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# Mixed-Use Apartment Building 735 Wonderland Road, London Transportation Impact Assessment

Paradigm Transportation Solutions Limited

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230087



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## Mixed-Use Apartment Building 735 Wonderland Road, London Transportation Impact Assessment



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# Executive Summary

## Content

Paradigm Transportation Solutions Limited (Paradigm) has been retained to conduct this Transportation Impact Assessment (TIA) for a proposed Mixed-Use Apartment Building located at 735 Wonderland Road in the City of London.

This TIA includes an analysis of existing traffic conditions, a description of the proposed development, analysis of future traffic conditions, and assessment of development traffic impacts with recommendations as appropriate to accommodate the proposed development.

## Proposed Redevelopment

The Subject Site is located in the southeast corner of Wonderland Road and Beaverbrook Avenue, within the City's BRT (west leg) Transit Village, north of Oxford Street West. Horizon Drive abuts the east boundary of the Site.

The Site currently includes a shopping plaza made up of a single multi-unit commercial building located along the south property limit with the remainder of the lot used for surface parking. The north-west portion of the building accommodates a Swiss Chalet restaurant.

The site currently has five access points, two each on Wonderland Road and Beaverbrook Avenue, and one access on Horizon Drive.

A planned development to construct two smaller commercial buildings flanking Wonderland Road North and Beaverbrook Avenue are currently under Site Plan review (SPA22-088).

In addition to the two new commercial buildings, the proposed redevelopment of the site will involve demolishing the Swiss Chalet portion of the existing commercial building, and replacing it with a 25-storey mixed-use apartment building. The new addition will consist of a three-storey podium and 22-storey point tower above, and accommodate the following:

- ▶ ground floor commercial space in the podium fronting onto Beaverbrook Avenue;
- ▶ a point tower apartment building from the fourth level through to the 25<sup>th</sup> level, comprising a total of 219 one- and two-bedrooms residential apartment units; and



- ▶ underground parking with 215 spaces internal to the podium, with the garage access to the south of the building.

The site will have one access each on Wonderland Road, Horizon Drive, and Beaverbrook Avenue. The site is noted to currently have two accesses each on Wonderland Road and Beaverbrook Avenue. The northerly access on Wonderland Road and the westerly access on Beaverbrook Avenue will each be closed and the southerly and easterly accesses on the respective roadways will be retained.

The apartment building will be completed by 2026, and the two smaller commercial buildings are assumed to be in place by 2026 as well.

## TIA Scope

The scope of the Transportation Impact Assessment for the proposed development includes:

- ▶ **Study Area Intersections:**
  - Wonderland Road and Beaverbrook Avenue;
  - Wonderland Road and Farrah Road;
  - Horizon Drive and Beaverbrook Avenue;
  - Horizon Drive and Farrah Road;
  - Farrah Road and Proudfoot Lane;
  - driveway intersections on:
    - Wonderland Road (RIRO);
    - Beaverbrook Ave (All Moves); and
    - Horizon Drive (All Moves).
- ▶ **Analysis Periods:** Weekday AM and PM peak hours.
- ▶ **Background Developments:** Mixed-use Development at 530 Oxford Street.
- ▶ **Traffic Conditions:** Existing (2023) and five years after development (2031).

## Conclusions

Based on the investigations carried out, it is concluded that:

- ▶ **Existing Traffic Conditions:** The study area and site access intersections are operating at acceptable levels of service, except for the following critical movements at the intersection of Wonderland Road and Beaverbrook Avenue:



- the 95<sup>th</sup> percentile queue length of the westbound right-turn movement exceeds the existing storage of 40 metres during the AM and PM peak hours; and
- the southbound left-turn movement is operating at LOS D with a v/c ratio of 0.92 during the PM peak hour.

The existing site driveway intersections on Wonderland Road, Beaverbrook Avenue, and Horizon Drive are currently operating at acceptable levels of service.

- ▶ **Development Trip Generation:** The development is forecast to generate 96 and 134 trips during the AM and PM peak hours, respectively. The development traffic volumes are noted to be low to moderate additions to the existing traffic volumes on the surrounding road network.
- ▶ **2031 Background Traffic Conditions:** The study area intersections are forecast to operate at similar levels of service as under existing traffic conditions, with the following additional critical movements:

#### Wonderland Road and Beaverbrook Avenue

- the eastbound left-turn movement is forecast to operate at LOS F with a v/c ratio greater than 0.90;
- the westbound right-turn movement is forecast to operate at LOS E with a v/c ratio greater than 0.90;
- the northbound left-turn movement is forecast to operate at LOS F with a v/c ratio greater than 0.90 and a 95<sup>th</sup> percentile queue length that is project to exceed the existing storage of 40 metres;
- the northbound through movement is forecast to operate at LOS D with a v/c ratio greater than 0.90; and
- the 95<sup>th</sup> percentile queue length of the southbound left-turn is project to exceed the existing storage of 60 metres.

#### Proudfoot Lane and Farrah Road

- the eastbound movement is forecast to operate at LOS E with a v/c ratio of 0.86.
- ▶ **2031 Total Traffic Conditions:** The study area intersections are forecast to operate at similar levels of service as under 2031 background traffic conditions.
- ▶ **Site Accesses:** The site access intersection on Wonderland Road, Beaverbrook Avenue, and Horizon Drive are forecast to operate at acceptable levels of service under 2031 background and total traffic conditions.



A northbound left-turn lane is not warranted on Horizon Drive at Access C.

However, a westbound left-turn lane with 15-metre storage is identified as warranted on Beaverbrook Avenue at Access B under 2031 background and total traffic conditions.

It is noted that a westbound left-turn lane at Access B can be provided either by extending the existing westbound left-turn lane at the intersection at Wonderland Road, or by providing a two-way centre turn lane on this section of Beaverbrook Avenue. These modifications could potentially be accommodated without requiring road widening.

- ▶ **Remedial Measures:** As noted in the operational analysis for the intersection at Wonderland Road and Beaverbrook Avenue, the westbound right-turn lane queues exceed the existing storage of 40 metres under both existing and future traffic conditions. This is independent of the proposed redevelopment of the site.

It would be appropriate to consider extending the storage length to accommodate the queueing of this traffic movement as part of future road reconstruction based on the monitoring of changes in road traffic volumes.

- ▶ **Transportation Demand Management:** The following TDM measures are appropriate for implementation at the subject development:
  - Bicycle parking in accordance with the City's Zoning By-Law requirements for residential and non-residential developments.
  - Access to existing transit routes on adjacent roadways.
  - Parking unbundled from the sale/rent of apartment units.
  - Identify Carshare space/vehicle(s) in a nearby location.
  - Transit, carshare, and active transportation information provided in a welcome package to new residents and/or posted in central locations on-site.

## Recommendations

Based on the findings and conclusions of this study, it is recommended that the development be considered for approval as proposed.



# Contents

<b>1</b>	<b>Introduction .....</b>	<b>1</b>
1.1	Overview .....	1
1.2	Purpose and Scope .....	2
<b>2</b>	<b>Existing Conditions .....</b>	<b>5</b>
2.1	Existing Roadways.....	5
2.2	Transit Service.....	7
2.3	Traffic Volumes .....	9
2.4	Traffic Operations .....	12
<b>3</b>	<b>Proposed Redevelopment.....</b>	<b>16</b>
3.1	Development Description .....	16
3.2	Development Trip Generation .....	18
3.3	Development Trip Distribution and Assignment .....	19
<b>4</b>	<b>Evaluation of Future Traffic Conditions.....</b>	<b>23</b>
4.1	Background Traffic Forecasts.....	23
4.1.1	Other Area Developments .....	23
4.2	2031 Background Traffic Operations.....	25
4.3	2031 Total Traffic Operations .....	30
4.4	Left-Turn Lanes .....	35
4.5	Remedial Measures .....	35
<b>5</b>	<b>Transportation Demand Management.....</b>	<b>39</b>
5.1	Walking.....	39
5.2	Cycling .....	39
5.3	Transit .....	40
5.4	Parking Management .....	40
5.5	Car Share .....	40
5.6	Wayfinding and Travel Planning .....	41
<b>6</b>	<b>Conclusions and Recommendations .....</b>	<b>42</b>
6.1	Conclusions.....	42
6.2	Recommendations .....	44

# Appendices

Appendix A	Pre-Study Consultation
Appendix B	Existing Traffic Data
Appendix C	Existing Traffic Operations Reports
Appendix D	Background Development Traffic Volumes
Appendix E	2031 Background Traffic Operations Reports
Appendix F	2031 Total Traffic Operations Reports



## Figures

<b>Figure 1.1: Location of Subject Site</b>	<b>4</b>
<b>Figure 2.1: Existing Lane Configuration and Traffic Control</b>	<b>6</b>
<b>Figure 2.2: Existing Transit Network</b>	<b>8</b>
<b>Figure 2.3a: Existing Traffic Volumes – AM Peak Hour</b>	<b>10</b>
<b>Figure 2.3b: Existing Traffic Volumes – PM Peak Hour</b>	<b>11</b>
<b>Figure 3.1: Concept Site Plan</b>	<b>17</b>
<b>Figure 3.2a: Site Generated Traffic Volumes – AM Peak Hour</b>	<b>21</b>
<b>Figure 3.2b: Site Generated Traffic Volumes – PM Peak Hour</b>	<b>22</b>
<b>Figure 4.1: Background Development Location</b>	<b>24</b>
<b>Figure 4.2a: 2031 Background Traffic Volumes – AM Peak Hour</b>	<b>26</b>
<b>Figure 4.2b: 2031 Background Traffic Volumes – PM Peak Hour</b>	<b>27</b>
<b>Figure 4.3a: 2031 Total Traffic Volumes – AM Peak Hour</b>	<b>31</b>
<b>Figure 4.3b: 2031 Total Traffic Volumes – PM Peak Hour</b>	<b>32</b>
<b>Figure 4.4a: Beaverbrook Avenue and Access B</b>	<b>36</b>
<b>Figure 4.4b: Horizon Drive and Access C – AM Peak Hour</b>	<b>37</b>
<b>Figure 4.4c: Horizon Drive and Access C – PM Peak Hour</b>	<b>38</b>

## Tables

<b>Table 2.1: Intersection Peak Hours</b>	<b>9</b>
<b>Table 2.2a: Existing Traffic Operations – AM Peak Hour</b>	<b>14</b>
<b>Table 2.2b: Existing Traffic Operations – PM Peak Hour</b>	<b>15</b>
<b>Table 3.1: Trip Generation</b>	<b>19</b>
<b>Table 3.2a: Estimated Commercial Trip Distribution</b>	<b>19</b>
<b>Table 3.2b: Estimated Residential Trip Distribution</b>	<b>19</b>
<b>Table 4.1a: 2031 Background Traffic Operations – AM Peak Hour</b>	<b>28</b>
<b>Table 4.1b: 2031 Background Traffic Operations – PM Peak Hour</b>	<b>29</b>
<b>Table 4.2a: 2031 Total Traffic Operations – AM Peak Hour</b>	<b>33</b>
<b>Table 4.2b: 2031 Total Traffic Operations – PM Peak Hour</b>	<b>34</b>





# 1 Introduction

## 1.1 Overview

Paradigm Transportation Solutions Limited (Paradigm) has been retained to conduct this Transportation Impact Assessment (TIA) for a proposed Mixed-Use Apartment Building located at 735 Wonderland Road in the City of London. **Figure 1.1** details the subject development location.

The Subject Site is located in the southeast corner of Wonderland Road and Beaverbrook Avenue, within the City's BRT (west leg) Transit Village, north of Oxford Street West. Horizon Drive abuts the east boundary of the Site.

The Site currently includes a shopping plaza made up of a single multi-unit commercial building located along the south property limit with the remainder of the lot used for surface parking. The north-west portion of the building accommodates a Swiss Chalet restaurant.

The site currently has five access points, two each on Wonderland Road and Beaverbrook Avenue, and one access on Horizon Drive.

A planned development to construct two smaller commercial buildings flanking Wonderland Road North and Beaverbrook Avenue are currently under Site Plan review (SPA22-088).

In addition to the two new commercial buildings, the proposed redevelopment of the site will involve demolishing the Swiss Chalet portion of the existing commercial building and replacing it with a 25-storey mixed-use apartment building. The new addition will consist of a three-storey podium and 22-storey point tower above, and accommodate the following:

- ▶ ground floor commercial space in the podium fronting onto Beaverbrook Avenue;
- ▶ a point tower apartment building from the fourth level through to the 25<sup>th</sup> level, comprising a total of 219 one- and two-bedrooms residential apartment units; and
- ▶ underground parking with 215 spaces internal to the podium, with the garage access to the south of the building.

The site will have one access each on Wonderland Road, Horizon Drive, and Beaverbrook Avenue. The site is noted to currently have two accesses each on Wonderland Road and Beaverbrook Avenue. The northerly access on Wonderland Road and the westerly access on



Beaverbrook Avenue will each be closed and the southerly and easterly accesses on the respective roadways will be retained. The apartment building will be completed by 2026, and the two smaller commercial buildings are assumed to be in place by 2026 as well.

## 1.2 Purpose and Scope

The purpose of this report is to identify and assess the potential traffic impact resulting from the proposed development. The scope of the study, developed in consultation with City of London staff via e-mail in October 2023, includes:

- ▶ assessment of the current traffic and site conditions within the study area;
- ▶ estimates of background traffic growth for five years after development (2031);
- ▶ the development at 530 Oxford Street is included in background traffic forecasts;
- ▶ estimates of additional traffic generated by the subject site;
- ▶ analyses of the impact of the future traffic on the surrounding road network, including the following study area intersections:
  - Wonderland Road and Beaverbrook Avenue;
  - Wonderland Road and Farrah Road;
  - Horizon Drive and Beaverbrook Avenue;
  - Horizon Drive and Farrah Road;
  - Farrah Road and Proudfoot Lane;
  - driveway intersections on:
    - Wonderland Road (RIRO);
    - Beaverbrook Ave (All Moves); and
    - Horizon Drive (All Moves).
- ▶ recommendations, if necessary, to mitigate the site generated traffic in a satisfactory manner.

