919 Fallis Line

Township of Cavan Monaghan, County of Peterborough

Traffic Brief for

Cortel Group

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Legal Notification

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1 Introduction

1.1 Background

The **Cortel Group** [Developer] is proposing a commercial development on a site municipally known as 919 Fallis Line, located at the southwest corner of the intersection of Fallis Line / County Road 10 in the community of Millbrook, in the Township of Cavan Monaghan [Township], County of Peterborough [County]. The proposed commercial development includes a 1,246 square metre general office building and a 230 square metre drive-thru restaurant.

The proposed development will include a full-movement access driveway onto Fallis Line [North Access] and a full-movement access driveway onto the future Horizon Avenue (formerly Street I) [South Access].

A traffic impact study was completed for the proposed Millbrook residential development in 2013 [Millbrook TIS]. The scope of the Milbrook TIS included an analysis of the weekday morning and afternoon peak hour for the existing (2014) and horizon year (2021, 2026 and 2031) scenarios. The Millbrook TIS included recommendations for improvements to accommodate the traffic generated by the development of the southern parcel [Phase 1]. The study also included future infrastructure considerations for the development of the 58.4 hectare northern parcel [Phase 2]; however the specifics of the Phase 2 development were only conceptual at the time the report was completed.

Construction is now underway on Phase 1 and the Developer is moving forward with the applications for development of Phase 2. The Township is also moving ahead with the design of a municipal recreation centre [Millbrook Recreation Centre], which would be constructed on a 10 hectare parcel of land, adjacent to the existing Municipal Office.

This Traffic Brief will identify any local improvements required to convey the traffic from the proposed development and will also inform the forthcoming Millbrook TIS Update, which will be completed to assess the impact of the proposed development of Phase 2 and the Millbrook Recreation Centre over a wider study area.

The Developer has retained **JD Northcote Engineering Inc.** [JD Engineering] to prepare this Traffic Brief in support of the proposed commercial development.

1.2 Study Area

Figure 1 illustrates the location of the subject site and study area intersections in relation to the surrounding area. The Site Plan by IPS Consulting Inc. is shown in **Appendix A.**

The subject site is bound by Fallis Line to the north, County Road 10 to the east, and future Millbrook Development Phase 1 lands to the south and west.

Through consultation with the Township and County, the following intersections are included in the Traffic Brief:

- North Access / Fallis Line; and
- South Access / Horizon Avenue.

Figure 1 - Proposed Site Location and Site Area

1.3 Study Scope and Objectives

The purpose of this study is to identify the potential impacts to traffic flow at the site access and on the surrounding roadway network. The study analysis includes the following tasks:

- Determine existing circulation patterns;
- Estimate the amount of traffic that would be generated by the proposed commercial development and assign to the roadway network;
- Prepare diagrams summarizing the weekday morning [AM], afternoon [PM] and weekend midday [SAT] peak hour traffic volumes generated by the proposed development;
- Complete a preliminary review of the impact of the proposed traffic volumes on the existing road network;
- Review the sight distance available at the proposed site access driveway access on Fallis Line;
- Review the proposed location of the north access with respect to adjacent County Road 10 / Fallis Line intersection;
- Review the proposed configuration of the site access driveways; and
- Document findings and recommendations in a final report

1.4 Analysis Periods

The weekday morning [AM], weekday afternoon [PM] and weekend midday [SAT] peak hours have been selected as the analysis periods for this study.

2 Information Gathering

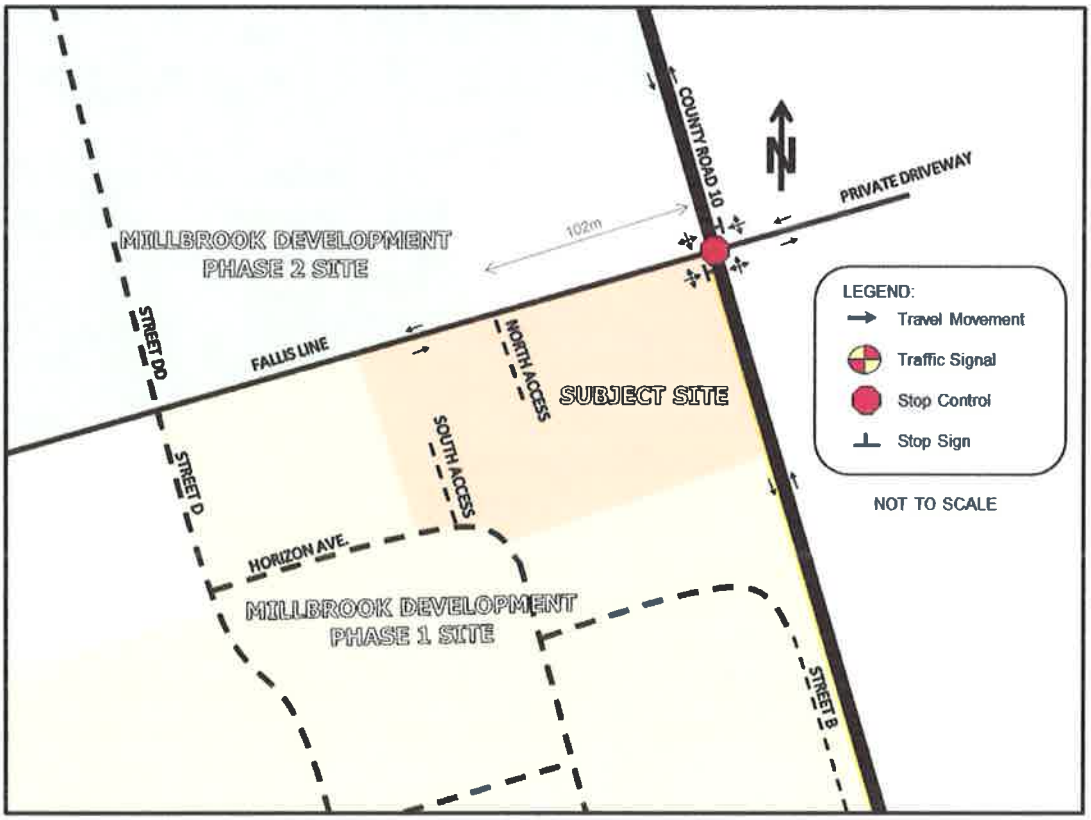
2.1 Street and Intersection Characteristics

