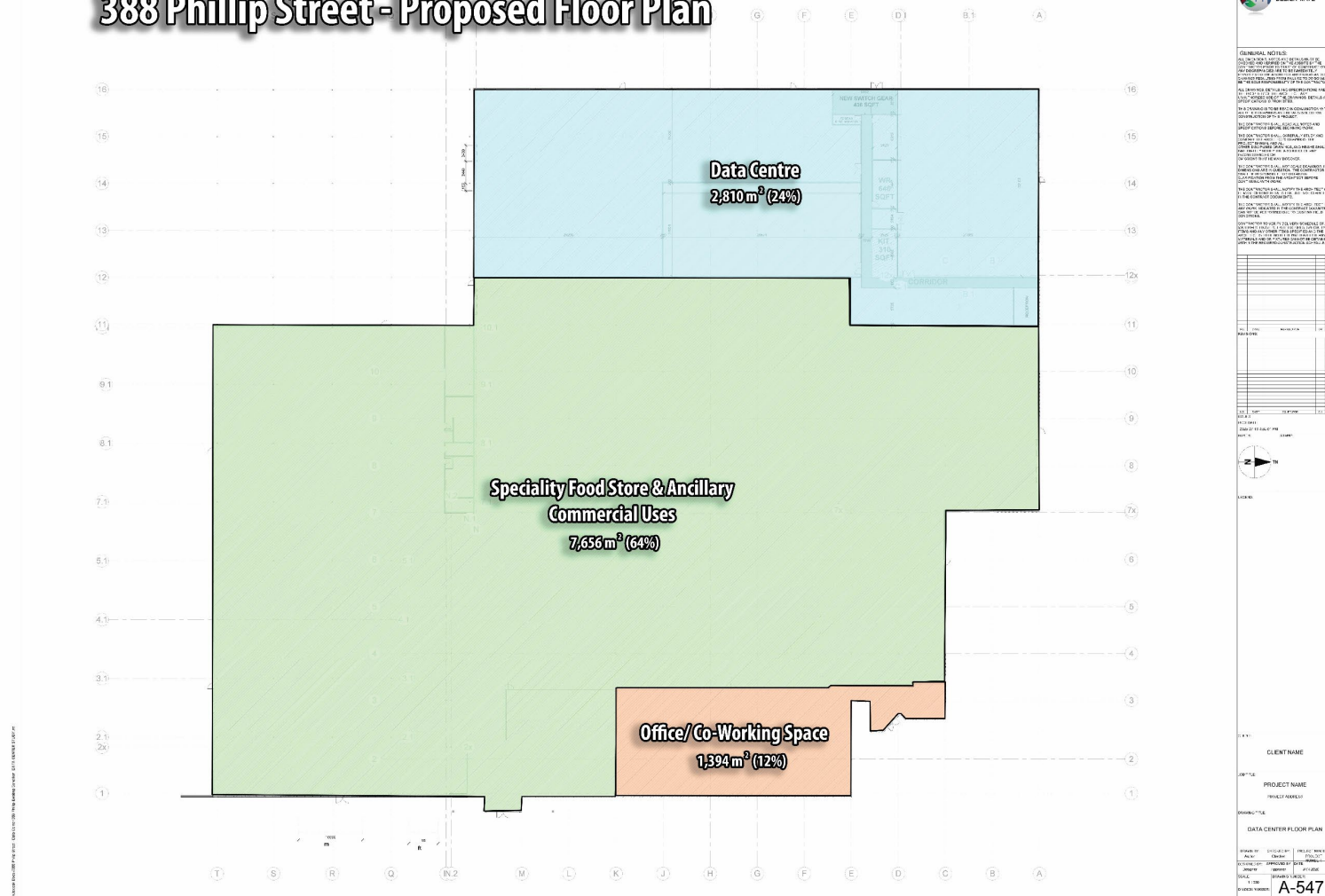


Site Location



Source: Grand River Transit, *System Map September 1, 2025*, Accessed 7 October 2025 from https://www.grt.ca/en/schedules-maps/resources/Fall-2025-System-map_20250901-web.pdf

388 Phillip Street - Proposed Floor Plan



Appendix A

Pre-Study Consultation Correspondence



Andrew Steinsky

From: Ainsley Rego <Ainsley.Rego@waterloo.ca>
Sent: September 19, 2025 9:25 AM
To: Andrew Steinsky
Subject: RE: (250606) 388 Phillip Street Traffic Brief - Terms of Reference

Good morning Andrew,

Thank you for your e-mail. The below scope of work is acceptable from a City perspective.

In your Transportation Brief, can you confirm if the access to 130 Columbia Street will remain or is the access proposed to be closed?

Best,



Ainsley Rego, BES, RSP1 (she/her)

Engineering Technologist – Traffic

Transportation Engineering, Integrated Planning & Public Works, City of Waterloo

265 Lexington Court PO Box 337 Station Waterloo Waterloo, ON N2J 4A8

P: 1.519.886.2310 ext. 30336 **F:** 1.519.886.5788 **TTY:** 1.866.786.3941 **E:** ainsley.rego@waterloo.ca

From: Andrew Steinsky <asteinsky@ptsl.com>
Sent: September 18, 2025 10:11 AM
To: Ainsley Rego <Ainsley.Rego@waterloo.ca>
Subject: [EXTERNAL] (250606) 388 Phillip Street Traffic Brief - Terms of Reference

CAUTION:

This email originated from outside the organization. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi Ainsley,

We've been retained to prepare a Traffic Impact Brief for a proposed change of use at 388 Phillip Street in the city of Waterloo.