**Appendix A** contains the pre-study consultation material and responses from the City of London.

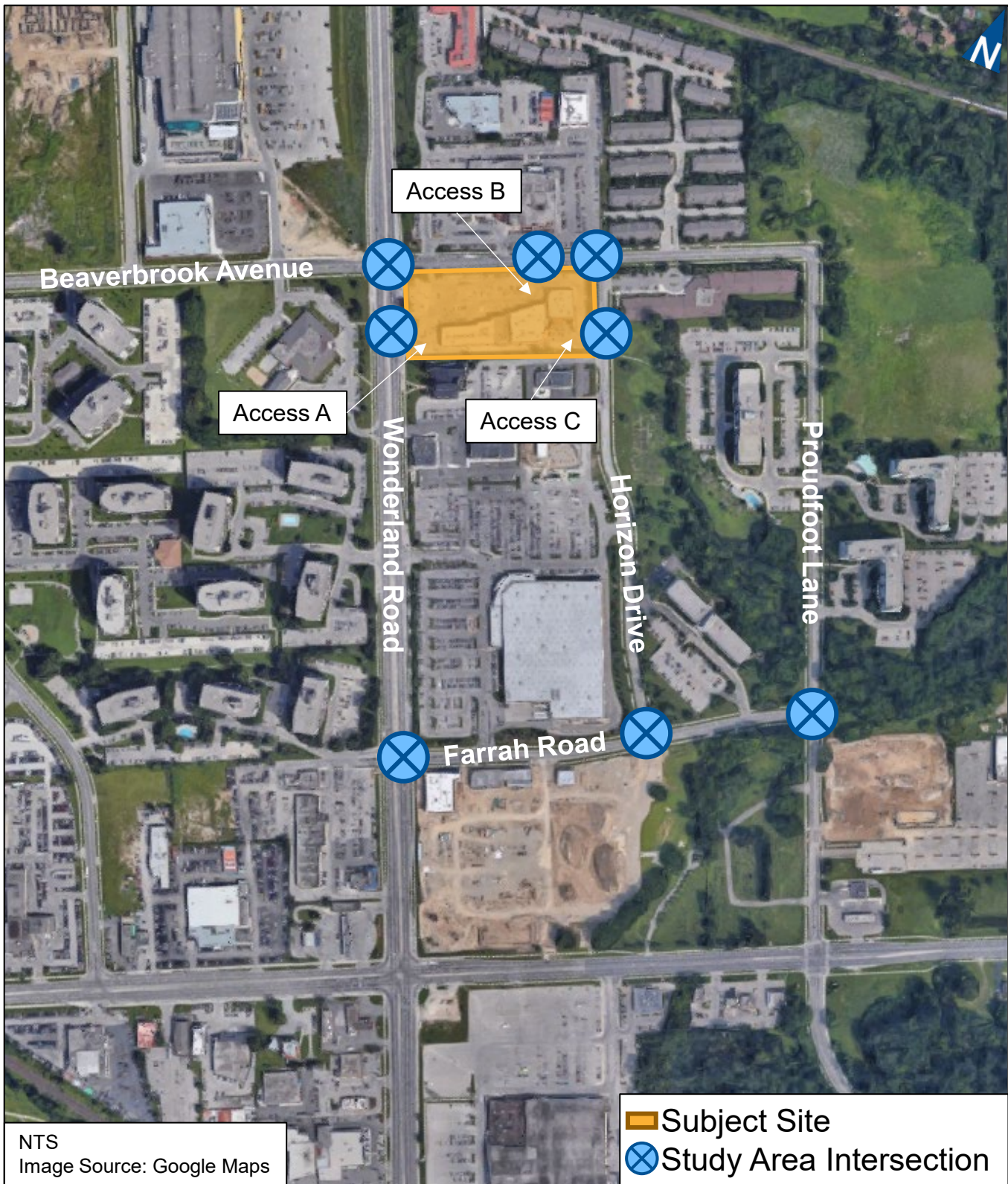


This study has been prepared in accordance with the requirements detailed by the City of London Transportation Impact Assessment Guidelines<sup>1</sup>.

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<sup>1</sup> Transportation Impact Assessment Guidelines, City of London, April 2012.





## Location of Subject Site

735 Wonderland Road, London TIA  
230087

**Figure 1.1**



## 2 Existing Conditions

### 2.1 Existing Roadways

The main roadways near the subject development considered in assessing the traffic impacts of the development include:

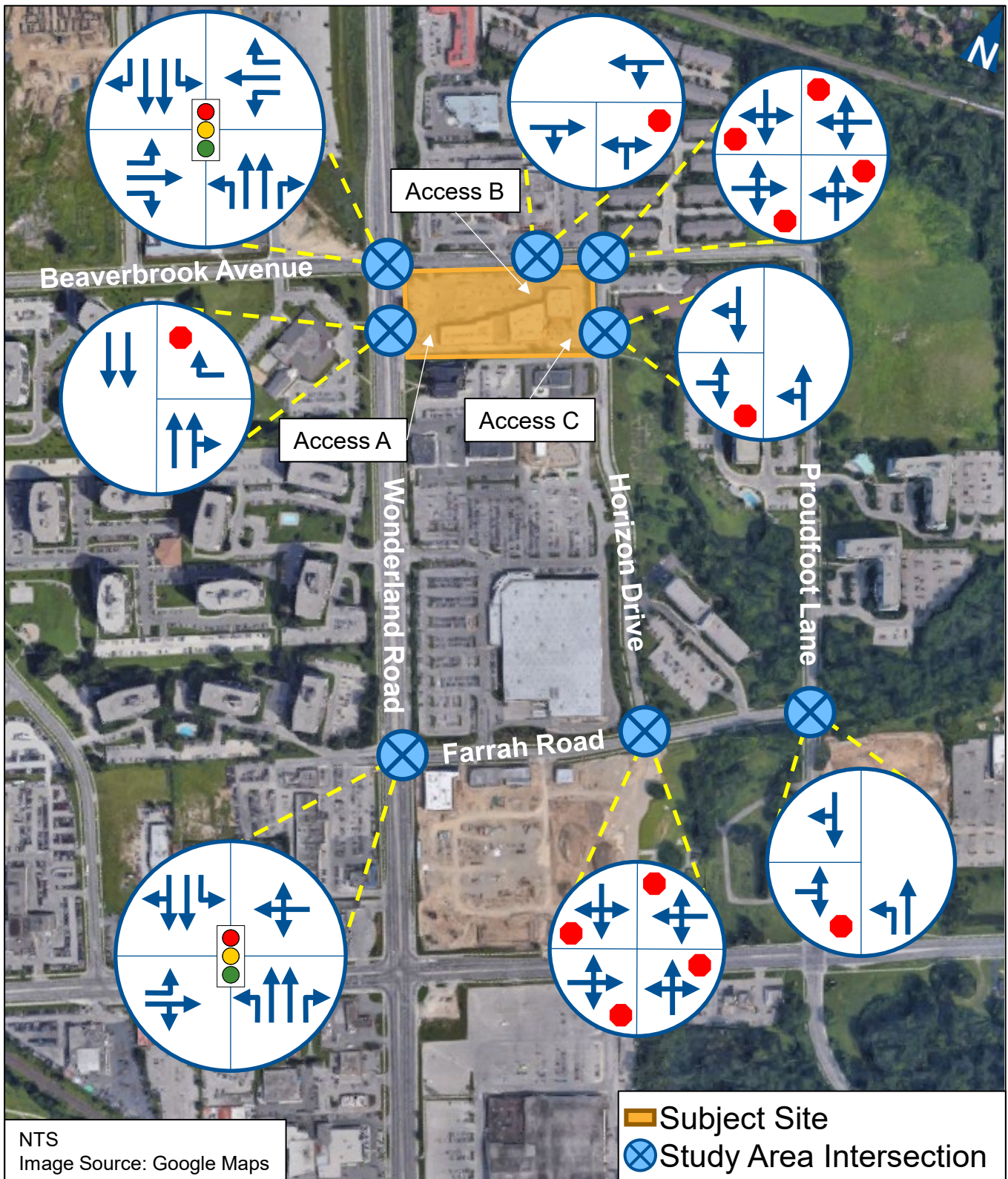
- ▶ **Wonderland Road** is a four-lane, north-south roadway classified under the City's Official Plan as an urban thoroughfare<sup>2</sup> north of Beaverbrook Avenue and a Main Street to the south. Sidewalks and exclusive, raised cycle lanes are provided on both sides of the roadway. The posted speed limit is 60 km/h.
- ▶ **Beaverbrook Avenue** is a two-lane, east-west neighbourhood connector road. Sidewalks are provided on both sides of the roadway. The posted speed limit is 40 km/h east of Wonderland Road and 50 km/h to the west.
- ▶ **Proudfoot Lane** is a two-lane, north-south neighbourhood connector road. Proudfoot Lane has sidewalks on both sides of the roadway. The posted speed limit is 40 km/h.
- ▶ **Farrah Road** is a two-lane, east-west local road. Sidewalks are provided on both sides of the roadway. The roadway runs from Wonderland Road to Proudfoot Lane. West of Wonderland Road, the roadway is an access for residential buildings and retail/restaurants. The posted speed limit is 40 km/h.
- ▶ **Horizon Drive** is a two-lane, north-south local road. Sidewalks are provided on both sides of the roadway. Horizon Drive runs from Beaverbrook Avenue to Farrah Road. North of Beaverbrook Avenue and south of Farrah Road, the roadway serves as an access for commercial and retail uses. The assumed speed limit is 50 km/h.

Traffic signals are provided at the intersections of (1) Wonderland Road and Beaverbrook Avenue and (2) Wonderland Road and Farrah Road. All-way stop-control is provided at the intersections of (1) Farrah Road and Horizon Drive, and (2) Beaverbrook Avenue and Horizon Drive, and side-street stop-control is provided at the Farrah Road and Proudfoot Lane intersection as well as the site access intersections on Wonderland Road, Beaverbrook Avenue, and Horizon Drive.

**Figure 2.1** illustrates the traffic control and lane configuration at the study area intersections.

<sup>2</sup> *The London Plan*, 25 May 2023.





## Existing Lane Configuration and Traffic Control

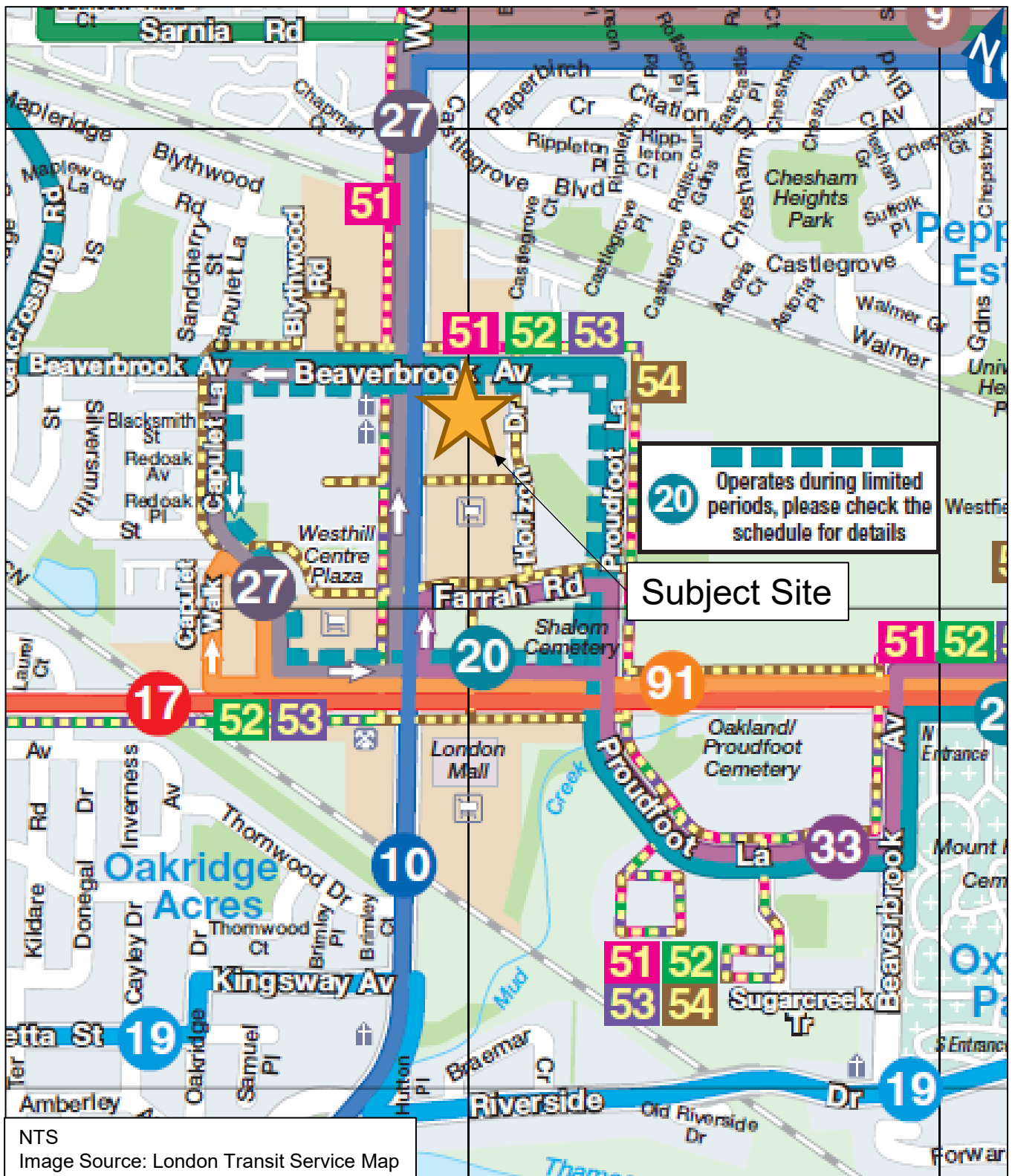
## 2.2 Transit Service

London Transit operates four routes within the study area. **Figure 2.2** illustrates the existing transit service. The four routes include:

- ▶ **Route 10 (Natural Science/Masonville Place)** operates clockwise and counterclockwise along Wonderland Road, Southdale Road, and Highbury Avenue between the Barker Street and Huron Street intersection and Masonville Place. The route operates seven days a week with 15- to 30-minute headways on weekdays and 30-minute headways on weekends.
- ▶ **Route 20 (Fanshawe College – Beaverbrook)** operates between Fanshawe College and the intersection of Oakcrossing Gate and Oakcrossing Road. The route operates seven days a week with 15- to 30-minute headways on weekdays and Saturdays and 30-minute headways on Sundays.
- ▶ **Route 27 (Fanshawe College – Capulet)** operates between Fanshawe College and the intersection of Oxford Street and Capulet Lane. The route operates seven days a week with 10- to 30-minute headways on weekdays, 30-minute headways on Saturdays, and 45-minute headways on Sundays.
- ▶ **Route 33 (Alumni Hall - Proudfoot)** operates between Alumni Hall and the intersection of Wonderland Road and Farrah Road. The route operates Monday to Friday with 10- to 15-minute headways.

London Transit also operates a community bus (**Routes 51, 52, 53 and 54**) on Beaverbrook Avenue and Proudfoot Lane on Monday, Tuesday, Wednesday, and Thursday, respectively. The route travels short distances to connect to nearby shopping centres, including the Cherryhill Village Mall and Sherwood Forest Mall.





## Existing Transit Network



## 2.3 Traffic Volumes

The City provided turning movement counts at the intersections of (1) Wonderland Road and Beaverbrook Avenue and (2) Wonderland Road and Farrah Road, recorded on 12 April 2023 and 09 March 2023, respectively. Paradigm conducted turning movement counts at the intersection of Farrah Road and Proudfoot Lane on 06 December 2023 and at the balance of the study area and site access intersections on 25 October 2023.

Paradigm also conducted turning moment counts at the northerly site access to Wonderland Road and the westerly site access to Beaverbrook Avenue. Both driveway accesses will be closed upon development completion. Therefore, the site trips have been assigned to the alternate Wonderland Road and Beaverbrook Avenue accesses, respectively.