Fallis Line is a two lane local road with a rural cross-section, 6,0 metre paved road width, 0.25 metre wide gravel shoulders and a 20 metre ROW within the study area. There are no sidewalks on Fallis Line. There is no posted speed on Fallis Line; consequently, we have assumed an existing 80km/h speed limit for the purpose of this analysis.

Fallis Line is under the jurisdiction of the Township.

The existing lane configuration for all study area intersections can be seen in **Figure 2**.

Figure 2 - Existing (2017) Lane Configuration within Study Area



2.2 Transit Access

There is currently no transit within the study area. The 2015 Township Official Plan has recommended steps toward implementing a preliminary transit system. Since this process is still in the early phases, we have conservatively assumed that the proposed development will not have access to transit.

2.3 Other Developments within the Study Area

Based on discussions with the Township, the Millbrook development and the Millbrook Recreation Centre outlined in Section 1.1 are the only proposed developments within the study area that will have a significant impact on local traffic volumes in the study area.

2.4 Local Road Improvements

Through our discussion with the Township and County staff, there are no significant local road improvements scheduled in the study area that will impact traffic volumes or traffic patterns within the short-term.

3 Proposed Development Traffic Generation and Assignment

3.1 Traffic Generation

The traffic generation for the subject site has been calculated based on the data provided in the Institute of Transportation Engineers [ITE] *Trip Generation Manual* (9th Edition) [ITE Trip Generation Manual]. The following ITE land uses have been applied to estimate the traffic from the proposed development:

- ITE land use 710 (General Office Building).
- ITE land use 934 (Fast-Food Restaurant with Drive-Through Window);

The estimated trip generation of the proposed development is illustrated below in **Table 1**. The AM, PM and SAT peak hour traffic generation for the subject site generally align with the anticipated AM, PM and SAT peak hour of the adjacent road network.

Table 1 - Estimated Traffic Generation of Proposed Development

Development	Size	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Fast-Food Restaurant with Drive-Thru Window ITE Land Use: 934	2,476 sq. ft.	58	55	113	42	39	81	74	72	146
General Office Building ITE Land Use: 710	13,412 sq. ft.	34	5	39	16	78	94	3	3	6
TOTAL TRIP GENERATION		**92**	**60**	**152**	**58**	**117**	**175**	**77**	**75**	**152**
INTERNAL CAPTURE*		-3	-3	-6	-2	-2	-4	-2	-2	-4
NET GENERATION		**89**	**57**	**146**	**56**	**115**	**171**	**75**	**73**	**148**
PASS-BY TRIPS (ITE Land Use: 934)**		-28	-28	-56	-20	-20	-40	-36	-36	-72
TOTAL SITE		**61**	**29**	**90**	**36**	**95**	**131**	**39**	**37**	**76**

* The internal capture rate has been calculated using the methodology outlined in Section 7 of the ITE Trip Generation Handbook (2nd Addition). Calculations are provided in **Appendix B**.
** The ITE data provides a pass-by rate for weekday AM and PM peak hour (49% and 50% respectively). For the purpose of this report we have decided to use a pass-by rate of 50% for the Fast-Food Restaurant component of the development for all scenarios.

No transportation modal split reduction has been applied to the above-noted traffic generation calculation.

3.2 Traffic Assignment

The ITE data provides the anticipated percentage of new traffic entering and exiting during the peak hour. The distribution of office traffic beyond the local area has been calculated based on the 2011 Transportation Tomorrow Survey [TTS] data for planning district 104, retrieved using the TTS Internet Data Retrieval System [IDRS] (output attached in **Appendix C**). TTS data provides historical origin and destination trip data for specific areas within the County and the Greater Toronto and Hamilton Area [GTHA].

Traffic distribution for the trips generated by the subject site during the AM, PM and SAT peak hour is expected to generally follow commuter travel patterns. Our analysis is based on all work-based ingress traffic during the AM peak hour. Generally, the distribution of egress traffic is expected to follow the inverse of the ingress traffic distribution. For each of the individual areas identified in the TTS data, we have selected the probable route of travel, assuming that people will select their route primarily based on travel time.

In order to account for the interaction between the office component of the proposed development and the community of Millbrook, we have assumed that 20% of all traffic generated by the subject site will be generated within the Millbrook community. Half of this traffic has been attributed to the existing Millbrook community and the other half is attributed to the future build-out of the Millbrook Development. This value has been based our review of the number, type and location of businesses and facilities within the community of Millbrook. An adjustment has also been made to account for the impact of future development in Fraserville. Traffic distribution along Larmer Line is expected to increase as this development proceeds.