The site is occupied by a one storey commercial building with a total gross floor area of 11,860 m² (127,660 sq. ft.). Vehicle access is provided by three all-moves driveway connections to Phillip Street. At the time of writing the building was vacant but was historically used for general office and research and development (R&D) type land uses.

The property owner is proposing to amend the Official Plan and Zoning By-law to renovate the building to comprise a 2,810 m² (30,246 sq. ft.) data centre, a 7,565 m² (82,409 sq. ft.) specialty food store and ancillary commercial uses, and a 1,394 m² (15,005 sq. ft.) office/co-working space. Vehicle access to the site is proposed via the existing all-moves driveway connections to Phillip Street. A preliminary floor plan is attached for reference.

Based on the proposed change of use, we are proposing the following work plan for the Traffic Brief.

- **Study Area:** We will provide a description of the existing transportation network and facilities along Phillip Street, including its connectivity to active transportation facilities along Columbia Street West.
- **Existing Mode Share Characteristics:** We will review the existing mode share for trips completed in/to/from the traffic analysis zone of the site (and surrounding zones if needed) based on the data contained in the 2022 Transportation Tomorrow Survey.
- **Former and Proposed Trip Generation:** We will calculate the trip generation of the former and proposed land uses based on data published in the ITE *Trip Generation Manual* for both the weekday AM peak hour and weekday PM peak hour.
- **Transportation Impact Assessment:** We will provide a quantitative estimate on the net change in trip generation activity between the former and proposed land uses.

Can City staff please review the above work plan and let us know if there are any comments.

Thanks,

Andrew Steinsky, P.Eng., PTOE, PTP, RSP1

Project Manager, Associate
(he/him)



paradigm
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Vacation Alert: Out of Office September 22 to September 26 (returning September 29)

Office Hours: 07:30 – 17:30 Eastern Daylight Time (EDT) Monday to Thursday. Paradigm's offices are closed on Fridays.

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Appendix B

TTS Output



Tue Oct 07 2025 13:07:01 GMT-0400 (Eastern Daylight Saving Time) - Run Time: 3145ms

Cross Tabulation Query Form - Trip - 2022

Row: 2022 TTS zone of household - tts22_hhld
Column: Primary travel mode of trip - mode_prime

RowG:(12061,12004,12009,12069,12062,12060,12067,12068)

ColG:

TblG:

Filters:

(2022 TTS zone of household - tts22_hhld In 12061, 12004, 12009, 12069, 12062, 12060, 12067, 12068)

Trip 2022

ROW : tts22_hhld

COLUMN : mode_prime

tts22_hhld	mode_prime	total	mode	proportion
1 B	1272	Transit excluding GO rail	11%	
1 C	64	Cycle	1%	
1 D	4214	Auto Driver	38%	
1 J	20	Joint GO Rail and Local Transit	0%	
1 P	722	Auto Passenger	6%	
1 S	61	School Bus	1%	
1 T	26	Taxi Passenger	0%	
1 W	4805	Walk	43%	
	Total	11184		100%

Tue Oct 07 2025 13:07:25 GMT-0400 (Eastern Daylight Saving Time) - Run Time: 3150ms

Cross Tabulation Query Form - Trip - 2022

Row: 2022 TTS zone of household - tts22_hhld
Column: Primary travel mode of trip - mode_prime

RowG:(12061,12004,12009,12060,12062,12067,12068,12069)

ColG:

TblG:

Filters:

(2022 TTS zone of household - tts22_hhld In 12061, 12004, 12009, 12060, 12062, 12067, 12068, 12069
and

Start time of trip - start_time In 0600-0900)

Trip 2022

ROW : tts22_hhld

COLUMN : mode_prime

tts22_hhld	mode_prime	total	mode	proportion
1 B	195	Transit excluding GO rail	8%	
1 C	64	Cycle	2%	
1 D	1050	Auto Driver	41%	
1 J	10	Joint GO Rail and Local Transit	0%	
1 P	129	Auto Passenger	5%	
1 S	31	School Bus	1%	
1 W	1108	Walk	43%	
	Total	2587		100%

Tue Oct 07 2025 13:07:45 GMT-0400 (Eastern Daylight Saving Time) - Run Time: 3136ms

Cross Tabulation Query Form - Trip - 2022

Row: 2022 TTS zone of household - tts22_hhld
Column: Primary travel mode of trip - mode_prime

RowG:(12061,12004,12009,12060,12062,12067,12068,12069)

ColG:

TblG:

Filters:

(2022 TTS zone of household - tts22_hhld In 12061, 12004, 12009, 12060, 12062, 12067, 12068, 12069
and

Start time of trip - start_time In 1500-1800)

Trip 2022

ROW : tts22_hhld

COLUMN : mode_prime

tts22_hhld	mode_prime	total	mode	proportion
1 B	754	Transit excluding GO rail	16%	
1 C	120	Cycle	3%	
1 D	1851	Auto Driver	39%	
1 P	128	Auto Passenger	3%	
1 S	31	School Bus	1%	
1 T	26	Taxi Passenger	1%	
1 U	21	Paid Rideshre	0%	
1 W	1819	Walk	38%	
	Total	4750		100%

Mode	Description
B	Transit excluding GO rail
C	Cycle
D	Auto Driver
E	E-scooter
G	Go Rail Only
J	Joint GO Rail and Local Transit
M	Motorcycle
O	Other
P	Auto Passenger
S	School Bus
T	Taxi Passenger
U	Paid Rideshre
W	Walk