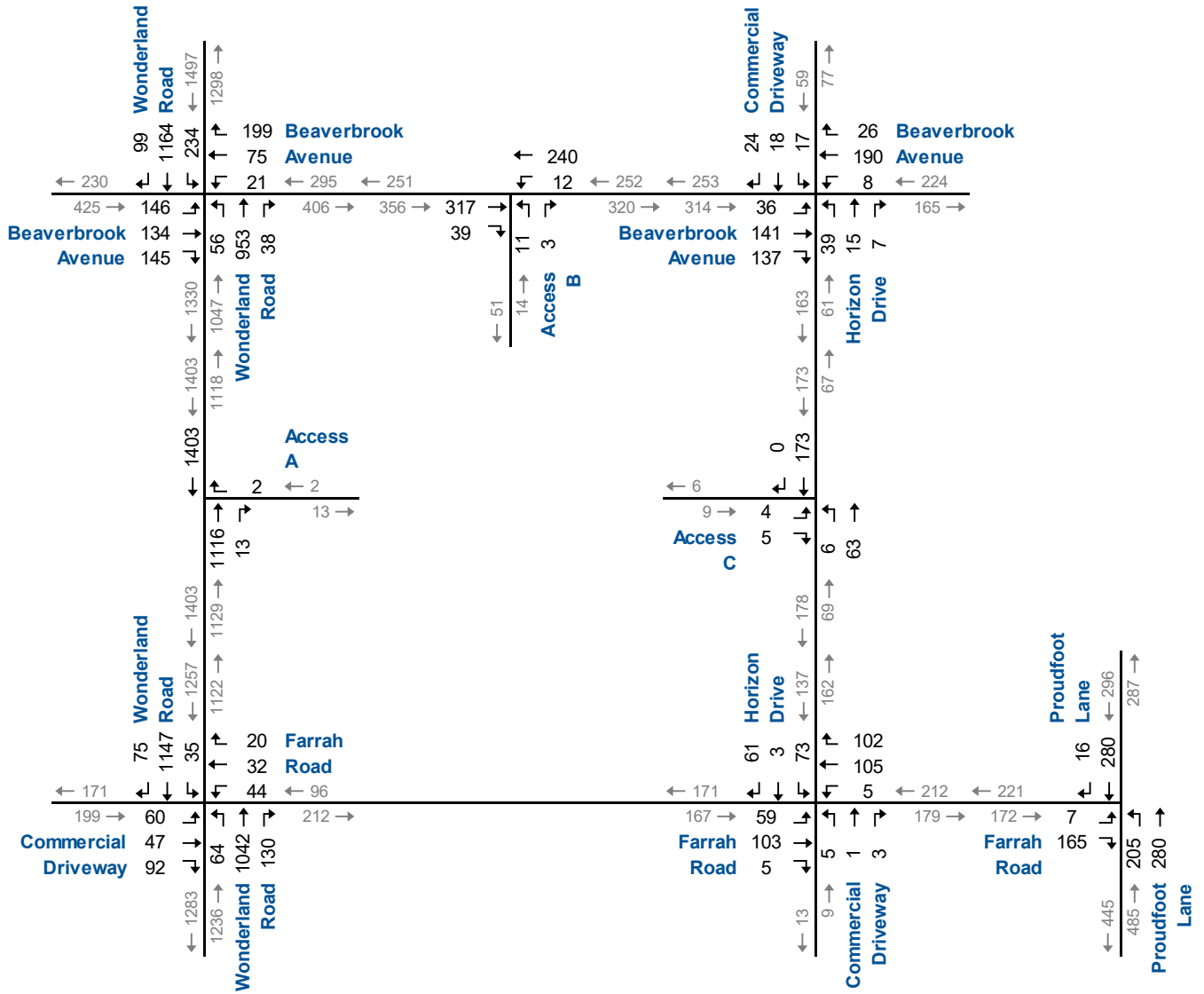
**Figure 2.3a** and **Figure 2.3b** respectively illustrate the existing AM and PM weekday peak hour turning movement traffic volumes. **Table 2.1** summarizes the peak hours at each intersection.

**Appendix B** contains the detailed traffic counts and signal timings for the study area and site access intersections, including the site accesses that will be closed upon development completion.

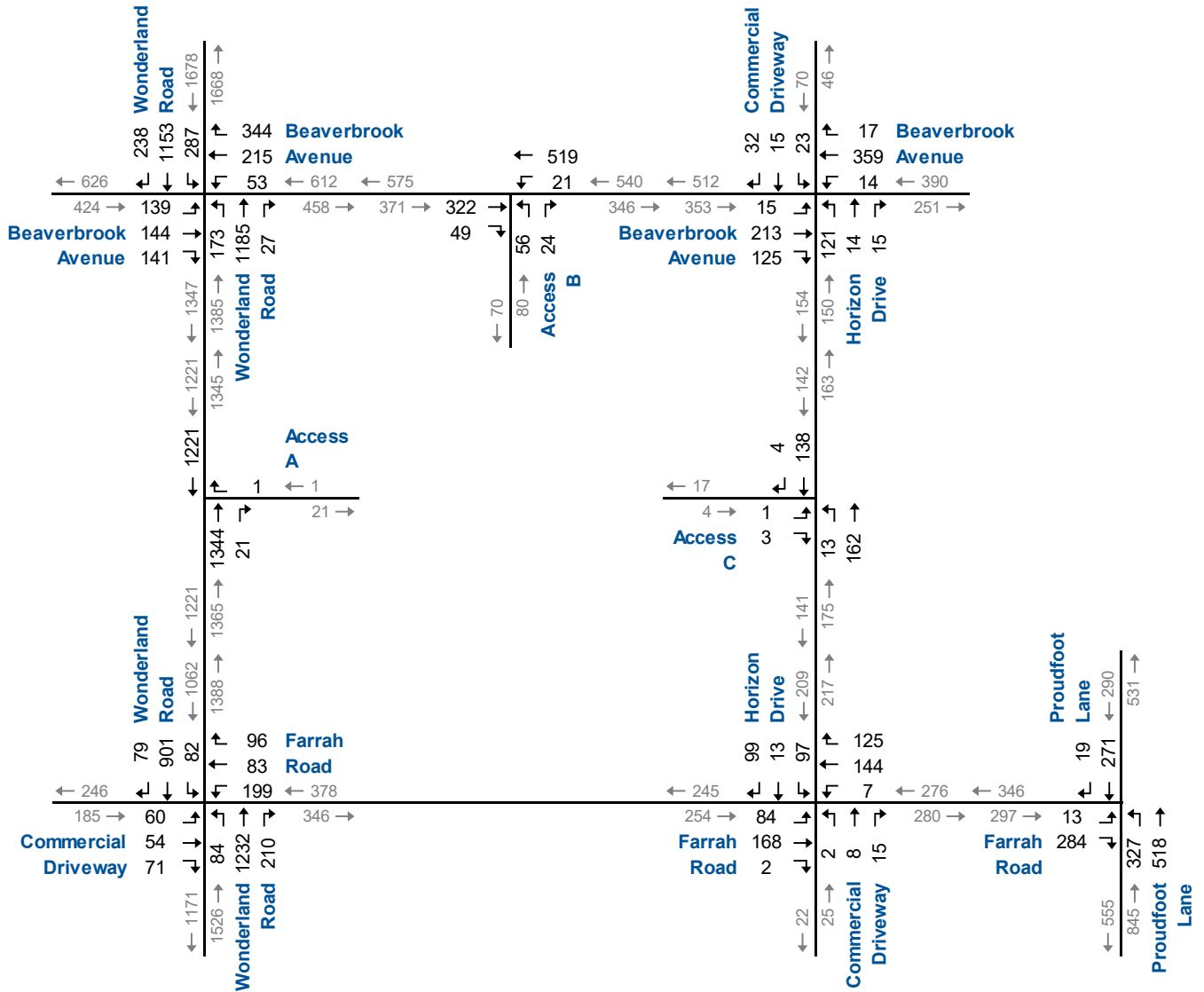
**TABLE 2.1: INTERSECTION PEAK HOURS**

Intersection	Source	AM Peak Hour	PM Peak Hour
Wonderland Road and Beaverbrook Avenue	City of London	8:00 – 9:00	4:30 – 5:30
Wonderland Road and Access A	Paradigm	8:00 – 9:00	3:00 – 4:00
Beaverbrook Avenue and Access B	Paradigm	9:00 – 10:00	4:30 – 5:30
Horizon Drive and Beaverbrook Avenue	Paradigm	9:00 – 10:00	4:15 – 5:15
Horizon Drive and Access C	Paradigm	9:00 – 10:00	4:30 – 5:30
Wonderland Road and Farrah Road	City of London	8:00 – 9:00	5:00 – 6:00
Horizon Drive and Farrah Road	Paradigm	8:45 – 9:45	4:30 – 5:30
Farrah Road and Proudfoot Lane	Paradigm	8:30 – 9:30	4:00 – 5:00





# Existing Traffic Volumes AM Peak Hour



# Existing Traffic Volumes PM Peak Hour

## 2.4 Traffic Operations

The level of service conditions at the study area intersections have been assessed through intersection operational analysis using Synchro 11.

Intersection level of service (LOS) is a recognized method of quantifying the average delay experienced by drivers at intersections. It is based on the delay experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles intending to make a particular movement, compared to the estimated capacity for that movement. The capacity is based on several criteria related to the opposing traffic flows and intersection geometry.

The highest possible rating is LOS A, under which the average total delay is equal or less than 10.0 seconds per vehicle. When the average delay exceeds 80 seconds for signalized intersections, 50 seconds for unsignalized intersections or when the volume to capacity (v/c) ratio is greater than 1.00, the movement is classed as LOS F and remedial measures are usually implemented if they are feasible. LOS E is usually used as a guideline for the determination of road improvement needs on through lanes, while LOS F may be acceptable for left-turn movements at peak times, depending on delays.

Movements are considered critical under the following conditions:

- ▶ v/c ratios for overall intersection operations, through movements or shared through/turning movements increased to 0.90 or above and LOS 'E' or worse;
- ▶ v/c ratios for dedicated turning movements increased to 0.90 or above and LOS 'E' or worse; or
- ▶ 95<sup>th</sup> percentile queue lengths for individual movements exceeds available lane storage.

**Table 2.2a** and **Table 2.2b** respectively summarize the results of the intersection operational analysis under existing conditions, including the AM and PM peak hour LOS, v/c ratios, and 95th percentile queues experienced.

The results indicate that the study area intersections are operating at acceptable levels of service, except for the following critical movements at the intersection of Wonderland Road and Beaverbrook Avenue:



- ▶ the 95<sup>th</sup> percentile queue length of the westbound right-turn movement exceeds the existing storage of 40 metres during the AM and PM peak hours; and
- ▶ the southbound left-turn movement is operating at LOS D with v/c ratio of 0.92 during the PM peak hour.

The site driveway intersections on Wonderland Road, Beaverbrook Avenue, and Horizon Drive are currently operating at acceptable levels of service.

**Appendix C** contains the detailed Synchro 11 reports.



**TABLE 2.2A: EXISTING TRAFFIC OPERATIONS – AM PEAK HOUR**

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	Wonderland Road & Beaverbrook Avenue	TCS	LOS Delay V/C Q Stor. Avail.	D 50 0.58 51 115 64	D 41 0.33 39 -	D 42 0.43 44 95 51	D 45 0.10 7 45 38	D 39 0.19 21 -	D 45 0.59 62 40 -22	D 44 0.24 4 40 36	B 15 0.55 56 -	C 20 0.05 3 40 -	B 14 0.05 3 40 37	B 20 0.67 11 60 49	B 18 0.61 53 -	B 12 0.12 7 60 53	B 18 0.18 7 60 53	C 24		
	Access B & Beaverbrook Avenue	TWSC	LOS Delay V/C Q	< < 0	A 0 >	> > >	A < <	A < 0.01 0	> > >	A 0 0.03 1	B 13 > > >	> > >	B 13 > > >	> > >	> > >	> > >	> > >	> > >	> > >	
	Horizon Drive/Commercial Driveway & Beaverbrook Avenue	AWSC	LOS Delay V/C Q	< < <	B 10 0.41 15	> > >	< < <	A 10 0.31 10	> > >	> > >	< < <	A 9 0.10 2	> > >	> > >	< < <	A 9 0.09 2	> > >	> > >	> > >	> > >
	Wonderland Road & Access A	TWSC	LOS Delay V/C Q	< < 0	> > >	> > >	> > >	> > >	B 14 0.01 0	B 14 > > >	A 0 0.00 0	> > >	A 0 > >	A 0 > >	A 0 0.00 0	> > >	A 0 > >	A 0 > >	A 0 > >	A 0 > >
	Wonderland Road & Commercial Plaza Driveway/Farrah Road	TCS	LOS Delay V/C Q Stor. Avail.	D 54 0.31 20 20 0	D 55 0.63 48 -	> > >	D 54 0.39 17 150 133	E 62 0.22 17 -	D 49 > >	D 55 0.23 5 50 45	B 14 0.43 2 -	A 6 0.12 1 70 69	A 5 > >	A 7 0.12 2 -	B 10 0.12 7 50 48	A 8 0.49 7 -	> > >	A 8 > >	A 8 > >	B 12
	Horizon Drive & Access C	TWSC	LOS Delay V/C Q	A 10 0.01 0	> > >	> > >	A 10 > >	> > >	> > >	> > >	< < <	A 8 0.01 0	> > >	A 1 > >	> > >	A 0 0.00 0	> > >	A 0 > >	A 0 > >	A 0 > >
	Commercial Driveway/Horizon Drive & Farrah Road	AWSC	LOS Delay V/C Q	< < <	A 9 0.24 7	> > >	> > >	< < <	A 9 0.27 8	> > >	< < <	A 8 0.02 0	> > >	> > >	< < <	A 9 0.20 5	> > >	> > >	> > >	> > >
	Proudfood Lane & Farrah Road	TWSC	LOS Delay V/C Q Stor. Avail.	B 13 0.29 9 -	> > >	> > >	B 13 > >	> > >	> > >	> > >	A 9 0.18 5 25 20	A 0 0.00 0 -	> > >	A 4 > >	> > >	A 0 0.00 -	> > >	A 0 > >	A 0 > >	A 0 > >

MOE - Measure of Effectiveness  
 LOS - Level of Service  
 Delay - Average Delay per Vehicle in Seconds  
 V/C - Volume to Capacity Ratio  
 Q - 95th Percentile Queue Length (m)  
 Stor. - Existing Storage (m)  
 Avail. - Available Storage (m)  
 TCS - Traffic Control Signal  
 TWSC - Two-Way Stop Control  
 AWSC - All-Way Stop Control  
 </> - Shared with through movement