The estimated distribution of trips generated by the subject site for the office component of the proposed development is illustrated in **Table 2**, which was calculated using the methodology outlined above.

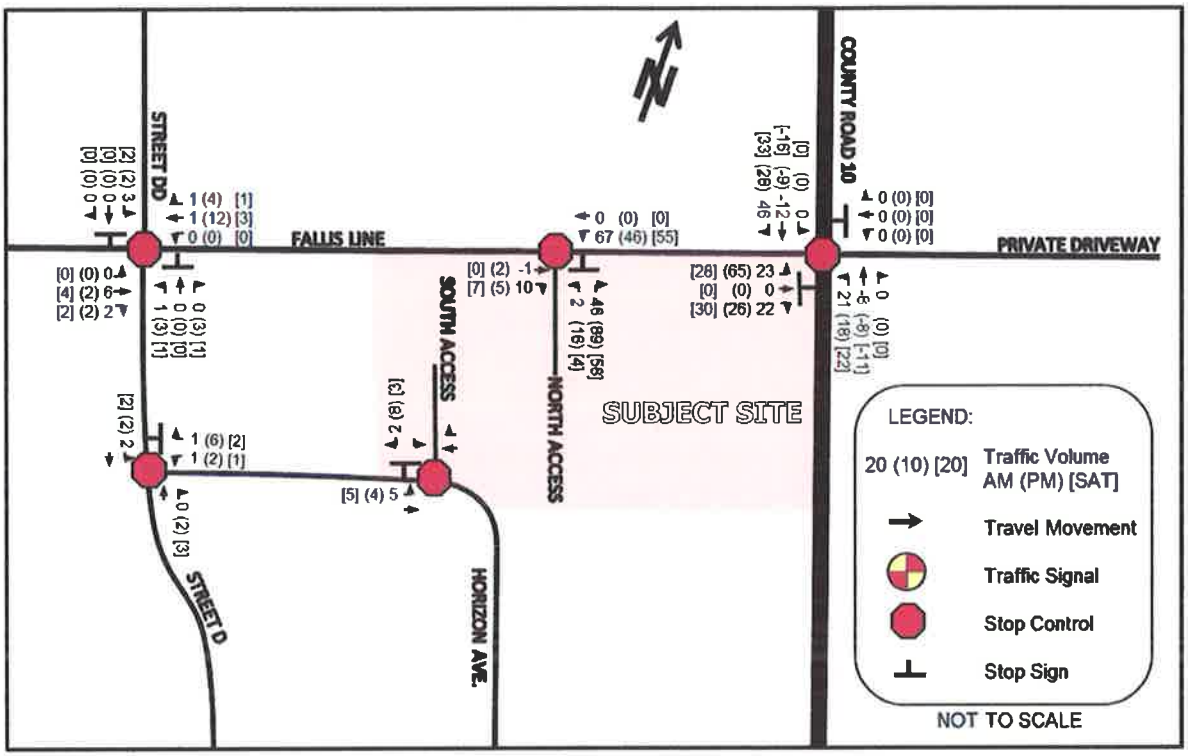
Table 2 – Proposed Office Traffic Distribution

Travel Direction (to/from)	Percentage of Total Traffic Generation
South / East via Millbrook	15%
South / West via Hwy 115	19%
North via CR10	66%
Total	**100%**

The distribution of traffic for the fast food restaurant component of the development is assumed to follow the distribution of the future traffic volumes within the study area[1]. **Table 3** illustrates the calculation of the distribution of ingress and egress traffic for the fast food restaurant component of the proposed development.

[1] The future traffic volumes in the area are based on the Total 2031 traffic volumes at the intersection of Fallis Line / County Road 10 from the Millbrook TIS.

Figure 6 - Total Site Traffic Assignment



4 Site Access

4.1 Sight Distance Review

A review of the available sight distance for the proposed North Access and South Access was completed as part of this analysis.

North Access
The sight distance west of the North Access is significantly greater than the minimum stopping sight distance requirements as identified in the Transportation Association of Canada *Design Guide for Canadian Roads* (2011) [TAC Guidelines] for a design speed of 100km/h (185 meters).

The sight distance east of the North Access ends at the County Road 10 / Fallis Line intersection (102 metres) and is less than the minimum stopping sight distance requirements as identified in the TAC Guidelines for a design speed of 100km/h (185 meters); however, there are no concerns with the sight distance as vehicles turning onto Fallis Line will be turning at much slower speeds.

There are no issues with the sight distance available for the proposed North Access.

South Access
The sight distance west of the South Access ends at the Street D / Horizon Avenue intersection (77 metres) and is less than the minimum stopping sight distance requirements as identified in the TAC Guidelines for a design speed of 60km/h (85 meters); however, there are no concerns with the sight distance as vehicles turning onto Horizon Avenue will be turning at much slower speeds.