**TABLE 2.2B: EXISTING TRAFFIC OPERATIONS – PM PEAK HOUR**

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		
PM Peak Hour	Wonderland Road & Beaverbrook Avenue	TCS	LOS Delay V/C Q Stor. Avail.	E 70 0.76 61 115 54	D 37 0.30 39 -	D 38 0.36 39 95 56	D 48 -	D 43 0.21 16 45 29	D 39 0.45 61 -	E 62 0.87 118 40 -78	D 53 -	C 29 0.69 22 40 18	C 32 0.76 100 -	B 19 0.04 4 40 36	C 31 -	D 54 0.92 58 60 2	C 25 0.68 79 -	B 19 0.33 28 60 32	C 29 -	D 35 -	
	Access B & Beaverbrook Avenue	TWSC	LOS Delay V/C Q	<	A 0 0.00 0	>	A 0 -	<	A 8 0.02 1	>	A 0 -	C 20 0.27 8	>	>	C 20 -						
	Horizon Drive/Commercial Driveway & Beaverbrook Avenue	AWSC	LOS Delay V/C Q	<	B 14 0.54 24	>	>	<	C 16 0.61 32	>	>	>	<	B 12 0.28 8	>	>	<	B 10 0.13 3	>	>	
	Wonderland Road & Access A	TWSC	LOS Delay V/C Q							C 16 0.00 0	C 16 -	A 0 0.00 0	>	A 0 -	A 0 0.00 0	A 0 -			A 0 -	A 0 -	
	Wonderland Road & Commercial Plaza Driveway/Farrah Road	TCS	LOS Delay V/C Q Stor. Avail.	D 49 0.26 19 20 1	D 39 0.31 33 -	>	D 42 -	E 59 0.74 74 150 76	D 41 0.44 52 -	>	D 51 -	C 23 0.29 14 50 36	B 14 0.58 28 -	B 10 0.24 8 70 62	B 14 -	D 37 0.46 21 50 29	B 13 0.46 22 -	>	B 15 -	C 20 -	
	Horizon Drive & Access C	TWSC	LOS Delay V/C Q	A 10 0.01 0	>	>	A 10 -					<	A 8 0.01 0	>	A 1 -		A 0 0.00 0	>	A 0 -	A 0 -	
	Commercial Driveway/Horizon Drive & Farrah Road	AWSC	LOS Delay V/C Q	<	B 11 0.39 14	>	>	<	B 11 0.39 14	>	>	<	A 9 0.04 1	>	>	<	B 11 0.33 11	>	>		
	Proudfood Lane & Farrah Road	TWSC	LOS Delay V/C Q Stor. Avail.	D 25 0.66 35 -	>	>	D 25 -					A 9 0.30 10 25 15	A 0 0.00 0 -		A 4 -		A 0 0.00 0 -	>	A 0 -	A 0 -	

MOE - Measure of Effectiveness  
 LOS - Level of Service  
 Delay - Average Delay per Vehicle in Seconds  
 V/C - Volume to Capacity Ratio  
 Q - 95th Percentile Queue Length (m)  
 Stor. - Existing Storage (m)  
 Avail. - Available Storage (m)  
 TCS - Traffic Control Signal  
 TWSC - Two-Way Stop Control  
 AWSC - All-Way Stop Control  
 </> - Shared with through movement

## 3 Proposed Redevelopment

### 3.1 Development Description

The Subject Site is located in the southeast corner of Wonderland Road and Beaverbrook Avenue, within the City's BRT (west leg) Transit Village, north of Oxford Street West. Horizon Drive abuts the east boundary of the Site.

The Site currently includes a shopping plaza made up of a single multi-unit commercial building located along the south property limit with the remainder of the lot used for surface parking. The north-west portion of the building accommodates a Swiss Chalet restaurant.

The site currently has five access points, two each on Wonderland Road and Beaverbrook Avenue, and one access on Horizon Drive.

A planned development to construct two smaller commercial buildings flanking Wonderland Road North and Beaverbrook Avenue are currently under Site Plan review (SPA22-088).

In addition to the two new commercial buildings, the proposed redevelopment of the site will involve demolishing the Swiss Chalet portion of the existing commercial building, and replacing it with a 25-storey mixed-use apartment building. The new addition will consist of a three-storey podium and 22-storey point tower above, and accommodate the following:

- ▶ ground floor commercial space in the podium fronting onto Beaverbrook Avenue;
- ▶ a point tower apartment building from the fourth level through to the 25<sup>th</sup> level, comprising a total of 219 one- and two-bedrooms residential apartment units; and
- ▶ underground parking with 215 spaces internal to the podium, with the garage access to the south of the building.

The site will have one access each on Wonderland Road, Horizon Drive, and Beaverbrook Avenue. The site is noted to currently have two accesses each on Wonderland Road and Beaverbrook Avenue. The northerly access on Wonderland Road and the westerly access on Beaverbrook Avenue will each be closed and the southerly and easterly accesses on the respective roadways will be retained.

The apartment building will be completed by 2026, and the two smaller commercial buildings are assumed to be in place by 2026 as well.

**Figure 3.1** shows the concept site plan.







## 3.2 Development Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation Manual<sup>3</sup> rates and equations were used to estimate the peak hour traffic volumes generated by the subject development based on the following ITE Land Use Codes:

- ▶ 215, Single-Family Attached Housing;
- ▶ 222, Multifamily Housing (High Rise); and
- ▶ 822, Strip Retail Plaza (<40k).

It is noted that internal trips within the development between the retail and residential uses have been estimated based on the National Cooperative Highway Research Program (NCHRP)<sup>4</sup> Internal Trip Capture Estimation Tool included in **Appendix D**.

It is also noted that a modal share reduction of 10% is applied to the site-generated trips. The percentage was confirmed with City staff during pre-study consultation.

**Table 3.1** summarizes the forecast number of net new trips generated by the proposed development.

It is noted that trip generation for the Apartment Building (**Table 3.1**) is based on 229 apartment units and nine townhouse units. The number of units has since been reduced to 219 apartment units and zero townhouse units. The reduction of residential units corresponds to six and eight fewer trips for the AM and PM peak hours, respectively. The trip reduction is insignificant for the traffic operational analyses in **Section 4.3**, which are based on the trip generation estimated in **Table 3.1**.

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<sup>3</sup> Institute of Transportation Engineers, *Trip Generation Manual*, 11th ed., (Washington, DC: ITE, 2021).

<sup>4</sup> NCHRP, "Enhancing Internal Trip Capture Estimation for Mixed-Use Developments", 2010.



**TABLE 3.1: TRIP GENERATION**

Land Use Code	Units	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Total	Rate	In	Out	Total
<b>215: Single-Family Attached Housing</b>	9 Units	0.48	1	3	4	Eq	1	0	1
<b>222: Multifamily Housing (High-Rise)</b>	229 Units	Eq	18	51	69	Eq	51	32	83
<b>822: Strip Retail Plaza (&lt;40k)</b>	14,705 sq. ft.	2.36	21	14	35	Eq	51	51	102
<b>Total Trip Generation</b>			<b>40</b>	<b>68</b>	<b>108</b>		<b>103</b>	<b>83</b>	<b>186</b>
<i>Internal Trips</i>			<i>-1</i>	<i>-1</i>	<i>-2</i>		<i>-18</i>	<i>-18</i>	<i>-36</i>
<i>Modal Share</i>		<i>10%</i>	<i>-5</i>	<i>-5</i>	<i>-10</i>	<i>10%</i>	<i>-8</i>	<i>-8</i>	<i>-16</i>
<b>Net Trip Generation</b>			<b>34</b>	<b>62</b>	<b>96</b>		<b>77</b>	<b>57</b>	<b>134</b>

LUC 215 | PM:  $T = 0.60(X) - 3.93$ LUC 222 | AM:  $T = 0.22(X) + 18.85$  | PM:  $T = 0.26(X) + 23.12$ LUC 822 | PM:  $\ln(T) = 0.71 \ln(X) + 2.72$ 

### 3.3 Development Trip Distribution and Assignment

The distribution for the commercial trips is based on the existing traffic distribution at the site accesses and study area intersections, and the distribution for residential trips is based on the existing travel patterns at the intersection of Wonderland Road and Oxford Street. **Table 3.2a** summarizes the breakdown of commercial trip distributions, and **Table 3.2b** summarizes the residential trip distributions used in this study.

**TABLE 3.2A: ESTIMATED COMMERCIAL TRIP DISTRIBUTION**

Origin/Destination	Distribution
North via Wonderland Road	35%
South via Wonderland Road	25%
South via Proudfoot Lane	20%
East via Beaverbrook Avenue	5%
West via Beaverbrook Avenue	15%
<b>Total</b>	<b>100%</b>

**TABLE 3.2B: ESTIMATED RESIDENTIAL TRIP DISTRIBUTION**

Origin/Destination	Distribution
North via Wonderland Road	25%
South via Wonderland Road	35%
South via Proudfoot Lane	40%
<b>Total</b>	<b>100%</b>

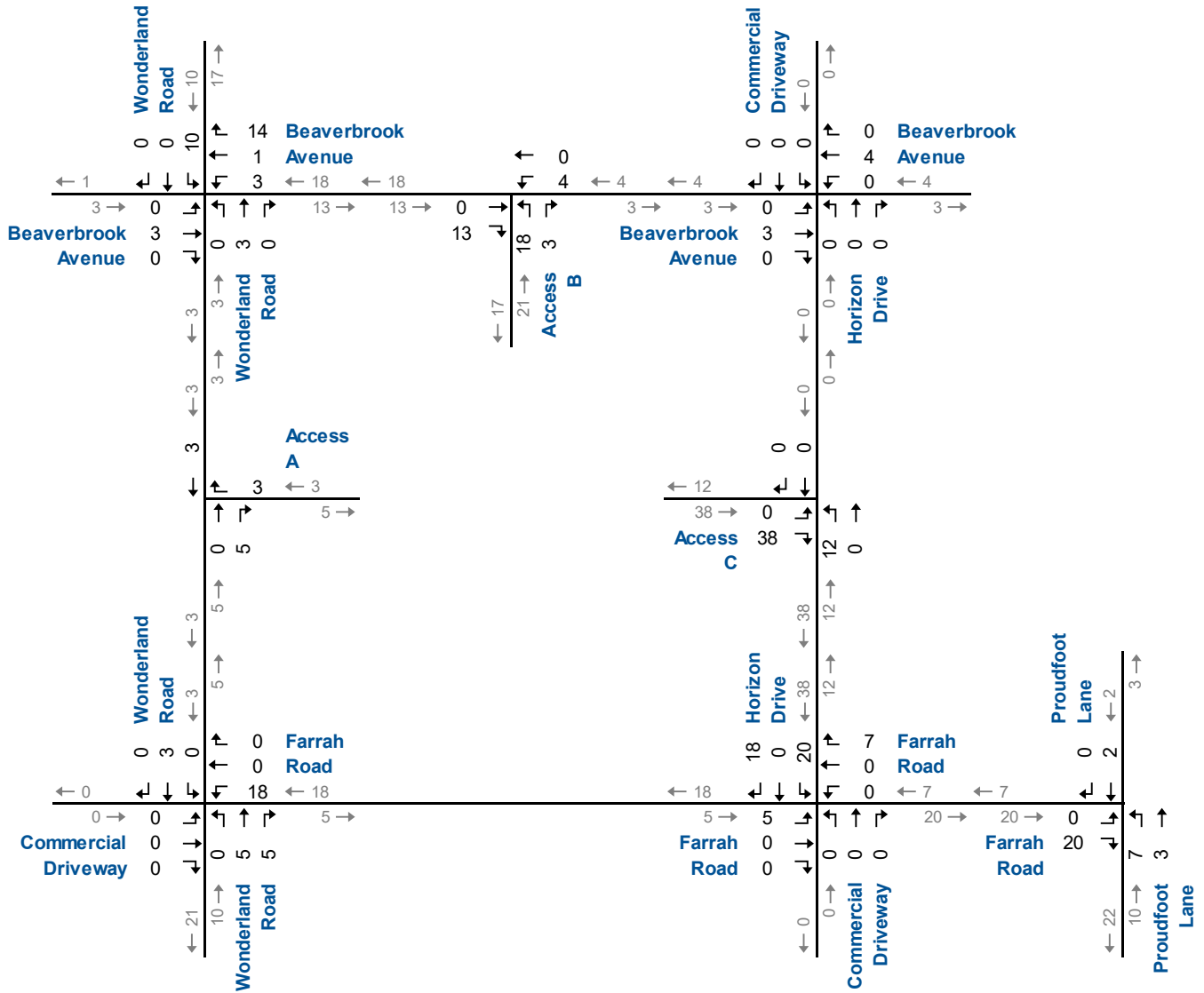
**Figure 3.2a** and **Figure 3.2b** illustrate the site-generated traffic volumes for the AM and PM peak hours, respectively.



The development traffic volumes are noted to be low to moderate additions to the existing traffic volumes on the surrounding road network.

**Appendix B** contains the peak hour turning movement count and full eight-hour report for the intersection of Wonderland Road and Oxford Street.





## Site Generated Traffic Volumes AM Peak Hour



## 4 Evaluation of Future Traffic Conditions

The assessment of future traffic conditions contained in this section includes estimates of future background and total traffic volumes, and the analyses for the traffic conditions five years after development opening (2031).

### 4.1 Background Traffic Forecasts

In order to derive the 2031 generalized background traffic volumes, a growth rate of 1.5% per annum was applied to the existing roadway traffic volumes. This growth rate was confirmed with City during the pre-study consultation.

It is noted that the site traffic for the existing Swiss Chalet restaurant has conservatively not been discounted at the study area intersections and site driveways.

#### 4.1.1 Other Area Developments

In consultation with the City, the development 530 Oxford Street has been included in estimating background traffic volumes.

The development is located at the southeast corner of Wonderland Road and Oxford Street. **Figure 4.1** illustrates the location of the background development.

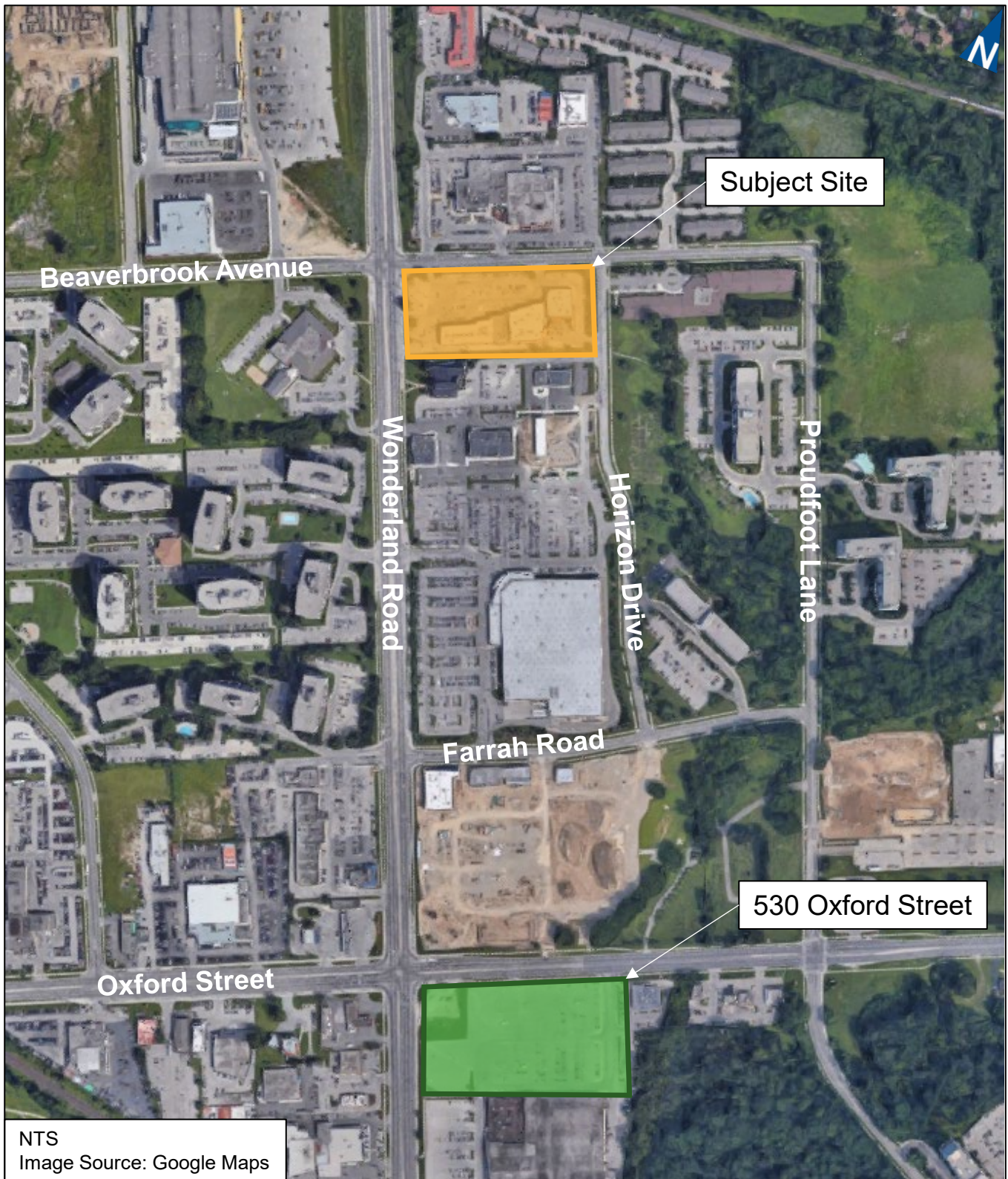
The lands are currently occupied by a commercial plaza totaling 14,091 m<sup>2</sup> Gross Floor Area (GFA) including retail, restaurants and a bank. The proposed redevelopment includes two high-rise 32-storey mixed use buildings accommodating a combined 408 units, 469.5 m<sup>2</sup> GFA street facing commercial, and a 3,500 m<sup>2</sup> supermarket within the existing commercial building and is expected to be completed by 2028.

The TIS completed for this location indicates the development is forecast to generate 202 trips during the AM peak hour and 317 trips during the PM peak hour.

**Appendix D** contains the background development traffic volumes.







## Background Development Location

735 Wonderland Road, London TIA  
230087

Figure 4.1



## 4.2 2031 Background Traffic Operations

**Figure 4.2a** and **Figure 4.2b** illustrate the 2031 background traffic volumes, including road traffic growth and other area development traffic.

The 2031 background traffic volumes have been analyzed using the same methodology as under existing traffic conditions. Signal timings have not been optimized.

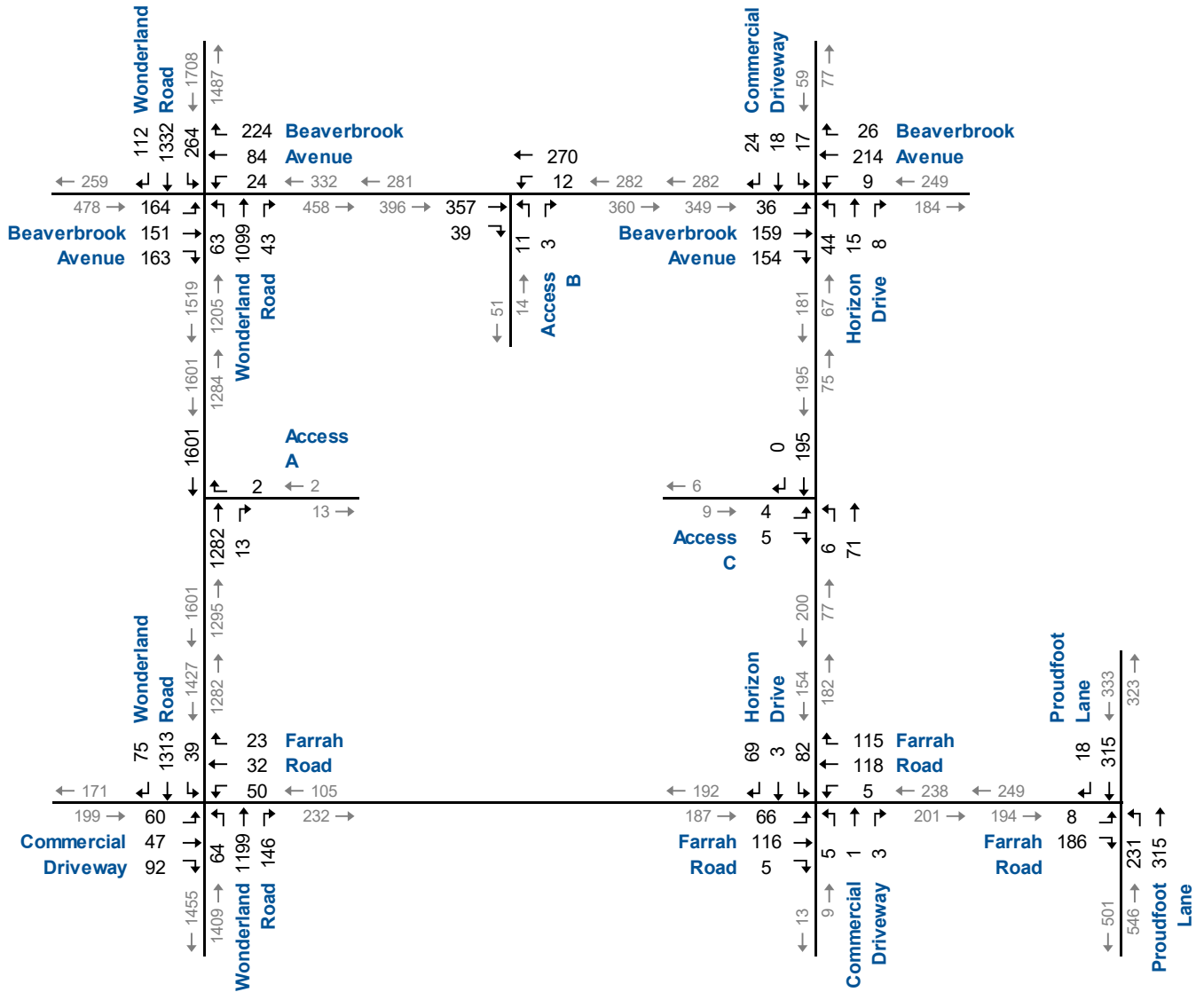
**Table 4.1a** and **Table 4.1b** summarize the results of the 2031 background traffic operations during the AM and PM peak hours, respectively. The results indicate that the study area intersections are forecast to operate at similar levels of service as under existing traffic conditions, with the following additional critical movements during the PM peak hour:

- ▶ Wonderland Road and Beaverbrook Avenue
  - the eastbound left-turn movement is forecast to operate at LOS F with a v/c ratio greater than 0.90;
  - the westbound right-turn movement is forecast to operate at LOS E with a v/c ratio greater than 0.90;
  - the northbound left-turn movement is forecast to operate at LOS F with a v/c ratio greater than 0.90 and a 95<sup>th</sup> percentile queue length that is project to exceed the existing storage of 40 metres;
  - the northbound through movement is forecast to operate at LOS D with a v/c ratio greater than 0.90; and
  - the 95<sup>th</sup> percentile queue length of the southbound left-turn is project to exceed the existing storage of 60 metres.
- ▶ Proudfoot Lane and Farrah Road
  - the eastbound movement is forecast to operate at LOS E with a v/c ratio of 0.86.

The site access intersections on Wonderland Road, Beaverbrook Avenue, and Horizon Drive are forecast to operate at acceptable levels of service.

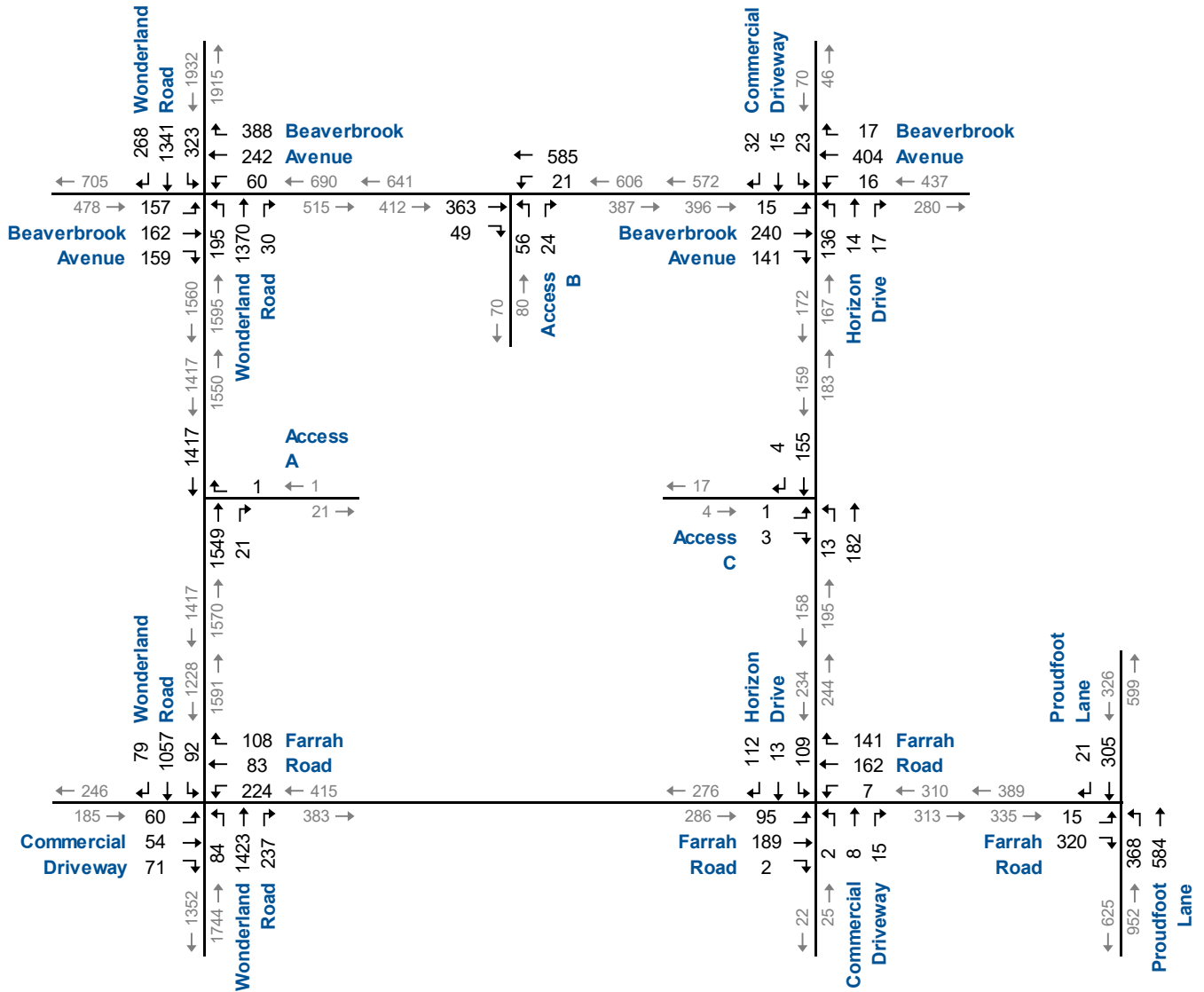
**Appendix E** contains the supporting detailed Synchro 11 reports.





# 2031 Background Traffic Volumes AM Peak Hour

Figure 4.2a



# 2031 Background Traffic Volumes PM Peak Hour

**TABLE 4.1A: 2031 BACKGROUND TRAFFIC OPERATIONS – AM PEAK HOUR**

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	Wonderland Road & Beaverbrook Avenue	TCS	LOS Delay V/C Q Stor. Avail.	D 53 0.65 59 115 56	D 40 0.35 44 - -	D 42 0.46 49 95 46	D 45 0.11 8 45 37	D 38 0.20 23 - -	D 46 0.64 69 40 -29	D 44 0.33 5 40 35	B 19 0.66 74 - -	C 15 0.06 4 40 36	C 24 0.85 28 60 32	D 37 0.71 70 - -	C 22 0.14 8 60 52	B 13 0.14 8 60 52	C 24 0.14 8 60 52	C 28		
	Access B & Beaverbrook Avenue	TWSC	LOS Delay V/C Q	< 0 0	A 0 0	> > >	A < <	A 8 0	> > >	A 0 0	B 14 0.04 1	> > >	B 14 > >	> > >	> > >	> > >	> > >	> > >	> > >	
	Horizon Drive/Commercial Driveway & Beaverbrook Avenue	AWSC	LOS Delay V/C Q	< < <	B 11 0.46 19	> > >	< < <	B 10 0.35 12	> > >	> > >	< < <	A 9 0.11 3	> > >	> > >	< < <	A 9 0.10 2	> > >	> > >	> > >	
	Wonderland Road & Access A	TWSC	LOS Delay V/C Q	< < <	< < <	> > >	< < <	B 15 0.01 0	> > >	B 15 > >	A 0 0.00 0	> > >	A 0 > >	A 0 0.00 0	> > >	A 0 > >	A 0 > >	A 0 > >	A 0 > >	
	Wonderland Road & Commercial Plaza Driveway/Farrah Road	TCS	LOS Delay V/C Q Stor. Avail.	D 54 0.31 20 20 0	D 54 0.61 47 - -	> > >	D 54 0.42 20 150 130	E 62 0.23 18 - -	D 49 > > >	D 55 0.28 8 50 42	B 18 0.50 4 - -	A 7 0.14 1 70 69	A 5 0.14 1 70 69	A 8 0.16 3 50 47	B 13 0.56 8 - -	A 9 0.22 7 >	> > >	A 9 0.22 7 >	A 9 0.22 7 >	B 13
	Horizon Drive & Access C	TWSC	LOS Delay V/C Q	A 10 0.01 0	< < <	> > >	A 10 > >	< < <	A 8 0.01 0	> > >	< < <	A 1 > >	> > >	A 1 > >	A 0 0.00 0	> > >	A 0 > >	A 0 > >	A 0 > >	
	Commercial Driveway/Horizon Drive & Farrah Road	AWSC	LOS Delay V/C Q	< < <	A 10 0.27 8	> > >	< < <	A 9 0.31 10	> > >	> > >	< < <	A 9 0.02 0	> > >	> > >	< < <	A 9 0.22 7	> > >	> > >	> > >	
	Proudfood Lane & Farrah Road	TWSC	LOS Delay V/C Q Stor. Avail.	B 14 0.36 12 - -	< < <	> > >	B 14 > >	< < <	< < <	< < <	A 9 0.21 6 25 19	A 0 0.00 0 - -	> > >	A 4 > >	A 0 0.00 0 - -	> > >	A 0 > >	A 0 > >	A 0 > >	

MOE - Measure of Effectiveness  
 LOS - Level of Service  
 Delay - Average Delay per Vehicle in Seconds  
 V/C - Volume to Capacity Ratio  
 Q - 95th Percentile Queue Length (m)  
 Stor. - Existing Storage (m)  
 Avail. - Available Storage (m)  
 TCS - Traffic Control Signal  
 TWSC - Two-Way Stop Control  
 AWSC - All-Way Stop Control  
 </> - Shared with through movement