Figure 4 - Fast-Food Restaurant Traffic Assignment – Pass-by Trips

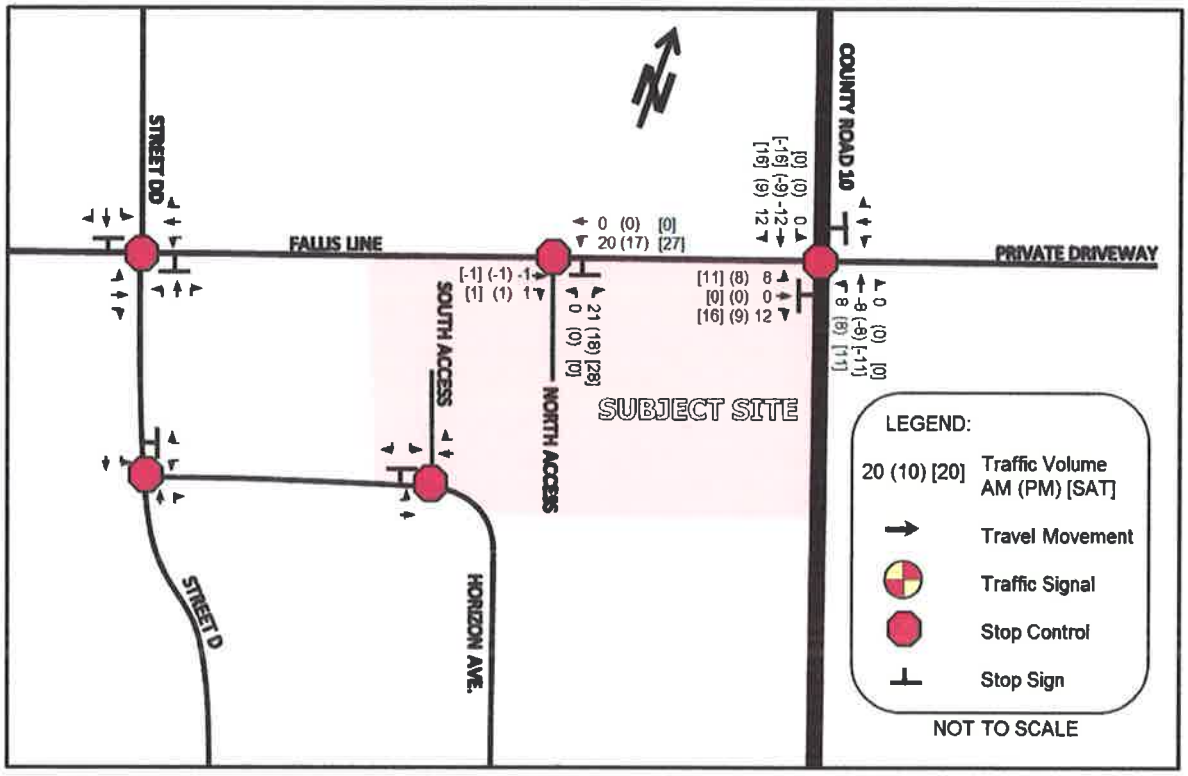


Figure 5 - Office Traffic Assignment

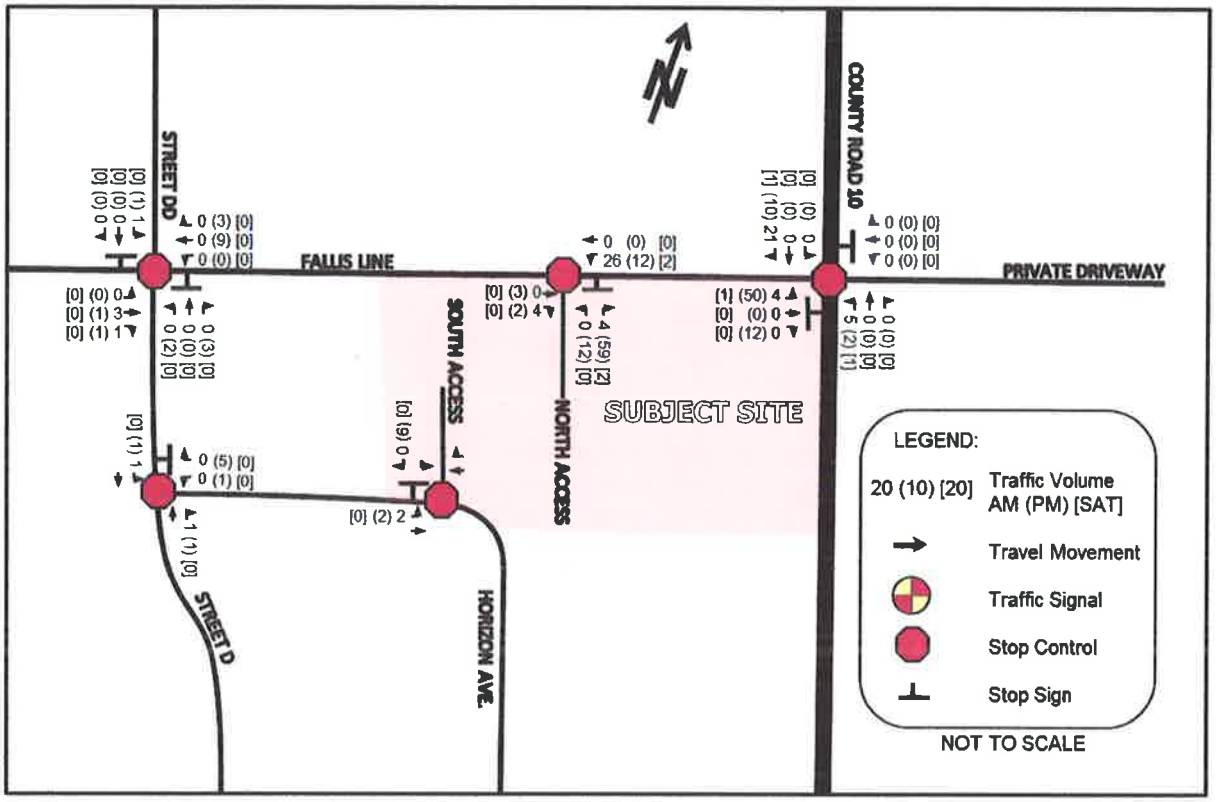
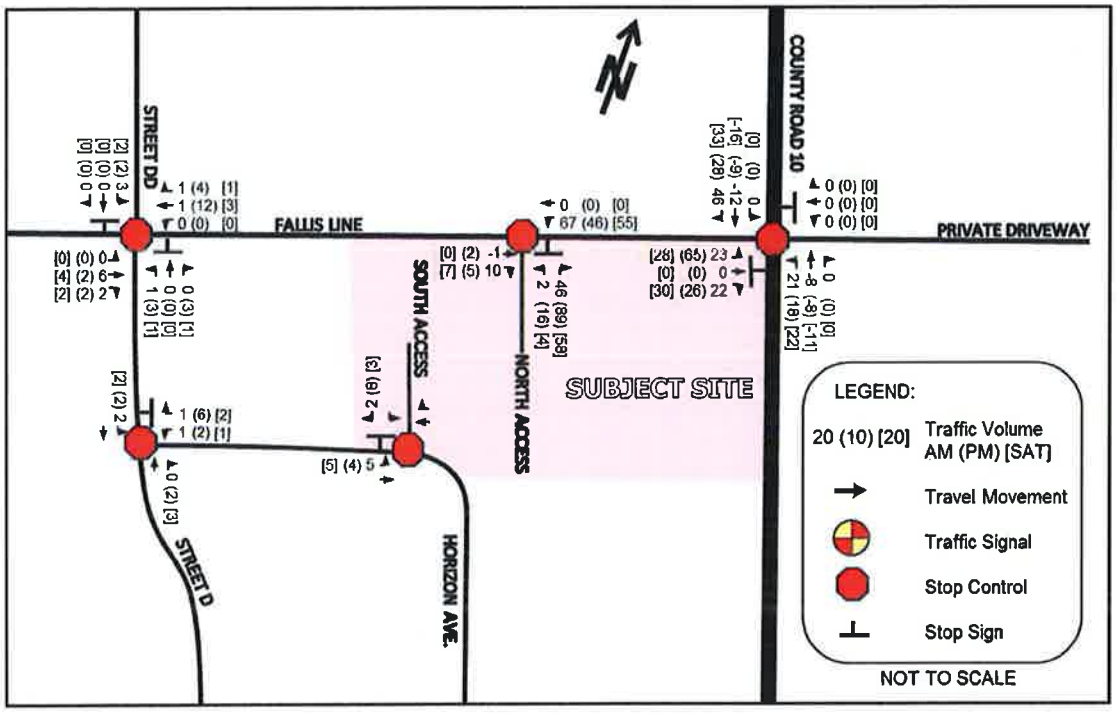


Figure 6 - Total Site Traffic Assignment



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A review of the available sight distance for the proposed North Access and South Access was completed as part of this analysis.

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The sight distance west of the North Access is significantly greater than the minimum stopping sight distance requirements as identified in the Transportation Association of Canada *Design Guide for Canadian Roads* (2011) [TAC Guidelines] for a design speed of 100km/h (185 meters).

The sight distance east of the North Access ends at the County Road 10 / Fallis Line intersection (102 metres) and is less than the minimum stopping sight distance requirements as identified in the TAC Guidelines for a design speed of 100km/h (185 meters); however, there are no concerns with the sight distance as vehicles turning onto Fallis Line will be turning at much slower speeds.

There are no issues with the sight distance available for the proposed North Access.

South Access
The sight distance west of the South Access ends at the Street D / Horizon Avenue intersection (77 metres) and is less than the minimum stopping sight distance requirements as identified in the TAC Guidelines for a design speed of 60km/h (85 meters); however, there are no concerns with the sight distance as vehicles turning onto Horizon Avenue will be turning at much slower speeds.

The sight distance south of the South Access is limited by the horizontal curve in the road on Horizon Avenue (51 metres), which is less than the minimum stopping sight distance requirements as identified in the TAC Guidelines for a design speed of 60km/h (85 meters); however, based on the proposed twelve metre centerline radius on Horizon Avenue, east of the South Access, vehicles are not anticipated to be travelling in excess of 40km/h in this area. The available sight distance meets the minimum stopping sight distance requirements as identified in the TAC Guidelines for a design speed of 40km/h (50 meters); consequently there are no concerns with the sight distance south of the South Access.

There are no issues with the sight distance available for the proposed South Access.

4.2 Site Access

Based on our review of the volume of traffic at the North Access and South Access, it is recommended that the North Access and South Access provide a single lane for ingress and a single lane for egress traffic movements. It is recommended that northbound one-way stop control is provided at the North Access and southbound one-way stop control is provided at the South Access.

The requirement for lane improvements on Fallis Line at the North Access will be reviewed as part of the forthcoming Millbrook TIS Update.