**TABLE 4.1B: 2031 BACKGROUND TRAFFIC OPERATIONS – PM PEAK HOUR**

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		
PM Peak Hour	Wonderland Road & Beaverbrook Avenue	TCS	LOS Delay V/C Q Stor. Avail.	F 116 0.97 89 115 26	D 38 0.34 45 - -	D 39 0.41 45 95 50	E 64	D 44 0.25 19 45 26	D 40 0.51 68 - -	F 86 0.99 155 40 -115	E 66	E 63 0.91 52 40 -12	D 21 0.94 149 40 36	C C 0.05 4 40	D 48	F 105 1.05 99 60 -39	C 29 0.79 98 - -	B 20 0.37 34 60 26	D 40	D 49	
	Access B & Beaverbrook Avenue	TWSC	LOS Delay V/C Q	<	A 0 0.00 0	>	A 0	<	A 8 0.02 1	>	A 0	C C 0.24 0.31 10	>	C 24	>	>	>	>	>	>	>
	Horizon Drive/Commercial Driveway & Beaverbrook Avenue	AWSC	LOS Delay V/C Q	<	C 17 0.63 34	>	<	C 21 0.71 44	>	<	C C 11 11	>	<	B 13 0.33 11	>	<	B 11 0.14 4	>	>	>	>
	Wonderland Road & Access A	TWSC	LOS Delay V/C Q	<	A 0 0.00 0	>	A 0	<	C 18 0.00 0	>	C C 18	>	A A 0 0.00 0	>	A 0	>	A A 0 0.00 0	>	A A 0	A 0	A 0
	Wonderland Road & Commercial Plaza Driveway/Farrah Road	TCS	LOS Delay V/C Q Stor. Avail.	D 48 0.25 19 20 1	D 37 0.29 32 - -	>	D 41	E 61 0.77 82 150 68	D 40 0.45 55 - -	>	D 51	C C 0.37 18 50 32	B 18 0.69 49 12 70 58	B 12 0.28 12 70 58	B 18	E 69 0.69 40 50 10	B 16 0.55 36 - -	>	B 20	C 23	
	Horizon Drive & Access C	TWSC	LOS Delay V/C Q	A 10 0.01 0	>	A 10	>	>	>	>	>	>	<	A 8 0.01 0	>	A 1	>	A 0 0.00 0	>	A 0	A 0
	Commercial Driveway/Horizon Drive & Farrah Road	AWSC	LOS Delay V/C Q	<	B 13 0.45 18	>	<	B 12 0.46 18	>	<	B B 12 0.46 18	>	<	A 9 0.04 1	>	<	B 12 0.38 14	>	>	>	>
	Proudfood Lane & Farrah Road	TWSC	LOS Delay V/C Q Stor. Avail.	E 48 0.86 64 - -	>	E 48	>	>	>	>	>	>	A 10 0.34 12 25 13	A 0 0.00 0 - -	A 4	A A 0 0.00 - -	>	A 0	A 0	A 0	

MOE - Measure of Effectiveness  
 LOS - Level of Service  
 Delay - Average Delay per Vehicle in Seconds  
 V/C - Volume to Capacity Ratio  
 Q - 95th Percentile Queue Length (m)  
 Stor. - Existing Storage (m)  
 Avail. - Available Storage (m)  
 TCS - Traffic Control Signal  
 TWSC - Two-Way Stop Control  
 AWSC - All-Way Stop Control  
 </> - Shared with through movement

### 4.3 2031 Total Traffic Operations

**Figure 4.3a** and **Figure 4.3b** illustrate the 2031 total traffic volumes, including trips generated by the proposed development.

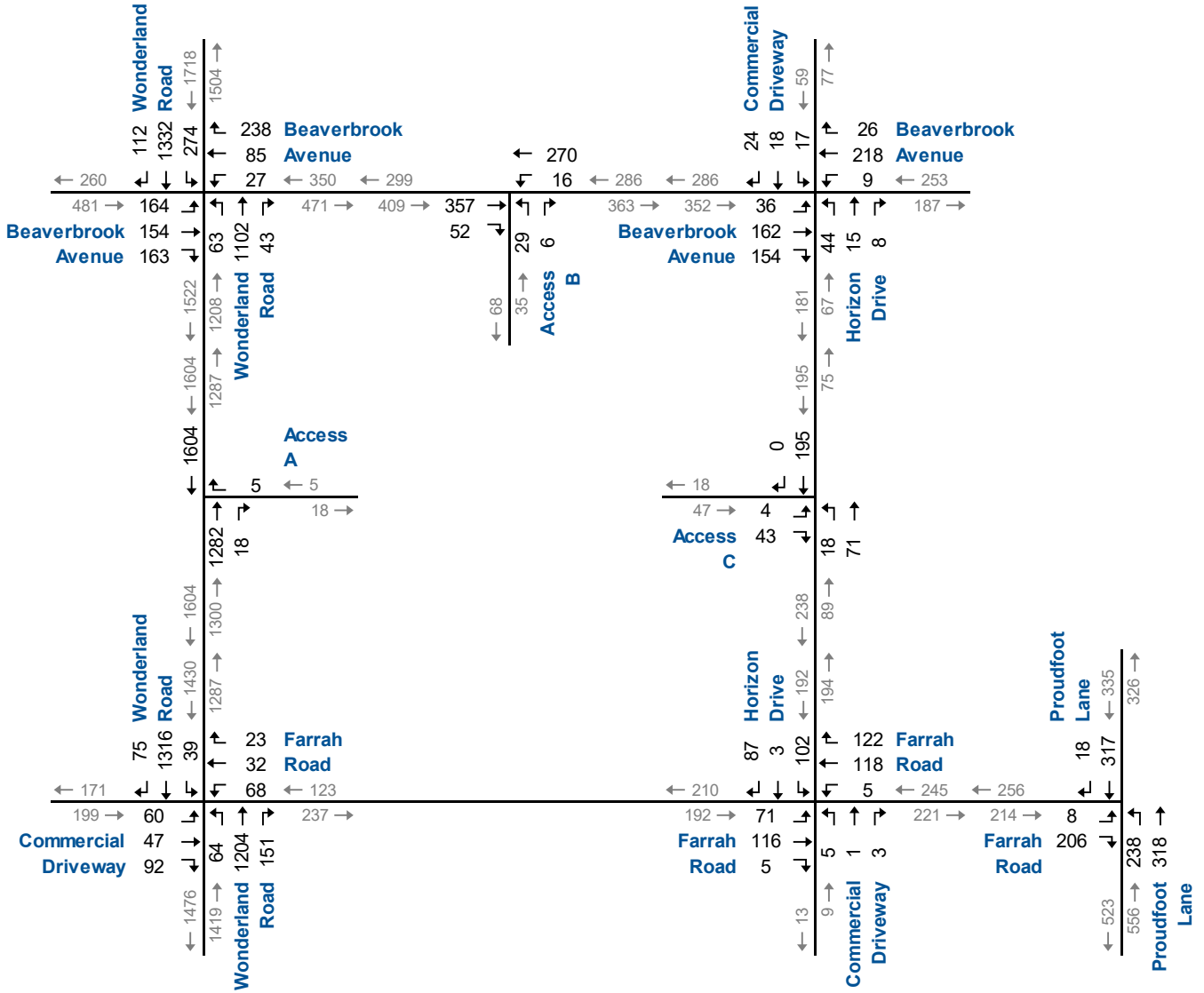
The 2031 total traffic volumes have been analyzed using the same methodology as under existing and background traffic conditions. Signal timings have not been optimized.

**Table 4.2a** and **Table 4.2b** summarize the results of the 2031 total traffic operations during the AM and PM peak hours, respectively. The results indicate that the study area intersections are forecast to operate at similar levels of service as under 2031 background traffic conditions.

The site access intersections on Wonderland Road, Beaverbrook Avenue, and Horizon Drive are forecast to operate at acceptable levels of service.

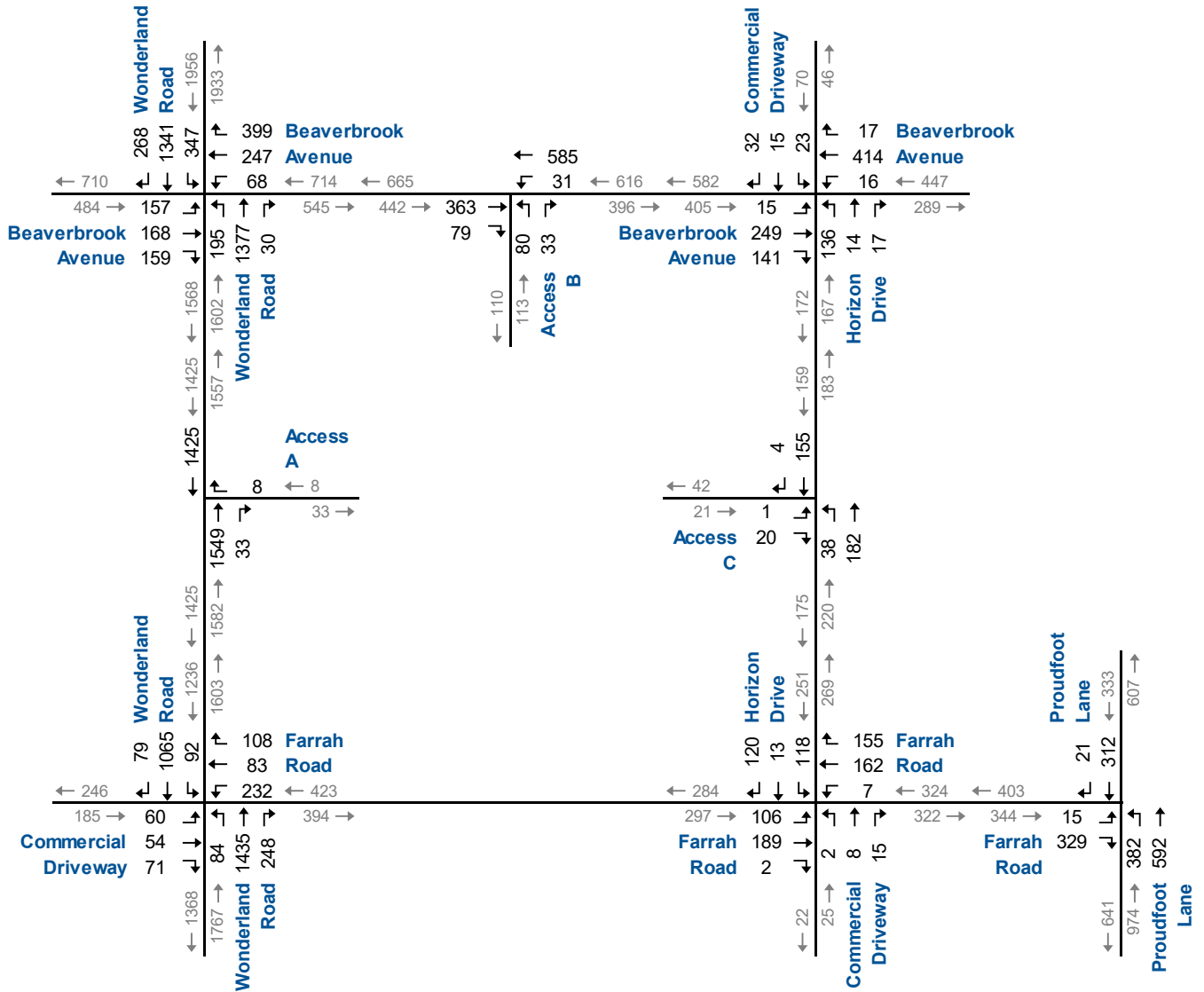
**Appendix F** contains the supporting detailed Synchro 11 reports.





# 2031 Total Traffic Volumes AM Peak Hour

Figure 4.3a



## 2031 Total Traffic Volumes PM Peak Hour



**TABLE 4.2A: 2031 TOTAL TRAFFIC OPERATIONS – AM PEAK HOUR**

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	Wonderland Road & Beaverbrook Avenue	TCS	LOS Delay V/C Q Stor. Avail.	D 53 0.65 59 115 56	D 40 0.36 44 - -	D 42 0.46 49 95 46	D 45 0.13 8 45 37	D 38 0.21 23 - -	D 47 0.68 74 40 -34	D 45 0.33 5 40 35	B 19 0.67 76 - -	C 16 0.06 4 40 36	C 24 0.88 34 60 26	D 41 0.71 71 - -	C 22 0.14 8 60 52	B 13 8 60 -	C 24	C 29		
	Access B & Beaverbrook Avenue	TWSC	LOS Delay V/C Q	< 0 0	A 0 0	> > >	A < <	A < 0	> > >	A > >	B 15 0.09 2	> > >	B 15	> > >	> > >	> > >	> > >	> > >	> > >	
	Horizon Drive/Commercial Driveway & Beaverbrook Avenue	AWSC	LOS Delay V/C Q	< < <	B 11 0.47 19	> > >	< < <	B 10 0.36 12	> > >	> > >	< < <	A 9 0.12 3	> > >	> > >	< < <	A 9 0.10 2	> > >	> > >	> > >	
	Wonderland Road & Access A	TWSC	LOS Delay V/C Q	< < <	< < <	> > >	< < <	B 15 0.01 0	> > >	B 15	A 0 0.00 0	> > >	A 0	> > >	A 0 0.00 0	> > >	A 0	> > >	A 0	
	Wonderland Road & Commercial Plaza Driveway/Farrah Road	TCS	LOS Delay V/C Q Stor. Avail.	D 52 0.28 20 20 0	D 51 0.55 46 - -	> > >	D 51 0.49 27 150 123	E 61 0.21 18 - -	D > > >	D 55 0.29 9 50 41	C 20 0.51 4 - -	A 8 0.15 2 70 68	A 8	B 15 0.16 4 50 46	A 10 0.57 9 - -	> > >	A 10 9 - -	> > >	A 10	B 14
	Horizon Drive & Access C	TWSC	LOS Delay V/C Q	A 10 0.06 2	< < <	> > >	A 10	< < <	A 10 0.33 11	> > >	< < <	A 8 0.01 0	> > >	A 2	< < <	A 0 0.00 0	> > >	A 0	> > >	A 0
	Commercial Driveway/Horizon Drive & Farrah Road	AWSC	LOS Delay V/C Q	< < <	A 10 0.29 9	> > >	< < <	A 10 0.33 11	> > >	< < <	A 9 0.02 0	> > >	> > >	< < <	A 10 0.28 9	> > >	> > >	> > >	> > >	> > >
	Proudfood Lane & Farrah Road	TWSC	LOS Delay V/C Q Stor. Avail.	B 15 0.39 14 - -	< < <	> > >	B 15	< < <	> > >	> > >	A 9 0.22 6 25 19	A 0 0.00 0 - -	> > >	A 4	A 0 0.00 0 - -	> > >	A 0	> > >	A 0	

MOE - Measure of Effectiveness  
 LOS - Level of Service  
 Delay - Average Delay per Vehicle in Seconds  
 V/C - Volume to Capacity Ratio  
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 Stor. - Existing Storage (m)  
 Avail. - Available Storage (m)  
 TCS - Traffic Control Signal  
 TWSC - Two-Way Stop Control  
 AWSC - All-Way Stop Control  
 </> - Shared with through movement