The proposed spacing between the North Access and County Road 10 (measured edge of driveway to edge of the future 5-lane County Road 10) is greater than 80m, which is in excess of the suggested minimum corner clearance requirements (for the signalized condition of County Road 10 / Fallis Line) as identified in the TAC Guidelines – Figure 8.8.2 (Suggested Minimum Corner Clearances to Accesses or Public Lanes at Major Intersections, for both signalized and unsignalized conditions).

The proposed spacing between the North Access and Street D (measured edge of driveway to edge of road) is greater than 100m, which is in excess of the suggested minimum corner clearance requirements (for the unsignalized or signalized condition of Fallis Line / Street D) as identified in the TAC Guidelines – Figure 8.8.2 (Suggested Minimum Corner Clearances to Accesses or Public Lanes at Major Intersections, for both signalized and unsignalized conditions).

The proposed spacing between the South Access and Street D is in excess of 70m (measured edge of driveway to edge of road), which is in excess of the suggested minimum corner clearance requirements for a driveway on a local road (15m) as identified in the TAC Guidelines – Figure 8.8.2.

The proposed spacing between the South Access and Street B is in excess of 65m (measured edge of driveway to edge of road), which is in excess of the suggested minimum corner clearance requirements for a driveway on a local road (15m) as identified in the TAC Guidelines – Figure 8.8.2.

Consequently, the proposed North Access and South Access will provide sufficient capacity to service the proposed development. No traffic issues are anticipated as a result of the North Access and South Access.

5 Summary

Cortel Group retained **JD Engineering** to prepare this traffic brief in support of the proposed Villa Care Centre in the Township of Cavan Monaghan. The site plan is shown in **Appendix A.** This chapter summarizes the conclusions and recommendations from the study.

The proposed development includes a general office building (1,246sq.m. GFA) and a drive-thru restaurant (230sq.m. GFA).

1. The proposed development is expected to generate a total of 90 AM, 131 PM and 76 SAT primary peak hour trips.

2. An estimate of the amount of traffic that would be generated by the Subject Site was prepared and assigned to the study area streets and intersections

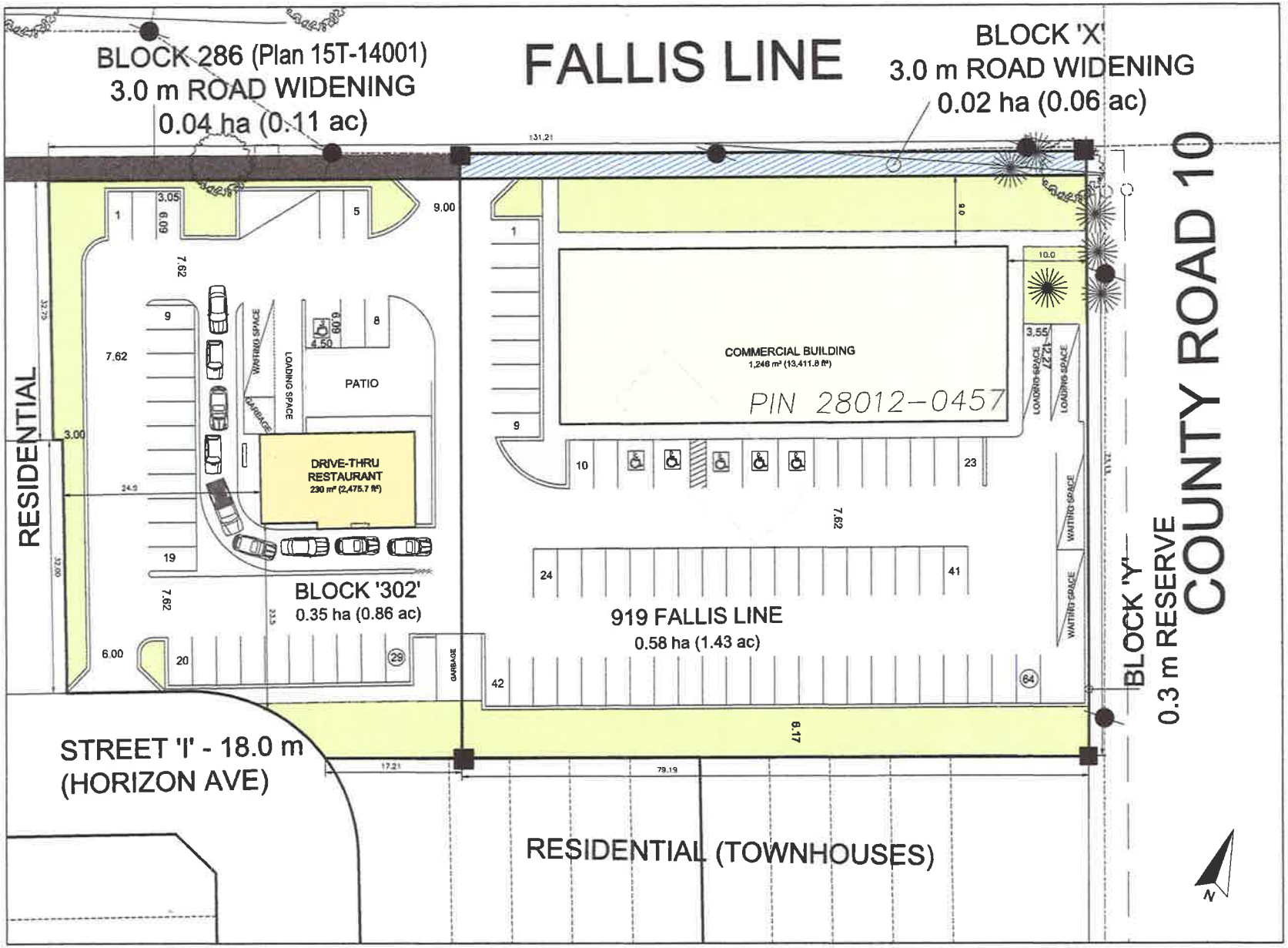
3. The proposed North Access and South Access driveways will operate efficiently with one-way stop control for northbound and southbound traffic respectively. A single lane for ingress and egress movements for both accesses will provide the necessary capacity to convey the traffic volume generated by the proposed development.

4. The requirement for lane improvements on Fallis Line at the North Access will be reviewed as part of the forthcoming Millbrook TIS Update.

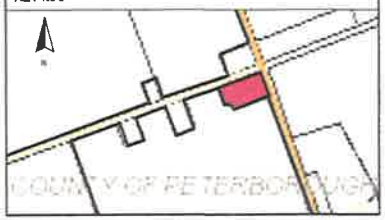
5. The sight distance and corner clearance available for the North Access and South Access are acceptable for the intended use.

6. In summary, the proposed development will not cause any operational issues to the local roadway network.

Appendix A – Site Plan



KEY MAP



CONCEPTUAL SITE PLAN

PART OF LOT 12 CONCESSION 5
(GEOGRAPHIC TOWNSHIP OF)
919 FALLIS LINE and BLOCK '302' (PLAN 15T-14001)
IN THE
TOWNSHIP OF CAVAN MONAGHAN
COUNTY OF PETERBOROGUH

Scale 1:125

0 5 10 15 20 25m

LEGEND

- SUBJECT LANDS (0.93 ha (2.29 ac))
- ROAD WIDENING 3.0m (0.02 ha (0.06 acres))
- DRIVE-THRU RESTAURANT (230 m²)
- COMMERCIAL BUILDING (1248 m²)
- LANDSCAPE SPACE / PLANTING STRIPS (1584 m²)
- CONCRETE PATIO (165 m²)
- SIDEWALK (2.0 m)
- LOADING SPACES & WAITING AREAS (NO PARKING)
- EX. UTILITY - HYDRO

ZONING TABLE - COMMERCIAL (C-SP)

PROVISION	REQUIRED	PROVIDED 919 Fallis Line & Block '302
LOT AREA (min)	1180 m²	9278 m²
LOT FRONTAGE (min)	36 m	73.1 m
SETBACKS (min)		
FRONT YARD	9 m	10.0 m
SIDE YARD - INTERIOR	9 m	23.5 m
- EXTERIOR	9 m	9.0 m
REAR YARD	6 m	24.9 m
COUNTY ROAD	30 m	10.0 m
PARKING SPACES (min) - RESTAURANT - COMMERCIAL	93 TOTAL 25.5 (1 per 9m²) 67.4 (1 per 18.5 m²)	93
PARKING ACCESSIBLE (min)	6 (1 per 15 spaces)	6
PLANTING STRIP - to Res. Zone (min)	1.5 m	3.0 m
BUILDING HEIGHT (max)	12.5 m	< 12.5 m
LOADING SPACES (min)	3 (1 per 280 m²)	3
LOADING WAITING AREA (min)	3 (1 per space)	3

Source: Survey prepared by IVAN B. WALLACE O.L.S. LTD., dated __.17.

Note: Information shown in approximate and subject to change.

CONCEPTUAL SITE PLAN - COMMERCIAL

919 FALLIS LINE - TOWNSHIP OF CAVAN MONAGHAN

RESIDENTIAL — CURRENT OFFICIAL PLAN DESIGNATION

R1-15h, R1-14h, R3-5h, RU — CURRENT ZONES

SCHEDULE OF REVISIONS

No.	Date	Description	By

IPS INNOVATIVE PLANNING SOLUTIONS
PLANNERS • PROJECT MANAGERS • LAND DEVELOPERS
710 DUNLOP STREET EAST, SUITE 201, BARRIE, ONTARIO L4M 1B1
tel: 705 - 812 - 3281 fax: 705 - 812 - 3434 e: info@ipsbarrie.ca www.ipsbarrie.ca