**TABLE 4.2B: 2031 TOTAL TRAFFIC OPERATIONS – PM PEAK HOUR**

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		
PM Peak Hour	Wonderland Road & Beaverbrook Avenue	TCS	LOS Delay V/C Q Stor. Avail.	F 123 0.99 92 115 23	D 38 0.35 46 - -	D 39 0.41 45 95 50	E 66	D 45 0.29 22 45 23	D 40 0.52 69 - -	F 94 1.01 166 40 -126	E 71	E 63 0.91 52 40 -12	D 21 0.94 152 - -	C 0.05 4 40 36	D 48	F 132 1.13 128 60 -68	C 29 0.79 98 - -	B 20 0.37 34 60 26	D 46	D 52	
	Access B & Beaverbrook Avenue	TWSC	LOS Delay V/C Q	<	A 0 0.00 0	>	A 0	<	A 8 0.03 1	>	A 0	D 31 0.47 18	>	>	D 31	>	>	>	>	>	>
	Horizon Drive/Commercial Driveway & Beaverbrook Avenue	AWSC	LOS Delay V/C Q	<	C 18 0.65 36	>	<	C 22 0.73 47	>	<	C 13 0.33 11	>	<	B 13 0.33 11	>	<	B 11 0.14 4	>	>	>	>
	Wonderland Road & Access A	TWSC	LOS Delay V/C Q	<	<	<	<	C 18 0.03 1	>	C 18	A 0 0.00 0	>	A 0	>	A 0	>	A 0	>	A 0	>	A 0
	Wonderland Road & Commercial Plaza Driveway/Farrah Road	TCS	LOS Delay V/C Q Stor. Avail.	D 47 0.25 18 20 2	D 37 0.29 32 - -	>	D 40	E 63 0.79 87 150 63	D 39 0.44 55 - -	>	D 52	C 32 0.37 19 50 31	B 18 0.70 51 - -	B 12 0.29 13 70 57	B 18	E 74 0.72 43 50 7	B 16 0.56 38 - -	>	C 20	C 24	
	Horizon Drive & Access C	TWSC	LOS Delay V/C Q	A 9 0.03 1	>	>	A 9	<	<	<	<	A 8 0.03 1	>	A 1	>	A 0 0.00 0	>	A 0	>	A 0	
	Commercial Driveway/Horizon Drive & Farrah Road	AWSC	LOS Delay V/C Q	<	B 13 0.48 20	>	<	B 13 0.49 20	>	<	B 9 0.04 1	>	<	A 9 0.04 1	>	<	B 12 0.42 15	>	>	>	>
	Proudfood Lane & Farrah Road	TWSC	LOS Delay V/C Q Stor. Avail.	F 57 0.91 74 - -	>	>	F 57	<	<	<	A 10 0.36 13 25 12	A 0 0.00 0 -	>	A 4	>	A 0 0.00 - -	>	A 0	>	A 0	

MOE - Measure of Effectiveness  
 LOS - Level of Service  
 Delay - Average Delay per Vehicle in Seconds  
 V/C - Volume to Capacity Ratio  
 Q - 95th Percentile Queue Length (m)  
 Stor. - Existing Storage (m)  
 Avail. - Available Storage (m)  
 TCS - Traffic Control Signal  
 TWSC - Two-Way Stop Control  
 AWSC - All-Way Stop Control  
 </> - Shared with through movement

## 4.4 Left-Turn Lanes

The need for an auxiliary westbound left-turn turning lane on Beaverbrook Avenue at the site access (Access B) and an auxiliary northbound left-turn turning lane on Horizon Drive at the site access (Access C) was assessed based on the requirements and procedures detailed in the Ministry of Transportation Design Supplement for the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads<sup>5</sup>. The assessment is based on the nomographs for left-turn lanes on a two-lane undivided highway at an unsignalized intersection with a design speed of 10 kilometres per hour over the assumed and posted speed limits (50 km/h and 60 km/h, respectively).

Based on these criteria, a northbound left-turn lane is not warranted on Horizon Drive at Access C; however, a westbound left-turn lane is warranted with 15 metres of storage on Beaverbrook Avenue at Access B under 2031 background and total traffic conditions.

It is noted that a westbound left-turn lane at Access B can be provided either by extending the existing westbound left-turn lane at the intersection at Wonderland Road, or by providing a two-way centre turn lane on this section of Beaverbrook Avenue. These modifications could potentially be accommodated without requiring road widening.

**Figure 4.4a** contains the warrant nomographs for Beaverbrook Avenue and Access B, and **Figure 4.4b/c** contains the warrant nomographs for Horizon Drive and Access C.

## 4.5 Remedial Measures

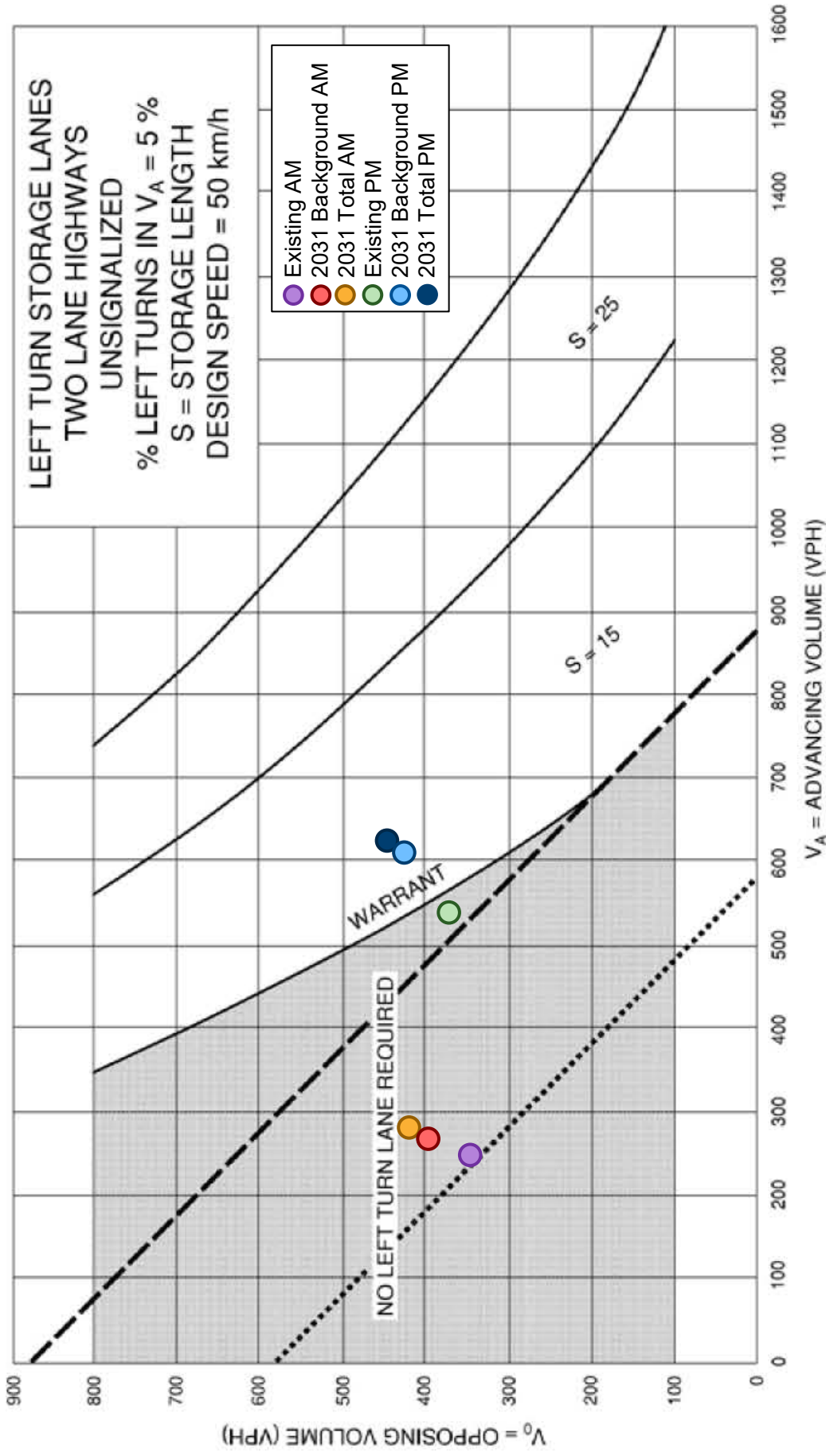
As noted in the operational analysis for the intersection at Wonderland Road and Beaverbrook Avenue, the westbound right-turn lane queues exceed the existing storage of 40 metres under both existing and future traffic conditions. This is independent of the proposed redevelopment of the site.

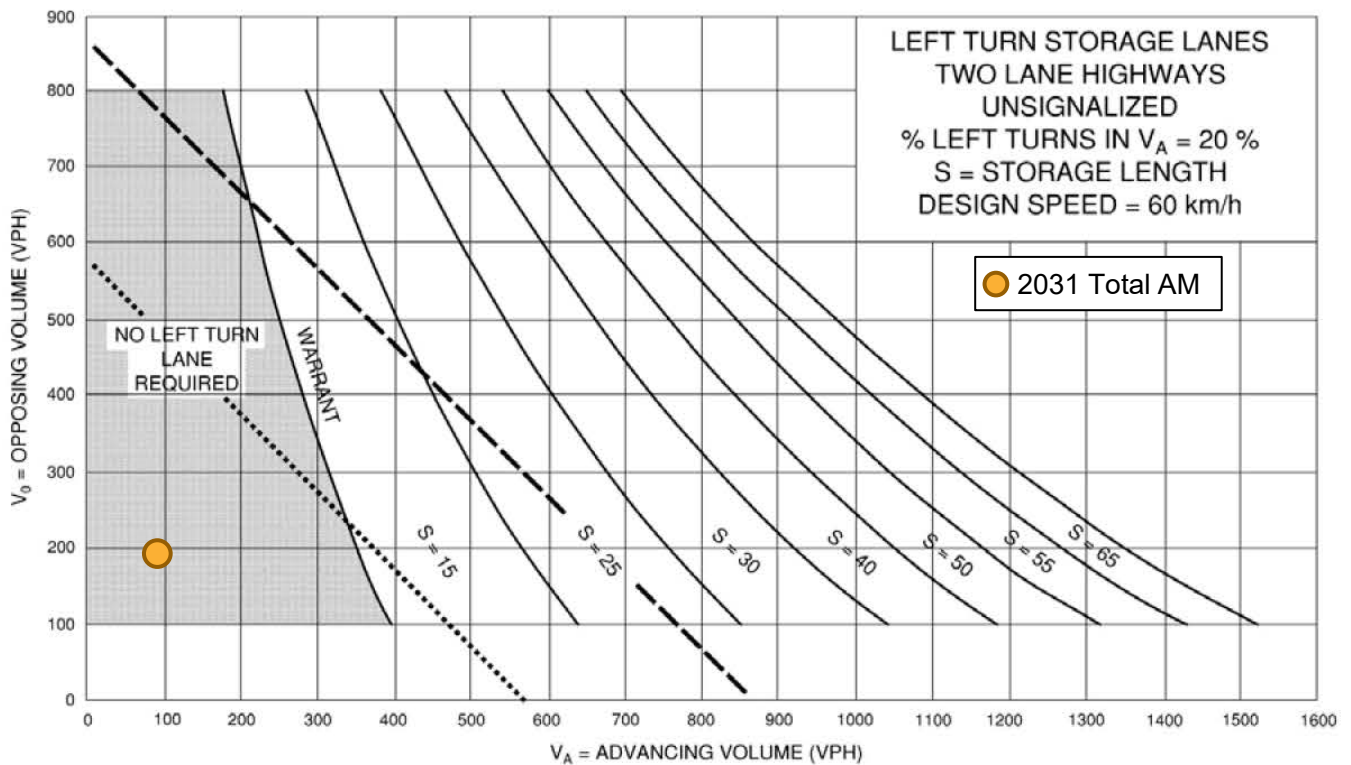
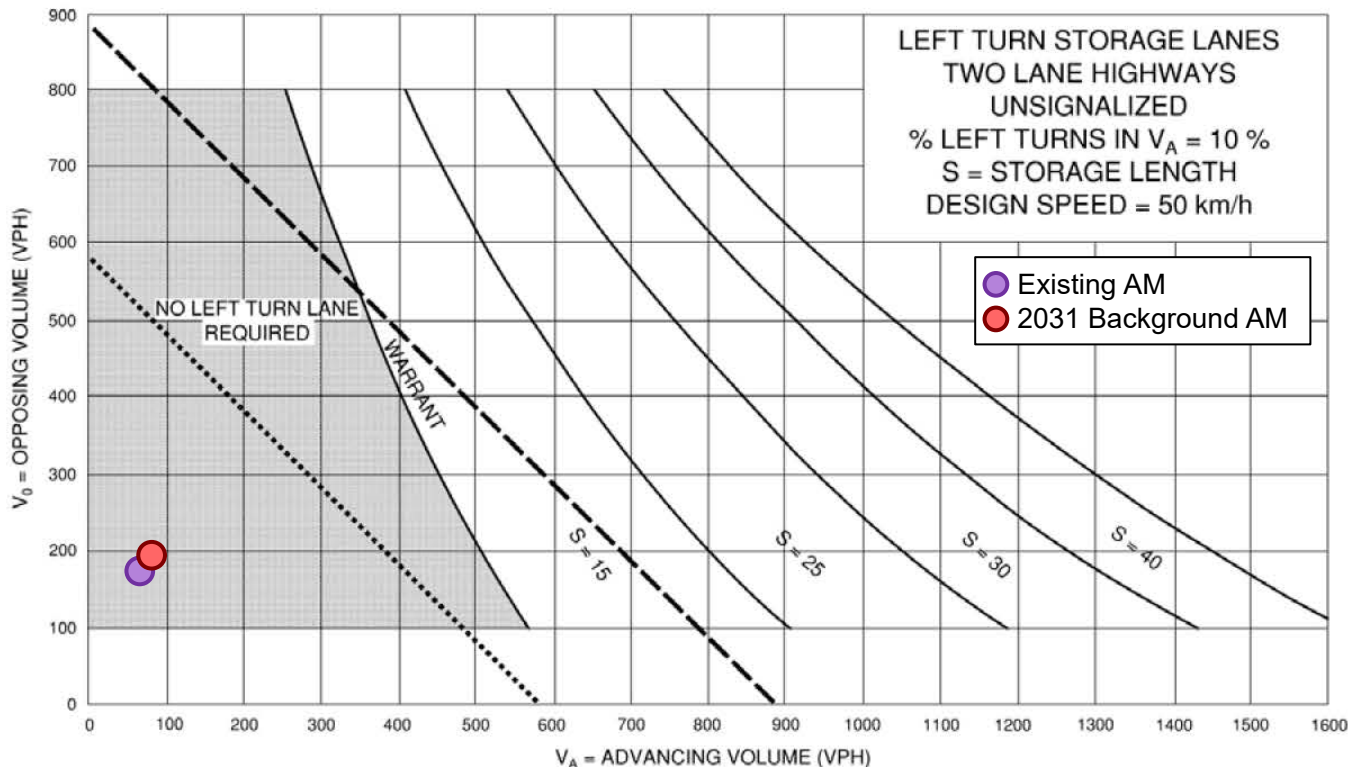
It would be appropriate to consider extending the storage length to accommodate the queueing of this traffic movement as part of future road reconstruction based on the monitoring of changes in road traffic volumes.

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<sup>5</sup> MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads, June 2017.

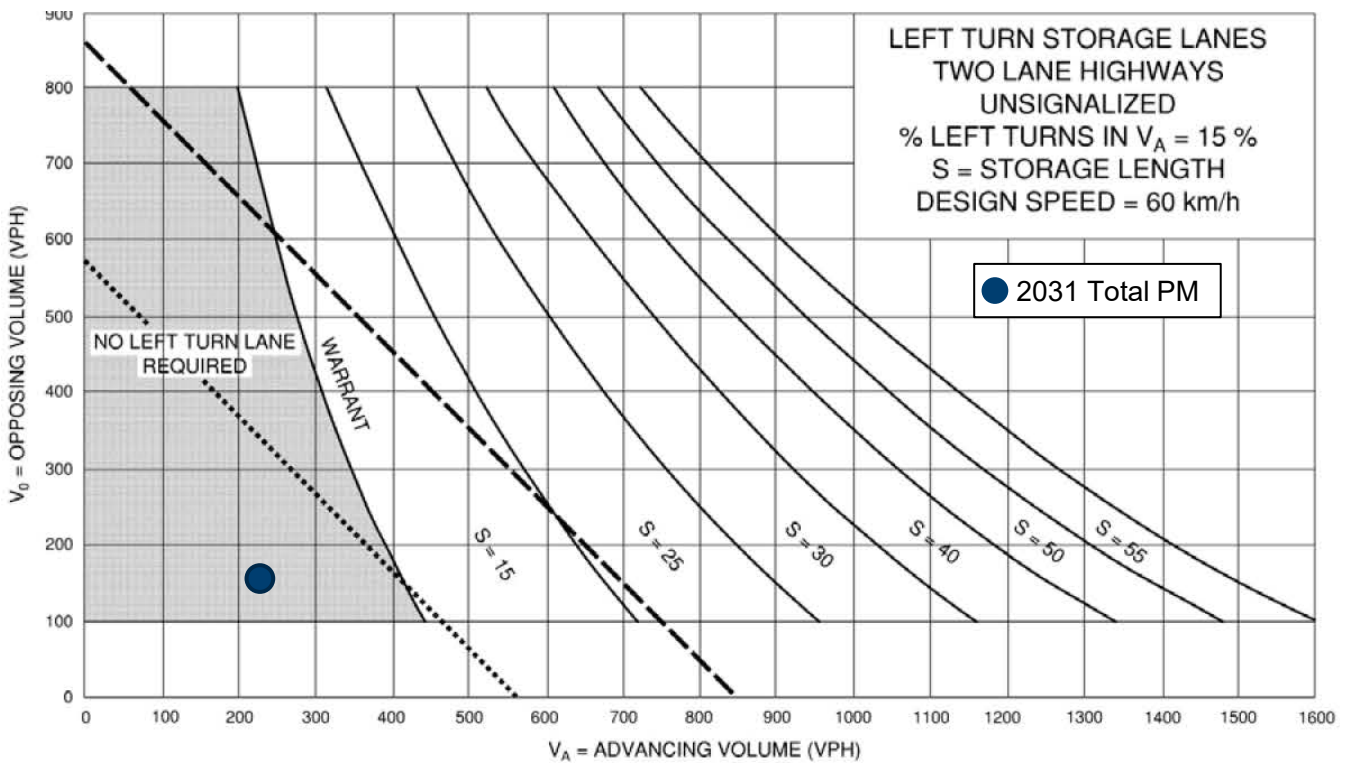
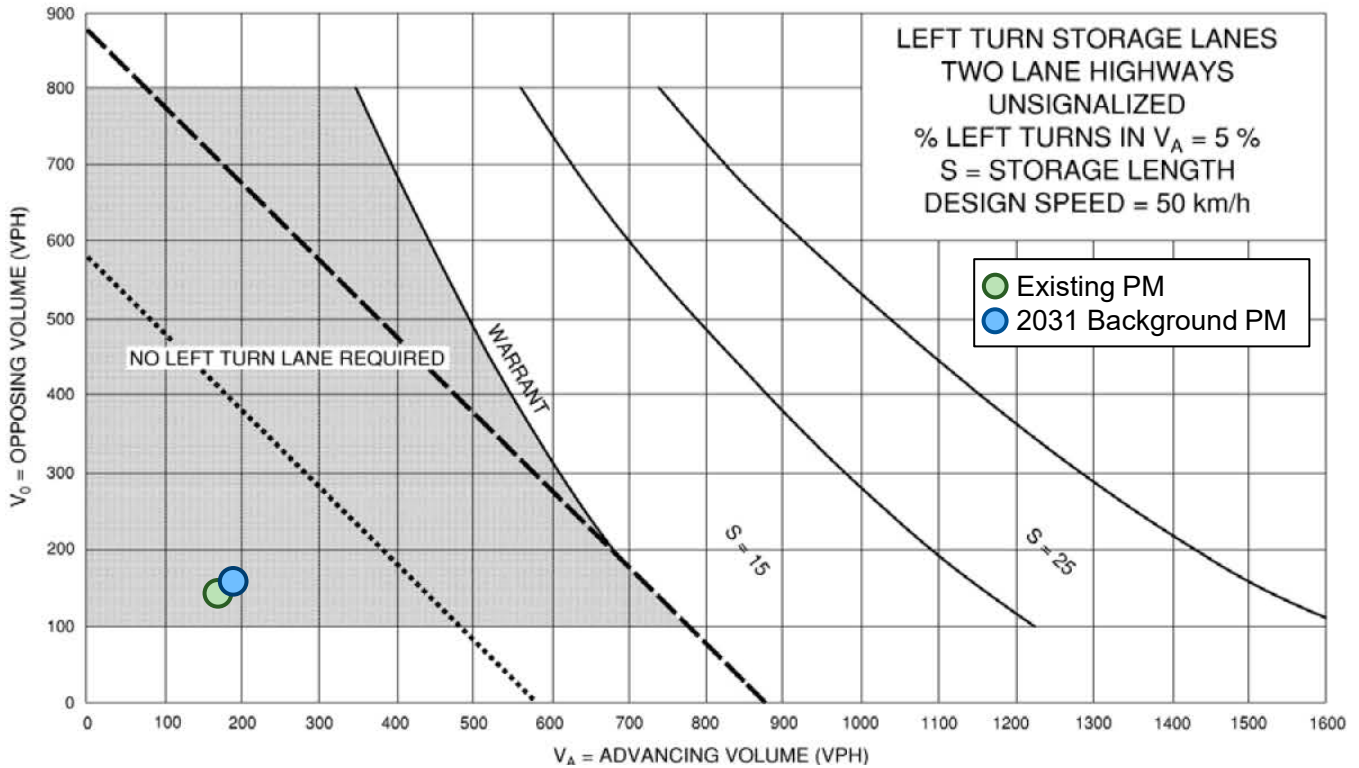






## Horizon Drive and Access C Northbound Left-Turn Lane AM Peak Hour





## Horizon Drive and Access C Northbound Left-Turn Lane PM Peak Hour



## 5 Transportation Demand Management

Transportation Demand Management (TDM) refers to ways of making the capacity of roads more efficient by reducing vehicle demand. TDM approaches consider how people's choices of travel mode are affected by land use patterns, development design, parking availability, parking cost, and the relative cost, convenience, and availability of alternative modes of travel. Various TDM strategies are used to influence those factors so that the alternatives are more competitive with single-occupancy travel and potentially reduce reliance on motor vehicles.

The City of London requires TIA submissions to include a suitable travel demand management plan with reasonable measures to facilitate reduced automobile reliance and promote transit, cycling and walking for trips to and from the site. This requirement is consistent with the goal established by the 2030 Transportation Master Plan to achieve a mode share target of 35% by 2030<sup>6</sup>.

Potential TDM measures appropriate for the proposed development include the following.

### 5.1 Walking

The pedestrian accessibility of a development is essential in helping to ensure that those that can walk have access to accessible pedestrian connections. Proper pedestrian connections from the surrounding community to the site should be available to ensure safety and to enhance the experience of those that choose to walk.

The concept Site Plan indicates that sidewalks will be provided on all internal roadways with connections to each building and the adjacent roadways.

Sidewalks are provided on both sides of Wonderland Road, Beaverbrook Avenue, Horizon Drive, Farrah Road, and Proudfoot Lane.

### 5.2 Cycling

To promote cycling to/from the development, the City's Zoning By-Law requires 0.9 long-term and 0.1 short-term bicycle parking spaces per residential unit. The By-Law also requires 3 spaces plus 0.3 spaces per 100 m<sup>2</sup> gross floor area for the commercial component, and 3 spaces plus 0.2 spaces per 100 m<sup>2</sup> GFA for the office component.

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<sup>6</sup> City of London 2030 Transportation Master Plan: Smart Moves, January 2013.



A separated cycle track is provided on both sides of Wonderland Road. The subject site has good connectivity to the cycle track on Wonderland Road.

### 5.3 Transit

As discussed in **Section 2.2**, London Transit currently operates Routes 10, 20, 27, 33, 51, 52, 53, and 54 within the study area. The closest bus stops for Routes 10 and 27 are located on Wonderland Road on the north (Stop # 2097) and south (Stop # 2098) sides of Beaverbrook Avenue. The nearest stop for Route 20 is located Beaverbrook Avenue along the site's frontage (Stop # 228 and 2417). The nearest stop for Route 33 is located on Farrah Road between Horizon Drive and Proudfoot Lane (Stop # 717).

The nearest stop for the Community Bus Routes (Routes 51, 52, 53, and 54) is located at the residential development on the west side of Wonderland Road between Beaverbrook Avenue and Farrah Road.

The nearby bus stops are easily accessible from the subject development via the existing sidewalks along Wonderland Road, Beaverbrook Avenue, Horizon Drive, Farrah Road, and Proudfoot Lane. The routes provide good connectivity to the broader network and key destinations within the City.

### 5.4 Parking Management

The development will consider providing unbundled parking, separating the sale/renting of apartment units from the supply of vehicular parking spaces. This practice encourages a mix of auto-owning and non-auto-owning tenants and contributes to reducing the use of single-occupancy vehicles in new developments.

### 5.5 Car Share

Car sharing refers to 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 rely on alternative travel options as much as possible.

Communauto (VRTUCAR) currently has six locations in the City of London. The closest vehicle is located 3 kilometres from the subject development.

Given the size of the development and distance to the nearest carshare location, a car share vehicle/space in a convenient location on-site would allow residents from the development and surrounding



area who normally would not need a vehicle for their daily activities to be comfortable with the decision to not own a vehicle.

## **5.6 Wayfinding and Travel Planning**

Increasing awareness of sustainable transportation opportunities for residents and visitors of the development should be considered.

Providing a welcome package that outlines the available transit routes and active transportation options can be helpful to encourage new residents to educate themselves on the support for alternative modes near the subject site. Posting real-time transit and active transportation information in common areas can further support this education.



## 6 Conclusions and Recommendations

### 6.1 Conclusions

Based on the investigations carried out, it is concluded that:

- ▶ **Existing Traffic Conditions:** The study area and site access intersections are operating at acceptable levels of service, except for the following critical movements at the intersection of Wonderland Road and Beaverbrook Avenue:
  - the 95<sup>th</sup> percentile queue length of the westbound right-turn movement exceeds the existing storage of 40 metres during the AM and PM peak hours; and
  - the southbound left-turn movement is operating at LOS D with a v/c ratio of 0.92 during the PM peak hour.

The existing site driveway intersections on Wonderland Road, Beaverbrook Avenue, and Horizon Drive are currently operating at acceptable levels of service.

- ▶ **Development Trip Generation:** The development is forecast to generate 96 and 134 trips during the AM and PM peak hours, respectively. The development traffic volumes are noted to be low to moderate additions to the existing traffic volumes on the surrounding road network.
- ▶ **2031 Background Traffic Conditions:** The study area intersections are forecast to operate at similar levels of service as under existing traffic conditions, with the following additional critical movements:

#### Wonderland Road and Beaverbrook Avenue

- the eastbound left-turn movement is forecast to operate at LOS F with a v/c ratio greater than 0.90;
- the westbound right-turn movement is forecast to operate at LOS E with a v/c ratio greater than 0.90;
- the northbound left-turn movement is forecast to operate at LOS F with a v/c ratio greater than 0.90 and a 95<sup>th</sup> percentile queue length that is project to exceed the existing storage of 40 metres;
- the northbound through movement is forecast to operate at LOS D with a v/c ratio greater than 0.90; and
- the 95<sup>th</sup> percentile queue length of the southbound left-turn is project to exceed the existing storage of 60 metres.



### Proudfoot Lane and Farrah Road

- the eastbound movement is forecast to operate at LOS E with a v/c ratio of 0.86.
- ▶ **2031 Total Traffic Conditions:** The study area intersections are forecast to operate at similar levels of service as under 2031 background traffic conditions.
- ▶ **Site Accesses:** The site access intersection on Wonderland Road, Beaverbrook Avenue, and Horizon Drive are forecast to operate at acceptable levels of service under 2031 background and total traffic conditions.

A northbound left-turn lane is not warranted on Horizon Drive at Access C.

However, a westbound left-turn lane with 15-metre storage is identified as warranted on Beaverbrook Avenue at Access B under 2031 background and total traffic conditions.

It is noted that a westbound left-turn lane at Access B can be provided either by extending the existing westbound left-turn lane at the intersection at Wonderland Road, or by providing a two-way centre turn lane on this section of Beaverbrook Avenue. These modifications could potentially be accommodated without requiring road widening.

- ▶ **Remedial Measures:** As noted in the operational analysis for the intersection at Wonderland Road and Beaverbrook Avenue, the westbound right-turn lane queues exceed the existing storage of 40 metres under both existing and future traffic conditions. This is independent of the proposed redevelopment of the site.

It would appropriate to consider extending the storage length to accommodate the queueing of this traffic movement as part of future road reconstruction based on the monitoring of changes in road traffic volumes.

- ▶ **Transportation Demand Management:** The following TDM measures are appropriate for implementation at the subject development:
  - Bicycle parking in accordance with the City's Zoning By-Law requirements for residential and non-residential developments.
  - Access to existing transit routes on adjacent roadways.
  - Parking unbundled from the sale/rent of apartment units.
  - Identify Carshare space/vehicle(s) in a nearby location.



- Transit, carshare, and active transportation information provided in a welcome package to new residents and/or posted in central locations on-site.

## 6.2 Recommendations

Based on the findings and conclusions of this study, it is recommended that the development be considered for approval as proposed.



# Appendix A

## Pre-Study Consultation





# Appendix B

## Existing Traffic Data



# Appendix C

## Existing Traffic Operations Reports



# Appendix D

## Background Development Traffic Volumes



# Appendix E

## 2031 Background Traffic Operations Reports



# Appendix F

## 2031 Total Traffic Operations Reports