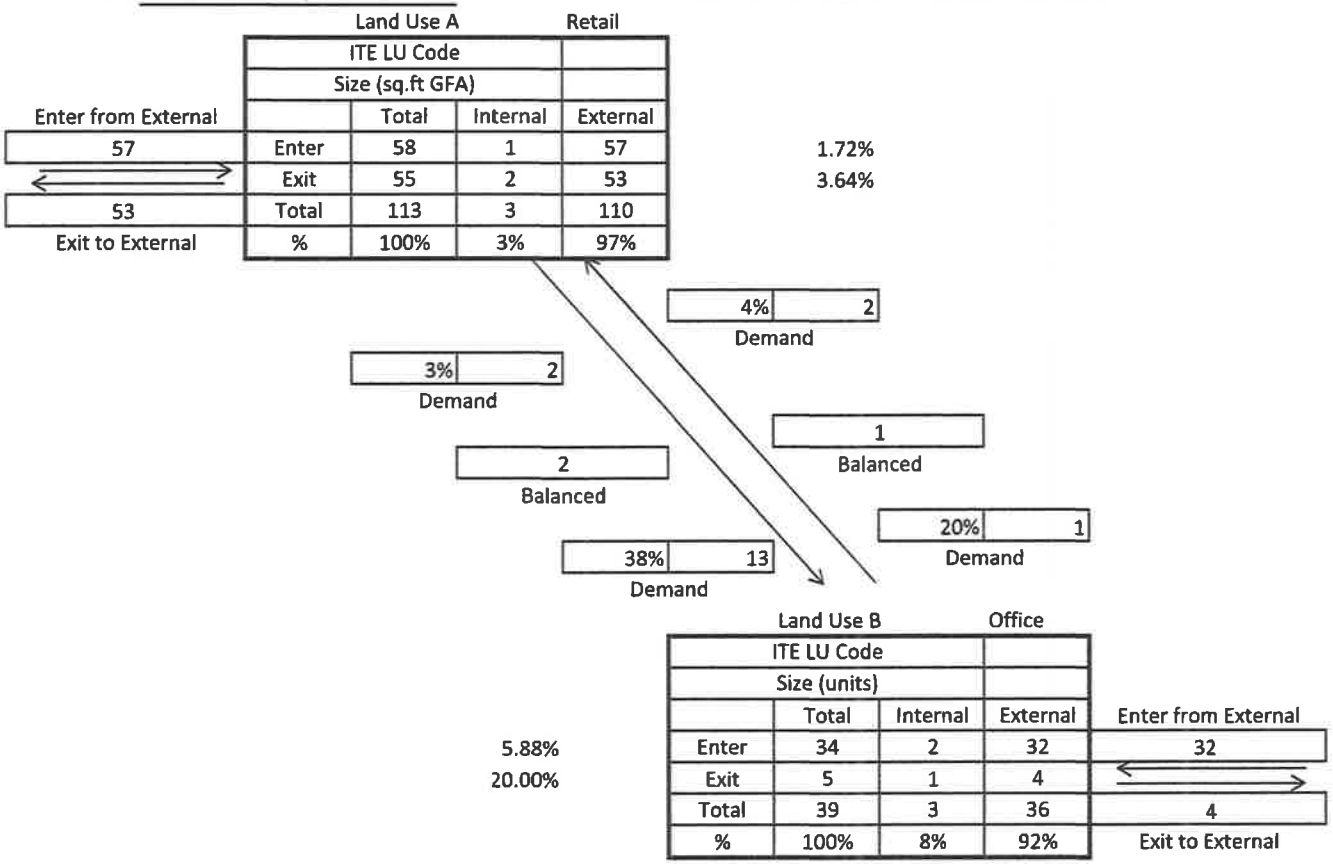
Date: OCT. 02, 2017 — Drawn By: W.C.

File: 13-452 - COMMERCIAL — Checked: D.V.

Appendix B –
Internal Capture Calculation

MULTI-USE DEVELOPMENT
TRIP GENERATION
AND INTERNAL CAPTURE SUMMARY

Analyst: A. Aresta
Date: 01-Sep-17
Time Period: AM Peak Hour



MULTI-USE DEVELOPMENT
TRIP GENERATION
AND INTERNAL CAPTURE SUMMARY

Analyst: A. Aresta
Date: 01-Sep-17
Time Period: PM Peak Hour

Land Use A: Retail

ITE LU Code				
Size (sq.ft GFA)				
Enter from External		Total	Internal	External
41	Enter	42	1	41
	Exit	39	1	38
38	Total	81	2	79
Exit to External	%	100%	2%	98%

2.38%
2.56%

2% 1 Demand

3% 1 Demand

1 Balanced

1 Balanced

23% 18 Demand

31% 5 Demand

Land Use B: Office

ITE LU Code				
Size (units)				
		Total	Internal	External
6.25%	Enter	16	1	15
1.28%	Exit	78	1	77
	Total	94	2	92
	%	100%	2%	98%

Enter from External: 15
Exit to External: 77

MULTI-USE DEVELOPMENT
TRIP GENERATION
AND INTERNAL CAPTURE SUMMARY

Analyst: A. Aresta

Date: 01-Sep-17

Time Period: Saturday Peak Hour

Land Use A		Retail		
ITE LU Code				
Size (sq.ft GFA)				
Enter from External		Total	Internal	External
73	Enter	74	1	73
	Exit	72	1	71
71	Total	146	2	144
Exit to External	%	100%	1%	99%

1.35%

1.39%

4% 3 Demand

3% 2 Demand

1 Balanced

1 Balanced

20% 1 Demand

38% 1 Demand

Land Use B		Office		
ITE LU Code				
Size (units)				
		Total	Internal	External
33.33%	Enter	3	1	2
33.33%	Exit	3	1	2
	Total	6	2	4
	%	100%	33%	67%

Enter from External: 2

Exit to External: 2

Appendix C – Transportation Tomorrow Survey – Internet Data Retrieval System excerpt

Wed Aug 23 2017 08:53:03 GMT-0400 (Eastern Daylight Time) - Run Time: 2565ms

Cross Tabulation Query Form - Trip - 2011
Row: Planning district of household - pd_hhld
Column: Planning district of destination - pd_dest

Filters:
Planning district of destination - pd_dest In 104
and
Start time of trip - start_time In 700 - 900
and
Trip purpose of destination - purp_dest In W

Trip 2011
ROW : pd_hhld
COLUMN : pd_dest

pd_hhld	pd_dest	total
2	104	16
24	104	31
81	104	25
89	104	198
103	104	431
104	104	132
106	104	66
108	104	29
109	104	20
111	104	12